International Business Research

Canadian Center of Science and Education®

INTERNATIONAL BUSINESS RESEARCH

An International Peer-reviewed and Open Access Journal for Business Research

The scopes of the journal include:	The journal is included in:
Business	EconBiz; EconLit
Marketing	ECONIS; ERA
Management	Google Scholar
Finance	JEL; RePEc
Economics	SHERPA/RoMEO
Accounting	Ulrich's; ZBW

EDITORIAL TEAM

CONTENTS

CONTENTS

Does the CBOE Volatility Index Predict Downside Risk at the Tokyo Stock Exchange?

Chikashi Tsuji[1]

[1] Faculty of Economics, Chuo University, Japan

Correspondence: Chikashi Tsuji, Professor, Faculty of Economics, Chuo University, 742-1 Higashinakano, Hachioji-shi, Tokyo 192-0393, Japan. E-mail: mail_sec_low@minos.ocn.ne.jp

Abstract

This study investigates the predictability of the preceding day's US volatility index (VIX) from the Chicago Board Options Exchange (CBOE) for sharp price drops of the Tokyo Stock Price Index (TOPIX) by employing several versions of probit models. All our results indicate that the preceding day's US S&P 500 VIX movement has predictive power for sharp price declines of the TOPIX in Japan. As we repeatedly examined several left tail risks in TOPIX price changes and we also tested by applying some different versions of probit models, our evidence of the forecast power of the S&P 500 VIX for downside risk of the TOPIX shall be very robust.

Keywords: downside risk, probit model, stock market linkage, S&P 500, tail risk, TOPIX, VIX

1. Introduction

In a globalizing economy, much more academics and practitioners are paying attention to the research of international stock market connections. However, we note that many past investigations have been performed for overall stock market evolution, which contains all conditions or state of bull, bear, and ordinary markets (see, e.g., Diebold and Yilmaz, 2012; Wang, 2014). In light of this point, this study newly examines the international equity market linkages with a particular focus on the downward stock market condition.

More concretely, from the above new viewpoint, this study empirically tests the predictive power of the preceding day's US S&P 500 volatility index (VIX) from the Chicago Board Options Exchange (CBOE) for sharp price drops of the Tokyo Stock Price Index (TOPIX) by applying several versions of probit models. Our investigations employing US and Japanese financial market data reveal the following new findings. (1) First, the estimation results from our simple univariate probit model suggest that the dynamic evolution of the preceding day's US VIX has statistically significant predictive power for large TOPIX price drops in Japan. (2) Second, the estimation results from our autoregressive (AR)(3)-probit model also indicate that the preceding day's US VIX has statistically significant forecast power for large declines in TOPIX. (3) Finally, the estimation results from our probit model with different control variables again suggest that the preceding day's US VIX has statistically significant predictive power for the next day's sharp TOPIX price declines in Japan. The above new robust evidence from our examinations with new analyzing viewpoint is the contribution of this work.

Regarding the organization of the rest of this paper, Section 2 reviews previous studies; Section 3 explains our data and variables for our research; Section 4 documents our analyzing methodology; Section 5 supplies our empirical results; and Section 6 documents our interpretations and conclusions.

2. Literature Review

In this section, we concisely review existing literature focusing only on recent studies. Wang (2014) recently investigated the integration and causality relationships among six major East Asian stock markets, and this study also examined their interactions with the US market before and during the financial crisis from 2007 to 2009. Ülkü and Baker (2014) examined the connection between macroeconomic linkages and stock market linkages by inspecting the relations between macroeconomic betas and stock market betas.

Further, Chien et al. (2015) investigated the dynamic convergence process among cross-border equity markets in China and Association of Southeast Asian Nations (ASEAN) five countries applying a recursive cointegration analysis. Neaime (2016) investigated the contagion vulnerability, international financial relationships, and regional financial connections as to the Middle East and North Africa (MENA) equity markets. A recent study by

Mensi et al. (2016) examined the spillover effects between the US stock market and those of the BRICs (Brazil, Russia, India, China) and South Africa.

Laopodis (2016) studied the linkages of US seventeen industry returns, the US stock market, and several economic fundamental variables. As for the study in the context of downward stock markets, by focusing on the US stock market, Tsuji (2016) rigorously evidenced the superior forecast power of volatility forecasts derived from several kinds of generalized autoregressive conditional heteroskedasticity (GARCH) models (This paper can be downloaded from the journal's web site.). However, there seems to be little previous study that examined the forecast power of the US VIX for sharp drops of the Japanese stock market.
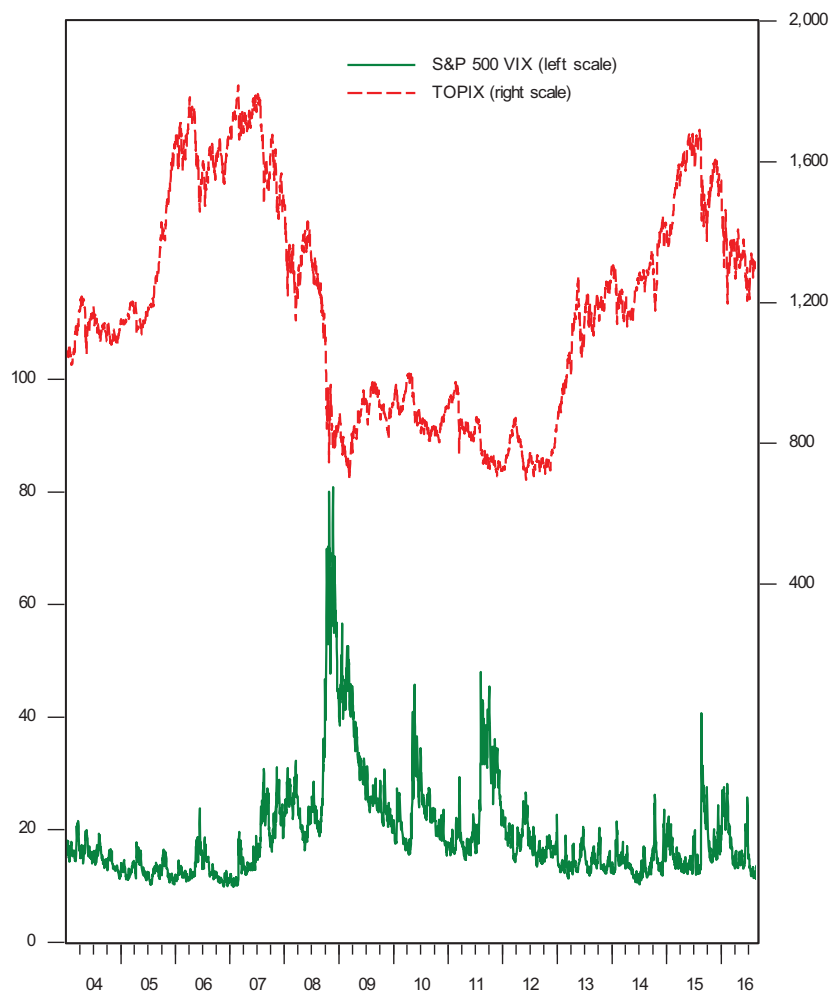
Figure 1. Dynamic daily evolution of the S&P 500 VIX and the TOPIX

3. Data and Variables

In this section, we describe our data and variables used in this study. First, DTPX means the first difference as to the price of the TOPIX in Japan, TPX. Next, DSPX denotes the first difference as to the level of the S&P 500 VIX in the US, SPX. Further, as control variables, we employ DTERM and DEX. More concretely, DTERM means the first difference series of the interest rate spread between the benchmark 10-year Japanese government bond yield and the Japanese three-month interbank offered rate. In addition, DEX denotes the first difference of the time-series as to the exchange rate of the Japanese yen to the US dollar.

All our data are daily time-series and the sample period examined in this work is from January 2, 2004 to September 5, 2016. The data source of all our data is Thomson Reuters. In Figure 1, we exhibit the daily time-series evolution of SPX and TPX for our sample period. This figure suggests that when the US VIX largely increases, the TOPIX sharply drops.

Table 1. Descriptive statistics of US and Japanese financial market variables

	SPX	DSPX	TPX
Mean	19.2034	−0.0019	1187.6160
Median	16.3050	−0.0500	1178.1150
Maximum	80.8600	16.5400	1816.9700
Minimum	9.8900	−17.3600	695.5100
Standard deviation	9.1309	1.7509	308.9502
Skewness	2.5594	0.6971	0.1989
Kurtosis	11.6955	22.4779	1.8700
Observations	3306	3306	3306
	DTPX	DTERM	DEX
Mean	0.0908	−0.0004	−0.0011
Median	0.0000	0.0000	0.0000
Maximum	115.4400	0.1365	3.3000
Minimum	−94.2300	−0.1305	−3.8500
Standard deviation	16.2202	0.0232	0.6601
Skewness	−0.4363	0.2107	−0.2993
Kurtosis	7.8679	5.6579	6.1150
Observations	3306	3306	3306

Note: DSPX means the first difference as to the US S&P 500 VIX, SPX. DTPX means the first difference as to the TOPIX in Japan, TPX. DTERM means the first difference as to the Japanese term spread and DEX denotes the first difference as to the exchange rate of the Japanese yen to the US dollar.

Table 2. Predictive power of the volatility index of the S&P 500 for large drops in the TOPIX: Results of univariate probit models

Panel A. 94% VaR			Panel B. 95% VaR		
	Coefficient	*p*-value		Coefficient	*p*-value
Const.	−1.6642***	0.0000	Const.	−1.7558***	0.0000
DSPX(−1)	0.2203***	0.0000	DSPX(−1)	0.2117***	0.0000
McFadden R^2	0.102101		McFadden R^2	0.101639	
Panel C. 96% VaR			Panel D. 97% VaR		
	Coefficient	*p*-value		Coefficient	*p*-value
Const.	−1.8573***	0.0000	Const.	−1.9983***	0.0000
DSPX(−1)	0.1972***	0.0000	DSPX(−1)	0.1954***	0.0000
McFadden R^2	0.097166		McFadden R^2	0.105178	
Panel E. 98% VaR			Panel F. 99% VaR		
	Coefficient	*p*-value		Coefficient	*p*-value
Const.	−2.1875***	0.0000	Const.	−2.4454***	0.0000
DSPX(−1)	0.1923***	0.0000	DSPX(−1)	0.1612***	0.0000
McFadden R^2	0.122681		McFadden R^2	0.105014	

Note: DSPX(−1) means the first lag of the first difference as to the S&P 500 VIX in the US. McFadden R^2 denotes the McFadden's R-squared value. *** indicates the statistical significance at the 1% level.

4. Testing Methodology

In this section, we document our testing methodology. In this study, we employ three kinds of probit models to test the forecast power of the US S&P 500 VIX for sharp price drops in the TOPIX. It is emphasized that our repeated examinations with below different three probit models should be effective for robustness checks as to the predictability of the US VIX.

Our first model is the following simple univariate probit model:

$$DTPX_t = \pi_0 + \pi_1 DSPX_{t-1} + \mu_t, \tag{1}$$

$$y_t = \begin{cases} 1 & if \ DTPX \le k\%VaR \\ 0 & otherwise \end{cases}.$$

In the above model (1), DTPX denotes the first diferrence of the TOPIX, DSPX denotes the first diferrence of the S&P 500 VIX, $k\%$ VaR means the $k\%$ Value at Risk, and k takes one of the values of 94, 95, 96, 97, 98, and 99 in our analyses (the same hereinafter). Hence, all our investigations test the predictive power of the US S&P 500 VIX for the downside tail risk in the price changes of the TOPIX in Japan.

Table 3. Predictive power of the volatility index of the S&P 500 for large drops in the TOPIX: Results of AR(3)-probit models

Panel A. 94% VaR			Panel B. 95% VaR		
	Coefficient	p-value		Coefficient	p-value
Const.	−1.6744***	0.0000	Const.	−1.7640***	0.0000
DSPX(−1)	0.2147***	0.0000	DSPX(−1)	0.2060***	0.0000
DTPX(−1)	−0.0010	0.6347	DTPX(−1)	−0.0010	0.6610
DTPX(−2)	−0.0065***	0.0019	DTPX(−2)	−0.0054**	0.0129
DTPX(−3)	−0.0056***	0.0098	DTPX(−3)	−0.0054**	0.0181
McFadden R^2	0.113377		McFadden R^2	0.110992	
Panel C. 96% VaR			Panel D. 97% VaR		
	Coefficient	p-value		Coefficient	p-value
Const.	−1.8680***	0.0000	Const.	−2.0291***	0.0000
DSPX(−1)	0.1875***	0.0000	DSPX(−1)	0.1847***	0.0000
DTPX(−1)	−0.0031	0.1872	DTPX(−1)	−0.0049*	0.0533
DTPX(−2)	−0.0049**	0.0351	DTPX(−2)	−0.0090***	0.0003
DTPX(−3)	−0.0059**	0.0146	DTPX(−3)	−0.0058**	0.0312
McFadden R^2	0.108797		McFadden R^2	0.131296	
Panel E. 98% VaR			Panel F. 99% VaR		
	Coefficient	p-value		Coefficient	p-value
Const.	−2.2177***	0.0000	Const.	−2.4646***	0.0000
DSPX(−1)	0.1808***	0.0000	DSPX(−1)	0.1514***	0.0000
DTPX(−1)	−0.0048*	0.0978	DTPX(−1)	−0.0041	0.2441
DTPX(−2)	−0.0073***	0.0089	DTPX(−2)	−0.0055	0.1129
DTPX(−3)	−0.0067**	0.0288	DTPX(−3)	−0.0039	0.3059
McFadden R^2	0.147686		McFadden R^2	0.121501	

Note: DSPX(−1) means the first lag of the first difference as to the S&P 500 VIX in the US. DTPX(−k) means the kth lag of the first difference as to the TOPIX price in Japan. McFadden R^2 denotes the McFadden's R-squared value. ***, **, and * indicate the statistical significance at the 1%, 5%, and 10% levels, respectively.

The second model used in our tests is the following AR(3)-probit model (2):

$$DTPX_t = \kappa_0 + \kappa_1 DSPX_{t-1} + \sum_{k=1}^{3} \kappa_{k+1} DTPX_{t-k} + \omega_t, \tag{2}$$

$$y_t = \begin{cases} 1 & if \ DTPX \le k\%VaR \\ 0 & otherwise \end{cases}.$$

Further, our third model is the following multiple probit model:

$$DTPX_t = \tau_0 + \tau_1 DSPX_{t-1} + \tau_2 DTPX_{t-1} \\ + \tau_3 DTERM_{t-1} + \tau_4 DEX_{t-1} + \upsilon_t, \tag{3}$$

$$y_t = \begin{cases} 1 & if \ DTPX \le k\%VaR \\ 0 & otherwise \end{cases}.$$

We note that in this third model (3), the first lags of DTPX, DTERM, and DEX are included as control variables.

Table 4. Predictive power of the volatility index of the S&P 500 for large drops in the TOPIX: Results of probit models with control variables

Panel A. 94% VaR			Panel B. 95% VaR		
	Coefficient	p-value		Coefficient	p-value
Const.	−1.6638***	0.0000	Const.	−1.7552***	0.0000
DSPX(−1)	0.2180***	0.0000	DSPX(−1)	0.2089***	0.0000
DTPX(−1)	−0.0011	0.6507	DTPX(−1)	−0.0013	0.6082
DTERM(−1)	0.1783	0.9146	DTERM(−1)	0.8184	0.6410
DEX(−1)	−0.0053	0.9327	DEX(−1)	−0.0152	0.8174
McFadden R^2	0.102306		McFadden R^2	0.102071	
Panel C. 96% VaR			Panel D. 97% VaR		
	Coefficient	p-value		Coefficient	p-value
Const.	−1.8583***	0.0000	Const.	−2.0039***	0.0000
DSPX(−1)	0.1894***	0.0000	DSPX(−1)	0.1837***	0.0000
DTPX(−1)	−0.0047*	0.0994	DTPX(−1)	−0.0062**	0.0463
DTERM(−1)	1.9036	0.3114	DTERM(−1)	1.2296	0.5608
DEX(−1)	0.0074	0.9165	DEX(−1)	−0.0139	0.8561
McFadden R^2	0.100184		McFadden R^2	0.111186	
Panel E. 98% VaR			Panel F. 99% VaR		
	Coefficient	p-value		Coefficient	p-value
Const.	−2.1952***	0.0000	Const.	−2.4524***	0.0000
DSPX(−1)	0.1792***	0.0000	DSPX(−1)	0.1483***	0.0000
DTPX(−1)	−0.0056	0.1138	DTPX(−1)	−0.0058	0.1749
DTERM(−1)	1.7384	0.4775	DTERM(−1)	2.0031	0.5194
DEX(−1)	−0.0627	0.4744	DEX(−1)	−0.0287	0.7910
McFadden R^2	0.130095		McFadden R^2	0.112172	

Note: DSPX(−1) means the first lag of the first difference as to the S&P 500 VIX in the US. DTPX(−k) means the kth lag of the first difference as to the TOPIX price in Japan. DTERM(−1) means the first lag of the first difference as to the Japanese term spread and DEX(−1) denotes the first lag of the first difference as to the exchange rate of the Japanese yen to the US dollar. McFadden R^2 denotes the McFadden's R-squared value. ***, **, and * indicate the statistical significance at the 1%, 5%, and 10% levels, respectively.

5. Empirical Results

First, we check some characteristics of the data used in this study. Table 1 exhibits the descriptive statistics of US and Japanese financial market variables we use in this research. Explaining by focusing on our two main variables of DSPX and DTPX, the mean value of DSPX is slightly negative while that of DTPX is slightly positive. In addition, from Table 1, we understand that the standard deviation value of DTPX is much higher than that of DSPX.

Next, we document our empirical results derived from the above-mentioned three probit models. First, the estimation results of our simple univariate probit model (1) are shown in Table 2. The results exhibited in panels A to F in Table 2 show that all the coefficients of the variable DSPX(−1) are statistically significantly positive at the 1% level. Hence, our first empirical results suggest that the preceding day's US S&P 500 VIX has statistically significant predictive power for large price drops of the TOPIX in Japan.

We next explain the estimation results with regard to our second model, the AR(3)-probit model (2). Table 3 exhibits the results and those displayed in all panels from A to F of this table suggest that again, all the coefficients of the variable DSPX(−1) are statistically significantly positive at the 1% level. Thus, the results derived from our second probit model also indicate that the preceding day's US S&P 500 VIX has statistically significant forecast power for sharp price declines in the TOPIX even though we include three AR variables as control variables in our analyzing model.

Finally, we document the estimation results as to our final probit model (3), in which we include the different control variables DTPX(−1), DTERM(−1), and DEX(−1). In Table 4, the estimation results are shown and again, all panels from A to F in this table indicate that all the coefficients of the variable DSPX(−1) are statistically significantly positive at the 1% level. The results in Table 4 therefore again demonstrate that the dynamic evolution of the preceding day's US VIX has statistically significant predictive power for the next day's sharp TOPIX drops in Japan even after we include different control variables in our testing econometric model.

As we documented above, we tested six tail risks in the form of 94% VaR, 95% VaR, 96% VaR, 97% VaR, 98% VaR, and 99% VaR in the distribution of the TOPIX price changes. In addition, we carefully performed our tests by employing three different versions of probit models. Therefore, we understand that all our test results consistently suggested that the increases of the preceding day's US S&P 500 VIX have statistically significant predictive power for large TOPIX price drops in Japan.

6. Summary and Conclusions

Using US and Japanese daily time-series data and applying three sorts of probit models, this study empirically tested the predictive power of the preceding day's US volatility index for the next day's sharp stock price drops in Japan. As we described in the previous section, all the results from our analyses suggested that the preceding day's US S&P 500 VIX has statistically significant predictive power for the next day's large price drops of the TOPIX in Japan. We note that because (1) we carefully examined several tail risks in the form of six kinds of VaR related to price changes in the TOPIX and (2) we also repeatedly conducted our tests by applying three different versions of probit models, we can naturally emphasize that our empirical results exhibited in this paper are highly robust.

In addition, demonstrating the interpretations of our work, our empirical results can be interpreted firstly that (1) downward asset price movements in the US and Japan, more specifically, downside risks in US and Japanese equity markets actually exhibit comovements. Further, our results also can be interpreted secondly that (2) there exist downside risk spillovers from the US equity market to the Japanese equity market (The spillovers in different contexts are also analyzed by Diebold and Yilmaz (2016) and MacDonald (2017), for example.).

It is also noted that these two viewpoints explored in this study are rather new and useful for further investigation and consideration of the issues related to international equity market linkages. Hence, it can be also emphasized that the findings from this study shall be important to further deepen our knowledge as to international stock market evolution and connections in a rapidly globalizing economy.

References

Chien, M, S., Lee, C. C., Hu, T. C., & Hu, H. T. (2015). Dynamic Asian stock market convergence: Evidence from dynamic cointegration analysis among China and ASEAN-5. *Economic Modelling*, *51*, 84-98. http://dx.doi.org/10.1016/j.econmod.2015.06.024

Diebold, F. X., & Yilmaz, K. (2012). Better to give than to receive: Predictive directional measurement of volatility spillovers. *International Journal of Forecasting*, *28*, 57-66. http://dx.doi.org/10.1016/j.ijforecast.2011.02.006

Diebold, F. X., & Yilmaz, K. (2016). Trans-Atlantic equity volatility connectedness: U.S. and European financial institutions, 2004-2014. *Journal of Financial Econometrics*, *14*, 81-127. http://dx.doi.org/10.1093/jjfinec/nbv021

Laopodis, N. T. (2016). Industry returns, market returns and economic fundamentals: Evidence for the United States. *Economic Modelling*, *53*, 89-106. http://dx.doi.org/10.1016/j.econmod.2015.11.007

MacDonald, M. (2017). International capital market frictions and spillovers from quantitative easing. *Journal of International Money and Finance*, *70*, 135-156. http://dx.doi.org/10.1016/j.jimonfin.2016.08.003

Mensi, W., Hammoudeh, S., Nguyen, D. K., & Kang, S. H. (2016). Global financial crisis and spillover effects among the U.S. and BRICS stock markets. *International Review of Economics and Finance*, *42*, 257-276. http://dx.doi.org/10.1016/j.iref.2015.11.005

Neaime, S. (2016). Financial crises and contagion vulnerability of MENA stock markets. *Emerging Markets Review*, *27*, 14-35. http://dx.doi.org/10.1016/j.ememar.2016.03.002

Tsuji, C. (2016). Does the fear gauge predict downside risk more accurately than econometric models? Evidence from the US stock market. *Cogent Economics & Finance*, *4: 1220711*, 1-42. http://dx.doi.org/10.1080/23322039.2016.1220711

Ülkü, N., & Baker, S. (2014). Country world betas: The link between the stock market beta and macroeconomic beta. *Finance Research Letters*, *11*, 36-46. http://dx.doi.org/10.1016/j.frl.2013.07.002

Wang, L. (2014). Who moves East Asian stock markets? The role of the 2007−2009 global financial crisis. *Journal of International Financial Markets, Institutions & Money*, *28*, 182-203. http://dx.doi.org/10.1016/j.intfin.2013.11.003

The Effect of Perceived Risk on Repurchase Intention and Word – of – Mouth in the Mobile Telecommunication Market: A Case Study from Vietnam

Nguyen Xuan Tho[1], Min-Tsai Lai[2], Huey Yan[2]

[1]Ph.D. Program in Business and Management, Southern Taiwan University of Science and Technology, Taiwan

[2]College of Business, Southern Taiwan University of Science and Technology, Taiwan

Correspondence: Nguyen Xuan Tho, Ph.D. Program in Business and Management, Southern Taiwan University of Science and Technology, No. 1, Nan-Tai Street, Yongkang Dist., Tainan City 710, Taiwan. E-mail: Khoanhkhac2008@gmail.com

Abstract

This study aims at examining the effect of perceived risk on repurchase intention and positive word-of- mouth (WOM). An online survey method was used to collect data, and 268 questionnaires were properly completed and submitted by subscribers in the Vietnam's mobile telecommunication market. First-order and second-order CFA were established to analyze and confirm dimensions of perceived risk and its construct by using AMOS software. Then, the structure equation model (SEM) was used to test hypotheses. The results show that perceived risk has a significantly negative impact on repurchase intention. The findings also indicate that there is a negative relationship between perceived risk and word - of - mouth. Based on scientific proof as well as practical evidence, it suggests that the mobile service providers in Vietnam need to prevent any cause that may lead to an increase in terms of consumer's risky perception in order to retain existing subscribers and attract more potential customers.

Keyword: perceived risk, WOM, first-order and second-order CFA, SEM, mobile telecommunication market, Vietnam

1. Introduction

As of August 2016, the mobile telecommunication market in Vietnam has more than 128.3 million subscribers using service of five providers - Viettel, Vinaphone, MobiFone, Vietnamobile, and Gtel (Gmobile). However, the market is dominated by Viettel, Vinaphone, MobiFone. Accordingly, they are holding a majority of market share in the mobile telecommunication industry of Vietnam. The Viettel holds the highest market share of 49.5%, next the MobiFone occupies approximately 27%, followed by the Vinaphone with nearly 16% (Ministry of Information & Communications [MIC], 2016). Presently, although the mobile telecommunication market in Vietnam is generally saturated in the number of subscribers, the competition is still very fierce in a market structure with constantly fluctuating number of subscribers among service providers. This is a challenge to attract more new customers, so the service providers focus more on retaining existing customer through loyalty programs. Furthermore, there is a fact that the cost of attracting new users is much higher than the cost of retaining existing subscribers, thus "keeping customer loyalty is a crucial issue for service firms" (Liu, Guo & Lee, 2011).

A number of previous studies have confirmed some factors which have an impact on customer loyalty in the field of mobile telecommunication service. For example, service quality (Eshghi, Roy, & Ganguli, 2008; Lee & Murphy, 2008; Ishaq, 2012; M. Hassan, S. Hassan, Nawaz, & Aksel , 2013), corporate image (Kim, Park, & Jeong, 2004; Jallow, 2013; Bayraktar, Tatoglu, Turkyilmaz, & Zaim, 2012; Aydin & Ozer, 2005; Hafeez & Hasnu, 2010; Vranakis, Chatzoglou, & Mpaloukas, 2012), switching barrier (Kim et al., 2004; Liu, Guo & Lee, 2011; Almossawi, 2012; Aydin & Ozer, 2005), perceived value (Bayraktar et al., 2012; Ishaqa, 2012), customer trust (Liu, Guo & Lee, 2011; Ahmad, Husain & Rajput, 2015), etc. However, within this service market, there seems to be a lack of research about examining the relationship between customer perceived risk and customer loyalty (particularly focus on repurchase intention and positive WOM). It might be argued that the effect of

perceived risk on repurchase intention and word-of-mouth is well investigated in literature. However, due to lack of research in this industry as was mentioned above and consumer's perceived risk may vary in different sectors or markets, this study will ignore some main components of service quality to focus on examining the effect of perceived risk on repurchase intention (consumer's intention of using mobile network over the long term) as well as on positive word-of-mouth in the Vietnam's mobile telecommunication market. It is expected that the study will bring out not only the scientific proof but also the empirical evidence in order to persuade the Vietnam's mobile network operators that they should stand on consumer's point of views to understand subscriber's perceived risk. As a result, the operators may adjust their policy and strategy to meet customer's need in order to retain existing subscribers in this intensely competitive environment.

The paper begins with literature review: some key terms will be explained based on previous studies. Definition of perceived risk dimensions examined in this study will be also clarified. In the next section, the questionnaire's structure and methodologies to analyze data will be presented. Then the results of the study will be shown in detail, followed by the discussion section. Finally, several limitations and future research direction will be mentioned.

2. Literature Review

2.1 Two Main Dimensions of Customer Loyalty

Customer loyalty has been considered as the frequency or quantity of purchase from a specific product/brand. The current literature regarding customer loyalty only focuses on customers and does not take the psychological meaning of loyalty into account (Ansari & Riasi, 2016). Being aware of different dimensions of customer loyalty can help to resolve this problem.

The concept of customer loyalty can be approached from both two perspectives, attitudinal and behavioral, or one of them. From behavioral perspective, loyalty "can be converted into actual purchase behaviors" (Cheng, 2011), and loyal customer tend to repurchase and keep the relationship with service providers (Jones and Taylor, 2007). On the other hand, attitudinal loyalty can be recognized in terms of attitudes or commitment towards a particular service provider (Söderlund, 2006), or preference of a service or product over alternatives (Jones and Taylor, 2007); and, through word-of-mouth, customers are willing to "create a positive image of a business to others" (Cheng, 2011). Some other previous researchers emphasized on repurchase intention and word-of-mouth to make mention of behavioral intention (Fornell, 1992; Oliver, 1999; Tho & Tuu, 2012). Accordingly, loyal customers will not only have intention of purchasing again and again, but also would be willing to recommend to others about the products or services that they have experienced. In this paper, the concept customer loyalty is considered on two main dimensions, including repurchase intention and positive word-of mouth.

2.1.1 Repurchase Intention

Repurchase intention or customer retention is acknowledged as the likelihood of using a service provider again in the future (Fornell, 1992), and it is "an individual's judgment about buying again a designated service from the same company, taking into account his or her current situation and likely circumstances" (Hellier, Geursen, Carr, & Rickard, 2003). Hume, Mort, and Winzar (2007) defined as the consumer's decision to commit with the firms or providers in term of future activities. It is regarded as an indicator to measure reaction of consumers to certain experiences on their consumption, and it can be obtained by opinion polls from current customers. Repurchase intention is the most vital goal for company success (Jones & Sasser, 1995), and it has been considered as a remarkably important concept in marketing until now. According to Lee, J. Lee, and Feick (2001), loyal customers tend to purchase same product again and again or to buy different products or services of the same provider. As the cost of maintaining existing loyal customers is lesser than that of attracting new customers, the repurchase intention of a customer is very important for any business organization (Samad, 2014). As a result, it seems that almost companies are focusing more on retaining their existing subscribers rather than looking for more new customers.

2.1.2 Word – of – Mouth

Word-of-mouth is defined as "the sharing of information from one person to another" (Khalid, Ahmed, & Ahmad, 2013), or "the passing of information from person to person by oral communication" (Maisam & Mahsa, 2016). It is a form of advertising in which customers are likely to give any recommendation about products or service in their living environments, and as such creating "a chain of communication that could reach a whole community" (Mason, 2008). Mutual conversations, unilateral advices, or suggestions can be also considered as forms of expressing of word of mouth (Maisam & Mahsa, 2016), and it has been recognized as "an effective medium for dissemination of information" (Khan, Ahmed, & Ahmad, 2015). According to Maisam and Mahsa (2016), word

of mouth is "one of the ways that has the most effect on the people and persuades people to buy a product or service more than other commercials because people usually trust to what they hear directly from others". The people who spread information do not have any intention of doing business, and the providers are not directly involved. Also, they may transmit negative or positive word-of-mouth. In this paper, positive WOM is mentioned as one dimension of loyalty.

2.2 Perceived Risk

Perceived risk can be explained as "consumer's doubt about the result of their decisions" (Arslan, Gecsti, & Zengin, 2013). According to Cox and Rich (1964), the concept of perceived risk includes at least two aspects, adverse consequences and uncertainties. Risk can be encountered during consumer's purchasing process, or once they face to any potential uncertainty and undesirable consequence (Taylor, 1974; Zhang, W. Tan, Xu, & G. Tan, 2012). Therefore, if the purchase result was not favorable, customers would be lost their budget, wasted their time, damaged their social position, etc (Cabañero & Carmen, 2007).

According to Jacoby and Kaplan (1972), several types of risk that consumers perceive can be considered: functional risk, physical risk, financial risk, social risk, and psychological risk. Zhang et al. (2012) proposed and verified more dimensions of perceived risk, which include social risk, economics risk, privacy risk, time risk, quality risk, health risk, delivery risk, after-sale risk. In addition, Alamsyah and Angliawati (2015) also brought out several dimensions to measure the concept of perceived risk, followings financial risk (price, cost, funding), functional risk (needs, functions, beliefs), and psychosocial risk (stress, dislike, refuse). Thus, the perceived risk can be considered in term of economic/functional aspects, psychological/social elements, or some combination of both forms (Taylor, 1974). Accordingly, dimensions of perceived risk which are mentioned in this study will be presented in the table below:

Table 1. Definition of perceived risk dimensions

Variable	Definition	Source
Financial risk	The possibility of losing money when buying/using a poor product or service (Jacoby & Kaplan, 1972; Beneke, Greene, Lok, & Mallet, 2012; Tho & Tuu, 2012; Tuu, Olsen, & Linh, 2014), or probably monetary loss due to fraud (Zhang et al., 2012), or potentially financial loss as a consequence of the service provider's mistake.	Jacoby & Kaplan (1972), Beneke et al., (2012), Tho & Tuu (2012), Zhang et al. (2012); Tuu et al. (2014), and this study
Psychosocial risk (social and psychological risk)	Customers worry about losing their status in one's social group as a consequence of purchasing a particular product or service (Jacoby & Kaplan, 1972; Beneke et al., 2012; Zhang et al., 2012; Tho & Tuu, 2012). Besides that, consumers feel disappointed with a poor product or service because it has failed to fulfill their hopes (Beneke et al., 2012), or they may be underestimated by others (Tho & Tuu, 2012),	Jacoby & Kaplan (1972); Beneke et al., (2012); Zhang et al., 2012; Tho & Tuu (2012) and this study
Message risk	The risk associated to failure by message service to fulfill subscriber's need. In detail, consumers worry about receiving any message related to unexpected ads, game invitations, or phishing attacks.	This study

2.3 Perceived Risk and Repurchase Intention

According to Taylor (1974), "once perceived risk has been identified in a purchase situation, there seems to be some reasonable evidence that subsequent consumer behavior can be determined in accordance with such risk". Risk can be occurred during purchasing process or consumption, and it has a negative impact on consumer's attitude (Zhang et al., 2012). The degree of consumer's risky perception is one of the important factors, which influences on their buying decision (Schiffman & Kanuk, 2010). The more risk customer perceive, the less likely it is that they will make a purchase (Zhang et al., 2012); because the fact that "consumers are more often motivated to avoid mistakes than to maximize utility in purchasing" (Mitchell, 1999). Therefore, the first hypothesis would be:

Hypothesis 1: *Perceived risk has a negative impact on repurchase intention*

2.4 Perceived Risk and Positive WOM

Lin and Fang (2006) presumed that people will not spread positive word-of-mouth when a product is considered in inherently risky circumstances. According to Lampert and Rosenberg (1975), when consumers seem to perceive low risk from a product or service, they will engage more word-of-mouth activity. In addition, in high risky situation, consumers are more likely to think about the potentially negative consequences when they make

a decision (Beisswanger, Stone, Hupp, & Allgaier, 2003). More recently, Tho and Tuu (2012) also asserted that perceived risk has negative association with positive word-of-mouth. Thus, the second hypothesis was proposed:

Hypothesis 2: *Perceived risk has a negative effect on positive WOM*

3. Conceptual Model
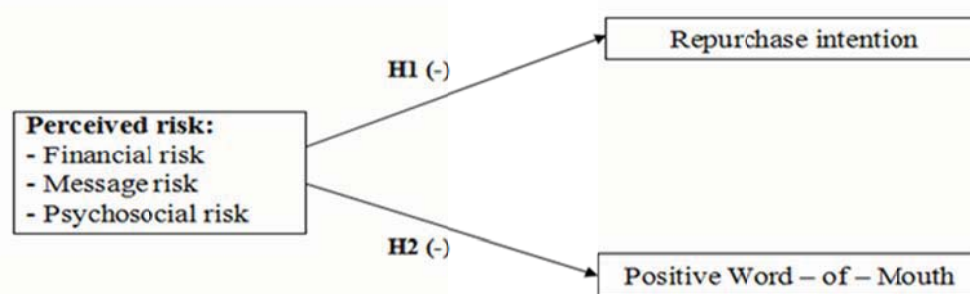
Figure 1. Theoretical Framework

4. Methodology

4.1 Questionnaire and Data Collection

A self-administered questionnaire was selected for survey. It consists of five components: (1) measure "financial risk" (FR) with three questions adapted from Tho and Tuu (2012), and Tuu et al. (2014); (2) four items were created in order to observe "message risk" (MR); (3) evaluate "psychosocial risk" (PR) with three questions fitted from Tho and Tuu (2012); (4) also, three questions were used to measure "repurchase intention" (RI) (Chaudhuri & Holbook, 2001; Eshghi, Roy, & Ganguli, 2008; Tho & Tuu, 2012; Hassan et al., 2013; Nasir & Mushtaq, 2014); and (5) two items for evaluating "WOM" (W) (Chaudhuri & Holbook, 2001; Eshghi et al., 2008; Tho & Tuu, 2012; Nasir & Mushtaq, 2014).

The questionnaire was first pretested with a group of 30 lecturers of the NgheAn University of Economics (Vinh city, Vietnam). These lecturers were also asked to revise the content and structure of the questionnaire. In line with their comments, we combined psychological risk and social risk into one dimension, namely psychosocial risk in the final questionnaire. A five point Likert scale questionnaire was posted in some facebook groups and e-mailed to collect data. After over two months, a total of 296 questionnaires were collected. However, only 268 properly competed questionnaires were used in this paper.

4.2 The Data Analysis Process

Firstly, descriptive statistics were used to highlight the respondent profiles. Then, first-order and second-order CFA were established to analyze dimensions of perceived risk and its construct. Finally, the Structure Equation Model (SEM) was used to test proposed hypotheses.

Table 2. Profile of respondents (N =268)

	Category	Number of samples	Percentage
Gender	Male	102	38.1
	Female	166	61.9
Age	≤ 25	108	40.3
	25 – 40	102	38.1
	≥ 40	58	21.6
Mobile network operator	Viettel	106	39.6
	Vinaphone	86	32.1
	MobiFone	70	26.1
	Others (Vietnammobile, Gmobile-Gtel)	6	2.2
Payment choice	Prepaid	209	78.0
	Postpaid	59	22.0
Occupation	Public Servant	55	20.5
	Private sector employee	69	25.7
	Student	99	36.9
	Freelancer	38	14.2
	Others	7	2.6

5. Analysis and Results

5.1 Respondent Profiles

As shown in the demographic profile (table 2), the survey is dominated by females (61.9%). The table also indicates that the majority of respondents (39.6%) are using service provided by Viettel. The runner-up is Vinaphone (32.1%), followed by MobiFone (26.1%). Only 2.2% of the sample use Vietnammobile and Gmobile (Gtel). Most respondents (78%) consume prepaid cards while only 22% choose monthly bills.

5.2 First and Second-order CFA for Perceived Risk

First-order CFA was applied to test how well measured variables represent in the dimensions (financial risk, message risk, psychosocial risk). According to Malhotra (2004), the value of coefficient alpha falls below 0.6 is considered weak in reliability, while it falls into the range of 0.6-0.8 is recognized moderate strong, and the range of 0.8-1.0 is acknowledged very strong in reliability. In addition, the rule from Clark and Watson (1995) suggested that reliability-related critical value must be at least 0.60 and the values below that value are unacceptable. In order to be better of model and reliability of observable variables, based on Cronbach's alpha and item loading, therefore some items were removed from initial model (MR1, PR3). The results of first-order CFA show in table 3.

Table 3. First-order of perceived risk measurement model

Scale/items	Item loading	Cronbach's Alpha (α)
Financial risk (CR =0.73; AVE = 0.48)		**0.74**
FR1: It is difficult to control my account balance.	0.64	0.66
FR2: Sometimes my account balance is deducted without any reason.	0.77	0.65
FR3: Sometimes there are incorrect charges due to the service provider's mistake	0.66	0.66
Message risk (CR= 0.78; AVE = 0.55)		**0.77**
MR1: I often get many unwanted advertising messages on my phone	0.62	0.76
MR2: I often get many game invitations on my phone	0.76	0.67
MR3: I often get many phishing attacks on my phone	0.83	0.61
Psychosocial risk (CR=0.78; AVE = 0.64)		**0.77**
PR1: My family members do not want me to use this mobile phone network	0.72	0.61
PR2: I am underestimated when using this mobile network	0.87	0.66
Square of correlation (CORR^2):	Financial risk <-> Message risk = 0.27 Message risk <-> Psychosocial risk = 0.18 Financial risk <-> Psychosocial risk = 0.26	
Model fit indices:	Chi-square = 35.915; Df = 17; Chi-square/df = 2.07; p-value =0.006 GFI =0.967; AGFI =0.931; CFI =0.972 ; IFI = 0.972; RMSEA =0.063	

The table 3 show that item loadings ranged from 0.64 to 0.77 for financial risk, 0.62 to 0.83 for message risk, and 0.72 to 0.87 for psychosocial risk. All of composite or construct reliability (CR) of the measurement constructs are above 0.7 (Straub, 1989). Also, all of the constructs (except financial risk) have the average variance extracted (AVE) values greater than 0.5 (Fornell & Larcker 1981; Hair, Anderson, Tatham, & Black 1998). Cronbach's alpha coefficients for the measures ranged from 0.61 and 0.87. There are evidences that the model provides good fit (Chi-square = 35.915; Degrees of freedom = 17; $\chi2/df$ = 2.07; GFI = 0.967; AGFI = 0.931; IFI = 0.972; CFI = 0.972; RMSEA = 0.063).

According to Bagozzi, Li, and Philips (1991), if all factor loadings for traits are statistically significant, convergent validity will be satisfied. As both the fit indices and item loadings of each factor are exceeding the critical value (0.6), which was recommended by Nunnally (1967), it can be said that convergent validity is ensured for the dimensions of perceived risk.

Second-order CFA was employed to specify to what extent the sub-dimensions of perceived risk explain the concept. Results indicate that Financial risk is the most reliable indicator (0.79) followed by message risk (0.66), and psychosocial risk (0.65) (see in table 4).

Table 4. Second-order CFA of perceived risk measurement model

Structural parameters	Factor loading
Perceived risk → Financial risk	0.79
Perceived risk → Message risk	0.66
Perceived risk → Psychosocial risk	0.65
Model fit indices: Chi-square = 35.915; Df = 17; Chi-square/df = 2.07; p-value =0.006 GFI =0.967; AGFI =0.931; CFI =0.972 ; IFI = 0.972; RMSEA =0.063	

5.3 Discriminant Validity Test

In order to evaluate the degree to which measures of different concepts are distinct, discriminant validity test is used. The AVE method (average variance extracted method) is used to test discriminant validity. According to Fornell and Larcker (1981), If the average variances extracted (AVE) by the correlated latent variables is greater than the square of the correlation (CORR^2) between the latent variables then discriminant validity satisfies. The results (see table 5) indicate that two pair of constructs (Perceived risk & Repurchase intention and Repurchase intention & WOM) satisfy with the discriminant validity. However, the CORR ^2 (WOM spread and Perceived risk: 0.53) is greater than the AVE of Perceived risk (0.51) and smaller than the AVE of WOM (0.81). Thus, AVE method fails to check the discriminant validity between two constructs of "Perceived risk" and "WOM". Therefore, it is necessary to find other alternative method.

Table 5. Confirmation Factor Analysis for Convergent and Discriminant Validity

AVE/ CORR^2	α	Construct reliability (CR)	Perceived risk	Repurchase intention	WOM
1. Perceived risk	0.795	0.74	**0.51**		
2. Repurchase intention	0.846	0.85	0.25	**0.74**	
3. WOM	0.879	0.66	0.53	0.38	**0.81**

Model fit indices: Chi-square = 90.553; Df = 48; Chi-square/df = 1.887; p-value =0.000
GFI =0.947; AGFI =0.914; CFI =0.968 ; IFI = 0.969; RMSEA =0.58

One of the alternative methods to check discriminant validity was recommended by Bagozzi et al. (1991), using Chi-square different test. Accordingly, chi-square differences between Model 1, where correlation fixed at 1, and Model 2, where correlations were free. If chi-square of two models is different, it means that the discriminant validity was satisfied between two constructs. The results of Chi-square difference test of two constructs (Perceived risk and WOM) are presented in table 6:

Table 6. The result of Chi-square differences test

Model	Chi-square	DF	P-value
Model 1 (Correlations fixed at 1)	430.292	32	***
Model 2 (Correlations free)	67.252	31	***
Difference of Chi-square	363.04		
Difference of DF		1	

Note: *** significant at 1% level

The results show that chi-square value of the fixed model (model 1) was higher than the unconstrained one (model 2). The Chi-square difference test result was significant (P-value < 0.01), therefore, two constructs of "Perceived risk" and "WOM" satisfy with the discriminant validity.

5.4 Hypothesis Test

The structural equation model was employed to test hypotheses of research. The results are shown in figure 2 below:
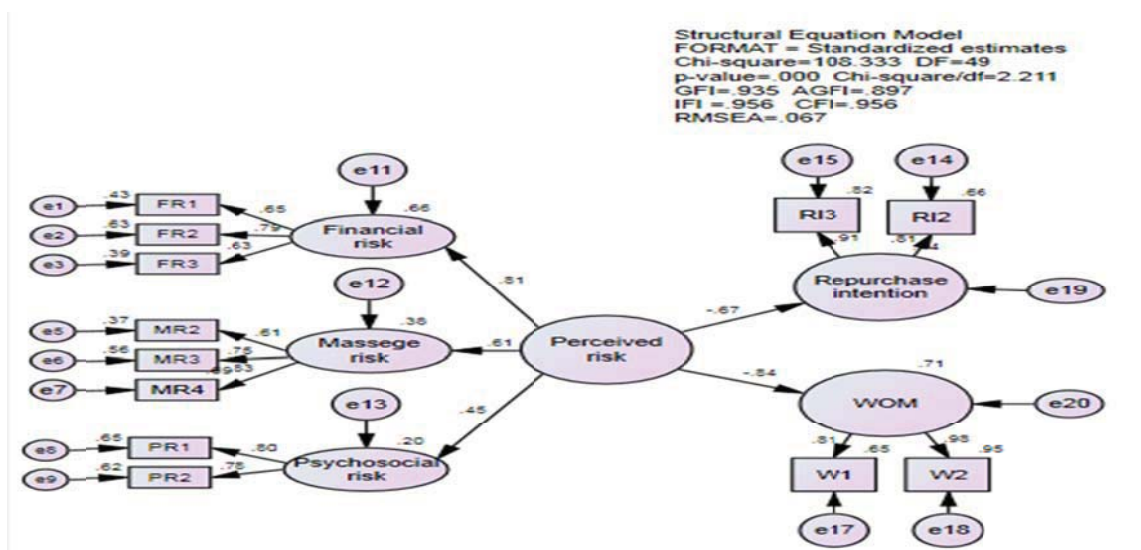
Figure 2. Results of structural modeling analysis

Table 7. Results of hypothesis test

Hypothesized path	Standard Estimates	t- value	Sig.	Result
H1: Perceived risk → Repurchase intention	-0.67	-7.128	***	Accepted
H2: Perceived risk → WOM spread	-0.84	-8.109	***	Accepted

Model fit indices: Chi-square = 108.333; DF= 49; Chi-square/df =2.211;
P-value=0.000; GFI = 0.935 ; AGFI =0.897 ; IFI=0.956, CFI = 0.956; RMSEA = 0.67
Note: *** Significant at 1% level

The results in table 7 indicate that the hypothesis H1 and H2 are accepted. It means that perceived risk has a negative effect on repurchase intention and positive WOM.

6. Discussion and Conclusion

According to Yanamandram and White (2006), in order to assess the model, "reliance on the chi-square test as the sole measure of fit in a structural equation model is not recommended due to its sensitivity to sample size", especially for cases in which the sample size exceeds 200 respondents (Hair et al., 1998; Tabachnick & Fidell, 1996).

Therefore, some alternative stand-alone fit indices which are less sensitive to sample size will be used in order to assess the overall model fit. These indices include the Normed chi-square or chi-square /df, the Comparative Fit Index (CFI), the Incremental Fit Index (IFI), the Goodness-of-Fit (GFI), and the Adjusted goodness-of-fit index (AGFI) (Bagozzi & Yi, 1988; Byrne, 2010; Hair et al., 1998; Joreskog & Sorbom, 1993). The rule of thumb: Chi-square divided by degree of freedom (normed chi-square) should be less than 3 (Carmine & McIver, 1981; Kline, 2005); however, Joreskog and Sorbom (1993) suggested that it should be less than or equal 2 to have an acceptable level of model fit. A value of GFI, IFI, CFI at least 0.90 was required to accept a model (Bagozzi & Yi, 1988; Bollen, 1989; Joreskog & Sorbom, 1993; Hair et al., 1998), while a value of at least 0.95 was required to ensure a good level of model fit (Hox, 2002; Hooper, Couhlan, & Mullen, 2008). The value of AGFI should exceed 0.8 (Joreskog & Sorbom, 1993).

Another approach for assessing how well a model fits the data, in order to accept it, by using the value of RMSEA (Root Mean Square Error of Approximation) (Joreskog & Sorbom, 1993; Yanamandram & White, 2006). Some researchers claimed that RMSEA need to be less than 0.08 (Steiger, 1990; MacCallum, Browne, Sugawara, 1996; McQuitty, 2004), some others recommended that it should be below 0.07 (Bollen, 1989; Steiger, 2007; Hoop, Couhlan, & Mullen, 2008). However, Hu and Bentler (1999) suggested that RMSEA should be less than 0.06, while Schumaker and Lomax (2004) propounded that there is a good model if RMSEA is less than or equal to 0.05. Thus, it is safe to say that a value between 0.05 and 0.08 is indicative of acceptable model fit (Yanamandram & White, 2006). The results of model fit indices (see Figure 2) indicate that the model proposed in this study has an acceptable fit to data.

The results of structural equation modeling analysis indicate that perceived risk in the Vietnam's mobile telecommunication market has a significant and negative effect on repurchase intention. Thus, proposed hypothesis H1 is accepted. This finding is consistent with previous researches in other industries (Schiffman & Kanuk, 2010; Tho & Tuu, 2012; Zhang et al., 2012), which have shown that once customers sense more perceived risk from a product or service, they would not intend to purchase again. In other words, the more risk consumers perceive, the less likely they will make a purchase or have intention of repurchasing products or services.

Contrary to the first time finding from a study conducted by Lin and Fang (2006), this research examined the relationship between perceived risk and word-of-mouth resulted in a different finding. As hypothesis H2 is supported, it confirms that people will avoid spreading positive word-of-mouth when a product or service is perceived under risky circumstances. It is consistent with Tho and Tuu (2012), when perceived risk towards services increases, customers tend to close their positive WOM, and they will probably spread negative WOM instead.

There are some reasons to explain why perceived risk only consists of three dimensions in this study. First, in the pilot phase, four dimensions were taken into consideration, namely financial risk, message risk, psychological risk and social risk. However, most pilot survey participants suggested that given their high interaction, psychological risk and social risk should be combined in order to better reflect consumer behavior in this industry. Second, this study conducted in Vietnam where the market structure of mobile telecommunication service is not stable yet. In addition, a legal framework for the market has been inefficient until now. Cell phone users, therefore, have often received spam messages such as unexpected advertisements, game invitations and phishing attacks in recent years. Besides that, Vietnamese subscribers have sometimes complained about

inexplicable or inaccurate deductions from their account balance. It means that subscribers have suffered from several kinds of financial problems, namely financial risk in this paper.

In conclusion, the purpose of this study is to examine the effect of perceived risk of existing customers on their repurchase intention (intention of using cell phone network over the long term) as well as on their intention of spreading positive word-of-mouth in the field of mobile telecommunication market of Vietnam. To do this, a framework was built with two hypotheses which propose the relationships between these constructs. First-order and second-order CFA were established to analyze and confirm dimensions of perceived risk and its construct. After doing this, the structure equation model was employed to test proposed hypotheses. As a result, the findings show that two hypotheses were supported. The findings in this study brought out evidences, both on scientific aspect as well as practical side, to suggest that it would be more profitable for any cellular network service provider in Vietnam when finding out effective policies and strategies to meet customer's need in this intensely competitive environment.

Indeed, Vietnamese's highly saturated mobile telecommunications market is a challenge for its mobile services providers. It is essential for them to fully understand the degree of consumers' perceived risk that impacts on their subscriber's intention of spreading positive word-of-mouth and intention of using mobile network over the long term. The better strategy for the mobile service operators is that they have to not only maintain high service quality but also eliminate any factor which increases consumer's perceived risk level. The more effective policy the cell network providers make to reduce the level of consumer's risky perception, the more profit they can get from their customer.

7. Limitation and Future Research Direction

Similar to the other studies, this research has a few limitations. First, given the fact that the survey covered only volunteers, our research team observed that most respondents were young (U40) and female. This issue might affect the representative sample even though the questionnaire was completed directly by consumers. In order to reduce this problem, both online survey and traditional survey should be carried out in next research studies. Second, in order to focus on consumer's perceived risk, this study did not take into account some main components of service quality that may affect more on behavioral intention. Therefore, it could be argued that its practical contributions are limited in general. In addition, some other factors also need to be examined in future researches, such as customer trust, customer familiarity, advertising, etc. All these factors need to be structurally analyzed for their influence on repurchase intention and word-of-mouth. It can be expected that the newly developed model will lead to more complete findings and greater practical signification.

Acknowledgments

References

Ahmad, J., Husain, M., & Rajput, A. (2015). Customer loyalty framework of telecommunication service market. *International Journal of Managing value and Supply chains (IJMVSC), 6*(1), 69-78. Retrieved from https://doi.org/10.5121/ijmvsc.2015.6106

Alamsyah, D. P., & Angliawati, R. Y. (2015). Buying behavior of organic vegetables product: the effects of perceptions of quality and risk. *International journal of scientific and technology research, 4*(12), 28-36. Retrieved from http://www.ijstr.org/final-print/dec2015/Buying-Behavior-Of-Organic-Vegetables-Product-The-Effects-Of-Perceptions-Of-Quality-And-Risk-.pdf

Almossawi, M. M. (2012). Customer satisfaction in the mobile telecom industry in Bahrain: Antecedents and consequences. *International Journal of Marketing Studies, 4*(6), 139-156. Retrieved from https://doi.org/10.5539/ijms.v4n6p139

Ansari, A., & Riasi, A. (2016). Modelling and evaluating customer loyalty using neural networks. Evidence from startup insurance companies. *Future Business Journal*, *2*(1), 15-30. http://dx.doi.org/10.1016/j.fbj.2016.04.001

Arslan, Y., Gecₛti, F., & Zengin, H. (2013). Examining perceived risk and its influence on attitudes: A study on private label consumers in Turkey. *Asia Social Science, 9*(4), 158-166. Retrieved from https://doi.org/10.5539/ass.v9n4p158

Aydin, A., & Ozer, G. (2005). The analysis of antecedents of customer loyalty in the Turkish mobile

telecommunication market. *European Journal of Marketing, 39(*7/8), 910-925. http://dx.doi.org/10.1108/03090560510601833

Bayraktar, E., Tatoglu, E., Turkyilmaz, A., & Zaim, S. (2012). Measuring the efficiency of customer satisfaction and loyalty for mobile phone brands with DEA. *Expert Systems with Applications, 39,* 99-106. http://dx.doi.org/10.1016/j.eswa.2011.06.041

Bagozzi, R. P., & Yi, Y. (1988). On the Evaluation of Structural Equation Models. *Journal of the Academy of Marketing Science, 16*(1), 74-94. http://dx.doi.org/10.1007/BF02723327

Bagozzi, R. P., Li, Y., & Philips, L. W. (1991). Assessing construct validity in organizational research. *Administrative Science Quarterly, 36*(3), 421-458. http://dx.doi.org/10.2307/2393203

Beisswanger, A. H., Stone, E. R., Hupp, J. M., & Allgaier, L. (2003). Risk taking in relationships: Differences in deciding for oneself versus for a friend. *Basic & Applied Social Psychology, 25*(2), 121-135. http://dx.doi.org/10.1207/S15324834BASP2502_3

Beneke, J., Greene, A., Lok, I., & Mallett, K. (2012). The influence of perceived risk on purchase intent: the case of premium grocery private label brands in South Africa. *Journal of Product & Brand Management, 21*(1), 4-14. http://dx.doi.org/10.1108/10610421211203060

Bollen, K. A. (1989). *Structural Equations with Latent Variables*, New York: Wiley. https://doi.org/10.1002/9781118619179

Byrne, B. M. (2010). *Structural equation modeling with Amos: Basic concepts, applications, and programming* (2nd ed.). New York, NY: Taylor and Francis Group.

Carmen, P. C. (2007). Perceived risk on goods and service purchases. *EsicMarket, 129,* 183-199. Retrieved from http://www.esic.edu/documentos/revistas/esicmk/080114_153323_I.pdf

Carmines, E. G., & McIver, J. P. (1981). *Analyzing Models with Unobserved Variables*. In G.W. Bohrnstedt & E. F. Borgatta (Eds.), Social Measurement: Current Issues, Beverly Hills, CA: Sage.

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7*(3), 309-319. http://dx.doi.org/10.1037/1040-3590.7.3.309

Chaudhuri, A., & Holbrook, M. B. (2001). The chain of effects from brand trust and brand affect to brand performance: the role of brand loyalty. *Journal of Marketing, 65*(2), 81-93. Retrieved from https://doi.org/10.1509/jmkg.65.2.81.18255

Cheng, S. I. (2011). Comparisons of competing models between attitudinal loyalty and behavioral loyalty. *International Journal of Business and Social Science, 2*(10), 149-166. Retrieved from http://ijbssnet.com/journals/Vol._2_No._14;_July_2011/18.pdf

Cox, D. F., & Rich, S. U. (1964). Perceived risk and consumer decision making-the case of telephone shopping. *Journal of Market Research, 1*(4), 32-39. http://dx.doi.org/10.2307/3150375

Eshghi, A., Roy, S. K., & Ganguli, S. (2008). Service quality and customer satisfaction: An empirical investigation in Indian Mobile telecommunications services. *Marketing Management Journal, 18*(2), 119-114. Retrieved from http://www.mmaglobal.org/publications/MMJ/MMJ-Issues/2008-Fall/MMJ-2008-Fall-Vol18-Issue2-Eshghi-Roy-Ganguli-pp119-144.pdf

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39-50. http://dx.doi.org/10.2307/3151312

Fornell, C. (1992). A national customer satisfaction barometer: The Swedish experience. *Journal of Marketing*, *56*, 6-21. http://dx.doi.org/10.2307/1252129

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate Data Analysis*. Prentice Hall, New Jersey

Hafeez, S., & Hasnu, S. (2010). Customer satisfaction for Cellular phones in Pakistant: A case study of Mobilink. *Business and Economics Research Journal, 1*(3), 35-44. Retrieved from http://www.berjournal.com/customer-satisfaction-for-cellular-phones-in-pakistan-a-case-study-of-mobilink

Hassan, M., Hassan, S., Nawaz, M. S., & Aksel, I. (2013). Measurement customer satisfaction and loyalty through service fairness, service quality and price fairness perception: an empirical study of Pakistan Mobile telecommunication sector. *Aci.Int (Lahore), 25*(4), 971-980. Retrieved from

http://www.sci-int.com/pdf/204359195453--971-980--masood%20&%20Saad%20final.pdf

Hellier, P. K., Geursen, G. M., Carr, R. A., & Rickard, J. A. (2003). Customer repurchase intention: A general structural equation model. *European Journal of Marketing, 37*(11/12), 1762-1800. https://doi.org/10.1108/03090560310495456

Hu, L. T., & Bentler, P. M. (1999). Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria versus New Alternatives. *Structural Equation Modeling, 6*(1), 1-55. http://dx.doi.org/10.1080/10705519909540118

Hume, M., Mort, G. S., & Winzar, H. (2007). Exploring repurchase intention in a performing arts context: Who comes? And why do they come back? *International Journal of Nonprofit and Voluntary Sector Marketing, 12*(2), 135-148. http://dx.doi.org/10.1002/nvsm.284

Hooper, D., Coughlan, J., & Mullen, M. R., (2008). Structural Equation Modelling: Guidelines for Determining Model Fit. *The Electronic Journal of Business Research Methods, 6*(1), 53-60. Retrieved from http://arrow.dit.ie/cgi/viewcontent.cgi?article=1001&context=buschmanart

Hox, J. J. (2002). An introduction to Structural Equation Modeling. *Family Science Review, 11,* 354-373. Retrieved from http://joophox.net/publist/semfamre.pdf

Ishaqa, M. I. (2012). Perceived value, Service quality, corporate image and customer loyalty: Emperical assessment from Pakistan. *Serbian Journal of Management, 7*(1), 25-36. Retrieved from https://doi.org/10.5937/sjm1201025I

Jacoby, J., & Kaplan, L. B. (1972). The Components of Perceived Risk. *Paper presented at the Third Annual Convention of the Association for Consumer Research*, 382-393. Retrieved from http://www.acrwebsite.org/search/view-conference-proceedings.aspx?Id=12016

Jallow, M. (2013). Customer Satisfaction in Taipei Mobile Phone Sector. *African Journal of Business Management, 7*(6), 272-380. http://dx.doi.org/10.5897/AJBM10.623

Joreskog, K. G., & Sorbom, D., (1993). *LISREL 8: Structural equation modeling with the SIMPLIS command language*. Chicago: Scientific Software International.

Jones, T. O., & Sasser W. E. (1995). Why Satisfied Customers Defect. *Harvard Business Review,* (Nov-Dec), 88-99. http://dx.doi.org/10.1061/(ASCE)0742-597X(1996)12:6(11.2)

Jones, T., & Taylor, S. F. (2007). The conceptual domain of service loyalty: how many dimensions? *Journal of Services Marketing, 21*(1), 36-51. http://dx.doi.org/10.1108/08876040710726284

Kline, R. B. (2005), *Principles and Practice of Structural Equation Modeling* (2nd ed.). New York: The Guilford Press.

Khan, S. A, Ramzan, N., Shoaib, M., & Mohyuddin, A. (2015). Impact of Word of Mouth on consumer purchase intention. *Sci.Int. (Lahore), 27*(1), 479-482. Retrieved from http://www.sci-int.com/pdf/1812633232479-482--Saba%20Anwar%20Khan--SS--CO-ZEESHAN--.pdf

Khalid, S., Ahmed, M. A., & Ahmad, Z. (2013). Word – of Mouth communications: A powerful contributor to Consumers Decision –making in Healthcare Market. *International Journal of Business and Management Invention, 2*(5), 55-64. Retrieved from http://www.ijbmi.org/papers/Vol(2)5/version-2/I255564.pdf

Kim, M. K., Park, M. C., & Jeong, D. H. (2004). The effects of customer satisfaction and switching barrier on customer loyalty in Korean mobile telecommunication services. *Telecommunications policy, 28,* 145-159. http://dx.doi.org/10.1016/j.telpol.2003.12.003

Lampert, S. I., & Rosenberg, L. J. (1975). Word of mouth activity as information search: A reappraisal. *Journal of the Academy of Marketing Science, 3*(4), 337-354. http://dx.doi.org/10.1007/BF02729294

Lee, R., & Murphy, J. (2008). The moderating influence of enjoyment on customer loyalty. *Australasian Marketing Journal, 16*(2), pp. 11-21. http://dx.doi.org/10.1016/S1441-3582(08)70011-9

Lee, J., Lee, J., & Feick, L. (2001). The impact of switching cost on the customer satisfaction-loyalty link; mobile phone service in France. *Journal of Service Marketing, 15*(1), 35-48. http://dx.doi.org/10.1108/08876040110381463

Lin, T. M. Y., & Fang, C. H. (2006). The effects of perceived risk on the word –of –mouth communication dyad. *Social behavior and personality, 34*(10), 1207-1216. http://dx.doi.org/10.2224/sbp.2006.34.10.1207

Liu, C. T., Guo, Y. M., & Lee, C. H. (2011). The effects of relationship quality and switching barriers on

customer loyalty. *International Journal of Information management, 31,* 71-79. http://dx.doi.org/10.1016/j.ijinfomgt.2010.05.008

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power Analysis and Determination of Sample Size for Covariance Structure Modeling. *Psychological Methods, 1*(2), 130-149. Retrieved from http://ww.w.statpower.net/Content/312/Handout/MacCallumBrowneSugawara96.pdf

Mason, R. (2008). Word of mouth as a promotional tool for turbulent markets. *Journal of Marketing Communications, 14*(3), 207-224. http://dx.doi.org/10.1080/13527260701754258

Malhotra, N. K. (2004). *Marketing Research: An Applied Orientation* (4th Ed.). Pearson Education, Inc., New Jersey.

Maisam, S., & Mahsa, R. D. (2016). Positive Word-of –Mouth Marketing: Explaining the role of value congruity and brand love. *Journal of Competitiveness, 8*(1), 19-27. http://dx.doi.org/10.7441/joc.2016.01.02

McQuitty, S. (2004). Statistical power and structural equation models in business research. *Journal of Business Research, 57*(2), 175-183. http://dx.doi.org/10.1016/S0148-2963(01)00301-0

Ministry of Information & Communications. (2016). *Vietnam had signed up over 128.3 million mobile subscribers.* Retrieved from http://ictnews.vn/vien-thong/viet-nam-hien-co-hon-128-3-trieu-thue-bao-dien-thoai-di-dong-142931.ict

Mitchell, V. W. (1999). Consumer perceived risk: conceptualisations and models. *European Journal of Marketing, 33*(1/2), 163-195. http://dx.doi.org/10.1108/03090569910249229

Nasir, A., & Mushtaq. (2014). Customer loyalty in telecom sector of Pakistan. *Journal of Sociological Research, 5*(1), 449-467. http://dx.doi.org/10.5296/ jsr.v5i1.6575

Nunnally, J. C. (1967). *Psychometric theory*. New York: McGraw-Hill.

Oliver, R. L. (1999). Whence customer loyalty? *Journal of Marketing, 63,* 33-44. http://dx.doi.org/10.2307/1252099

Samad, A. (2014). Examining the impact of perceived service quality demensions on repurchase intentions and word of mouth. *Journal of Business and Management, 16*(1), Ver. III, 37-41. Retrieved from http://iosrjournals.org/iosr-jbm/papers/Vol16-issue1/Version-3/E016133741.pdf

Schiffman, G. L., & Kanuk, L. L. (2010). *Consumer behavior* (10th Ed.). New Jersey: Prentice Hall.

Schumacker, R. E., & Lomax, R. G. (2004). *A Beginner's Guide to Structural Equation Modeling (2nd Ed)*. Mahwah, NJ: Lawrence Erlbaum Associates.

Steiger, J. H. (1990). Structural model evaluation and modification: an interval estimation approach. *Multivariate Behavioural Research, 25,* 173-180. http://dx.doi.org/10.1207/s15327906mbr2502_4

Steiger, J. H. (2007). Understanding the limitations of global fit assessment in structural equation modeling. *Personality and Individual Differences, 42*(5), 893-898. http://dx.doi.org/10.1016/j.paid.2006.09.017

Straub, D. W. (1989). Validating instruments in MIS research. *MIS Quarterly, 13*(2), 147-169. http://dx.doi.org/10.2307/248922

Söderlund, M. (2006). Measuring customer loyalty with multi‐item scales: A case for caution. *International Journal of Service Industry Management, 17*(1), 76-98. http://dx.doi.org/10.1108/09564230610651598

Tabachnick, B. G., & Fidell, L. S. (1996). *Using Multivariate Statistics*. Harper Collins, New York.

Taylor, J. W. (1974). The role of risk in consumer behavior. *Journal of Marketing, 38*(2), 53-60. http://dx.doi.org/10.2307/1250198

Tuu, H. H, Olsen, S. O., & Linh, P. T. T. (2011). The moderator effects of perceived risk, objective knowledge and certainty in the satisfaction- loyalty relationship. *Journal of Consumer Marketing, 28*(5), 363-375 http://dx.doi.org/10.1108/07363761111150017

Tho, N. X., & Tuu, H. H. (2012). The effect of destination image and perceived risk on intention of returning and positive WOM: A case study about visitors who visited the beach of Cua Lo, Vietnam. *Economics and Administration Review, 4*(September), 54-59. Retrieved from http://www.ntu.edu.vn/Portals/62/Bai%20bao%20nam%202012/Huy%20Tuu%20&%20Xuan%20Tho.pdf [Vietnamese]

Vranakis, S., Chatzoglou, P., & Mpaloukas, A. (2012). Customer satisfaction of Greek Mobile phone services.

International Journal of Managing Value and Supply Chains (IJMVSC), 3(4), 43-54. Retrieved from https://doi.org/10.5121/ijmvsc.2012.3404

Yanamandram, V., & White, L. (2006). Exploratory and confirmatory factor analysis of the perceived switching costs model in the business services sector, *Australia and New Zealand Marketing Academy Conference*, Brisbane, Queensland, 4-6 December 2006. Retrieved from http://ro.uow.edu.au/cgi/viewcontent.cgi?article=1240&context=commpapers

Zhang, L., Tan, W., Xu, Y., & Tan, G. (2012). Demension of consumers' perceived risk and their influences on online consumer's purchase behavior. *Communications in information science and management engineering (CISME), 2*(7), 8-14. Retrieved from http://CISME10270-20120725-102911-1342-595%20(2).pdf

Copyrights

Analyzing Influential Factors of Lean Management

Wen-Hsiang Lai[1], Hsien-Hui Yang[2]

[1]Department of Business Administration, Feng Chia University, Taiwan

[2]Ph. D. Program of Business, Feng Chia University, Taiwan

Correspondence: Hsien-Hui Yang, Ph. D. Program of Business, Feng Chia University, Taiwan. E-mail: magiyang99@gmail.com

Abstract

The study explores the key factors influencing Lean management and evaluates their individual weights to identify what leads to a successful hospital management. It adopts the 4P Excellence Model in Lean management to assess and measure the healthcare organizations from the five perspectives: leadership, people, partnership, processes, and products. To explore the potential factors, the study employs the analytic hierarchy process (AHP) method and multi-expert judgment to prioritize the significance of each factor. The study has led to a number of useful insights. Processes are crucial when hospitals advocate lean management. Among the 18 sub-factors in the five criteria, the most significant factors include patient-centered care, clearly defined work content, rewarding teamwork effort, continual learning and upgrading, and increasing the clinic quality. To satisfactorily carry out Lean management, a hospital should continuously strive for improvement, pursue perfection, engender organizational culture, strengthen teamwork, and create mutual trust among team members. Moreover, patient-centered care beliefs should be actively implemented. To provide seamless care, patients and their families should be the main foci. The results could be used by hospital managers to improve their skills and knowledge when implementing Lean management. In addition, the framework developed herein could potentially lend itself to many practical applications.

Keywords: healthcare delivery, lean management, 4P excellence model, AHP method

1. Introduction

Healthcare delivery is a vital issue in the global social welfare system. Healthcare delivery has been on the decline due to rising medical expenses and increasing frequencies of chronic diseases as the population is aging fast. Moreover, the waste of medical resources aggravates these problems, which leads to poor medical services. To address such problems in order to enhance financial performance and sustainability, healthcare professionals and managers throughout the world have been experimenting with Lean methods to improve healthcare efficiency, clinical outcomes, and satisfaction, as well as safety for both staff and patients (D'Andreamatteo et al., 2015). Adopting Lean management could help healthcare providers bring in large profits and elevate their competitiveness within the healthcare industry.

In 1995, Taiwan launched the National Health Insurance (NHI), which operates based on a fee for service (FFS) system (Taiwan Healthcare Reform Foundation, 2016). The patient needs to pay an amount of fees set by the National Health Insurance Administration (NHIA) for each medical service received, while the rest of the payment for the service is covered by the NHIA. Taiwan's healthcare delivery system is market-driven. A hospital has two types of large outpatient departments and affiliated clinics for primary care. The laissez-faire policy has greatly impacted the quality of medical care for many years (Lu & Hsiao, 2003).

In Taiwan, patients are free to choose either a hospital or a clinic. There are no incentives for the patients to accept the referral suggested by the physician; instead, their preference and information dominate their decision. Easy access to medical treatment has led to the abuse of healthcare services. To prevent unlimited spending, the NHIA introduced "the global budget system" to modify the FFS mechanism. The global budget puts an expenditure cap on each medical field. If the total services performed exceeded the field's budget quota, then the FFS reimbursement ratio would start to deflate, which would shrink the payment for each service performed (Taiwan Healthcare Reform Foundation, 2016). The deflation mechanism of the global budget would affect every contracted medical institution. If the total service exceeded the quota, then the payment would shrink; in

some circumstances, the healthcare providers would tend to work extra hours or seek other ways to cover the losses. For cost-effectiveness, the physicians tend to focus more on profit than on patient treatments. Consequently, healthcare institutions and their medical processes have incurred much more waste and ineffectiveness.

The implementation of the National Health Insurance has changed the medical ecology and healthcare practice in Taiwan. Healthcare organizations are undergoing fundamental changes. The rapid pace of change presents tremendous challenges for healthcare managers. These changes include the healthcare systems, science and technology, new incentive structures and technologies, moral attitudes, environmental conditions, and rising costs. To address these challenges, for many years, the healthcare industry has initiated quality improvements, such as Total Quality Management (TQM) and Continuous Quality Improvement (CQI). However, these initiatives lost incentives and acceptance due to their lack of data driven analyses. Moreover, many managers and physicians became disappointed with the prospects of quality improvement (Noori, 2015). Traditional performance measurement systems (PMSs) have failed to measure and integrate the factors that are critical to the success of a business (Su et al., 2014).With the multifunctional market and the challenging environment, new PMSs have been proposed: the Activity-Based Costing System (Koota & Takala, 1998), the Balanced Scorecard (Kaplan & Norton, 2005), the SMART System (Hudson et al., 2001), and the Performance Measurement Questionnaire (Park et al., 1998). Numerous approaches for proposing the criteria for the design of PMSs exist; however, these proposed approaches failed to cope with the complex problems of the healthcare industry. To face the harsh challenges of the competitive market, the healthcare industry needs a comprehensive initiative.

The healthcare industry is a specialized field as it includes complex processes, expertise, delicate instruments, and a fluent workflow process, which are all associated with a successful operation of a hospital. Lean management teaches us to see quality improvement as a means to cost reductions, a better approach than focusing directly and solely on costs. If effectively using Lean principles, a top tier of hospitals will emerge. Therefore, the objectives of this study are to explore the key factors that influence Lean management and evaluate their individual weights to identify what leads to successful hospital management. The aim is to propose a framework of Lean management that can be applied in hospital.

1.1 Theoretical Foundation of Lean Management

The concept of Lean management originated from the Toyota Motor Corporation. As Womack and Jones (2005) noted, Lean management was initially developed to improve car production; yet, its essence could be applied to any healthcare system, as a great number of studies have documented that Lean is an effective way to improve healthcare organizations (Poksinska, 2010; Aguilar-Escobar et al., 2015). For the past few years, the healthcare industry, with dwindling budgets and a soaring healthcare demand, has been confronted with tremendous pressure. Consequently, embracing "Lean thinking" is inevitable if one would like to achieve "more" with "less" (Poksinska, 2010).

Lean management has been introduced to improve quality in healthcare in recent decades. The fundamental goal of Lean is to determine how to do the right thing, how to eliminate waste, and how to change procedures flexibly enough for effective improvement. Value is the key to the concept of Lean management, and the customers determine the value. A product (or service) is valuable if it meets a customer's needs under a fixed time and price (Womack & Jones, 2005). Modern healthcare organizations are comprised of complex processes, and they are in significant need of improvement in the domains of safe, efficient, timely, and appropriate delivery of care to patients. The goal of Lean management in healthcare is to continuously focus on the large and small changes that must be made in the processes of how clinical care is delivered so that healthcare can be delivered in a way that simultaneously optimizes quality, safety, efficiency, and appropriateness. The principles of Lean management require frequently redesigning medical procedures in order to remove waste and continue to improve the support structure for all of the hospitals' medical services (Papadopoulos et al., 2011).

There has been extensive evidence in the literature that Lean management has been instrumental in increasing the healthcare system's capacity without any extra cost (Johnson & Mastro, 2012; Poksinska, 2010; Graban, 2016). If adopting Lean management can lead to significant outcomes, then managers need to understand it, and identify how to best structure their initiatives to achieve its benefits. Lean management has been implemented in some large-scale hospitals in Taiwan for improving medical quality and services. However, since there are different criteria and lack of evaluative decisions while promoting the Lean management, it becomes more difficult to deploy Lean management in healthcare industry.

Taiwan is facing a formidable challenge in which many historic business models and operating processes will no longer suffice amid rising demand, continued cost pressures, lack of or inadequate care facilities, and rapidly

evolving market conditions. There is agreement that healthcare reform is essential to reach both low cost and high quality; Lean is a method to help medical institutions realize their goals of upgrading the healthcare quality. There are many hospitals using Lean methods to elevate and enhance their healthcare qualities.

1.2 The Application of Goal Theory

In this study, goal theory is used to make up the lack of theoretical foundation of Lean practices. Goal theory has existed for many years. It has been extensively studied in academia and has become a large part of practitioners' efforts to improve organizational performance (Langabeer et al., 2009). The healthcare industry has focused on improved qualities (e.g., TQM, CQI), which are not widespread and have failed to meet managers' and physicians' expectations due to the lack of data-driven analyses (Linderman et al., 2003). Goal theory emphasizes the cognitive process and intentional behavior, and it offers a theoretical basis to help understand the relationship between goal setting and goal attainment (Locke, 1970).

The importance of setting goals is determined by task performance in today's competitive business environment. Goals encourage innovation by developing improved strategies to finish a task, which motivates employees and organizations to pay attention to relevant problems for enhancing performance. According to goal theory, hospital's managers set goals for eliminating waste and improving medical service, and then, they check and modify the defective procedures in goal setting and goal attainment (Parast, 2010).

1.3 The Criteria for Lean Management

Many hospitals have been promoting the Lean management for improving qualities and reducing costs. However, since different criteria exist and evaluative decisions are scarce while promoting the Lean management, it has become more difficult to deploy Lean management in healthcare industry. Dahlgaard-Park and Dahlgaard (2010) proposed a model, the "4P" Excellence Model, which has proven to be a good framework for assessing, measuring, diagnosing and improving innovation enablers and results, when companies are planning to attain Lean. The model's 5 components are Leadership, People, Partnership, Processes and Products, as show in Figure 1. This study adopts the 4P Excellence Model to assess and measure the healthcare organizations to cover this gap.
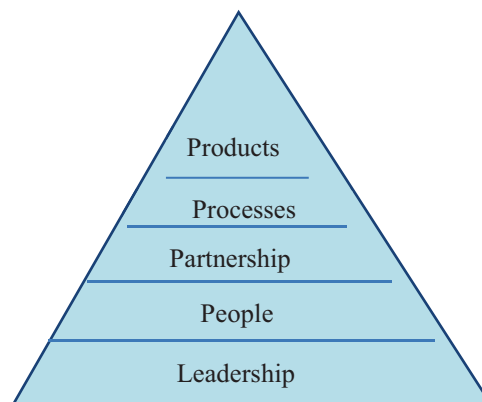
Figure 1. The "4P" Excellence Model

Figure 1 indicates that the model starts with Leadership at the bottom, which requires building a culture with norms and values that supports innovation and new product development. It resulted from intentional long-term activities as well as careful thinking, reflection, planning, and measurements (Dahlgaard-Park & Dahlgaard, 2010; Marx, 2015). The next step up is People, which is to educate and train people with the right values and competencies. The leaders and their people will together integrate creativity and motivate as well as manage knowledge and learning (Dahlgaard-Park & Dahlgaard, 2010; Graban, 2016). Partnership requires establishing and developing teams that are able to practice the right and needed values and competencies. A partnership is formed in all people relationships, including within the team, between team members, between teams, and with other people or groups outside of the team (Xyrichis & Ream, 2008; Dahlgaard-Park & Dahlgaard 2010). Processes means that leaders, individuals and teams gradually try to practice the needed values and competencies based on the principle of continuous improvement and the organization's mission, vision, goals, and strategy (Dahlgaard-Park & Dahlgaard 2010; Khalifa, 2012). Products on top of the hierarchy refer to melting quality into tangible and intangible products (or services) through a ceaseless focus on customers' needs and market potential. It also requires practicing the principles of constant improvement in parallel with innovativeness in product development (Dahlgaard-Park & Dahlgaard 2010).

2. Method

The aim of this study is explore the key factors that influence Lean management and propose a framework that can be applied in a hospital management. There are some steps to follow in carrying out this study. First, established were a hierarchical structure and the influencing factors, based on a thorough literature review and an initial interview to select the criteria to formulate a questionnaire. Next, formulated was the questionnaire by screening the factors through the Fuzzy Delphi Method (FDM). Finally, the Analytic Hierarchy Process (AHP) method was adopted to calculate the weight of the influence factors and test the consistency.

2.1 Fuzzy Delphi Method

The FDM was derived from the traditional Delphi technique and fuzzy set theory (Ishikawa et al., 1993). One of the most important problems is to solve the fuzziness of the expert consensus within the group's decision-making. This method solved not only the shortcomings of the conventional Delphi method but also the effects of the Delphi method that are easily affected by extreme opinions. The functions are calculated using triangular fuzzy numbers with maxima and minima as the two extreme values, which indicate the tolerance range of the selected factors. The geometric mean represents all of the trigonometric functions of the evaluation consensus reached by the expert groups (Hsu et al., 2010). The last objective of the study is to select the appropriate threshold value α as the standard filter selection factor.

2.2 Analytic Hierarchy Process

AHP is considered to be a decision method that decomposes a complex multi-criteria decision problem into a hierarchy using experts as the objects of a questionnaire (Saaty, 1980). Through a set of pairwise comparisons at each level of the hierarchy, a matrix can be developed in which the entities indicate the strength with which one element dominates another with respect to a given criterion. AHP is a principle of measurement through pair-wise comparisons and relies on the judgment of experts to derive the priority scales. These scales measure the intangibles in relative terms. The comparisons are made using a scale of absolute judgment that represents how much more one element dominates another with respect to a given attribute (Vinodh et al., 2012). AHP judges and selects the elements/concepts that have a greater influence on the predetermined objective.

2.3 Evaluating Model Applications

In evaluating model applications, four steps are taken: Proposing important criteria, Screen important criteria using Fuzzy Delphi Method, Establishing a hierarchical framework, and Calculating the weights of the evaluation criteria.

1) Proposing important criteria: The influencing factors for Lean management based on reviewing relevant literature selection approach are proposed. Definitions of the evaluating criteria of the Lean management selection are presented in Table 1 and Table 2.

Table 1. Operational definition of criteria

Criteria	Operating definition
Leadership	This is the capacity to influence others through a dynamic, reciprocal covenant aimed toward identifying and accomplishing collective purposes, which a process that uses communications to motivate members and to promote teamwork (Crema & Verbano, 2013; Marx, 2015).
People	This emphasizes a clear list of work types, offering continual training and counseling to personnel to motivate their innovation and involving personnel in decision making, with the hope of enhancing work devotion (Graban, 2016).
Partnership	This is about stabilizing mutual trust among different departments, which is used to enable the sharing of information, the accomplishment of objectives, and the establishment of long-term cooperation with suppliers (Xyrichis & Ream, 2008).
Processes	This is to examine the equipment and tools of the hospital by using a visible management approach, the aim of which is to establish a standardized working process for continuous improvement and learning, with the hope of avoiding unseen problems (Sayer & Williams, 2012).
Products	This effectively helps reduce medical errors, infections, and mortality, as well as any occurrence of hostile events. It aims to provide a seamless patient care environment in order to meet patients' satisfaction (Gulliford et al., 2006).

Table 2. Operational definition of sub-criteria

Criteria	Sub-Criteria	Operating definition
Leadership	Mission and Vision	It states the value and existence of organizations. It also motivates, adjusts and guides the company employees' actions, values, and behaviors (Hill & Jones, 2012).
	Integrated Planning for Strategies	This works through analyzing both the external and internal environments in order to effectively allocate the organization's internal resources for developing strategies and responding to the changes in the external environment (Hill & Jones, 2012; Dombrowski et al.2013).
	Patient-centered Care	This is to consider patients' wishes and beliefs and to integrate different professions and services based on the patients' state of health for providing a coordinated and integrated care (Frampton et al., 2008；Cliff, 2012).
	Executive Sponsorship and Leadership	This is a direct involvement by the leaders who take employees' feelings and needs into consideration to provide timely assistance and feedback (Mostafa et al., 2013).
People	Motivating Learning and Innovation	This is to motivate employees to learn and to generate new ways of thinking and practice in order to apply the learned knowledge and skills into work to increase organization's effectiveness, efficiency and productivity (Lyle, 2012).
	Continual Training and Counseling	This is to improve employees' working abilities through the guidance of the organization. The learning objectives include knowledge, skills, abilities and attitudes (Winston et al., 2006).
	Clearly Defined Work Content	This is to precisely designate responsibilities, tasks and conditions and clearly helps technical professionals to concentrate on their professional contents so that employees can demonstrate their specialties (Graban, 2016).
	Channels for Advice	It is a constructive channel of commutation in which employees of the organization offer constructive suggestions for improving the current situation of the organization (Lyle, 2012).
Partnership	Cross-functional Team	It is organized by the employees from the different departments of the organization to complete the same tasks. As employees' skills complement one another, they are more likely to finish the same tasks effectively (Xyrichis & Ream, 2008).
	Rewarding Teamwork Effort	This is to achieve the pre-set goals through joint efforts by valuing the communication, the participation, the mutual trust and the cooperation among the employees (Adjekukor et al., 2015).
	Treating Partners Fairly and Equally	This is to consider the business partners and suppliers who have a long-term relationship with the organization and to help them improve their competences (Jylhä & Junnila, 2014; Graban, 2016).
Process	Standardized Work	This is to define the standards of consistent and predictable works. The main purpose is to improve products, processes and relevance of services in order to achieve the intended purposes (Sayer &Williams, 2012).
	Error Proofing	This is the creation of devices or methods that either prevent defects or automatically inspect the outcome of a process (Graban, 2016).
	Visual Management	This refers to the way of management that helps employees rapidly identify problems in the production system, regardless of how unfamiliar they are with the processes (Tezel et al., 2013).
	Continual Learning and Upgrading	This means that employees in the organization need to get involved and be responsible. In addition, this is to improve the working situation or process, and employees need to engage in continuous learning, self-improvement and innovation, as well as knowing how to use the appropriate method to solve problems (Graban, 2016).
Products	Improving Customer Satisfaction	This is the direct appraisal from the customers, concerning the products and services offered by employees (Verena, 2011).
	Offering Continuity of Care	This means that the patient and his/her physician-led care team are cooperatively involved in ongoing healthcare toward the shared goal of high quality and cost-effective medical care (Gulliford et al., 2006).
	Increasing the Clinic Quality	This is to accurately assess the needs of the patients and understand the patient's conditions entirely. This also effectively helps reduce medical errors, infections, mortality as well as any occurrence of hostile events (Graban, 2016).

2) Screen important criteria using Fuzzy Delphi Method: First, five main criteria and 31 sub-criteria were selected as the key evaluation items of Lean management in a hospital. Then, 10 experts from a medical center in central Taiwan were interviewed between June 2016 and July 2016. The interviewees, who were senior hospital managers, had served for more than a decade at the center and had participated in important decision-making, as presented in Table 3. Experts complete the questionnaires to rank the importance of the factors on a 1~10 point scale, with 10 as the most important factor. Then, the evaluation score of each alternative factor's significance given by each expert was found using linguistic variables in questionnaires. Finally, the experts' opinions found in the FDM questionnaires were converted to triangular fuzzy numbers, and the de-fuzzified values were determined after performing the calculation (Kuo & Chen, 2008). This stage adopted elements with a threshold above 7, and the key evaluation items with a threshold below 7 were deleted (Hsu et al., 2010). The important evaluation items found after screening are listed in Table 4.

Table 3. Subject Characteristics

Item	Characteristics (Number)
Gender	Male (5) / Female (5)
Education	Doctorate (6) / Master (4)
Position	Director (6) / Manager (3) / Researcher (1)
Year of experience	10~20 (8) / Above 20 (2)

Table 4. Evaluation criteria after FDM screening

Criteria	Sub-Criteria	Min	Average	Max	De-fuzzy
Leadership	1-1 Mission and Vision	7	9	10	8.93
	1-2 Integrated Planning for Strategies	7	9.4	10	9.34
	1-5 Patient-centered Care	9	9.9	10	9.9
	1-6 Executive Sponsorship and Leadership	9	9.79	10	9.8
People	2-1 Motivating Learning and Innovation	7	8.7	10	8.63
	2-2 Continual Training and Counseling	7	8.9	10	8.84
	2-5 Clearly Defined Work Content	7	8.8	10	8.72
	2-6 Channels for Advice	5	8.8	10	8.61
Partnership	3-1 Cross-functional Team	7	9	10	8.91
	3-2 Rewarding Teamwork Effort	7	9.3	10	9.21
	3-3 Treating Partners Fairly and Equally	5	7.4	10	7.24
Processes	4-1 Standardized Work	7	9.7	10	9.65
	4-2 Error Proofing	7	9.5	10	9.45
	4-5 Visual Management	7	8.9	10	8.82
	4-6 Continual Learning and Upgrading	7	9.7	10	9.65
Products	5-1 Improving Customer Satisfaction	7	9.4	10	9.34
	5-2 Offering Continuity of Care	7	8.7	10	8.51
	5-4 Increasing the Clinical Quality	8	9.6	10	9.58
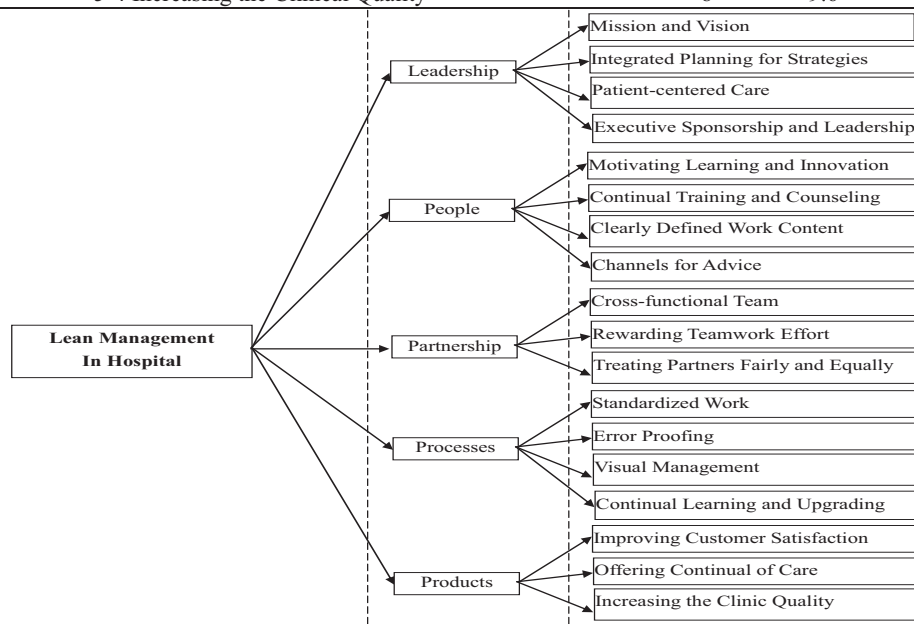
Figure 2. Hierarchical Framework of Lean Management in Hospital

3) Establishing a hierarchical framework: Based on the FDM, a general consensus among experts was reached to establish a hierarchical structure. The Lean management in a hospital can be evaluated based on five evaluation criteria and 18 evaluation sub-criteria (Figure 2). In the second interview, 23 questionnaires were administered to 23 medical specialists from two medical centers in central Taiwan. The subjects had more than 10 years of working experience in medical fields, as presented in Table 5.

Table 5. Subject Characteristics

Item	Characteristics(Number)
Gender	Male (11) / Female (12)
Education	Doctorate (6) / Master (10) / Bachelor (7)
Position	Director (5) / Nurse (8) / Physician (5) / Manager (1) / Researcher (4)
Year of Experience	10~20 (15) / Above 20 (8)

4) Calculating the weights of the evaluation criteria: In this step, a pairwise comparison matrix was first constructed through pairwise comparisons of each decision factor, using subjective judgments to determine the importance of one factor relative to another. The scale used in AHP for preparing the pairwise comparison matrix was a discrete scale from 1 to 9, as presented in Table 6. In accordance with typical AHP design, the questionnaire analysis was performed using Expert Choice 2000 and Excel.

Table 6. Scale of the relative importance of factors

Numerical Rating	Definition	Explanation
1	Equal importance	Two factors equally contribute to the objective.
3	Moderate importance	Experience and judgment slightly favor one over the other.
5	Essential importance	Experience and judgment strongly favor one over the other.
7	Very Strong Importance	Experience and judgment very strongly favor one over the other.
9	Absolute Importance	The evidence favoring one over the other is of the highest possible validity.
2,4,6,8	Intermediate values	When compromise is needed.

3. Results

Table 7 displays the results of the study. The results of this AHP calculation (CR= 0.01< 0.10) meet both the desired consistency index (CI) and consistency ratio (CR) values in the hierarchy comparison analysis, both of which should be less than or equal to 0.1, and conform to the acceptable deviation scope as suggested by Saaty (1980).

3.1 The Ranking of the Main-criteria

Among the five factors, the most salient one that influences the implementation of a Lean management in a hospital is Processes, with a value of 0.304, which is followed by Products (w=0.224), Leadership (w=0.187), Partnership (w=0.165), and People (w=0.12) respectively. It indicates that hospital employees need to prioritize improve key processes and tasks for the sake of improving patient safety, preventing time delays, making work easier for employees, and reducing costs.

Table 7. Weights and the ranking levels of the main and sub-criteria

Criteria	Weight (w)	Rank	Sub-Criteria	Weight (w)	Rank
Leadership	0.187	3	Mission and Vision	0.098	4
			Integrated Planning for Strategies	0.2	3
			Patient-centered Care	0.411	1
			Executive Sponsorship and Leadership	0.291	2
People	0.12	5	Motivating Learning and Innovation	0.118	4
			Continual Training and Counseling	0.184	3
			Clearly Defined Work Content	0.388	1
			Channels for Advice	0.31	2
Partnership	0.165	4	Cross-functional Team	0.207	3
			Rewarding Teamwork Effort	0.425	1
			Treating Partners Fairly and Equally	0.368	2
Processes	0.304	1	Standardized Work	0.139	4
			Error Proofing	0.201	3
			Visual Management	0.316	2
			Continual Learning and Upgrading	0.345	1
Products	0.224	2	Improving Customer Satisfaction	0.177	3
			Offering Continuity of Care	0.349	2
			Increasing the Clinic Quality	0.473	1

Note：CR= 0.01< 0.10 (acceptable)

3.2 The ranking of the Sub-criteria

In this study, there are 18 sub-criteria that are derived from the five main criteria. Table 7 displays the rank of each of the sub-criteria.

Among the four sub-criteria in Leadership, Patient-centered Care receives the highest value (w=0.411), followed by Executive Sponsorship and Leadership (w=0.291), Integrated Planning for Strategies (w=0.2), and Mission and Vision (w=0.098) respectively. Among the four sub-criteria in People, Clearly Defined Work Content ranks the highest in value (w=0.388), followed by Channels for Advice (w=0.31), Continual Training and Counseling (w=0.184), and Motivating Learning and Innovation (w=0.118) respectively. Among the three sub-criteria in Partnership, Rewarding Teamwork Effort receive the highest value (w=0.425), followed by Treating Partners Fairly and Equally (w=0.368) and Cross-functional Team (w=0.207) respectively.

Among the four sub-criteria in Processes, Continual Learning and Upgrading received the highest value (w=0.345), followed by Visual Management (w=0.316), Error Proofing (w=0.201), and Standardized Work (w=0.139) respectively. Among the three sub-criteria in Products, Increasing the Clinic Quality receives the highest value (w=0.473), followed by Offering Continuity of Care (w=0.349) and Improving Customer Satisfaction (w=0.177) respectively. These clearly points out what the priorities are and what should be taken into consideration first. For a hospital that adopts a Lean management, its core standards for an effective, efficient medical care should implement the concept of the patient-centered practice, which provides high-value healthcare system. Furthermore, as services increase, the types of work should be clearly defined, and professionalism should be valued if errors and delays in delivering services are to be avoided. The process of providing medical care services relies heavily on teamwork to improve medical quality, patient outcomes, and safety. Only through continuous improvement and learning, and constantly striving for quality, efficiency, patient safety, and the promotion of services, can a hospital sustain its competitiveness and profitability and provide quality services to the public.

4. Discussion

4.1 The Ranking of the Main Five Factors

According to the results, Processes is the most important factor, which clearly demonstrates that the key factors for implementing Lean management in hospitals require concentrating on process optimization. This finding contradicts the results found in the literature review, which indicate that Leadership plays a major role in adopting Lean management (Johnson & Mastro, 2012). This finding has led us to infer that as medical services are highly timely and unique, people tend to judge the product of medical care based on whether a patient can recover after being treated. A correct process leads to an accurate result. Innovative products and services are the outcomes of a revised process. Consequently, only through the analysis of the work process, problem finding and solving, and stability maintenance can efficacy be achieved. This clearly explains why Processes plays a key role in Lean management. As the medical care system involves the safety of the general public and the well-being of human beings, no room is left for negligence in its operation. Hence, quality and safety should be taken into account if a balance would like to be achieved in such a competitive healthcare industry.

Products come in second in this category. It indicates that to offer satisfactory services that meet the patient's expectation and to reduce the cost requires proper quality control and an efficient use of resources. Verena (2011) indicated that in hospitals, the importance of the service is clearly defined: patients expect the highest quality of medical treatment and therapies, and patient care is existential. As standards of living advance and people are more aware of their rights as consumers, patients are expecting more on how they are being served. Thus, the efficacy of services has become a factor that decides why a patient chooses a certain hospital.

The results of the study also revealed that Leadership and Partnership are nearly equal in value, while People rank last. This finding indicates that the influence of people is minimal in implementing Lean management, which may occur because healthcare professionals have received thorough training to cope with emergency events, and they have access to newer medical information. Therefore, people are not considered an important criterion.

4.2 The Ranking of the Sub-criteria

4.2.1 Leadership

Among the four sub-criteria, Patient-centered Care receives the highest value. As Frampton et al. (2008) noted, leadership engagement in any culture-change initiative toward patient-centered care is crucial. It clearly demonstrates that the concept of patient-centered care plays a key role. As a growing number of nations have promoted medical renovations and attention has been oriented toward quality, medical care focusing on

patient-centered care has become a new model. Under this trend, the medical industry has also begun to reverse its thinking from targeting diseases, physicians, and hospitals to patient-centered care. This trend and the results of the study have verified what we have concluded in the literature review.

Executive Sponsorship and Leadership as well as Integrated Planning for Strategies are nearly equal in value, which indicates that they are important for the leadership category. The goals and direction of a Lean hospital should be planned as a whole. They are tools essential for building up a Lean culture and for disseminating it to the entire organization. Thus, the success of a hospital adopting Lean management relies heavily on the support from the administrators and the physicians. If the upper management is reluctant to get involved and help resolve conflicts and disputes among different departments, then it is rather difficult to successfully carry out Lean management.

Vision and Mission ranks last. Vision and Mission may be very important at the stage of establishing a new hospital; yet, it may become less important after it matures into a comprehensive hospital.

4.2.2 People

Among the four sub-criteria, Clearly Defined Work Content and Channels for Advice are both nearly equal in value. The reasons behind this similarity might be due to the popularity of the national health insurance in Taiwan, the ever-increasing amount of medical services required, the prevalent chronic diseases, the aging population, the increasing severity of diseases, and the complexity of clinic care, which might have led to heavy workloads. Under these conditions, the so-called "sweat hospitals" might emerge. When distinctions do not exist between a professional clinic and a non-professional clinic, the role of medical care personnel cannot be developed to its fullest, which may easily lead to malpractice. As a result, a clear list of the duties needs to be urgently set up because it helps ensure that the personnel can follow and abide by it specifically and correctly.

In Taiwan, the top-down approach is the prevailing way of running a hospital; however, it is necessary for the higher-ups to take a more open attitude toward their employees. Only when their employees' opinions are valued can the morale of the employees be increased. As a result, the participation of the employees helps improve the quality, patient safety, and employee engagement.

Motivating Learning and Innovation is ranked relatively less important. For this, the hospitals should focus on standards of operation in medical events, and the employees need to accept education and training of medical skills at a fixed time.

4.2.3 Partnership

Among the three sub-criteria, Rewarding Teamwork Effort receives the highest value. In an increasingly competitive environment, teamwork has become a trend. The structure and organization of work for the team apparently has become an important mode of operation (Leigh & Maynard, 1998). For the medical industry, good teamwork is the foundation of successful medical treatment. However, the importance of teamwork in the practice of healthcare has received the least attention in medical staff education and training. According to the literature and the 2011 Taiwan patient safety reporting system statistics (Joint Commission of Taiwan, 2011), the most common causes of medical abnormal happenings are poor communication and team cooperation. This indicates that teamwork skills have a great impact on the safety of the patients (Yule et al., 2006).

In this category, Treating Partners Fairly and Equally received a value of 0.368, which indicates that it is also a significant factor. That is to say, the resources should be shared among the colleagues to foster cooperation and trust in order to generate equality and share responsibility if decision making is to be effective. The competitive advantage of an enterprise comes from the DNA of the enterprise. Whether it is within or outside the organization, no one can step out of the supply chain. As a result, if sustainable partnerships are to be established, then it is crucial to cultivate personnel who value teamwork as well as foster the development of employees and business partners, long-term close cooperation, mutual trust, and a win-win environment.

Forming a successful cross-functional team needs to have clear performance standards and expectations. Individuals need to know how well they are performing as a member of the cross-functional team and that evaluation should be separate from the functional department evaluation. In these situations, the team members have two distinct roles, and maintaining a clear distinction is helpful, particularly when the team's decisions require compromise and resources from a functional department. This helps explain why the rewarding teamwork effort is a very important factor.

4.2.4 Processes

Among the four sub-criteria, Continual Learning and Upgrading as well as Visual Management received values

that are nearly equal. With the construction of an internal improvement platform, all employees are encouraged to participate in a learning society that targets innovations, continuous learning, and creativity, only through which will the operation be cost-effective, high in quality, and full of perspectives. Healthcare is a complex process, which makes process management complex; consequently, what a hospital leader has to carry out is to create work surroundings that will significantly reduce errors and damage.

Designing and using a control process that is clear and easy to see can enable the employees to detect what the problems and anomalies are and what is being wasted. This process is to expose the problems for quick and timely solutions. For that reason, visual management is indispensable. The healthcare industry is tremendously devoted to the issues of quality improvement and patient safety. Based on this trend, it is inevitable for hospitals to establish and improve their operating structures and mechanisms using comprehensive standardization, and apply them in daily clinical services. Therefore, compared with the other sub-criteria in the Processes category, the influence of standardized work tends to be lower.

4.2.5 Products

Among the three sub-criteria, Increasing the Clinic Quality receives the highest value. The Institute of Medicine (IOM) committee (2001) defines "quality of care" as "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge." As the level of knowledge and the standard of living of the people in Taiwan have tremendously advanced, they are increasingly demanding high-quality medical care. Consequently, enhancing the quality of care and achieving better clinical outcomes have become the long-term direction of medical institutions.

In this study, Improving Customer Satisfaction received the lowest value (w=0.177). Why was it the least valued? It is quite probable that if the quality of health care is improved, then the customers will express their satisfaction as well. Continuously improving the service quality thereby enhances customer satisfaction (Punnakitikashem et al., 2012).

4.3 Suggestions

Healthcare services in Taiwan have undergone many fundamental changes since the inception of the National Health Insurance. Healthcare providers are now facing the ever-rising demands for quality healthcare services and limited reimbursement from the National Health Insurance. How to maintain the healthcare quality and run a hospital cost effectively have become the crucial issues that hospital managers need to address. Under this pressure, the only way to survive is to create a promising strategy. There has been extensive evidence in the literature that Lean management has been instrumental in increasing the healthcare system's capacity without any extra cost.

It takes great resources and effort to implement Lean management in hospitals. As a result, it is not practical to adopt the policy on a one-time basis. Therefore, the managers should identify this link and make their resource distribution decisions accordingly. Though the Toyota Lean production system has been used in the healthcare industry, very few successful cases actually exist. For this reason, the priorities should be clearly listed if success is to be expected.

This study provides as follows the managerial implications for hospitals' senior managers:

1) The success of Lean requires many factors: shaping continuous improvement, pursuing perfection, involving the entire organizational culture, and strengthening teamwork and the mutual trust among team members.

2) Creating a patient-centered environment: The patient comes first in all activities and decisions. This idea is the central tenet of Lean practice in hospitals. It puts the patients' expectations at the center of the procedures. All errors and treatment delays must be prevented.

3) Breaking down departmental silos: This is to create collaborative relationships for all partners and stakeholders by being able to cooperate across value streams instead of optimizing their own area.

4) Be more flexible in responding to customers' needs: When facing fundamental changes, hospitals should conduct a full review to eliminate disparities and an inflexible managing system. Lean cannot be done everywhere quickly; instead, it should start with a model that will help demonstrate the potential of Lean and set an example for others to follow.

To improve their skills and knowledge for implementing Lean management, hospital leaders could use the results of this study. The framework developed in this study could potentially lend itself to many practical applications. This study focuses mainly on domestic medical centers in Taiwan. Other types of hospitals could be

investigated in future work. A combination of other research methods (such as fuzzy) with AHP could potentially improve the experimental results. For instance, AHP data analysis using fuzzy analytics could make the experimental results closer to human decision-making (Chan & Kumar, 2007).

References

Adjekukor, J. A., Aronu, C. O., & Ogbogbo, G. O. (2015). Evaluation of Team Composition Activities Amongst Health Workers in Nigeria Using Logistic Regression Analysis. *Open Science Journal of Statistics & Application*, *3*(6), 42-51.

Aguilar-Escobara,V. G., Bourqueb, S., & Godino-Gallegoc, N. (2015). Hospital kanban system implementation: Evaluating satisfaction of nursing personnel. *Investigaciones Europeas de Dirección y Economía de la Empresa*, *21*(3), 101-110. http://dx.doi.org/ 10.1016/j.iedee.2014.12.001

Chan, F. T., & Kumar, N. (2007). Global supplier development considering risk factors using fuzzy extended AHP-based approach. *Omega*, *35*(4), 417-431. http://dx.doi.org/10.1016/j.omega.2005.08.004

Cliff, B. (2012). Patient-Centered Care: The Role of Healthcare Leadership. *Journal of Healthcare Management*, *57*(6), 381-383.

Crema, M., & Verbano, C. (2013). Guidelines for overcoming hospital managerial challenges: A systematic literature review. *Therapeutics & Clinical Risk Management, 9,* 427-441. http://dx.doi.org/10.2147/TCRM.S54178

D'Andreamatteo, A., Ianni, L., Lega, F., & Sargiacomo, M. (2015). Lean in healthcare: A comprehensive review. *Health Policy*, *119*(9), 1197-1209. http://dx.doi.org/10.1016/j.healthpol.2015.02.002

Dahlgaard-Park, S. M., & Dahlgaard, J. J. (2010). Organizational learnability and Innovability: A system for assessing, diagnosing and Improving Innovations. *International Journal of Quality and Service Sciences*, *2*(2), 153-174. http://dx.doi.org/10.1108/17566691011057339

Dombrowskia, U., & Mielke, T. (2013). Lean Leadership fundamental principles and their application Systems. *Procedia CIRP*, *7*, 569-574. http://dx.doi.org/10.1016/j.procir.2013.06.034

Frampton, S., Guastello, S., Brady, C., Hale, M., Horowitz, S., & Smith, S. B. (2008). Patient-Centered Care Improvement Guide. Retrieved from http://patient-centeredcare.org

Graban, M. (2016). *Lean hospitals: improving quality, patient safety, and employee engagement*, CRC Press, New York, NY.

Gulliford, M., Naithani, S., & Morgan, M. (2006). What is 'continuity of care'? *Journal of Health Service Research Policy*, *11*(4), 248-250. http://dx.doi.org/10.1258/135581906778476490

Hill, C. W., & Jones, G. R. (2012). *Essentials of Strategic Management*, CENGAGE Learning, Boston, MA.

Hsu, Y. L., Lee, C. H., & Kreng, V. B. (2010). The application of Fuzzy Delphi Method and Fuzzy AHP in lubricant regenerative technology selection. *Expert Systems with Applications*, *37*(1), 419-425. http://dx.doi.org/10.1016/j.eswa.2009.05.068

Hudson, M., Smart, A., & Bourne, M. (2001). Theory & practice in SME performance measurement systems. *International Journal of Operations & Production Management*, *21*(8), 1096-1115. http://dx.doi.org/10.1108/EUM0000000005587

Institute of Medicine. (2001). *Crossing the Quality Chasm: A New Health System for the 21st Century.* Washington, DC: National Academy Press.

Ishikawa, A., Amagasa, M., Shiga, T., Tomizawa, G., Tatsuta, R., & Mieno, H. (1993). The max-min Delphi method and fuzzy Delphi method via fuzzy integration. *Fuzzy Sets & Systems*, *55*(3), 241-253. http://dx.doi.org/10.1016/0165-0114(93)90251-C

Johnson, J., Smith, A., & Mastro, A. (2012). From Toyota to the Bedside: Nurses Can Lead the Lean Way in Health Care Reform. *Nursing Administration Quarterly*, *36*(3), 234-242. http://dx.doi.org/10.1097/NAQ.0b013e318258c3d5

Joint Commission of Taiwan. (2011). *Patient Safety*. Retrieved from http://www.jct.org.tw/FrontStage/patient_safety_en.html

Jylhä, T., & Junnila, S. (2014). Partnership practices and their impact on value creation – reflections from lean management", *International Journal of Strategic Property Management, 18*(1), 56-65. http://dx.doi.org/10.3846/1648715X.2013.863813

Kaplan, R. S., & Norton, D. P. (2005). Harvard Business Review: The balanced scorecard: Measures that drive performance. Retrieved from https://hbr.org/2005/07/the-balanced-scorecard-measures-that-drive-performance

Khalifa, A. S. (2012). Mission, purpose, & ambitions: redefining the mission statement. *Journal of Strategy and Management*, *5*(3), 236-251. http://dx.doi.org/10.1108/17554251211247553

Koota, P., & Takala, J. (1998). Developing a performance measurement system for world-class distribution logistics by using activity-based costing and management. Case: Basic metal industries. *International Journal of Technology Management*, *16*(1), 267-280. http://dx.doi.org/10.1504/IJTM.1998.002653

Kuo, Y. F., & Chen, P. C. (2008). Constructing performance appraisal indicators for mobility of the service industries using Fuzzy Delphi Method. *Expert Systems with Applications*, *35*(4), 1930-1939. http://dx.doi.org/10.1016/j.eswa.2007.08.068

Langabeer, J. R., DelliFraine, J. L., Heineke, J., & Abbass, I. (2009). Implementation of Lean and Six Sigma quality initiatives in hospitals: A goal theoretic perspective. *Operations Management Research*, *2*(1), 13-27. http://dx.doi.org/10.1007/s12063-009-0021-7

Leigh, A., & Maynard, M. (1998). *Leading Your Team：How to Involve and Inspire Teams*. Nicholas Berkley Publishing, London, UK.

Linderman, K., Schroeder, R., Zaheer, S., & Choo, A. (2003). Six Sigma: a goal-theoretic perspective. *Journal of Operations Management*, *21*(2), 193-203. http://dx.doi.org/10.1016/S0272-6963(02)00087-6

Locke, E. A. (1970). Job satisfaction and job performance: a theoretical analysis. *Organizational Behavior and Human Performance*, *5*(5), 484-500. http://dx.doi.org/10.1016/0030-5073(70)90036-X

Lu, J. F., & Hsiao, W. C. (2003). Does Universal Health Insurance Make Health Care Unaffordable? Lessons From Taiwan. *Health Affairs*, *22*(3), 77-88. http://dx.doi.org/ 10.1377/hlthaff.22.3.77

Lyle, E. R. (2012). Learning Organisation [AL] Learning. *International Journal of Business and Social Science*, *3*(6), 217-221.

Marx, T. G. (2015). The impact of business strategy on leadership. *Journal of Strategy and Management*, *8*(2), 110-126. http://dx.doi.org/ 10.1108/JSMA-06-2014-0042

Mostafa, S., Dumrak, J., & Soltan, H. (2013). A framework for lean manufacturing implementation. *Production & Manufacturing Research, 1*(1), 44-64. http://dx.doi.org/10.1080/21693277.2013.862159

Noori, B. (2015). The critical success factors for successful lean implementation in hospitals. *International Journal of Productivity & Quality Management*, *15*(1), 108-126. http://dx.doi.org/10.1504/IJPQM.2015.065987

Papadopoulos, T., Radnor, Z., & Merali, Y. (2011). The role of actor associations in understanding the implementation of lean thinking in healthcare. *International Journal of Operations and Production Management*, *31*(2), 167-191. http://dx.doi.org/10.1108/01443571111104755

Parast, M. M. (2010). The effect of Six Sigma projects on innovation & firm performance. *International Journal of Project Management*, *29*, 45-55. http://dx.doi.org/10.1016/j.ijproman.2010.01.006

Park, C., Occena, L. G., Goodwin, C., & Payne, A. (1998). Analysis of performance measures-A veteran's home case study. *Journal of Nursing Administration*, *28*(12), 28-35. http://dx.doi.org/10.1097/00005110-199812000-00011

Poksinska, B. (2010). The current state of lean implementation in health care: literature review. *Quality Management in Healthcare*, *19*, 319-329. http://dx.doi.org/10.1097/QMH.0b013e3181fa07bb

Punnakitikashem, P., Buavaraporn, P., Maluesri, P., & Leelartapin, K. (2012). *Health Care Service Quality: Case Example of a Hospital with Lean Implementation*, paper presented at the POMS 23 rd Annual Conference; 2012 April 20-23; Chicago, Illinois, U.S.A. Retrieved from http://www.pomsmeetings.org/confproceedings/025/FullPapers/FullPaper_files/025-1232.pdf

Saaty, T. L. (1980). *The Analytic Hierarchy Process*, McGraw-Hill, New York, NY.

Sayer, N. J., & Williams, B. (2012). *Lean for Dummies*. John Wiley & Sones, Hoboken, NJ.

Su, Y., Soar, J., Shen, N., & Al-Hakim, L. (2014). Adapted Lean Thinking for Healthcare Services: An Empirical Study in the Traditional Chinese Hospital. In Wickramasinghe, N., Al-Hakim, L., Gonzalez, C and Tan, J. (Eds.), Lean Thinking for Healthcare, Springer, New York, NY, 115-142.

http://dx.doi.org/10.1007/978-1-4614-8036-5_8

Taiwan Healthcare Reform Foundation. (2016). *Healthcare in Taiwan*. Retrieved from http://issue.thrf.org.tw/EN/Page_Show.asp?Page_ID=124

Tezel, A., & Nielsen,Y. (2013). Lean Construction Conformance among Construction Contractors in Turkey. Journal of Management in Engineering, *29*(3), 236-250. http://dx.doi.org/10.1061/(ASCE)ME.1943-5479.0000145

Verena, L. S. (2011). *Lean Management in Hospitals Principles and Key Factors for Successful Implementation*. Druck Diplomica Verlag GmbH, Hamburg, Germany.

Vinodh, S., & Joy, D. (2012). Structural equation modeling of lean manufacturing practices. *International Journal of Production Research*, *50*(6), 1598-1607. http://dx.doi.org/10.1080/00207543.2011.560203

Winston, B. E., & Patterson, K. (2006). An integrative definition of leadership. *International Journal of Leadership Studies*, *1*(2), 6-66.

Womack, J. P., & Jones, D. T. (2005). Lean consumption. *Manufacturing Engineer, 84*(4). http://dx.doi.org/10.1049/me:20050411

Xyrichis, A., & Ream, E. (2008). Teamwork: a concept analysis. *Journal of Advanced Nursing*, *61*(2), 232-241. http://dx.doi.org/ 10.1111/j.1365-2648.2007.04496.x.

Yule, S., Flin, R., Paterson-Brown, S., & Maran, N. (2006). Non-technical skills for surgeons in the operating room: a review of the literature. *Surgery*, *139*, 140-149. http://dx.doi.org/ 10.1016/j.surg.2005.06.017

Predicting Bankruptcy of Belgian SMEs:
A Hybrid Approach Based on Factorial Analysis

Loredana Cultrera[1], Mélanie Croquet[1], Jérémy Jospin[2]

[1]Warocqué School of Business and Economics, University of Mons, Belgium and Human Org Research Institute, Belgium

[2]MAINSYS, Belgium

Correspondence: Loredana Cultrera, Warocqué School of Business and Economics, University of Mons, Belgium and Human Org Research Institute, Belgium. E-mail: loredana.cultrera@umons.ac.be

Abstract

The aim of this paper is to verify the relevance of technical data analysis which seems to be useful for identifying predictors of bankruptcy of Belgian SMEs. To do so, a sample of 1,860 Belgian companies, including healthy and bankrupt firms, was used. The sample was constituted using Belfirst software (2015). A mixed method data analysis, coupling the Ward aggregation criterion, the method of mobile centres and principal component analysis, was performed on the variables commonly cited in the literature as predictive of corporate bankrupticies. The results of this study show that the use of these methods is not relevant in the context of bankruptcy prediction using this sample, but the results of the logistic regressions did not question the discriminatory power of the introduced active variables.

Keywords: bankruptcy, principal component analysis, bankruptcy prediction models, classification, SME

1. Introduction

The prediction of the bankruptcy phenomenon is based on the work of Fitzpatrick (1932), but the pioneers in this field are Beaver (1966) with one-dimensional methodology, and Altman (1968) with discriminant analysis. Subsequently, discriminant analysis and other techniques, such as logit and probit models (Ohlson, 1980; Zmijewski, 1984), or neural networks (Odom and Sharda, 1990), have exploited the various financial data necessary to predict bankruptcy. In Belgium, different models have been applied, but the discriminant analysis of Ooghe and Verbaere (1982) and of Ooghe et al. (1991) are the two best known. These models aim to predict bankruptcy as soon as possible to prevent the company's failure and minimise the costs associated with a possible bankruptcy (Van Caillie and Dighaye, 2002).

Many Belgian authors have also focused on the preventive aspect, rather than on the predictive aspect, of bankruptcy (Van Caillie, 2004, Crutzen and Van Caillie, 2010). Indeed, the financial approach to bankruptcy is mainly based on bankruptcy prediction models relying on accounting ratios that can be considered and analysed as they reflect the symptoms arising from the real causes of the failure. Three other approaches have been developed (Guilhot, 2000): the economic approach, the strategic/ organisational approach and finally, the managerial approach. These appear at earlier stages of the process of bankruptcy, and therefore characterise deeper causes. These bankruptcy processes allow the identification of the causes and their patterns, as well as the determination of ways to prevent bankruptcy (Levratto, 2011).

However, despite the many existing bankruptcy prediction models, some methodologies are not used by researchers. This is particularly the case for multivariate statistical methods, such as factorial analysis or classification algorithms. It was only recently that some authors investigated the case of SMEs for the application of these prediction models (Donckels, 1984; Keasey and Watson, 1991) as the models are mainly used on larger firms (Levratto, 2011). However, while the study of SMEs is attractive because of their characteristics, such as their ability to respond quickly and creatively thanks to their greater flexibility (Bellanca et al., 2015), analysing SMEs requires facing many obstacles, including the lack of data, which is certainly the biggest problem (Van Caillie, 1993).

The objective of this research is twofold:

- Improve the knowledge of bankruptcy prediction for Belgian SMEs

- Analyse the predictive capacity of factorial analysis using in particular the principal components analysis, coupled with classification algorithms. The goal here is to identify if the obvious underuse of these techniques is the result of a lack of recognition from the scientific community or the lack of performance of these methods.

2. Literature Review

Different prediction models have been used for decades when it comes to predicting the risk of bankruptcy. These models include parametric statistical classification models (Beaver, 1966; Altman, 1968; Deakin, 1972, Ohlson, 1980; Mensah, 1984; Platt and Platt, 1991; Zmijewski, 1984; Gentry et al., 1985; etc.) non-parametric ones (Frydman et al., 1985; Calia and Ganucci, 1997; etc.), models based on artificial intelligence (Varetto, 1998; Barney et al., 1999), on the risk index (Tamari, 1966), on the behaviour analysis of titles (Beaver, 1968; Aharony et al., 1980) and SIM models (Ooghe et al., 2005). Although this list is not exhaustive, it represents most of the models used.

Alongside the more "famous" models briefly presented above, other existing methods are less used in the field of failure prediction due to the fact that they are less recognised or have lower performance. This is particularly the case for factorial analysis, including principal components analysis (PCA) and multiple correspondence analysis (MCA). Although they are very similar in their objectives, that is to say they aim to reduce a large number of observed variables into a small number of latent variables, these methods are characterised by the continuous or nominal character of the observed variables. Indeed, PCA is conducted as part of the continuous reduction of observed variables while MCA is used to reduce the nominal observed variables. In the following section, certain studies into bankruptcy predictions that use factorial methods, such as PCA or MCA, will be identified.

PCA is mainly used in combination with neural networks (Mensah, 1984; Zavgren, 1985; Gombola et al. 1987; Skogsvik 1990; Alici, 1996; Sharma and Iselin, 2003; Shin and Lee, 2003; Wang, 2004; Canbas et al., 2005; Min and Lee, 2005; Tang and Chi, 2005; Shin et al., 2006; Sookhanaphibarn et al., 2007; Yao, 2007. Ravi and Pramodh, 2008; Chen and Du 2009; Balas et al, 2010). Indeed, PCA is one of the most popular data selection methods (Zhang, 2000; Li and Sun, 2011). The reason why PCA is very often associated with neural networks is that the linear limitation of this method can be overcome thanks to the neural networks that can capture nonlinear relationships (Zhang, 2000). Pump and Bilderbeek (2005) based their analysis on PCA to predict the bankruptcy of Belgian companies using a neural network.

Other authors, such as Armeanu et al. (2012), have used PCA to determine different stages of insolvency (monthly repayments delays, payment default, default fee or default interest, etc.).
Takahashi and Kurokawa (1984) and Laitinen (1991) also used PCA on failing firms that filed accounts three years before bankruptcy in order to achieve the failing companies' profiles.

The authors Li and Sun (2009) associated PCA with the case-based reasoning method (CBR) in the context of the bankruptcy prediction of listed Chinese companies. They mixed these methods to improve the performance of CBR. In a subsequent study, Li and Sun (2011) together developed a hybrid model using PCA, multivariate discriminant analysis (MDA) and logistic regression. Having compared their hybrid model to models that do not use PCA, the authors concluded that PCA gives better results.

Van Caillie (1993) sought to assess the contribution of MCA to the detection of bankruptcy warning signs. He said that this method applies rather well for SMEs, as it allows the drawbacks of conventional models to be overcome. In his study two axes were used to synthesise of all the variables, while losing as little information as possible. Furthermore, a factorial representation of the financial behaviour of SMEs was developed. The author was able to go from prediction to prevention by analysing the movement over time between different classes of companies, identified by MCA, and by observing the change in various components.

Finally, Crutzen and Van Caillie (2010) conducted a typology of bankrupted Belgian SMEs with MCA. A cluster analysis (conducted using the method of Ward) first allowed them to gather businesses with similar characteristics. Correspondence analysis was then used to determine the variables that could be associated with each group. Two dimensions were used: the first opposed internal and external failure factors, and the second characterised the adaptability of the firms to their environment.

Thus, factorial analysis (through MCA, PCA or other factorial methods), when mobilised by researchers to improve bankruptcy prediction models are often used together with other methodologies. As far as is known, the principal components analysis have never been used before using the Ward criterion and mobile centres as part

of bankruptcy prediction. But these methodologies, if used simultaneously, could help to identify classes of homogeneous businesses, when also combined with other features used in the analysis. The bankrupt or non-bankrupt nature of the companies would therefore be a feature that could potentially explain the obtained classes. The joint use of PCA, the Ward criterion and mobile centres could therefore serve the cause of variable selection in the field of forecasting bankruptcy, and subsequently allow the calculation of bankruptcy probability.

3. Method

3.1 Data

A sample of 1,860 unlisted bankrupt and non-bankrupt Belgian SMEs was developed with the Belfirst software, which is published annually by the Bureau van Dijk. The objective was to focus on SMEs, as such only firms employing fewer than 100 people were selected. Thereafter, only the firms filing their annual accounts in abbreviated format were kept to improve the uniformity of the data (many SMEs opt to present their accounts in an abbreviated format because it is less restrictive than the full format).

The bankrupt companies were selected on the basis of the previous year's annual accounts. In the case of this study, the last year was 2012. To analyse the five years before the bankruptcy, only companies that filed accounts between 2007 and 2011 were selected. The final sample included 930 bankrupt SMEs.

To ensure the integration of healthy SMEs in the sample the applied logic was the same. However, here, the last year of filed accounts was chosen as 2014, to avoid the possibility of the 2012 filings coming from firms which went on to fail in 2013 or 2014. The year 2014 was the last year of account available in the Belfirst software. The aggregate sample included 2,113 healthy SMEs among which 930 SMEs were randomly selected to obtain a balanced final sample.

3.2 Methodological Choices

To achieve the objective of the study, a mixed classification method was chosen. This method combines a hierarchical ascending method, in this case the Ward aggregation criterion, and a non-hierarchical method, namely the mobile centres, to take the advantages of both methods and to reduce their disadvantages. The application of these methods was preceded by PCA on the active variables. These variables are those most commonly cited in the literature as predictors of bankruptcy:

- Equity / Total Assets,
- Cash Flow / Debts,
- Current ratio,
- Tax, wage and social debts / Net value added,
- EBIT / Total Assets.

These variables characterise the solvency, profitability, corporate liquidity, and also the tax, which is relatively high in Belgium. These ratios were used by Belgian authors (Ooghe and Van Wymeersch, 2000 Pump and Bilderbeek, 2005) and international authors (Altman, 1968; Taffler 1982; Frydman et al., 1985) and directly apply to the case of SMEs because of their availability in abbreviated accounts.

These variables were retained for the years 2007, 2009 and 2011 for all 1,860 firms in the sample. For firms that went bankrupt in 2012, the years 2007, 2009 and 2011 are the years which precede the bankruptcy by five years, three years and one year respectively.

The final database included 15 variables. Finally, the main variable that was retained to characterise the obtained classes was the nominal variable bankrupt / not bankrupt. This is the variable that eventually identifies a failing company's profile.

SPAD software was used to carry out this classification.

4. Results

Six principal components were selected after the analysis of eigenvalues (Table 1). These values explain 57.15% of the total variance.

Table 1. Eigenvalues of factorial axes (extract)

Principal Component	Eigen value	%	% cumulative
1	2.2362	14.91	14.91
2	1.8123	12.08	26.99
3	1.4208	9.47	36.46
4	1.0608	7.07	43.53
5	1.0412	6.94	50.48
6	1.0009	6.67	57.15
7	0.9979	6.65	63.80

The analysis of the coordinates of the active variables on the principal component allows the characterisation of these axes. The principal components were retained if their eigenvalue was above 1. Then, the Ward aggregation criterion and mobile centres were combined on the factorial scores of the active variables on the first six principal components. These methods identified five classes. Nevertheless, it appears that the class sizes are very different (see Table 2).

Table 2. Class sizes

Class	Number of firms	Percentage of the total
1	1781	95,75%
2	2	0,11%
3	69	3,71%
4	4	0,215%
5	4	0,215%

This imbalance in terms of numbers is a bad sign for either the relevance of these variables in forecasting bankruptcies, which would go against the empirical literature, or the suitability of this methodology in identifying predictors of bankruptcy.

Still, the classification was continued by attempting to identify the active variables of the two largest groups, those that characterise most of these classes. This table only contains the most characteristic variables, those whose test-values are greater than 2. That is, in order to be considered as relevant characteristics, the test-values of the variables is the principal criteria that will be used. The test value makes it possible to evaluate the interest of a variable in the characterization of a class of individuals on the basis of a statistic calculated on the sample and on the class. This statistic is often the mean. Thus, if the difference between the average of a variable calculated on the individuals of the class and the mean of this variable calculated on the sample is due to chance then, this variable does not characterize the class. The test value is expressed as the number of standard deviations of a normal distribution. For example, a test value of 8 for a variable can be interpreted as follows: the observed deviation is equal to the probability of drawing an observation at 8 standard deviations in a normal distribution.

Table 3. Classes 1 and 3: description by the active variables

Class 1/5		Weight – 1781 / Number– 1781				
V. Test	P-value	Means		Standard deviations		Characteristic variables
		Class	General	Class	General	
8.51	0.000	0.15	-0.45	2.60	14.24	89. Equity/Total Assets 2007
7.67	0.000	0.16	0.02	1.02	3.70	87. Equity/Total Assets 2009
6.49	0.000	0.01	-0.04	0.30	1.75	318. EBIT/Total Assets 2009
6.25	0.000	0.03	-0.15	0.27	6.25	320. EBIT/Total Assets 2007
6.16	0.000	0.07	-0.42	1.56	16.04	85. Equity/Total Assets 2011
4.32	0.000	0.07	-0.03	3.15	5.10	219. Tax, wage and social debts / Net value added 2009
2.45	0.007	0.00	0.00	0.37	0.42	316. EBIT/Total Assets 2011
-3.36	0.000	1.23	1.23	2.69	36.85	100. Cash Flow/Debts 2007
-6.80	0.000	1.87	1.87	2.24	47.37	98. Cash Flow/Debts 2009
-26.98	0.000	2.74	2.74	2.93	7.08	173. Current ratio 2011
-27.21	0.000	2.87	2.87	2.80	7.14	175. Current ratio 2009
-28.09	0.000	2.85	0.85	2.69	6.93	177. Current ratio 2007

Class 3/5		Weight – 69.00 / Number – 69				
V. Test	P-value	Means		Standard deviations		Characteristic variables
		Class	General	Class	General	
29.79	0.000	27.61	2.85	21.86	6.93	177. Current ratio 2007
29.17	0.000	28.97	2.74	23.32	7.08	173. Current ratio 2011
28.88	0.000	27.98	2.87	23.60	7.14	175. Current ratio 2009
-4.62	0.000	-3.53	-0.03	24.47	5.10	219. Tax, wage and social debts / Net value added 2009

Consequently, the variables for which the test value will be greater than 2 in absolute value will be considered as significantly characteristic of a class because de p-value will be smaller than the significance threshold of 5%. The higher the test value associated with a variable in absolute value, the more this variable characterizes the class of individuals.

Table 3 shows the description of classes 1 and 3 by their active variables.

It appears that the firms in the first class had significantly higher levels of solvency than the general mean calculated using all the firms. Note that these average levels are negative in 2007 and 2011, and slightly positive in 2009. This finding is certainly the translation of the consequences of the recent financial crisis because half the companies in the sample went bankrupt in 2012.

It was also noted that the firms in class 1 had mean liquidity levels lower than average levels calculated using all the firms for the three years. Similarly, it appears that these companies had a lower average level of cash flow / debts than the general average for the years 2007 and 2009, five years and three years before the bankruptcy of the firms in the sample. Conversely, the class 3 companies had higher levels of liquidity than the rest of the sample for the three selected years.

Finally, it seems that the variable "taxes, wages and social debts / Net value added" is also characteristic of classes 1 and 3. Indeed, the firms in class 1 appear to have a higher mean value than the average for this ratio in 2009, while the opposite occurred for the class 3 companies.

To complete the typology, a dichotomous variable "bankruptcy or not" was integrated as an illustrative variable. Table 4 characterises class 3 by the two modalities of this dichotomous variable. Modality 1 of this variable represents failing firms while modality 2 represents the healthy firms. Thus, it seems that the most liquid firms in 2007, 2009 and 2011 showed a higher probability of not defaulting in 2012. Liquidity is therefore an important variable in the field of bankruptcy prediction.

Table 4. Characterisation of Class 3 by the modality of the illustrative variable « Bankrupt »

Class 3 / 5						
V.Test	P-value		Percentages		Modalities	Variables
		CLA/MOD	MOD/CLA	GLOBAL		
				3.71	Class 3 / 5	
7.05	0.000	6.67	89.86	50.00	Modality 2	Bankruptcy
-7.05	0.000	0.75	10.14	50.00	Modality 1	Bankruptcy

After this typology, it can be noted that the results are quite limited in the context of bankruptcy prediction, with respect to the previous empirical results. This finding may be explained in two different ways. First, it could potentially qualify the low predictive power of the bankruptcy variables selected, even if this goes against the empirical literature on the subject (in particular, the findings of Altman, 1968; Frydman et al., 1985; Ooghe and Van Wymeersch, 2000; Pompe and Bilderbeek, 2005). Then, the relevance of using this methodology in the context of bankruptcy prediction could also be questioned. To remove any doubt about the preliminary variable selection, a parallel study using logistic regression was conducted.

STATA software enabled this logistic regression to be carried out on the variables from one, three and five years before bankruptcy. Based on a sample of 930 failing firms and 2,113 healthy companies, that is to say 3,043 raw data, the regression used a final sample of 2,668 exploitable companies after data cleansing.

Table 5. Results of logistic regression – one year before bankruptcy

Variables	Results
Equity/Total Assets 2011	-0.372***
	(0.039)
Cash Flow/Debts 2011	-0.281***
	(0.108)
Current ratio 2011	-0.274***
	(0.040)
EBIT/Total Assets 2011	-3.072***
	(0.314)
Tax, wage and social debts/Net value added 2011	-0.018***
	(0.004)
Sig. model (p-value)	0.000
Number of observations firm-year	2 668

Note. Standard errors are reported in brackets; ***, **, * significant at 1, 5 and 10% respectively.

According to the results of previous studies, the results of logistic regressions highlight the predictive nature of the five variables introduced into the initial model. Therefore, the poor results obtained, following the classification of factors, confirms the relative irrelevance of this methodology in the context of bankruptcy prediction.

Table 5 lists the results of the logistic regression, one year before the bankruptcy. The results are substantially identical for the logistic regressions conducted for three and five years before bankruptcy.

The results of the logistic regression for the year 2011 appear to be very satisfactory. Indeed, the chi square maximum likelihood related to the model is very high, and the resulting p-value indicates that the model is statistically significant at 1%. The five variables included in the model are statistically significant, at a threshold of 1%. The sign associated with each coefficient is negative, which means that the higher the significant value for each variable for a company, the lower the likely risk of bankruptcy will be.

5. Discussion

Owing to its importance for the economy, bankruptcy is one of the most discussed topics in the literature. The costs that bankruptcy may generate have led many authors to develop bankruptcy prediction models (Beaver, 1966; Altman, 1968; Ohlson, 1980).

However, these models have the disadvantage of limiting companies to being categorised as either bankrupt or not, and do not consider the different stages the company can go through before bankruptcy is declared. These stages have also led to different definitions of failure, it may be economic, financial, organisational or legal (Crucifix and Derni, 1992; Gresse, 1994; Quintart, 2001; Hol et al., 2002; Grégoire, 2012).

When it comes to studying the phenomenon of bankruptcy, different approaches have also been developed because of the multitude of factors that can be involved. These are economic, financial, strategic/organisational, and managerial approaches.

By focusing on the readily available financial statements, problems of profitability, solvency and liquidity, which a company may face, can be highlighted. It is from these that most predictive models, such as univariate analysis, linear discriminant analysis, logistic regression, recursive partitioning and neural networks, are built. In Belgium, the most successful models are the linear discriminant analysis of Ooghe and Verbaere (1982) and the logit model of Ooghe et al. (1991). These models were firstly used for the case of large companies with greater visibility. It is only later that SMEs, representing the majority of the economic landscape, have attracted the attention of researchers.

In recent years, various authors (Li and Sun, 2009, 2011) have continued to develop new methods to better predict bankruptcy. PCA is one of the methods that had never been used before as a bankruptcy prediction tool. However, this technique can be applied to qualitative variables and, therefore, adapts quite well to the deeper causes of bankruptcy. Therefore, it was used to determine different types of bankruptcy (Crutzen, 2010).

This article aims to combine this technique with the Ward classification methods and mobile centres, making principal component analysis a real bankruptcy prediction tool. Prior to this study, this method had never been used to discriminate failing firms from non-failing ones. This is, therefore, a real innovation in the field of bankruptcy prediction. This combination of methods was performed using SPAD software and aimed to form various classes. Unlike conventional prediction models, more than two final classes were obtained.

To validate this methodology, a sample of 930 Belgian failing firms and 930 non-failing firms was analysed. Five ratios representing the solvency, profitability, added value, liquidity and the Belgian tax system were identified five years, three years and one year before the bankruptcy. The methodology has identified six factorial axes having eigenvalues greater than 1. Representation on the first two axes (for axes 2 and 3 also) pointed out a high concentration of companies at the origin of the axes, not allowing for healthy firms to be adequately discriminated from failing ones, from the variables initially selected. However, the choice of variables should not be called into question because, on the one hand, they are used in many articles in the literature (Altman, 1968; Taffler, 1982; Ooghe and Van Wymeersch, 2000; Pompe and Bilderbeek, 2005), and on the other hand, the discriminating power of these variables was confirmed using logistic regression (most variables one year, three years and five years before bankruptcy were significant). The principal components analysis method associated with the Ward criterion and mobile centres applied to the prediction of bankruptcy was not found to be effective for determining a sufficient number of classes composed of a majority of healthy or failing firms.

One way to extend this study could be to use the pairing method, to pair firms by sector or by legal form. This should provide a more homogeneous sample, with the hope of improving the results.

References

Aharony, J., Jones, C., & Swary, I. (1980). An analysis of risk characteristics of corporate bankruptcy firms using capital market data. *Journal of Finance, 35*, 1001-1016. https://doi.org/10.1111/j.1540-6261.1980.tb03516.x

Alici, Y. (1996). Neural networks in corporate failure prediction: The UK experience. In Y. Abu-Mostafa, J. Moody & A. Weigend (Ed.), *Neural Networks in Financial Engineering* (pp. 393-406), Singapore: World Scientific.

Altman, E. I. (1968). Financial Ratios, Discriminants Analysis and the Prediction of Corporate Bankruptcy. *Journal of Finance*, *23*, 589-609. https://doi.org/10.1111/j.1540-6261.1968.tb00843.x

Armeanu, S. D., Vintila, G., Moscalu, M., Filipescu, M., & Lazar, P. (2012). Using Quantitative Data Analysis Techniques for Bankruptcy Risk Estimation for Corporations. *Theoretical and Applied Economics, 19*, 97-112.

Balas, C. E., Koç, M. L., & Tür, R. (2010). Artificial neural networks based on principal component analysis, fuzzy systems and fuzzy neural networks for preliminary design of rubble mound breakwaters. *Applied Ocean Research, 32*, 425-433. https://doi.org/10.1016/j.apor.2010.09.005

Barney, D. K., Graves, O. F., & Johnson, J. D. (1999). The farmer home administration and farm failure prediction. *Journal of Accounting and Public Policy, 18,* 99-139. https://doi.org/10.1016/S0278-4254(98)10018-2

Beaver, W. H. (1966). Financial ratios as predictors of failure. *Journal of Accounting Research*, *4,* 71-111. https://doi.org/10.2307/2490171

Beaver, W. H. (1968). Market Price, Financial Ratios and the Prediction of Failure. *Journal of Accounting Research, 6*, 179-192. https://doi.org/10.2307/2490233

Bellanca, S., Cultrera, L., & Vermeylen, G. (2015). La faillite des PME belges. *La Libre Belgique – La Libre Entreprise*, p.A4.

Calia, P., & Ganucci, P. (1997). Kernel and nearest neighbour discriminant analysis: Business failure classification in industrial district. *Applied Stochastic Models and Data Analysis,* Paper presented at Capri conference, 11-14th June.

Canbas, S., Cabuk, A., & Kilic, S. B. (2005). Prediction of commercial bank failure via multivariate statistical analysis of financial structures: The Turkish case. *European Journal of Operational Research*, *166*, 528-546. https://doi.org/10.1016/j.ejor.2004.03.023

Chen, W. S., & Du, Y. K. (2009). Using neural networks and data mining techniques for the financial distress prediction model. *Expert Systems with Applications*, *36*, 4075-4086. https://doi.org/10.1016/j.eswa.2008.03.020

Crucifix, P., & Derni, A. (1992). *Le Redressement de l'entreprise : les symptômes de défaillance et les stratégies*. Louvain-la-Neuve: Academia.

Crutzen, N. (2010). *The origins of small business failure: A Taxonomy of Five Explanatory Business Failure Patterns*. Paper presented at the Annual Conference of the AIMS, Liège Belgium. Paper retrieved from http://orbi.ulg.ac.be/bitstream/2268/57383/1/CrutzenNathalie-AIMS2010.pdf

Crutzen, N., & Van Caillie, D. (2010). La mauvaise gestion de l'entreprise : trois profils-types de petites entreprises en difficulté". *Centre d'Etude de la Performance des Entreprises (CEPE) Working Papers*, 24.: http://orbi.ulg.ac.be/bitstream/2268/35970/1/2010%20-%20RFG%20-%20Proposal.pdf

Cultrera, L., & Vermeylen, G. (Unknown). Predicting bankruptcy of Belgian SME's: Statistical modelling. *MIMEO*.

Deakin, E. B. (1972). A Discriminant Analysis of Predictors of Business Failure. *Journal of Accounting Research*, *10*, 167-179. https://doi.org/10.2307/2490225

Donckels, R. (1984). Algemene aspekten van het KMO-beleid. *Accountancy et Bedrijfskunde, Jaargang, 9,* 16-27.

Fitzpatrick, P. J. (1932). *A comparison of ratios of successful industrial enterprises with those of failed companies*. Washington: The Accountants Publ. Co.

Frydman, H., Altman, E., & Kao. (1985). Introducing recursive partitioning for financial classification: The case

of financial distress. *Journal of Finance, 40*, 269-291. https://doi.org/10.1111/j.1540-6261.1985.tb04949.x

Gentry, J. A., Newblod, P., & Whiteford, D. T. (1985). Classifying Bankrupt Firms With Funds Flow Components. *Journal of Accounting Research, 23*, 146-160. https://doi.org/10.2307/2490911

Gombola, M. J., Haskins, M. E., Ketz, J. E., & Williams, D. D. (1987). Cash-Flow in Bankruptcy Prediction. *Financial Management, 16*, 55-65. https://doi.org/10.2307/3666109

Grégoire, M. (2012). *Procédures collectives d'insolvabilité*. Bruxelles : Bruylant.

Gresse, C. (1994). *Les entreprises en difficulté*. Paris : Economica.

Guilhot, B. (2000). Défaillance d'entreprise : soixante-dix ans d'analyses théoriques et empiriques. *Revue française de gestion, 26,* 52-67.

Hol, S., Westgaard, S., & Van der Wijst, N. (2002). *Capital structure and the prediction of Bankruptcy*. Paper presented at the EWGFM Conference, Capital Markets Research (Bankruptcy Prediction), retrieved from: http://www.fbv.kit.edu/symposium/9th/papers/Hol_Wes_Wij.pdf

Keasey, K, & Watson, R. (1991). The State of the Art of Small Firm Failure Prediction: Achievements and Prognosis. *Journal of Small Business Management, 9,* 11-29. https://doi.org/10.1177/026624269100900401

Laitinen, E. K. (1991). Financial ratios and different failure processes. *Journal of Business, Finance and Accounting, 18,* 649-673. https://doi.org/10.1111/j.1468-5957.1991.tb00231.x

Levratto, N. (2001). L'échec des pme: mieux le comprendre pour mieux le prévenir. *Business Management Review, 1*, 36-47.

Li, H., & Sun, J. (2011). Empirical research of hybridizing principal component analysis with multivariate discriminant analysis and logistic regression for business failure prediction. *Expert Systems with Applications, 38*, 6244-6253. https://doi.org/10.1016/j.eswa.2010.11.043

Mensah, Y. M. (1984). An Examination of the Stationarity of Multivariate Bankruptcy Prediction Models: A Methodological Study. *Journal of Accounting Research*, *22*, 380-395. https://doi.org/10.2307/2490719

Min, J. H., & Lee, Y. C. (2005). Bankruptcy Prediction Using Support Vector Machine with Optimal Choice of Kernel Function Parameters. *Expert Systems with Applications*, *28*, 603-614. https://doi.org/10.1016/j.eswa.2004.12.008

Odom, M. C., & Sharda, R. (1990). A Neural Network Model for Bankruptcy Prediction. *Proceedings of the IEEE International Joint Conference on Neural Networks*, *2*, 163-168. https://doi.org/10.1109/ijcnn.1990.137710

Ohlson, J. (1980). Financial Ratios and Ratios and the probabilistic Prediction of Bankruptcy. *Journal of Accounting Research*, *18*, 109-131. http://dx.doi.org/10.2307/2490395

Ooghe, H., Joos, P. H., & De Vos, D. (Unknown). Failure prediction models. *Ghent University Working Paper*, Belgium.

Ooghe, H., & Verbaere, E. (1982). Determinante van faling: verklaring en predictive. *Accountancy – Bedrijfsfinanciering – Beleidsinformatie (Rijksuniversiteit Gent)*, 5-166.

Ooghe, H., Spaenjers, C., & Vandermoere, P. (2005). Business Failure Prediction: Simple-Intuitive Models Versus Statistical Models. *Faculteit Economie en Bedrijfskunde, Universiteit Gent*, 1-36, in : http://core.ac.uk/download/pdf/6251372.pdf

Ooghe, H., & Van Wymeersch, C. (2000). *Traité d'analyse financière*. Anthémis, Tome 1, Partie V : Modèles quantitatifs de diagnostic financier et défaillance d'entreprise, 376-440.

Platt, H. D., & Platt, M. B. (1991). A note on the use of industry-relative ratios in bankruptcy prediction. *Journal of Banking and Finance*, *15*, 1183-1194. https://doi.org/10.1016/0378-4266(91)90057-s

Pompe, P. M., & Bilderbeek, J. (2005). The prediction of bankruptcy of small and medium sized industrials firms. *Journal of Business Venturing*, *20*, 847-868. https://doi.org/10.1016/j.jbusvent.2004.07.003

Quintart, A. (2001). *Méthodes d'analyse des états financiers*. Université Catholique de Louvain (lesson notes).

Ravi, V., & Pramodh, C. (2008). Threshold accepting trained principal component neural network and feature subset selection: application to bankruptcy prediction in banks. *Appl Soft Comput*, *8*, 1539-1548. https://doi.org/10.1016/j.asoc.2007.12.003

Sharma, D. S., & Iselin, E. R. (2003). The Relative Relevance of Cash-Flow and Accrual Information for Solvency

Assessments: A Multi-Method Approach. *Journal of Business Finance and Accounting*, *30*, 1115-1140. https://doi.org/10.1111/1468-5957.05421

Shin, K. S., & Lee, Y. J. (2003). A Genetic Algorithm Application in Bankruptcy Prediction Modeling. *Expert Systems with Applications*, *23*, 321-328. https://doi.org/10.1016/s0957-4174(02)00051-9

Shin, S. W., Lee, K. C., & Kilic, S. B. (2006). Ensemble prediction of commercial bank failure through diversification of input features. *Lecture notes in computer science*, *4304*, 887-896. https://doi.org/10.1007/11941439_93

Skogsvik, K. (1990). Current Cost Accounting Ratios as Predictors of Business Failure: The Swedish Case. *Journal of Business Finance and Accounting*, *17*, 137-160. https://doi.org/10.1111/j.1468-5957.1990.tb00554.x

Sookhanaphibarn, K., Polsiri, P., Choensawat, W., & Lin, F. C. (2007). Application of Neural Networks to Business Bankruptcy Analysis in Thailand. *International Journal of Computational Intelligence Research*, *3*, 91-96. https://doi.org/10.5019/j.ijcir.2007.92

Taffler, R. J. (1982). Forecasting Company Failure in the UK using Discriminant Analysis and Financial Ratio Data. *Journal of Royal Statistical Society*, *145*, 342-358. https://doi.org/10.2307/2981867

Takahashi, K., & Kurokawa, Y. (1984). Corporate Bankruptcy Prediction in Japan. *Journal of Banking & Finance*, 229-247. https://doi.org/10.1016/0378-4266(84)90005-0

Tamari, M. (1966). Financial ratios as a means of forecasting bankruptcy. *Management International Review, 6*, 15-21.

Tang, T. C., & Chi, L. C. (2005). Neural Networks Analysis in Business Failure Prediction of Chinese Importers: A Between-Countries Approach. *Expert Systems with Applications*, *29*, 244-255. https://doi.org/10.1016/j.eswa.2005.03.003

Van Caillie, D. (1993). Apports de l'analyse factorielle des correspondances multiples à l'étude de la détection des signaux annonciateurs de faillite parmi les PME" *Cahier de Recherche du Service d'Informatique de Gestion (Reprint: Cahier de Recherche du CEPE)*, *1*, 1-36.

Van Caillie, D. (2004). La faillite d'entreprise, champ d'application privilégié des méthodes quantitatives en gestion. in: Regards croisés sur les méthodes quantitatives en gestion, Bair J. & Henry Eds V., Editions de l'Université de Liège, 295-327.

Van Caillie, D., & Dighaye, A. (2002). La recherche en matière de faillite d'entreprise : un état de sa situation et de ses perspectives d'avenir. *Communication proposée à la XIème Conférence Internationale de Management Stratégique, Paris – ESCP-EAP*, 28. disponible sur: http://orbi.ulg.ac.be//bitstream/2268/38168/1/2002%20-%20AIMS%20-%20Trajectoire%20de%20faillites.pdf

Varetto, F. (1998). Genetic Algorithms Applications in the Analysis of Insolvency Risk. *Journal of Banking and Finance*, *22*, 1421-1439. https://doi.org/10.1016/s0378-4266(98)00059-4

Wang, Z. (2004). Financial Ratio Selection for Default-Rating Modeling: A Model-Free Approach and Its Empirical Performance. *Journal of Applied Finance*, *14*, 20-35.

Yao, P. (2007). Research of financial crisis prediction based on FCMPCA-SVM model. *ISCRAM CHINA 2007: Proceedings of the second international workshop on information systems for crisis response and management*, 476-481.

Zavgren, C. V. (1985). Assessing the Vulnerability to Failure of American Industrial Firms: A Logistic Analysis. *Journal of Business Finance and Accounting*, *12*, 19-45. https://doi.org/10.1111/j.1468-5957.1985.tb00077.x

Zhang, G. P. (2000). Neural Networks for Classification: A Survey. IEEE transactions on systems, man, and cybernetics: Part C: Applications and reviews, *30*, 451-462. https://doi.org/10.1109/5326.897072

Zmijewski, M. (1984). Methodological issues related to the estimation of financial distress prediction models. *Journal of Accounting Research*, *22*, 59-86. https://doi.org/10.2307/2490859

Copyrights

Tax Policy and Foreign Direct Investment:
Empirical Evidence from Mauritius

Sharvesh Digumber[1], Hemavadi Soondram[1], Bhavish Jugurnath[1]

[1]Department of Accounting and Finance, Faculty of Law and Management, University of Mauritius, Réduit, Mauritius

Correspondence: Bhavish Jugurnath, Lecturer, Department of Accounting and Finance, Faculty of Law and Management, University of Mauritius, Réduit, Mauritius. E-mail: b.jugurnath@uom.ac.mu

Abstract

This study demonstrates, through the use both qualitative and quantitative data, that there are several factors determining Foreign Direct Investment flows between two countries. A total of 180 accountants were surveyed in this study, whereby the majority of respondents agreed that Capital Gains Tax is an important factor determining FDI flow within a tax treaty but is not the only significant factor. The study also used regression analysis through a gravity equation to confirm the survey's conclusion. Using Mauritius and a host of its tax treaty partners as proxies, it was found that Gross Domestic Product per capita, Capital Gains Tax, common language and distance were major factors affecting Foreign Direct Investment flow in a bilateral tax treaty. This study gives a good insight on the reasons why foreign investors use the Mauritian tax treaty network as a platform for investment. The main rationale for such investments was attributed to Mauritius offering a 0% Capital Gains Tax rate and being a low tax jurisdiction. However, this study sheds new light on this reasoning and provides evidence that investment does not depend solely on Capital Gains Tax levy but also a host of other important factors.

Keywords: CGT, determinants of FDI, FDI, gravity model, Mauritius

1. Introduction

There are various factors affecting FDI flows between countries and various benefits in bringing in FDI into a country, such as increased competition, training and upgrading human resources and bringing in technology. Small economies like Mauritius receive criticism about attracting 'treaty abusers' while bringing in FDI and such a scenario motivates countries to proposing the introduction of a CGT to counter misuse of tax treaties. This study determines the factors affecting FDI when it comes to tax treaties. It tests whether CGT is the main determinant of FDI flowing to and from Mauritius or if it is one of the major determinants. If it is found that CGT is the main determinant, it can lead to suggestions that Mauritius in fact attracts treaty abuse. Moreover, it is known that CGT might not be the only cause of FDI movements through the Mauritian route. There is a possibility that CGT does not significantly affect FDI flows. This is why it is important to test several other possible determinants and see if they significantly affect FDI.

The main aim of this study is to find out some of the possible main causes of FDI flows through the Mauritian route when it concerns trading with tax treaty partners. This study also aims to see if CGT is the main or one of the main determinants of FDI. Being regarded as a tool of treaty abuse when CGT is not taxed, it is important to see if the inexistence of CGT in a tax treaty really affects significantly FDI. This will then lead to a possible conclusion about whether the Mauritian route can be used as a treaty abuse destination. Finally, this study aims to provide valuable insight about perceptions of stakeholders from the Mauritian accounting and finance sector on the newly introduced BEPS. This new measure is likely to become imminent in the near future and is supposed to act as a detriment to invest in a country for treaty abusing purposes.

2. Literature Review

2.1 Empirical Evidence

Theoretical studies show that there are numerous factors which affect FDI flow in a country. In recent years, we have seen many bilateral tax treaties put in place for the various benefits .they contribute to the nations. New

insights in the field have captured the attention of researchers. Much research have been done to measure the different determinants of FDI. However, different types of FDI exist- inflow, outflow, firm level, industry level and national level. A self-contained general theory cannot be put in practice and such cases have been questioned by the likes of Agarwal (1980), Parry (1985), Itaki (1991). Tax revenue provides a main source of income to governments but tax benefits provide a competitive edge over resource allocation and distribution. Hence, theoretically tax treaties have an impact on the economic progress of any nation. Theoretical evidence also suggests that keeping CGT low will increase the level of FDI. Past literature suggest that small open economies should not tax capital gains as it will be against their favour. (Diamond & Mirrlees, 1971) showed, through a one consumer economy, that a small open economy will attain an efficient production rate by offering a low tax scheme or not tax at all. A study of Wilson (1991) showed that tax base relocation is proportionately more important for small economies and hence, will have a higher incentive to keep CGT, whereby they could create a "race to the bottom". Gordon (1990) explained that in a world getting more and more connected through globalisation, it is now very difficult for governments to set capital controls, whereby investors are disallowed from investing abroad. Investors, being rational in nature will choose to invest in jurisdictions offering the most favourable tax schemes. The author follows the theory that with the increasing openness of the European Community, and the world in general, worldwide capital gains taxation shall be as low as 0%.(Bénassy-Quéré, Fontagne & Lahreche-Revil, 2003) also backed this idea by stating that global competition increases will cause a growing pressure on tax policies and increases in taxes (like CGT) in one country will give an incentive for investors to shift their investment from that country to another. (Razin & Sadka, 2007) explained that to tap into the FDI inflows and earn a profit out of it, a country can use two methods; impose a minimum sales price on domestic firms or impose a CGT on FDI investors. The profit will then be distributed between the host country and the investors. (Eicher, Helfman & Lenkoski, 2011) found that higher taxes and financial risk increase FDI outflows from the host country, while lower taxes and financial risk have a positive effect on investment inflows.

(Artige & Nicolini, 2005) have seen in their study that per capita GDP an important FDI determinant, using econometric studies. This is applicable for horizontal FDI, where firms with several plants will perform the same activities in various countries. Jordaan (2004) suggests that FDI will flow to countries with bigger markets where people have higher purchasing power. Firms will hence achieve higher return on investment. In fact, (Brooks, Fan & Sumulong, 2003); (Crespo & Fontoura, 2007) all reach consensus that there is a mutual relationship between FDI and GDP per capita, where FDI provides capital, technology and foreign exchange to the recipient country. (Portes & Rey, 1999) have found that there is a strong negative relationship between FDI and distance. Gravity models used in past literature have all included the distance factor to determine trade patterns. Moreover, the 'non-diminishing' effect of distance over trade provides a fixed variable to be studied over time. Countries have a better relationship when they share common attributes like culture, language, shared festivals and historical ties. (Kim, Liu, Kim-Lee, Brown & Leblang, 2013) used Philippines (ex-Spanish colony) and its 2010 agreement with Spain to re-introduce Spanish into the educational curriculum. They linked the incident with the visit of Spanish Business Executives to explore investment ventures. The authors state that many more countries are using such tactics to attract FDI. The latter study reviewed literature which suggest that "States with the same languages or legal structures will be more likely to engage in economic exchange. Eicher et al. (2011) studied the determinants of FDI and explained that there is little consensus on the main determinants of FDI flows. They used the Bayesian Model Averaging and agree that there is a consensus that FDI increase causes an increase in economic growth. Morisset (2003) used data from 58 countries showed through utility function that when a country highly invests in ease of doing business strategies, whereby the investment climate becomes favourable, FDI is likely that to be influenced considerably. (Dimitropoulou, Burke & MC Cann, 2007) agrees on this by stating a country which has industrial promotion agencies to promote segment of specialisation will have a positive impact on FDI. However, (Wheeler & Modi, 1992) shows that bureaucracy risk does not deter investments made by MNCs in a country and hence, ease of doing business strategies will have little impact of FDI flow.

Eicher et al. (2011) found that the creation of government policies such as providing low tax rates boosted FDI flow. This conclusion contradicts (Wheeler & Modi's, 1992) findings that FDI flow is not affected significantly by a corporate tax rate. Authors have also linked FDI flow with risk level, particularly political risk. (Cieslik & Ryan, 2004) and Blonigen (2005) show that high political risk level tends to decrease FDI flows. Blonigen (2005) also shows that proper government institutions and appropriate legal protection (such as protection of intellectual property rights) are very important tools to promote FDI. (Wheeler & Modi, 1992) criticise this finding by concluding that socio-political risk did not have a significant impact on FDI. Various studies have tried to find a correlation between the level of corruption and FDI. (Wei & Smarzynsk, 2010) found that a foreign investor's choice will depend on the level of corruption in a host country. Using U.S. investors' data, it was found from survey analysis that American investors were rather reluctant to invest in foreign countries marked as corrupt.

(Rios-Morales & Brennan, 2007) found a positive direct correlation between the level of risk and corruption level, hence decreasing the investment level. However, (Wheeler & Modi, 1992) also studied corruption in U.S. and FDI and found that corruption was not a major deterrent on investment. (Kolstad & Villanger, 2004) also shows that despite some countries show some degree of corruption, FDI keeps flowing. Studies have also linked FDI to quality of human capital accompanied by low labour cost. (Kinoshita & Campos, 1997) found that skilled labour force had the ability to attract multinationals within a country. (Cheng & Kwan, 2000) also found that a highly productive workforce had positive effects on attracting MNCs. (Noorbakhsh, Palom &Youssef, 2001) found that a country offering quality labour force has a higher potential in attracting FDI. Such results have been contradicted by (Groh & Wich, 2009) who found that the level of investment does not depend on the quality and value of labour force but rather is influenced by location and sector.

Braunschweig (2014) used the gravity model to determine the relationship between the level of trade and the signing of a DTAA. His model presented the trade flows between two countries as directly and proportionately related to their respective sizes and negatively proportional to their geographical distance. Hines (1998) analysed the importance of providing tax benefits in a tax treaty and its relative impact on FDI, by using figures from Japanese, American and U.K treaties. Hines used the terminology "Tax sparing" which he defined as "*a practice designed to promote the effectiveness of local tax incentives for foreign investment' and 'the practice by which capital exporting countries amend their taxation of foreign source income to allow firms to retain the advantages of tax reductions provided by host countries.*" For example, in the India-Mauritius tax treaty prior to 2013, India had given the rights to capital gains taxation to Mauritius, which subsequently tax capital gains at a rate of 0%. Developing countries are usually willing to provide tax incentives such as low or no CGT to promote and attract FDI and hereby boost economic growth. Many developed countries which have tax treaties with such developing countries provide 'tax sparing' facilities, which will help investing firms to ask due on foreign tax credits against home country tax liabilities. Such liabilities would otherwise have been paid external countries without the use of special clauses in treaties. Hines (1998) used the case of Japan, which uses 'tax sparing' methods in several of its treaties with developing countries, and the case of US which prohibits the use of any tax incentive methods in its treaties. The author concludes that such tax incentives really have a significant impact on FDI. Moreover, Japanese firms prefer to invest in countries with which it has preferential treaty agreements such as not taxing capital gains. It was also found that Japanese treaty partner countries prefer to give Japanese firms (instead of American firms) special tax breaks. The findings clearly show that tax systems and schemes influence the volume and location of FDI. Bénassy-Quéré et al. (2003) also studied the impact of corporate taxes on FDI. The latter used econometrics to measure bilateral FDI flows across 11 OECD countries over 1984-2000 and noted that a high level of corporation tax, including CGT is a huge deterrent of investment. The authors conclude that though there are many determinants of FDI, like market potentials, taxes play a very important role in attracting FDI flows. However, contrary to the empirical evidence, this study showed that despite large amount of corporation tax is a major deterrent of FDI, low tax rates in host countries do not contribute significantly to attract investment.

2.2 Capital Gains Taxation in Treaties

This study puts a lot of emphasis on CGT being the main determinant of FDI for the Mauritian tax treaty network. DTA treaties are based on international tax laws. This study includes the effect of CGT on Tax Treaties and the final impact on FDI. Provisions on FDI are discussed in Article 13 of the OECD and UN Models. In such models, basic elements regarding capital gains are explained. For example, capital gains from 'alienation' of properties can be taxed in the Country of Residence (COR). Alienation has been explained in the Mauritius-Singapore tax treaty as the "*sale, exchange, transfer, or relinquishment of property or extinguishment of any rights therein or the compulsory acquisition thereof under any law in force in the respective Contracting States.*" COR refers to the seller's country of residence. The Country of Source (COS) is given non-exclusive rights to tax immovable property, business assets forming part of Permanent Establishments (PE), ownership interest in entities that derive value principally from immovable property, and shares forming significant participation in a resident company.

CGT is taxed based on legislations found in Article 13 of a tax treaty. The Mauritius-India and Mauritius-Singapore tax Article 13 relating to tax treaty will be used as reference. Amendments to Article 13 tend to go for a form of imposition of CGT on trade between two nations which previously did not tax CGT at all. Recent examples come from the Mauritius-China 2007 amendment, Mauritius-South Africa 2015 amendment and the Mauritius-India 2015 agreement. Sornarajah (2010) defined treaty shopping as "a technique which nationals of a state use in order to protect their investments from interferences by their own states.' Under such a situation, an investor will transfer its investment in a country B and the re-transfer such investments into his own country. The rationale behind this move is that it allows the investor to gain from positive benefits given by the

investor's government to foreign investors as well as a form of protection (e.g. diplomatic protections and protection of investment treaties). The main conflict which arises is that it becomes difficult to separate such inflow of capital of local investors to FDI inflows. An (2011) showed that an increase in corporate income tax, which took effect in 2008, reduced the preferential treatment offered by China to its foreign investors. Investments from Hong Kong, Macau and Taiwan, countries which were suspected to welcome round tripping from China, significantly decreased. The author concluded that an increase in corporate income tax reduced investment into China linked to round tripping.

There seems to be a co-incidence between the recent ratification of the Mauritius-India, Mauritius –South Africa tax treaties in 2013 and the issue of OECD report on BEPS in the same year. Sithanen (2015) argues that modifications to the Articles 13 of the India-Mauritius treaty will have the same effect as the Mauritius-South Africa treaty, whereby investment will wither out. Ohno (2010) has conducted an analysis on the Japanese network of tax treaties. The author found that newly concluded treaties had statistically significant long term positive impact on FDI while revised treaties did not have statistically significant impact on FDI. (Barthel, Busse & Neumayer 2009) used the estimation model and GMM for large dyadic panel data and showed that double tax treaties have significant and positive effect on FDI.

3. Research Methodology

Most of the questions available in the questionnaire were set based on the empirical and theoretical evidence found in the literature review. A total sample of 180 questionnaires was sent to the firms. 87 fully answered questionnaire was received. The population under consideration is represented by professional accountants having an ACCA or ACA qualification. The reason behind this representation is that such a population already have theoretical and technical background knowledge on the topic. Big 4 organisations (including EY,KPMG, PwC & Deloitte) were mostly considered because they are behind major accounting and tax advances and their technical knowledge have greatly contributed to this paper. Only one member of the population is from South African origin; the remaining population is Mauritian, working in Port-Louis, Ebene and Rose-Hill. We chose a sample instead of the whole population because of cost and efficiency limitation. After removing outliers, a sample of 70 questionnaires were deemed fit for the study.

3.1 Gravity Model

Net FDI flows is the dependent variable while independent variables used are GDP per Capita, Corruption, Common Language and CGT.

	Explanation	SYMBOL
Net FDI	Net FDI represents the total of FDI inflow and FDI outflow. NET FDI is represented in terms of USD	FDI
Per Capita GDP	Per Capita GDP is the GDP in USD per number of people on the country	PC
Distance	Distance per 1000 of Km shared between two countries	DIST
Common Language	Common official language shared between two countries	Lang
CGT	Does a form of Capital Gains Tax exist between two trading countries or are there any official news that links to the probability that CGT will be imposed.	CGT

Major literature reviews correlating FDI and determining factors have used the Gravity Equation. This gravitational model was first used for social science studies in the 1960s by Tinbergen and has later on been found to be useful in studies involving international trade. This model has been found to be useful in studying FDI and its relative determinants. In trade-theory, the gravity equation in its most basic and frequently used form is specified as:

$$\ln X_{ij} = \beta_0 + \beta_1 \ln Y_i + \beta_2 \ln Y_j + \beta_3 \ln D_{ij} + \beta_4 \ln F_{ij} + \mu_{ij}$$

Where X_{ij} is the trade flow between country i, which is the host and country j which is home. Y is the GDP of the two countries, measured at a prevailing currency denomination. D_{ij} is the distance which separates both countries. F_{ij} represents dummy factors or other variables which may affect trade between the two countries.

This study will derive its own formula based on factors believed important, taking evidence from the literature. It is represented as follows:

$$\ln FDI_{ijt} = \beta_0 + \beta_1 \ln PC_{it} + \beta_2 \ln PC_{jt} + \beta_4 \ln DIS_{ij} + \beta_5 \ln Lang_{ij} + \beta_6 \ln CGT_{ij} + \mu_{ijt}$$

Where:

FDI_{ijt}: Net Foreign Direct Investment from country, relevant years from 2010-2014

 j (home) to country I (host)

Source: http://www.bom.mu/pdf/statistics/Balance_of_Payments/FDIQ22015.pdf

PC_{it} : Per capita GDP of country i at time t in MUR

PC_{jt}: Per capita GDP of country j at time t in MUR

Source: **world Bank data**

DIS_{ij}: The Distance (Km) between country I and J

Source: **Google Maps**

$Lang_{ij}$: The dummy variable which takes into value of 1 if there is common official language, else 0

Source : https://www.cia.gov/library/publications/the-world-factbook/fields/2098.html

β_i (i= 1 to 6) is the variable regression coefficient computing the link between Net FDI and the independent variables

μ_{ijt} : Error term

The formula has been chosen based on the empirical research on this area. The Gravity model suggests that bilateral Foreign Investments between 2 countries are positively related to their relative economic sizes and negatively related to their population sizes and distance. Many literatures have given importance to GDP per capita, taxes, language barrier and distance factor as major determinants of FDI between countries. Hence, this study will use the Gravity model and will include the relative importance of CGT, GDP per capita, and distance as determinants of FDI.

GDP per Capita (Home and host country): This variable is always positive and significant. It is a means to show a country's economic growth, whereby high income countries have a bigger share of international investment flows. GDP per Capita is measured in MUR at year end.

Distance: This variable usually has an adverse effect on trade and investment. It appears in the equation in a negative and significant sign.

Common Language: Studies have found that countries sharing at least a common language will have more shared investors.

CGT: A form of capital gains tax has negative and significant impact on FDI. Even a news of bringing in a form of CGT will cause a drop in CGT.

This study will use India, Belgium China and South Africa as data for analysis. The main reason behind this is the drastic change in level of FDI throughout the 5 years between 2010 and 2015. China, South Africa and India was especially used due to the recent amendments in the Article 13 of the respective treaties with the aforementioned countries. The time series includes the 5 years 2010-2015 due to easy availability of data through reliable sources.

Regression Model: The appropriate regression model had to be chosen among Ordinary Least Squares (OLS), Fixed Effects Model (FEM), Random Effects Model (REM) and Generalized Method of Moments (GMM). Tests are carried out to find the appropriate model. Hausman test is used to compare between REM and FEM by calculating the p-value (Prob>chi2).

Under Ho: REM is consistent and efficient

          H1: FEM is consistent and efficient

Breusch-Pagan Lagrangian multiplier test is used to distinguish between REM and OLS.

Under Ho: REM is consistent and efficient

          H1: OLS is consistent and efficient

It is noted that both Hausman test and Breusch-Pagan Lagrangian use a 5% significance level.

3.2 Formulation of Hypothesis

Hypothesis 1: Per Capita GDP of home country has positive and significant statistical impact on FDI.

H1: Per capita GDP of home country has a positive significant statistical impact on FDI

Hypothesis 1.1: Per Capita GDP of host country has positive and significant statistical impact on FDI.

H1: Per capita GDP of host country has a positive significant statistical impact on FDI

(Artige &Nicolini, 2005)

Hypothesis 2: Introducing CGT or news of future imposition of CGT has positive and significant statistical impact on FDI

H1: Introducing CGT or news of future imposition of CGT has positive and significant statistical impact on FDI

Hypothesis 3: A shared common language between host and home country has significant and positive impact on FDI.

Hypothesis 4: Distance between Mauritius and double-tax treaty partner has significant and negative impact on FDI.

This study uses the Breusch-Pagan/Cook-Weisberg test to test the assumption of homoscedasticity. In contrary to homoscedasticity, heteroscedasticity is an undesired situation whereby the variance of the error terms will fluctuate across the independent variables. This will impact on the result as despite the variables and test data remaining unbiased, it will cause the regression model to be inefficient. The hypothesis to be tested shall be:

H0: Heteroscedasticity is absent

H1: Heteroscedasticity is present

Breusch-Pagan/Cook-Weisberg test uses a 5% significance level.

3.3 Autocorrelation

This test was first presented by Wooldridge (2002) for panel data models. Errors should be independent and uncorrelated; autocorrelation test is used to confirm this assumption. The hypothesis to be tested is:

H0: No first order autocorrelation

H1: There exist a first order autocorrelation

Again, the test used a 5% significance level.

3.4 Random Effect Model (REM)

This model is vital to this current study. It allows the data generated for the purpose of this study to be generalised to a limited range of scenarios and to be extrapolated to the sample population. The different variables presented in the gravity model differ greatly in terms of values and cannot be related without a given model. REM caters for this problem while assuming that the error terms are uncorrelated while being independent.
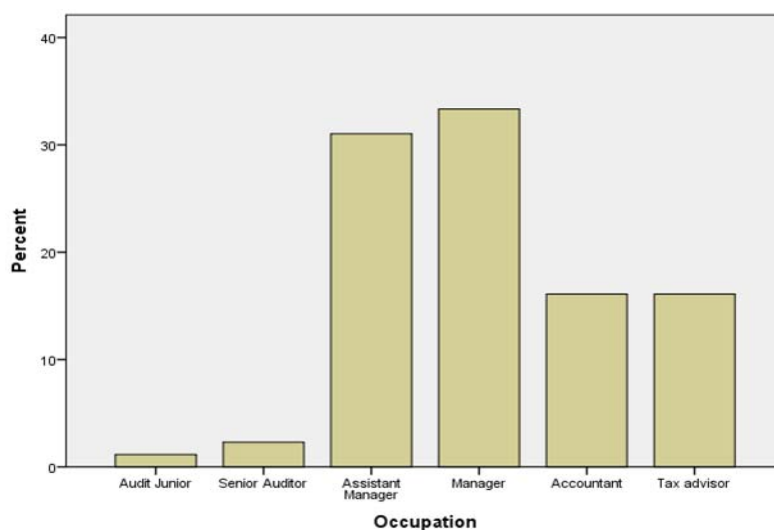
Figure 1. Respondents' occupation

4. Results

Figure 1 shows that 30.3% of respondents are assistant managers and 32.3% are managers. All of the respondents work in the auditing/tax/finance sector.

Figure 2 shows that 54% of the population had more than 5 years of working experience, 5-9 years and 10-14 years of working experience represented 23% of the population. This gives insight about the quality of the questionnaire response; more experienced respondents are expected to give more valid and consistent answers.
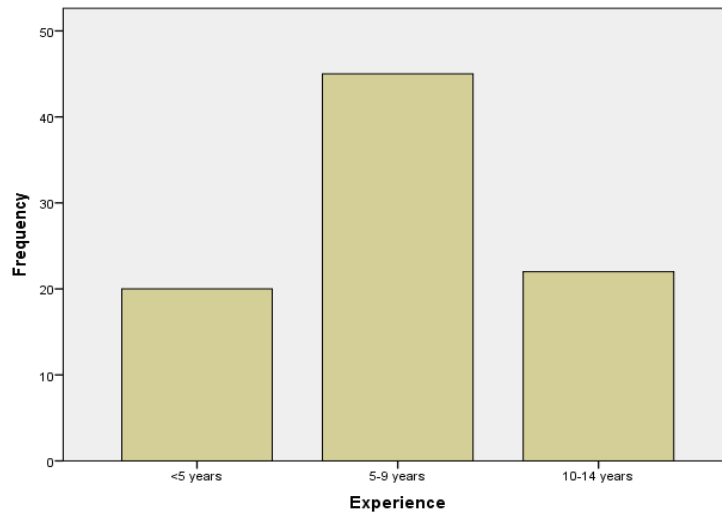
Figure 2. Respondents' work experience

Figure 2 shows that 51.7% of the have between 5 and 9 years of experience and are currently working in the accounting or finance sector. 23% of the respondents have less than 5 years of experience while 25.3% represent respondents having 10-14 years of experience.
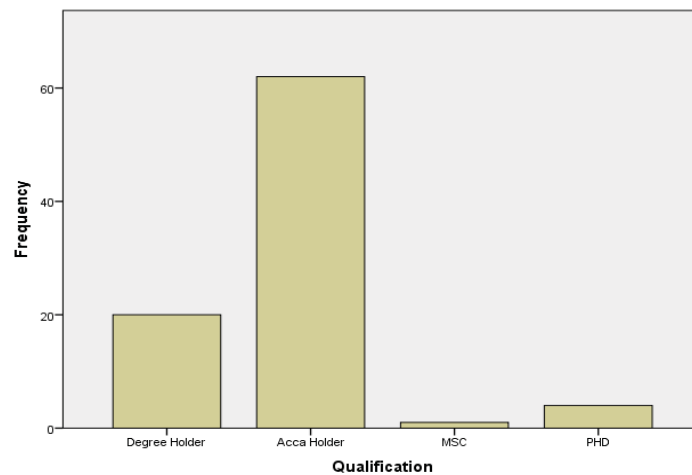
Figure 3. Respondents' qualification

72.3% of the respondents hold an ACCA qualification while 23% hold a university degree. 1.1% hold an MSc while 4.6% hold a PhD.

BEPS as a Factor Affecting FDI

BEPS is a newly introduced solution to eradicate treaty abuses and is perceived to be a new determinant of FDI.
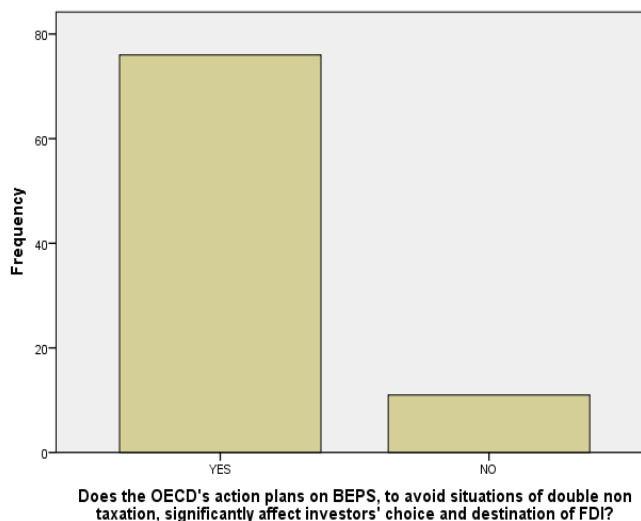
Figure 4. BEPS and FDI

Respondents were asked whether the OECD's action plans on BEPS, to avoid situations of double non taxation, significantly affect investors' choice and destination of FDI. 87.4% of the sample population have agreed that BEPS strategies will surely affect the current FDI patterns.
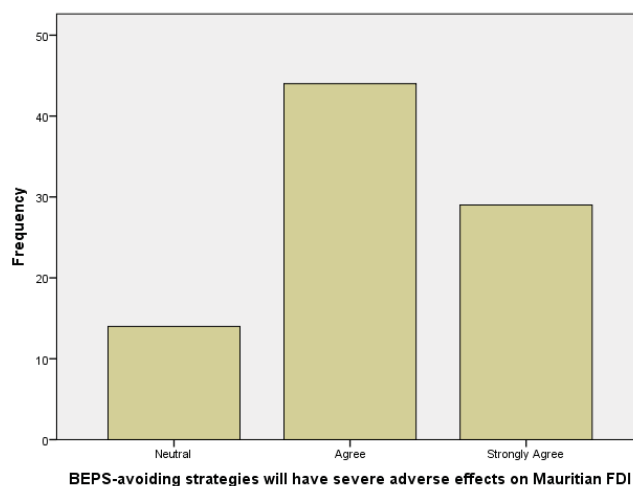
Figure 5. Opinions about BEPS effects in Mauritius

The idea that BEPS will affect Mauritian FDI significantly is shared among the population. 16.1% were neutral about the question but 50.6% agreed that BEPS avoiding strategies will have severe on Mauritian FDI and 33.3% strongly agreed on this statement. This is a possible representation of the growing concern of local investors and stakeholders of the accounting and finance sector about this new determinant of FDI.

Factors affecting FDI

The questionnaire provided the respondent to a list of factors which could potentially affect FDI. The mean score and standard deviation is recorded as:

Table 1. Factors affecting FDI

	Political risks in Mauritius or in its treaty partner countries tend to decrease FDI flow	Availability of legal protections (such as protection of IPR) is an important determinant of FDI	Factors like exchange rate fluctuations and inflation affect FDI flow within a tax treaty	The level of corruption is a major deterrent on investing in a country	Human capital quality and cost have a direct impact on investing in a country
Mean	4.2759	4.2644	3.6782	4.2644	4.1149
N	87	87	87	87	87
Std. Deviation	.47470	.63721	.99410	.63721	.65460

All of the above-mentioned factors: political risks, trade protections, exchange rate fluctuations and inflation, corruption and cost & quality of human capital are deemed to be determinants of FDI by the population. Most respondents agree on political risk playing an important role on net FDI, having a low standard deviation of 0.47. The majority of respondents also agreed on the roles of the other factors, being determinants of FDI. Respondents' answers were quite spread when it concerned exchange rate fluctuations and inflation. This might be due to the fact that such factors are less easy to control through economic decisions. The questionnaire has used the case of Mauritius-India and Mauritius-South Africa treaties to ask respondents if the main reason for using this trading route was because the non-levy of CGT.
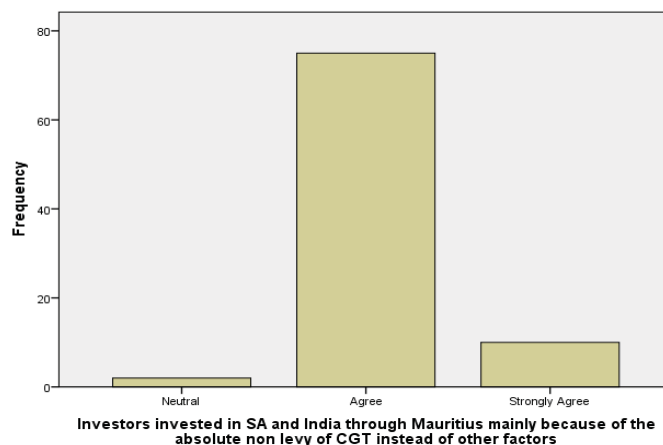
Figure 6. Opinions on SA/INDIA-Mauritius FDI flow

86.2% of the respondents agree on the fact that the non-levy of CGT is a main attraction when it comes to the Mauritian trading route with South Africa and India.

Correlations

Table 2. Correlations

		Political risks, legal protections exchange rate fluctuations, inflation, corruption and human capital quality are determinants of FDI	There are more than one factors affecting FDI in a country
Political risks, legal protections exchange rate fluctuations, inflation, corruption and human capital quality are determinants of FDI	Pearson Correlation Sig. (2 tailed) N	1 87	.224* .037 87
There are more than one factors affecting FDI in a country	Pearson Correlation Sig. (2 tailed) N	.224* .037 87	1 87

Source: Author's computation using SPSS 23

*. Correlation is significant at 5% level (2 tailed)

Correlation coefficient has been used to determine the relationship between various possible determinants of FDI (refer to questionnaire Section 1 Q (i), (ii), (iii), (iv), (v)) and respondents perception about having multiple determinants of FDI (refer to Section 2 Q (iv)). The result (see table 2) shows a positive (.224) and significant relationship (0.037 at 5% sig. level) between respondents believing that there are more than one factors affecting FDI and their perceptions about the aforementioned factors being plausible determinants of FDI. This gives an indication that respondents believe there might be several other factors affecting FDI.

Table 3 shows the relationship between the perception of respondents on whether there is a form of treaty abuse in Mauritian tax treaties and whether investors are attracted to the Mauritian destination due to possibility of treaty shopping. There is a positive and significant relationship between the two variables, suggesting that not only treaty abuse is a possibility in Mauritian treaties but also FDI flow in Mauritius is due to a possibility of treaty shopping.

Table 3. Opinions on tax treaty abuse

		There is no form of treaty abuse in Mauritian tax treaties	Investors are attracted by possibility of treaty shopping
There is no form of treaty abuse in Mauritian tax treaties	Pearson Correlation Sig. (2 tailed) N	1 87	.264* .014 87
Investors are attracted by possibility of treaty shopping	Pearson Correlation Sig. (2 tailed) N	.264* .014 87	1 87

*. Correlation is significant at 5% level (2 tailed)

Table 4. Correlation on treaty abuse

		There is no form of treaty abuse in Mauritian tax treaties	A major part of Mauritian FDI flow between tax treaty partners come as a form of 'round tripping'
There is no form of treaty abuse in Mauritian tax treaties	Pearson Correlation Sig. (2 tailed) N	1 87	.-0.60 .584 87
A major part of Mauritian FDI flow between tax treaty partners come as a form of 'round tripping'	Pearson Correlation Sig. (2 tailed) N	. .-0.60 .584 87	1 87

*. Correlation is significant at 5% level (2 tailed)

Table 4 shows the relationship between the perceptions of respondents on whether there is a form of treaty abuse in Mauritian tax treaties and whether a big proportion of Mauritian FDI flow between tax treaty partners are in a form of 'round tripping'. There is no significant relationship between the 2 variables, as suggested by a high significance level of .584. This suggests that despite respondents believe that there is a form of treaty abuse in Mauritian tax treaties, Mauritian FDI is not exposed to a money laundering tool like round tripping. Correlations presented in table 3 and 4 are variables which have been subject to high criticism in recent years. Destinations like Mauritius, Cayman Islands or Singapore have been linked with money laundering source of FDI through round tripping or treaty shopping. This study shows valuable information that its population believe that there might be a form of treaty shopping in Mauritian tax treaties but round tripping might not be as evident.

Hypothesis

When asked if imposing a CGT on a tax treaty affect FDI, 100% of respondents agreed positively. The same scenario occurred when respondents were asked if foreign investors, in general, prefer to invest in treaties offering low or no CGT. Interestingly, when respondents were asked if the non-levy of CGT is the main factor affecting FDI, the answers were shared between 'yes' and 'no'. This question was used to provide for a hypothesis whereby:

Ho: CGT is not the main determinant in attracting FDI

H1: CGT is the main determinant in attracting FDI

A one-sample test was used in SPSS 23 to test the hypothesis with a 2-tail test at a 5% significance level.

Table 5. One-Sample Test

	Test Value = 2				95% CI	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Is the non-levy of CGT in tax treaties the main factor affecting FDI?	-10.531	86	.000	-.56322	-.6695	-.4569

Note: CI. Correlation is significant at 5% level (2 tailed)

The sample mean was 1.56 and at a 5% significance level on a 2-tailed test, it is agreed that the non-levy of CGT in tax treaties does not represent the main factor affecting FDI. Hence, the alternative hypothesis is accepted at a 5% significance level. However, this factor is deemed to be an important determinant of FDI and further tests are carried out through the gravity model to measure its importance.

The following table shows the descriptive statistics of the panel data for the different factors analysed. The study

period is 5 years (2010-2014). In total, there are 25 observations. Skewness has to be measured to find the asymmetry between a probability distribution of a random variable value's mean and the normal distribution. Kurtosis compares the normal distribution to the data and test whether data is peaked or flat. Skewness is 0 and Kurtosis is approximately 3 for a normal distribution.

Table 6. Descriptive statistics

Variable	Observation	Mean	Std. Dev.	Min	Max
LN Net FDI	25	17.04381	1.334697	14.63428	18.95429
LN per cap GDP MRU	25	9.109603	.0862668	8.958296	9.211999
LN per cap GDP trade partners	25	9.2572	1.327954	7.24	10.77
LN Distance	25	-.4100657	.3807032	-1.011426	-.0589011
CGT	25	1.44	.5066228	1	2
Common Language	25	1.8	.4082483	1	2

From table 6, it can be seen that there are many factors which contribute to positively affect FDI. However, the further away is the distance between home and host country, the more it affects FDI. This is represented by negative mean value of approximately -0.41.

Correlation matrix of coefficients

The correlation matrix of coefficients is used to measure correlations between independent variables.

Table 7. Correlation matrix of coefficients

E(V)	LnPCGDPi	LnPCGDPj	Ln Distance	Common Lang	CGT	Constant
LnPCGDPi	1.0000					
LnPCGDPj	-0.1711	1.0000				
Ln Distance	0.1276	-0.7750	1.0000			
Common Lang	0.2153	-0.5953	0.5649	1.0000		
CGT	-0.3558	0.3580	-0.2629	-0.5490	1.0000	
Constant	-0.9948	0.0789	-0.0562	-0.1863	0.3182	1.0000

Table 7 does not show any evidence of multi-collinearity problems among the independent variables. The highest value was between Ln Distance and Ln per capita GDP of Mauritius. Hence, all independent variables can be included in the regression model, based on the multicollinearity test.

Regression Model

Three models of regression were considered for this study: the Hausman Test, Wooldridge test for autocorrelation in panel data and Breusch-Pagan / Cook-Weisberg test for heteroscedasticity.

Table 8. Regression models

	Breusch-Pagan/Cook-Weisberg	Wooldridge Test	Hausman Test
Prob.	0.3909	0.6828	0.0000
Ho	Accept	Do not reject	Accept
Conclusion	Heteroscedasticity is absent	First-order autocorrelation is absent	REM is consistent and efficient

Note: Tests follow a 5% significance level

The table shows the null hypothesis for Breusch-Pagan/Cook-Weisberg test is accepted and no form of heteroscedasticity is found. The Wooldridge test suggests that there is no first order autocorrelation. Finally, the Hausman test has accepted the null hypothesis and it is concluded that REM is a better measure than the FEM here. Hence, the REM test will be the most appropriate test to use.

Regression Results

Table 9. Regression results

Ln Net FDI	Coefficient	Standard error	t	P> |t|	95% confidence interval	
LN PC GDP Home	-3.324251	3.076615	-1.08	0.293	-9.763681	3.115179
LN PC GDP Host	.7641128	.3121449	2.45	0.024	.1107861	1.41744
LN Distance	-2.827128	1.061111	-2.66	0.015	-5.048058	-.6061983
Common Lang	-1.76984	.8701177	-2.03	0.056	-3.591017	.0513371
CGT	1.42461	.6168424	2.31	0.032	.1335442	2.71567
cons	40.22783	27.64073	1.46	0.162	-17.62487	98.08054

The regression analysis performed on the variables used in the gravity formula has given results. Most of the variables used have provided significant and positive results with the exception of Ln Per Capita GDP of Mauritius.

Using the REM, the following table is generated.

Table 10. Findings on hypothesis testing

Ln Net FDI	Coefficient	Standard error	t	P> |t|	95% CI	
LN PC GDP Home	-3.324251	3.076615	-1.08	0.280	-9.354306	2.705804
LN PC GDP Host	.7641128	.3121449	2.45	0.014	.1523201	1.375906
LN Distance	-2.827128	1.061111	-2.66	0.008	-4.906867	-.7473897
Common Lang	-1.76984	.8701177	-2.03	0.042	-3.475239	-.0644408
CGT	1.42461	.6168424	2.31	0.021	.2156213	2.633599
cons	40.22783	27.64073	1.46	0.146	-13.947	94.40266

Note: CI. Correlation is significant at 5% level (2 tailed)

Hypothesis 1: Per Capita GDP of host country has positive and significant statistical impact on FDI.

H0: Per capita GDP of host country does not have any statistical impact on FDI

H1: Per capita GDP of host country has a positive significant statistical impact on FDI

With a P> |t| value of 0.014, there is some evidence to reject the null hypothesis that there is no linear relationship between FDI flow and Per Capita GDP of host country. The result shows that as GDP per capita of host country increases, FDI flow between that country and Mauritius will consequently increase. As GDP per capita of the host country increases by 1 unit, FDI flows between Mauritius and the host country will increase by .7641128 unit. This supports Artige & Nicolini (2005) analysis that GDP per capita is one of the major determinants of FDI.

Hypothesis 1.1: Per Capita GDP of home country has positive and significant statistical impact on FDI.

H0: Per capita GDP of home country does not have any impact on FDI

H1: Per capita GDP of home country has a positive significant statistical impact on FDI

The P value 0.280 is much higher than the significance level of 5% and this suggests that if ever there is a relationship, it is the occurrence of coincidence. Hence, there is no significant evidence between FDI flows and Mauritian GDP per capita. Hence, the null hypothesis will be accepted.

H2: Introducing CGT or news of future imposition of CGT has negative and significant statistical impact on FDI

This had been declared as the most important variable of this study. In fact, it was deemed that even with a news of probable imposition of CGT in a double tax treaty becomes known, FDI will decrease by a given value. P value of .021 suggests that there is a linear relationship between CGT and FDI. It is seen that not having any form of CGT and that there is no kind of news which report the likelihood of imposing a form of CGT will positively impact FDI by 1.42461 units.

This is consistent with Hartman (1994), (Grubert & Mutti 1991), and Kemsley (1998) who argued that corporate taxes, including CGT have a negative and significant impact on FDI. However, the hypothesis is inconsistent with the findings of Swenson (1994) who showed a positive correlation between imposition of taxes and increase in FDI flows. The alternative hypothesis is accepted, where it is agreed that there is a significant and negative relationship between FDI and CGT.

H3: Distance between home and host country has negative and significant impact on FDI flows

P value of 0.008 suggests a linear relationship between distance and FDI flows. This study used 0.1 as proxy for

1000km and it is suggested from the table that every 1000km distance between two trading partners will affect FDI by -2.827128. This idea is supported by Rey (1999) who evidenced that there is a high correlation between distance and trade between two countries. Hence the null hypothesis is rejected at a 5% confidence interval.

H4: Inexistence of common language between host country and home country negatively and significantly impact on FDI flows.

H0: Inexistence of common language between host country and home country does not have any statistical impact on FDI

H1: Inexistence of common language between host country and home country negatively and significantly impact on FDI flows

P value of 0.042 suggests a linear relationship between common language and FDI. The absence of an official common language seems to negatively affect FDI by -1.76984.

5. Conclusion and Recommendations

This study includes various factors affecting FDI in the context of Mauritius and its treaty partners. The study uses two research methods, both given 2 different sets of factors, excluding imposition or news of future imposition of FDI, to provide answers in 2 different angles. However, it is known from the literature that FDI is affected by many more variables, many of which were not included in this analysis. For example, (Hattari & Rajan, 2009) had included several factors in their research and most of them have not been used in this study due to time constraint. This study also used a panel data consisting of 4 trading partners: India, Belgium, South Africa and China. However, chapter 2 shows that Mauritius has a tax network consisting of not less than 43 countries. A further study taking into consideration this vast amount of data can provide for more reliable analysis. Moreover, the panel data constitute of only 5 years from 2010-2014 due to availability of data from reliable sources. Future researchers can make use of a longer panel data and obtain data for more reliable analysis. As seen in this study there are various factors which statistically and significantly affect FDI between two trading countries. Some of these factors, such as trading country per capita GDP and distance, cannot be controlled by the home country- Mauritius. However, there are several factors which the local government and investors could use to attract FDI. It has been seen that corruption index score plays an important role in attracting FDI. Transparent public institutions, fair banking system and increasing roles of the private sector can be made available to upgrade the Mauritian corruption index vis-à-vis the rest of the world. Equally, it has been seen that countries investing in the education system to break language barriers could make it easier for foreign investors to invest in the country. Cultural affinities play a role and common language between trading countries make it easier for investment to flow between the countries. Lastly, it has been seen that CGT is a major determinant of attracting FDI into Mauritius. It is recommended that as far as possible, tax treaties which provide the right for Mauritius to tax capital gains should not be amended. This allows for a situation where CGT is not levied at all and it is an important determinant of FDI.

Finally, Mauritian authorities should also educate the population about the new concept of BEPS as it seems to worry investors, according to respondents. BEPS is a matter of concern for small insulate countries like Mauritius which highly rely on FDI for investment. Educating the population about the positives and drawbacks of such a project can help prepare the population for any future impact on FDI flows. This study aims to investigate the main factors affecting FDI in the context of Mauritian tax treaties. This study had also a secondary motive of finding whether CGT is the main determinant of FDI flows between Mauritius and its tax treaty partners. The imposition of CGT in Mauritius-China (2014), Mauritius-South-Africa (2014) and Mauritius-India (2016) tax treaties have had for reason treaty abuse by foreign investors. Respondents from the questionnaire survey also agreed that not only CGT is a main determinant of FDI but equally that there is a form of treaty abuse in Mauritian tax treaty. As it has been seen that CGT is indeed a main determinant of FDI flows between Mauritian tax treaty partners, it can be concluded that there currently exists a form of treaty abuse in Mauritius. Respondents have given valuable insight that despite there may exist forms of treaty shopping in Mauritius, they do not perceive Mauritius as a destination allowing 'round tripping' of FDI. The study has also provided insight about the possible negative effects of the OECD's BEPS project on Mauritian FDI. Most of the questioned population share the idea that BEPS will indeed negatively affect Mauritian FDI. However, BEPS is a new concept and can easily be misinterpreted before any real events occur on imposition.

Determinants such as distance between home and host country, host country per capita GDP and even common language seem to play a significant role in FDI flows between Mauritius and its tax treaty partners. This study has shown that cultural affinities also play an important role in FDI flows between countries. Mauritius is historically attached to China and India and this can provide a valid reason why FDI flows have been so massive in the past between the countries. However, this hypothesis could not be tested due to time factor and unavailability of suitable models. As a concluding note, it is difficult to find the primary determinant of FDI

flowing between Mauritius and its treaty partners. However, main determinants can be generalised through use of tools like the Gravity Model, with availability of appropriate data.

References

Agarwal, J. P. (1980). Determinants of Foreign Direct Investment, A Survey. *Weltwirtschaftliches Archiv*, 739-773. https://doi.org/10.1007/BF02696547

An, Z. (2011). Taxation and foreign direct investment (FDI): empirical evidence from a quasi-experiment in China. *International Tax and Public Finance October 2012, 19*(5), 660-676.

Artige, L., & Nicolini, R. (2005). Evidence on the Determinants of Foreign Direct Investment: The Case of Three European Regions. CREPP Working Paper 2006/07.

Barthel, F., Busse, F., & Neumayer, M. (2009). The Impact of Double Taxation Treaties on Foreign Direct Investment: Evidence From Large Dyadic Panel Data. *Contemporary Economic Policy* (ISSN 1465-7287).

Benassy-Quere, A., Fontagne, L., & Lahreche-Revil, A. (2003). Tax Competition and Foreign Direct Investment, CEPII. *Working paper, No.17,* 8-26.

Blonigen, B. (2005). A review of the Empirical Literature on FDI Determinants. *Atlantic Economic Journal, 33,* 383-403. https://doi.org/10.1007/s11293-005-2868-9

Braunschweig, A. (2014). Double Taxation Treaties' Impact on Intermediate Trade. *Lund University*, 5-38.

Brooks, D. H., Fan, E. X., & Sumolong, L. R. (2003). Foreign Direct Investment in Developing Asia: Trends, Effects, and Likely Issues for the Forthcoming WTO Negotiations. *ERD Working Paper* No. 38. Manla, PH: Asian Development Bank. Oxford: Oxford University Press.

Cheng, L. K., & Kwan, Y. K., (2000). What are The Determinants of the Location of Foreign Direct Investment? The Chinese Experience. *Journal of International Economics, 51*(1), 379-400. https://doi.org/10.1016/S0022-1996(99)00032-X

Cieslik, A., & Ryan, M. (2004). Explaining Japanese Direct Investment Flows into an Enlarged Europe: A Comparison of Gravity and Economic Potential Models. *Journal of the Japanese and International Economies, 18*(1), 12-37. https://doi.org/10.1016/j.jjie.2003.09.009

Crespo, N., & Fontoura, M. P. (2007). Determinant Factors of FDI Spillovers- What do We Really Know? *World Development, 35*(3), 410-425. https://doi.org/10.1016/j.worlddev.2006.04.001

Diamond, P., & Mirrlees, J. (1971). Optimal Taxation and Public Production, I: Production Efficiency (II: Tax Rules). *American Economic Review 61, March,* 8-27.

Dimitropoulou, D., Burke, S., & MC Cann, P. (2007). The Determinants of the Location of Foreign Direct Investment in UK Regions, Editorial Express. *Applied Economics, 45*(27), 3853-3862. https://doi.org/10.1080/00036846.2011.558482

Eicher, T., Helfman, L., & Lenkoski, A. (2011). Robust FDI Determinants: Bayesian Model Averaging in the Presence of Selection Bias, *University of Washington*, Washington.

Gordon, H. (1990). Can Capital Income Taxes Survive In Open Economies? *NBER working paper series, National Bureau of Economics Research*, *Working paper No. 3416,* 1-23.

Groh, A. P., & Wich, M. (2009). A Composite Measure to Determine a Host Country's Attractiveness for Foreign Direct Investment. *University of Navarra Working Paper*, Barcelona. https://doi.org/10.2139/ssrn.1550717

Grubert, H., & Mutti, J. (1991). Taxes, Tariffs and Transfer Pricing in Multinational Corporate Decision Making. *Review of Economic Studies, 73,* 285-293. https://doi.org/10.2307/2109519

Hartman, D. G. (1994). Tax Policy and Foreign Direct Investment in the United States. *National Tax Journal, 37*(4), 475-488.

Hattari, R., & Rajan, R. S. (2009). Understanding Bilateral FDI Flows in Developing Asia. *Asian-Pacific Economic Literature, 23*(2), 73-93. https://doi.org/10.1111/j.1467-8411.2009.01232.x

Hines, J. R. (1998). International Taxation And Multinational Activity. *The University Of Chicago Press Working paper*. Chicago and London, 39-72.

Itaki, M. (1991). A Critical Assessment of the Eclectic Theory of the Multinational Enterprise. *Journal of International Business Studies, 25,* 445-460. https://doi.org/10.1057/palgrave.jibs.8490310

Jordaan, J. C. (2004), Foreign Direct Investment and Neighbouring Influences. (Unpublished doctoral thesis), University of Pretoria.

Kemsley, D. (1998). The Effect of Taxes on Production Location. *Journal of Accounting Research, 36,* 321-341. https://doi.org/10.2307/2491480

Kim, M., Liu, A, Tuxhorn, K. L., Brown, T., & Leblang, D. (2013). Lingua Mercatoria: Language and Foreign Direct Investment. *International Studies Quarterly,* 330-343.

Kinoshita, Y., & Campos, N. (2002). The location determinants of foreign direct investment in transition economies. *Institute of Social Science*, University of Tokyo, Tokyo.

Kolstad, I., & Villanger, E. (2004). How does social development affect FDI and domestic investment? *Michelsen Institute CMI, Bergen.*

Morisset, J. (2003). Does a country need a promotion agency to attract foreign direct investment? A Small Analytical Model Applied to 58 Countries, *The World Bank, Policy Research Working Papers, No. 3-28,* Washington, D.C.

Noorbakhsh, F., Palom, A., & Youssef, A. (2001). Human Capital and FDI Inflows to Developing Countries: New Empirical Evidence. *World Development, 29*(9), 1593-1610. https://doi.org/10.1016/S0305-750X(01)00054-7

Ohno, T. (2010). Empirical Analysis of International Tax Treaties and Foreign Direct Investment. *Economist, Policy Research Institute, Ministry of Finance of Japan.*

Parry, T. G. (1985). Internalization as a General Theory of Foreign Investment: A Critique. *Weltwirtschaftliches Archiv, 121*(3), Springer, 564-569. https://doi.org/10.1007/BF02708193

PETRI, P. (2012). The Determinants of Bilateral FDI: Is Asia Different? *Journal of Asian Economics, 23,* 201-209. https://doi.org/10.1016/j.asieco.2011.01.003

Portes, M., & Rey, H. (2000). Financial integration and asset returns, *European Economic Review, 44,* 1327-1350. https://doi.org/10.1016/S0014-2921(00)00036-2

Razin, A., & Sadka, E. (2007). Foreign Direct Investment: Analysis of Aggregate Flows, *Princeton University Press*, chapter 4.

Rios-Morales, R., & Brennan, L. (2007). Ireland's Foreign Direct Investment Competitive Advantage and Japanese Outward Foreign Direct Investment. *Asia Pacific Business Review, 13*(2), 201-231. https://doi.org/10.1080/13602380601133219

Sithanen, R. (2015). An Assessment Of The Consequences And Implications Of The Recent Protocol On The DTAA Between India And Mauritius On The Global Business Sector And The National Economy.

Sornarajah, M. (2015). The International Law on Foreign Investment" *Cambridge University Press*, *Cambridge,* 328-331.

Swenson, D. L. (1994). The Impact of U. S. Tax Reform on Foreign Direct Investment in the United States, J*ournal of Public Economics, 54,* 243-266. https://doi.org/10.1016/0047-2727(94)90062-0

Tinbergen, J. (1962). Shaping the world economy: suggestions for an international economic policy. *The Twentieth Century Fund, New York.*

Wei, S. J., & Smarzynsk, B. (2009). Corruption and composition of Foreign Direct Investment: Firm level evidence. *National Bureau of Economic Research.*

Wheeler, D., & Mody, A. (1992). International Investment Location Decisions: The Case of US Firms, *Journal of International Economics, 33,* 57-76. https://doi.org/10.1016/0022-1996(92)90050-T

Wilson, J. D. (1991). Tax Competition with interregional differences in factor endowments, *Regional Science and Urban Economics, 21*(3), 423-451. https://doi.org/10.1016/0166-0462(91)90066-V

Wooldridge, J. (2002). Econometric Analysis of Cross Section and Panel Data, MIT Press.

Copyrights

The Lead-Lag Relationship among East Asian Economies:
A Wavelet Analysis

Buerhan Saiti [1]

[1] IIUM Institute of Islamic Banking and Finance, International Islamic University Malaysia

Correspondence: Buerhan Saiti, Institute of Islamic Banking and Finance, IIUM, Jalan Gombak, 53100 Kuala Lumpur, Selangor, Malaysia. E-mail: borhanseti@gmail.com

Abstract

Recently, the issue of market linkages (and price discovery) between stock indices and the lead-lag relationship is a topic of interest to financial economists, financial managers and analysts, especially that involves the East Asian countries. In this study, to investigate the financial market leader in East Asian countries after the US financial crisis, we employ several conventional time-series techniques and a newly introduced method – wavelet analysis - to economics and finance. Daily return data covering the period from 15th September 2008 to 1st March 2016 for five major international stock price indices in East Asia are analyzed. Our findings tend to, more or less, suggest that the Shanghai stock exchange composite index is the only exogenous variable, whereas the remaining variables are endogenous. Such finding implies that the Shanghai stock exchange composite index is the financial market leader whereas the rest of variables are follower, which includes Nikkei 225 (Japan). In order to check the robustness of our results, we also employed wavelet correlation and cross-correlation techniques. Interestingly, based on the results, the leading role of Shanghai Stock Exchange Composite Index is very clear at short scales; whereas, the leading role disappears at the long scales. This study shows that wavelet analysis can provide a valuable alternative to the existing conventional methodologies in identifying lead-lag (causality) relationship between financial/economic variables, since wavelets considered heterogeneous agents who making decisions over different time horizons.

Keywords: lead-lag, causality, wavelet, stock index, financial crisis

JEL Codes: G01, R100, F65

1. Introduction

No one can deny that the recent US financial crisis was one of the most unpredicted economic events in the recent history, particularly the severity with which it melted markets and economies around the world. There were two waves of crises. Firstly, countrywide $11.5 billion drew from credit lines by commercial banks and Bank of America topped $2 billion of equity capital up into countrywide by August 2007 (Guo et al. 2011; Saiti et al., 2016).   Such events resulted in a widespread loss of confidence in the banking system in the mind of investors. A prediction from December 2007 stated that "subprime borrowers will probably default on 220 billion-450 billion of mortgages[1]". Consequently, another round of credit crisis resulted, due to tightened lending standards of banks. The crash reached a crucial point in September 2008 when the Federal Housing Finance Agency placed Fannie Mae and Freddie Mac in government conservatorship, Bank of America bought Merrill Lynch, Lehman Brothers filed for Chapter 11 protection, and the American International Group borrowed $85 billion from the Federal Reserve Board. Financial organizations and companies hastened to deleverage to minimize their risk exposures; therefore, selling massive assets at discounted rates.

It is meaningful to analyse the lead-lag relationship of East Asian countries after a great financial shock – the collapse of Lehman Brothers. Causal linkages among stock markets have crucial implications in security pricing, hedging and trading strategies, and financial market regulations (Ozdemir, et al., 2009; Saiti et al., 2013, 2014; Abdullah et al., 2016). Furthermore, these linkages imply that stock prices of a country contain the information to estimate the stock prices of another country. In this context, casualty between the East Asian countries is of

---

[1]See Economist, Dec 19 2007.

significance in that it has the information to forecast the stock prices of other countries. The lead-lag causal relationship between stock indices reflects how fast each index reacts to information and how well their comovement is. If one index reacts faster to the market information than the other index, there will be a lead-lag relationship that is expected to be observed in data. In other words, the lead-lag relationship between stock indices demonstrates how well two markets are connected, and how fast one market reacts to new information from the other (Floros and Vougas, 2007). To put it differently, we try to understand the information flow between the two stock indices and their causal direction. We are going to look at the evolution of lead-lag relationship between East Asian stock indices after the collapse of Lehman Brothers.

In such a context, we investigate the stock indices causality among the East Asian economies through conventional techniques such as long run structural modelling, vector error correction and variance decomposition and as well as a novel approach known as wavelet analysis. This analysis is a very helpful technique since it represents a refinement in terms of analysis in both time and frequency domains (Rua and Nunes, 2009). Even though wavelets are very popular in some fields such as meteorology, physics, signal and image processing, etc, such a technique can also offer useful insights about several economic phenomena (see, for example, Ramsey and Zhang, 1996, 1997; De Jong and Nijman, 1997). According to literature, a pioneer study by Ramsey and Lampart (1998a, b) to investigate the relationship between several macroeconomic variables by employing wavelets.

2. Literature Review

In the finance literature, empirical results of the researches on the causality of stock market interdependencies in Asia are mixed. The role of Japan as the leader in the region has been highly controversial in this debate. While Masih and Masih (2001) as well as Ghosh et al. (1999) concluded that Japan is a market leader, other researches (Yang et al., 2003) suggest that Japan does not play a pivotal role in non-crisis periods. A few other studies have shown that especially Hong Kong is the most influential stock market in Asia (e.g., Masih and Masih, 1999; Dekker et al., 2001).

Kasa (1992) found evidence of a single stochastic trend underlying the equity markets of the selected countries, and point estimates of factor loadings which indicate this trend is the most important in the Japanese market and the least important in the Canadian market. By the same token, developed markets lead emerging markets (e.g. Najand, 1996), and there are causal linkages among emerging markets (e.g. Chen et al., 2002). Additionally, Cheung and Mak (1992), Liu and Pan (1997) and Wu and Su (1998) have found that both the US and Japanese stock markets lead the stock markets of the Asian countries. Masih and Masih (1997) have investigated long-run relationships and short-term dynamic causal linkages among major developed markets and the NIC stock markets, and arrived at a conclusion that all established markets drive the fluctuations of the NIC stock markets. Similarly, Cha and Oh (2000) have concluded that the US and Japanese markets have important effects on the stock markets of Hong Kong, Korea, Singapore and Taiwan. Berument and Ince (2005) and Berument et al. (2006) have traced the pattern of the effects of the S&P 500 on 15 emerging markets based on the geographical location of these markets.

In yet other studies, it is, however, shown that there are no linkages between or among some markets. Masih and Masih (1997, 1999) have provided the cointegration relation among the stock markets of Thailand, Malaysia, the US, the UK, Japan, Hong Kong and Singapore for the pre-financial crisis period of October 1987. However, they did not find any long-term relationships between these markets for the after-financial crisis period of October 1987. By the same token, Felix et al. (1998) have found no long-run comovement between the US and a number of emerging markets. In the same way, Byers and Peel (1993) have concluded that there is no linkage between the markets of US and Europe. Similarly, Ghosh et al. (1999) did not find any evidence of Japan and the US, on the stock markets of Taiwan and Thailand. Phylaktis and Ravazzolo (2005) too, did not find any support for dynamic interconnections among the equity markets of Pacific-Basin countries (Hong Kong, South Korea, Malaysia, Singapore, Taiwan, and Thailand) and the industrialized countries of Japan and US for the 1980–1998 periods.

Chiao et al. (2004) studied the price adjustment and lead-lag relations between returns on five size-based portfolios in the Taiwan stock market. They found that the price adjustment of small-stock portfolios is not slower than that of large-stock portfolios. Furthermore, they failed to support that a positive leading role of large-stock portfolio returns over small-stock portfolio returns. Nam et al. (2008), by taking Korea as example, studied market microstructure of price discovery in the KOSPI 200 stock index and its related derivatives markets using different time-interval price data. They found that the lead–lag relationship between the KOSPI 200 stock index and its derivatives markets can be supported by the trading cost hypothesis and leverage effect

hypothesis by applying the Granger causality test and vector error correction model.

Sandoval (2014) used a diverse range of 79 stock market indices from around the world and study their correlation structure, the eigenvalues and eigenvectors of their correlations under different time periods and volatility, as well as the differences between the working hours of the stock exchanges in order to analyze the possible time zone effects and suggest ways to remove them. They also investigated the enlarged correlation matrix obtained from original and lagged indices and examine a network structure derived from it, thus showing connections between lagged and original indices that could not be well represented before. Huth and Abergel (2014) confirmed that the intuition that the most liquid assets (short inter-trade duration, narrow bid/ask spread, small volatility, high turnover) tend to lead smaller stocks. These lead/lag relationships become more and more pronounced as we zoom on significant events.

Gong et al. (2016) investigated the lead–lag relationship between China Securities Index 300 (CSI 300), Hang Seng Index (HSI), Standard and Poor 500 (S&P 500) Index and their associated futures to reveal the variance of their relationship over time by application of a non-parametric approach—thermal optimal path (TOP) method. They supported the evidence of pronounced futures leadership for well-established index futures, namely HSI and S&P 500 index futures, while index of developing market like CSI 300 has pronounced leadership.

Even though lead-lag relationships have been analyzed between many financial markets in previous studies, this analysis should distinguish between the short and long-run investor. The main reason why we use the wavelet analysis is the lead-lag relationship analysis should take into account both the short and long-run investor (see, for example, Candelon et al., 2008, Gallegati, 2010; Saiti et al., 2016). From a portfolio diversification perspective, the first type of investor is generally more interested in knowing the comovement of stock returns at higher frequencies, that is, short-run fluctuations, while the latter concentrates on the relationship at lower frequencies, that is, long-run fluctuations (Rua and Nunes, 2009, Saiti et al., 2016; Altarturi et al., 2016). Therefore, in this study, we employ both conventional techniques as mentioned above and Gallegati's methodology (2008) to investigate the lead/lag relationship between stock returns by applying wavelet cross-correlation technique to wavelet coefficients.

3. Econometrics Concepts and Methodology

Firstly, we want to apply the standard cointegration, vector error correction and variance decomposition techniques to address the issue of this paper. Then, we are going to employ wavelet analysis to check the robustness of results. The techniques other than wavelet method are well-known time-series techniques in economics and finance (for more details, refer to Masih and Masih, 1997, 1999 and 2001). Therefore, we are not going to discuss in detail these conventional techniques. For wavelet analysis, we only describe the fundamental methods which are useful for our research purposes. For a more complete and comprehensive development of the theory and use of wavelets, see Percival and Walden (2000), Gencay et al., (2002) and (Gallegati, 2010).

3.1 Wavelet Cross-correlation

According to literature, both Discrete Wavelet Transform (DWT) and Maximal Overlap Discrete Wavelet Transform (MODWT) can decompose the sample variance of a time series on a scale-by-scale basis via its squared wavelet coefficients. However, the MODWT-based estimator has been shown to be superior to the DWT-based estimator (Percival, 1995 and Gallegati, 2008). Therefore, we are going to apply Maximal Overlap Discrete Wavelet Transform (MODWT) in our study.

Whitcher et al. (1999, 2000) extended the notion of wavelet variance for the maximal overlap DWT (MODWT) and introduced the definition of wavelet covariance and wavelet correlation between the two processes, along with their estimators and approximate confidence intervals. To determine the magnitude of the association between two series of observations X and Y on a scale-by-scale basis the notion of wavelet covariance has to be used. Following Gençay et al. (2001) and Gallegati (2008) the wavelet covariance at wavelet scale j may be defined as the covariance between scale j wavelet coefficients of X and Y, that is $\gamma_{XY,j} = Cov[\widetilde{\omega}_{j,t}^X \widetilde{\omega}_{j,t}^Y]$.

An unbiased estimator of the wavelet covariance using maximal overlap discrete wavelet transform (MODWT) may be given by in the following equation after removing all wavelet coefficients affected by boundary conditions (Gallagati, 2008),

$$\tilde{\gamma}_{XY,j} = \frac{1}{\widetilde{N}_j} N - 1 \sum_{t=L_{J-1}}^{N-1} \widetilde{\omega}_{j,t}^X \widetilde{\omega}_{j,t}^Y$$

Then, the MODWT estimator of the wavelet cross-correlation coefficients for scale j and lag τ may be achieved by making use of the wavelet cross-covariance, $\tilde{\gamma}_{\tau,XY,j}$, and the square root of their wavelet variances $\tilde{\sigma}_{X,j}$ and $\tilde{\sigma}_{Y,j}$ as follows:

$$\tilde{\rho}_{\tau,XY,j} = \frac{\tilde{\gamma}_{\tau,XY,j}}{\tilde{\sigma}_{X,j}\tilde{\sigma}_{Y,j}}$$

The wavelet cross-correlation coefficients $\tilde{\rho}_{\tau,XY,j}$, similar to other usual unconditional cross-correlation coefficients, are between 0 and 1 and offers the lead/lag relationships between the two processes on a scale-by-scale basis.

Starting from spectrum $S_{\omega X,j}$ of scale j wavelet coefficients, it is possible to determine the asymptotic variance Vj of the MODWT-based estimator of the wavelet variance (covariance). After that, we construct a random interval which forms a $100(1 - 2p)\%$ confidence interval. The formulas for an approximate $100(1 - 2p)\%$ confidence intervals MODWT estimator robust to non-Gaussianity for $\tilde{\upsilon}_{X,j}^2$ are provided in Gençay et al. (2002) and Gallegati (2008). According to empirical evidence from the wavelet variance, it suggests that Nj = 128 is a large enough number of wavelet coefficients for the large sample theory to be a good approximation (Whitcher et al., 2000 and Gallegati, 2008).

4. Data, Empirical Results and Discussions

4.1 Data

This paper investigates the dynamic causal linkages in the daily returns amongst five major international stock price indices in East Asia, namely, Nikkei 225 (Japan), Kospi (Korea), Shanghai Stock Exchange Composite Index (China), Taiwan Stock Exchange Index (TAIEX) and Hang Seng Index (Hong Kong) from 15th September 2008 to 1st March 2016. All data obtained from Datastream. We use the sample of the emerging markets which is the East-Asian region. The rationale for the group is due to the fact that those countries play the role of one of the backbones of the global economy, with a significant growth driven by the global manufacturing power house (Saiti et al., 2014).

4.2 Empirical Results and Discussion

We have conducted unit root tests (in level and difference form). Results tend to indicate that while all variables contain a deterministic trend, we cannot reject the presence of a unit root for any of the variables. Therefore, overall, we could not find evidence that the variables are not I(1). All variables were found non-stationary at the 'level' form but stationary after at the 'differences' form. Subsequently, before we proceed with cointegration test, there is a need for us to determine 'optimal' order for vector auto regression (VAR), that is, the number of lags to be used. The optimal lag structure for each of the VAR models was selected by maximizing the information criteria. In the final analysis, we use a lag of 2. We did not report results here due to space constrain, the full details of tests can be requested from the authors.

The results based on Johansen's (Johansen, 1988; Johansen and Juselius 1990) multivariate cointegration test (Table 1) tend to suggest that these five variables are bound together by long-run equilibrium relationship.

Table 1. Johansen's test for multiple cointegrating vectors

VECTOR:	[LNIKKEI, LKOSPI, LCHINASSE, LTAIEX, LHANGSENG]				
				CRITICAL VALUE (95%)	
H₀:	**H₁:**	**EIGEN VALUE**	**TRACE**	**EIGEN VALUE**	**TRACE**
r=0	r=1	49.8907**	121.2601**	37.8600	87.1700
r ≤ 1	r=2	36.0138**	71.3694**	31.7900	63.0000
r ≤ 2	r=3	19.0516	35.3556	25.4200	42.3400
r ≤ 3	r=4	11.7895	16.3040	19.2200	25.7700
r ≤ 4	r=5	4.5145	4.5145	12.3900	12.3900

Note: The statistics refer to Johansen's log-likelihood maximal eigen value and trace test statistics based on cointegration with unrestricted intercepts and restricted trends in the VAR. r indicates the number of

cointegrating relationships. **indicates significance at the 5% level.

Based on the Table 1, we applied the standard Johansen cointegration test for the presence of multiple cointegrating vectors. A study by Gonzalo (1994) provides empirical evidence to support the Johansen Procedure's relatively superior performance over other methods for testing the order of cointegration rank. We found them to have two cointegrating vector at 95% significance level on the basis of maximal Eigen value and Trace statistics. An evidence of cointegration implies that the relationship is not spurious. i.e. there is a theoretical relationship among the variables and that they are in equilibrium in the long run.

However, we tend to believe that there is one cointegrating vector based on intuition as well as financial markets continues to become increasingly integrated internationally. Furthermore, we also familiar with contemporary equity markets are typically "connected" or "integrated" in that the performance of one market tends to have an effect on other markets. Based on the above statistical results as well as we cannot forget the purpose of this study, we assume that there is one cointegrating vector, or long-run relationship. So there is one cointegration vector (r=1) in the consequent analysis.

Table 2. Vector Error Correction Estimates

	LNIKKEI	LKOSPI	LCHINASSE	LTAIEX	LHANGSENG
DLNIKKEI(1)	-0.25454	-0.20998	-0.11189	-0.12402	-0.15297
	(0.036957)	(0.052069)	(0.034856)	(0.033463)	(0.041055)
DLKOSPI(1)	0.11797	0.055956	0.020846	0.059987	0.17659
	(0.O33499)	(0.047197)	(0.031595)	(0.030332)	(0.037214)
DLCHINASSE(1)	-0.10742	-0.19572	0.0044379	-0.10274	-0.13203
	(0.036813)	(0.051866)	(0.034720)	(0.033333)	(0.040896)
DLTAIEX(1)	-0.076545	0.0037335	-0.032725	-0.030685	-0.087084
	(0.048851)	(0.068826)	(0.046074)	(0.044233)	(0.054269)
DLHANGSENG(1)	0.21077	0.22115	0.039886	0.19744	0.0040583
	(0.040726)	(0.057379)	(0.038411)	(0.036876)	(0.045243)
ECM1 (-1)	-0.0023624	-0.0056098	**-0.0006767**	-0.0014801	-0.0032525
	(0.0006418)	(0.0009043)	**(0.06054)**	(0.0005812)	(0.0007130)
CHI-SQ (SC)	27.1433 (0.00)	0.63920 (0.424)	2.6245 (0.105)	4.2573 (0.039)	3.2605 (0.071)
CHI-SQ (FF)	0.77152 (0.380)	5.6729 (0.017)	0.23394 (0.629)	0.38301 (0.536)	5.4969 (0.019)
CHI-SQ (N)	3234.1 (0.000)	12475.3 (0.000)	628.4527 (0.000)	410.8076 (0.000)	3171.7 (0.000)
CHII-SQ (HET)	246.5720 (0.000)	49.9273 (0.000)	6.4489 (0.011)	10.9742 (0.001)	101.0874 (0.000)
Number of Days to return to equilibrium	423.3	178.26	1477.8	675.63	307.46

Notes: The above within-sample results tend to indicate that in the long term Shanghai Stock Exchange Composite Index is exogenous, whereas the rest of variables are endogenous. The diagnostics are chi-squared statistics for serial correlation (SC), functional form (FF), normality (N) and heteroskedasticity (HET). The equations are not well specified because majority of them are below than 0.05.

This finding is consistent with studies by Masih and Masih (2001), among others, who find that nine major international equity markets possess at least one cointegrating vector. Furthermore, based on evidence using similar techniques on a system of five OECD equity markets, Masih and Masih (1997) find evidence that the crash did not affect the number of common stochastic trends within this particular system. More recently, Saiti and Masih (2016) found that the *Shariah* China Index appears to have a theoretical and long-run comovement with all the select conventional and *Shariah*-compliant stock indices as evidenced in the Cointegration and LRSM tests.

Cointegration test, however, cannot tell us the direction of Granger-causality among the variables as to which variable is leading and which variable is following (i.e. which variable is exogenous and which variable is endogeneous). For discerning the endogeneity and exogeneity of the variables, we applied the vector error-correction modeling technique. Information on direction of Granger-causation can be particularly useful for investors. Investors can better forecast or predict expected results of their investments by identifying which variable is exogenous and endogenous. Typically, an investor interested to know which index is the exogenous, then the investor is able to monitor the performance of that index closely as it would have significant bearing on

the expected movement of other indices which the investor has invested. This exogenous index would be the index of interest to the investor.

Summary results, based on the VECM formulation, are presented in Table 2. By looking at the significance or otherwise of the coefficient of the error-correction term we find that the Shanghai Stock Exchange Composite Index is the only exogenous variable, whereas the rest of variable are endogenous. That tends to indicate that the Shanghai Stock Exchange Composite Index is the driver whereas the rest of indices are follower. This finding is inconsistent with studies by Masih and Masih (1997), among others, which concluded that Japan is a market leader.

The error-correction model also helps us distinguish between the short term and long term Granger-causality. The error-correction term stands for the long-term relations among the variables. The speed of short-run adjustment to bring about the long term equilibrium is given by the coefficient of the error-correction term. The results tend to indicate that if the long term equilibrium between the variables is disturbed by any shocks, they will take about between 178.26 and 1477.8 days to restore the equilibrium. The Shanghai Stock Exchange Composite Index is within the longest period while the KOSPI is within the shortest period to get back long-run equations. The diagnostics of all the equations of the error-correction model (testing for the presence of autocorrelation, functional form, normality and heteroskedasticity) tend to indicate that the equations are not well-specified.

Table 3. Percentage of forecast variance explained by innovations in: Generalized variance decompositions.

		JAPAN	KOREA	CHINA	TAIWAN	HONGKONG
DAYS	**ΔNIKKEI**					
30		**0.4857**	0.1157	0.0329	0.1869	0.1788
60		**0.5099**	0.0812	0.0324	0.2041	0.1724
	ΔKOSPI					
30		0.0935	**0.3049**	0.0441	0.3468	0.2107
60		0.0810	**0.2465**	0.0457	0.4185	0.2082
	ΔCHINASSE					
30		0.0229	0.0568	**0.6788**	0.0782	0.1633
60		0.0208	0.0501	**0.6910**	0.0778	0.1603
	ΔTAIEX					
30		0.0790	0.1653	0.0508	**0.4956**	0.2093
60		0.0725	0.1389	0.0512	**0.5311**	0.2062
	ΔHANGSENG					
30		0.0749	0.1155	0.1062	0.2310	**0.4724**
60		0.0633	0.0786	0.1133	0.2541	**0.4907**

Although the error correction model tends to indicate the endogeneity and exogeneity of a variable, we had to apply the generalized variance decomposition technique (Table 3) to discern the relative degree of endogenity or exogeneity of the variables. The relative exogeneity or endogeneity of a variable can be determined by the proportion of the variance explained by its own past. The variable that is explained mostly by its own shocks (and not by others) is deemed to be the most exogenous of all.

From the above table, rows read as the percentage of the variance of forecast error of each variable into proportions attributable to shocks from other variables (in column), including its own. The diagonal line of the matrix (highlighted) represents the relative exogeneity. According to Generalized Variance Decomposition Analysis, the ranking of indices by degree of exogeneity is as per Table 3 (respectively 30 and 60 days' time horizon).

In Table 3, at the end of the forecast horizon number 60, the contribution of own shocks towards explaining the forecast error variance of each variable are as follows: Nikkei225 (51%), KOSPI (25%), China SSE (69%), TAIEX (53%) and Hang Seng (49%). The variable that is mostly affected by its own shocks and depends relatively less on other variables is the leading variable. These results tend to indicate that the China SSE variable is the most exogenous. These out-of-sample variance forecast results given by the generalized variance decompositions are consistent with our earlier within-sample results given by the error-correction model that China SSE is only the exogenous variable. The relative rank in exogeneity is exactly same as in 30 days and 60 days' time horizon.

Now we obtained more intuitively sensible rank the indices by relative exogeneity, as shown in the Table 4. This method gives us same order of relative exogeneity regardless of the time horizon.

Table 4. Relative exogeneity based on Generalized Variance Decomposition Analysis

No.	Variable Relative Exogeneity At Horizon = 30 & 60
1	LCHINASSE
2	LTAIEX
3	LNIKKEI
4	LHANGSENG
5	LKOSPI

We have already identified that generalized VDCs gives us more reliable information. So we just conducted generalized impulse response functions analysis in favour of its reliability. The generalized impulse response functions (IRFs) essentially produce the same information as the generalized VDCs, except that they can be presented in graphical form. We then applied the generalized impulse response functions (available upon request) and found that, consistent with the earlier results, the China SSE is the least sensitive to a one standard deviation shock to other variable while KOSPI is the most sensitive.

Finally, an application of the persistence profile analysis (Figure 1) indicates that if the whole cointegrating relationship is shocked, it will take about 30 periods/days for the equilibrium to be restored. The figure shows that the persistence profile for the cointegrating equation of this study.
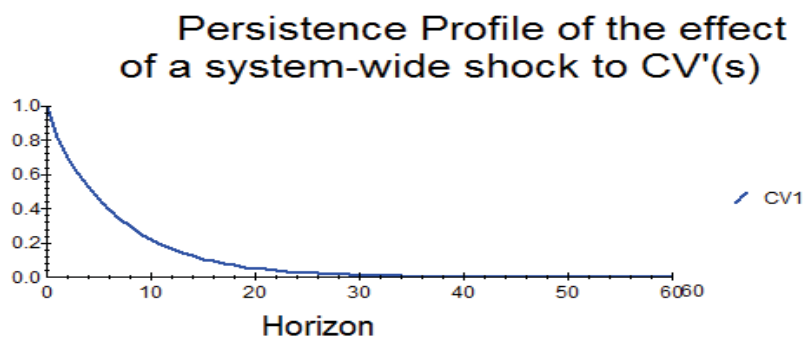
Figure 1. Persistence Profile Analysis

4.3 Wavelet Cross-correlation

We have arrived the point where Shanghai Stock Exchange Composite Index is found to be leading index while other stock indices of East Asian countries are followers. These results are inconsistent with findings of other researches such as Masih and Masih (2001) and Ghosh et al. (1999); they concluded that Japan is a market leader. It is for this reason, we wanted to employ wavelet analysis to check the robustness of the results.

4.3.1 Wavelet Correlation

When analyzing the relationship between Shanghai Stock Exchange Composite Index and Nikkei 225, our major concern is whether one is leading the other one or not. To investigate this issue, Figure 2 shows the wavelet correlation between these two variables at all five levels. From the Figure, we could see that, the correlations between the two variables - Shanghai Stock Exchange Composite Index and Nikkei 225, appear to be significant at all levels except level 5, with positive values. What we found is that the relevant time scales are levels 1, 2, 3, and 4, which associated with 2-4, 4-8, 8-16, 16-32 days cycles, which is of the same order of magnitude as the speed of reaction of stock price to exchange rate. At level 5, the correlation between the two indices is not significantly different from zero.
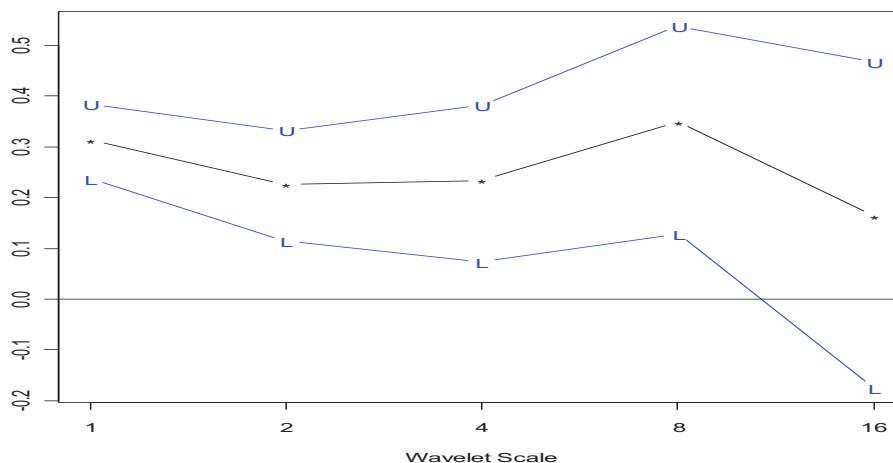
Figure 2. Wavelet correlation between Shanghai Stock Exchange Composite Index and Nikkei 225, at all 5 levels, with a 95% confidence level

4.3.2 Wavelet Cross-correlation

Simple correlations cannot capture the basic fact that lags often exist between variables, whatever their timescales are. In order to grasp the lead-lag relationship between two variables, we have applied wavelet-cross-correlation. In Figure 3, we report the MODWT-based wavelet cross-correlation between the Nikkei 225 (Japan) and Shanghai Stock Exchange Composite Index (China), with the corresponding approximate confidence intervals, against time leads and lags for all scales, where each scale is associated with a particular time period. The individual cross-correlation functions correspond to – from bottom to top - wavelet scales $\lambda_1, \ldots, \lambda_6$ which are associated with changes of 1-2, 2-4, 4-8, 8-16, 16-32, 32-64 days, respectively. The red lines bound approximately 95% confidence interval for the wavelet cross-correlation. If the curve is significant on the right side of the graph, it means that the Shanghai Stock Exchange Composite Index is leading Nikkei 225. If the curve is significant on the left side of the graph, it is the opposite. In other words, the wavelet cross-correlation skewed to the right means Shanghai Stock Exchange Composite Index is leading Nikkei 225; skewed to the left, it is the opposite. If both the 95% confidence levels are above the horizontal axes, it is considered as significant positive wavelet cross-correlation; if the both 95% confidence levels are below the horizontal axes, it is considered as significant negative wavelet cross-correlation.
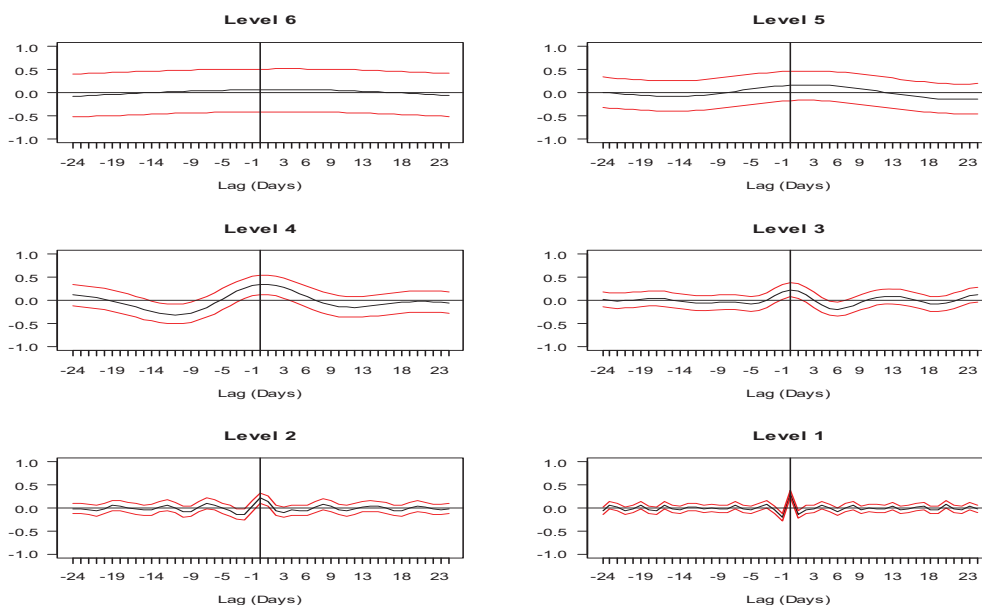
Figure 3. Wavelet cross-correlation between Shanghai Stock Exchange Composite Index and Nikkei 225 at first 6 levels, with 95% confidence interval

Figure 3 presents the wavelet cross-correlations of the Shanghai Stock Exchange Composite Index and Nikkei

225 at first six levels. From this figure, we can observe the following:

At the 2, 3 and 4 wavelet levels, we can observe some significant correlations on the right side of the graph and the curve is significant. It implies that the Shanghai Stock Exchange Composite Index is leading Nikkei 225. At the wavelet levels of 5 and 6, there are no any significant wavelet cross-correlations between these two indices which imply that there is no lead-lag relationship between them in the long run (longer than 32 days).

In conclusion, there is significant positive correlation between Shanghai Stock Exchange Composite Index and Nikkei 225. In the short-run (less than 32 days), the Shanghai Stock Exchange Composite Index (China) is leading the Nikkei 225 (Japan). In the long-run (longer than 32 days), there is no lead-lag relationship between these two stock indices. The leading role of Shanghai Stock Exchange Composite Index (China) is consistent with our previous findings which based on conventional time-series techniques.

The role of China as the leader in the region has been somewhat controversial. As Masih and Masih (2001) investigated as well as Ghosh et al. (1999) concluded that Japan is the market leader. These findings require some intuitive explanations. That is to say, is it logical that Chinese stock market leads Japanese stock market? We argue that the following factors may explain the leading role of Chinese stock market:

Starting from 1992, the Chinese stock market has boomed and become one of the worldwide largest stock markets in a relatively short period of time. This volume exceeded not only China's nominal GDP for the first time, but, as exhibited in most of the developed stock markets and ranked behind the New York Stock Exchange (NYSE) (Tang and Linowski, 2011).

The Chinese stock market, as often measured by Shanghai stock exchange composite index, has been the best stock index within the world2. Girardin and Liu (2007) explored the potential time-varying co-integration among the stock exchanges of Shanghai, Hong Kong, and New York during 1992–2005. They found that China's stock market integration within Asia and even the world may have been affected, given its huge economic growth, its enhanced economic interactions with the world through foreign direct investment (FDI) and imports/exports, and the fast development of its stock markets since the beginning of the 1990s. According to Huyghebaert and Wang (2010), China, longing for a greater role in the region and in the world, has played a crucial role in curbing this crisis. Firstly, China did not devalue its currency, which alleviated the burden for its Asian neighbors that were devaluing theirs, by allowing these countries to increase their competitive position in terms of FDI inflows and exports. Second, China strongly advocated substantial funding packages at low conditions for the afflicted Asian economies. China's sense of unity with its neighbours was further demonstrated by its willingness to contribute to these support packages.

Furthermore, the new Government in Taiwan also started to ease their past restrictions on Taiwanese investment in mainland China and vice versa China investment in Taiwan. These new policies will help boost both Taiwan and China Stock Markets. Last but not the least, China has leapfrogged Japan to become the world's second-largest economy, a title Japan has held for more than 40 years.

5. Conclusions

In this paper, we tried to investigate the economic leader in East Asian countries after the collapse of Lehman Brothers based on several conventional time-series techniques and a newly introduced method – wavelet analysis - to economics and finance.

The implication of VECM is that, as far as the selected markets are concerned, by looking at the significance or otherwise of the coefficient of the error-correction term, we find that the Shanghai stock exchange composite index is the only exogenous variable, whereas the rest of variables are endogenous. That tends to indicate that the Shanghai stock exchange composite index is the leader whereas the rest of variables are follower which includes Nikkei 225 (Japan). In order to check the robustness of our results, we have employed wavelet correlation and cross-correlation techniques. Similarly, based on the results, the leading role of Shanghai Stock Exchange Composite Index is very clear at short scales; whereas, the leading role disappears at the long scales.

In conclusion, this study shows that wavelet analysis can provide a valuable alternative to the existing conventional methodologies in identifying lead-lag (causality) relationship between financial/economic variables, since wavelets considered heterogeneous agents who making decisions over different time horizons.

---

[2]www.stock-market-today.org

References

Abdullah, A. M., Saiti, B., & Masih, M. (2016). The impact of crude oil price on Islamic stock indices of South East Asian countries: Evidence from MGARCH-DCC and wavelet approaches. *Borsa Istanbul Review, 16*(4), 219-232. https://doi.org/10.1016/j.bir.2015.12.002

Altarturi, B. H., Alshammri, A. A., Hussin, T. M. T. T., & Saiti, B. (2016). Oil Price and Exchange Rates: A Wavelet Analysis for OPEC Members. *International Journal of Energy Economics and Policy, 6*(3), 421-430.

Berument, H., & Ince, O. (2005). Effect of S&P 500's return on emerging markets: Turkish experience. *Applied Financial Economics Letters, 1,* 59-64. https://doi.org/10.1080/17446540520003146662

Berument, H., Ceylan, N. B., & Gozpinar, E. (2006). Performance of soccer on the stock market: Evidence from Turkey. *The Social Science Journal, 43,* 695-699. https://doi.org/10.1016/j.soscij.2006.08.021

Byers, J. D., & Peel, D. A. (1993). Some evidence on the interdependence of national stock markets and the gains from international portfolio diversification. *Applied Financial Economics*, *3*(3), 239-242. https://doi.org/10.1080/758535729

Candelon, B., Piplack, J., & Straetmans, S. (2008). On measuring synchronization of bulls and bears: the case of East Asia. *Journal of Banking and Finance, 32,* 1022-1035. https://doi.org/10.1016/j.jbankfin.2007.08.003

Cha, B., & Oh, S. (2000). The relationship between developed equity markets and the Pacific Basin's emerging equity markets. *International Review of Economics and Finance, 9,* 299-322. https://doi.org/10.1016/S1059-0560(00)00057-5

Chen, G. M., Firth, M., & Meng Rui, O. (2002). Stock market linkages: evidence from Latin America. *Journal of Banking & Finance*, *26*(6), 1113-1141. https://doi.org/10.1016/S0378-4266(01)00160-1

Cheung, Y.W., & Ng, L.K. (1998). International evidence on the stock market and aggregate economic activity. *Journal of Empirical Finance, 5,* 281-296. https://doi.org/10.1016/S0927-5398(97)00025-X

Chiao, C., Hung, K., & Lee, C. F. (2004). The price adjustment and lead-lag relations between stock returns: microstructure evidence from the Taiwan stock market. *Journal of Empirical Finance, 11*(5), 709-731. https://doi.org/10.1016/j.jempfin.2003.09.002

De Jong, F., & Nijman, T. (1997). High frequency analysis of lead-lag relationships between financial markets. *Journal of Empirical Finance, 4*(2), 259-277. https://doi.org/10.1016/S0927-5398(97)00009-1

Dekker, A., Sen, K., & Young, M. (2001). Equity market in the Asia Pacific region: a comparison of the orthogonalized and generalized VAR approaches. *Global Finance Journal, 12,* 1-33. https://doi.org/10.1016/S1044-0283(01)00025-4

Felix, A. O., Dufresne, U. B., & Chatterjee, A. (1998). Investment implications of the Korean financial market reform, *International Review of Financial Analysis, 7,* 83-95. https://doi.org/10.1016/S1057-5219(99)80040-4

Floros, C., & Vougas, D. V. (2007). Lead-lag relationship between futures and spot markets in Greece: 1999-2001. *International Research Journal of Finance and Economics, 7,* 168-174.

Gallegati, M. (2008). Wavelet analysis of stock returns and aggregate economic activity. *Computational Statistics & Data Analysis, 52,* 3061-3074. https://doi.org/10.1016/j.csda.2007.07.019

Gallegati, M. (2010). A wavelet-based approach to test for financial market contagion. *Computational Statistics and Data Analysis*.

Gençay, R., Selçuk, F., & Whitcher, B. (2001). Scaling properties of exchange rate volatilities. *Physica A*, 289, 89-106. https://doi.org/10.1016/S0378-4371(00)00456-8

Gençay, R., Selçuk, F., & Whitcher, B. (2002). *An Introduction to Wavelets and Other Filtering Methods in Finance and Economics*. San Diego Academic Press, San Diego.

Ghosh, A., Saidi, R., & Johnson, K. (1999). Who moves the Asia-Pacific stock markets – US or Japan? Empirical evidence based on the theory of co-integration. *Financial Review, 34,* 159-170.

https://doi.org/10.1111/j.1540-6288.1999.tb00450.x

Girardin, E., & Liu, Z. (2007). The financial integration of China: New evidence on temporally aggregated data for the A-share market. *China Economic Review, 18*(3), 354-371. https://doi.org/10.1016/j.chieco.2007.02.009

Gong, C. C., Ji, S. D., Su, L. L., Li, S. P., & Ren, F. (2016). The lead–lag relationship between stock index and stock index futures: A thermal optimal path method. *Physica A: Statistical Mechanics and its Applications, 444,* 63-72. https://doi.org/10.1016/j.physa.2015.10.028

Gonzalo, J. (1994). Five alternative methods of estimating long run equilibrium relationships. *Journal of Econometrics, 60,* 203-233. https://doi.org/10.1016/0304-4076(94)90044-2

Guo, F., Carl, R. Chen, Y., & Sophie, H. (2011). Markets contagion during financial crisis: A regime-switching approach. *International Review of Economics and Finance, 20,* 95-109. https://doi.org/10.1016/j.iref.2010.07.009

Huth, N., & Abergel, F. (2014). High frequency lead/lag relationships—Empirical facts. *Journal of Empirical Finance, 26,* 41-58. https://doi.org/10.1016/j.jempfin.2014.01.003

Huyghebaert, N., & Wang, L. (2010). The co-movement of stock markets in East Asia Did the 1997–1998 Asian financial crisis really strengthen stock market integration? *China Economic Review, 21,* 98-112. https://doi.org/10.1016/j.chieco.2009.11.001

Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of Economic Dynamics and Control, 12,* 231-254. https://doi.org/10.1016/0165-1889(88)90041-3

Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on co-integration with applications to money demand. *Oxford Bulletin of Economics and Statistics, 52,* 169-210. https://doi.org/10.1111/j.1468-0084.1990.mp52002003.x

Kasa, K. (1992). Common stochastic trends in international stock markets. *Journal of Monetary Economics, 29,* 95-124. https://doi.org/10.1016/0304-3932(92)90025-W

Liu, Y. A., & Pan, M. (1997). Mean volatility spillover effects in the US and Pacific-Basin stock markets. *Multinational Finance Journal, 1,* 47-62. https://doi.org/10.17578/1-1-3

Masih A. M. M., & Masih, R. (1997). A comparative analysis of the propagation of stock market fluctuations in alternative models of dynamic causal linkages. *Applied Financial Economics, 7*(1), 59-74. https://doi.org/10.1080/096031097333853

Masih, A. M. M., & Masih, R. (2001). Long and short term dynamic causal transmission amongst international stock markets. *Journal of International Money and Finance, 20*(4), 563-587. https://doi.org/10.1016/S0261-5606(01)00012-2

Masih, A. M. M., & Masih, R. (1999). Are Asian stock market fluctuations due mainly to intra-regional contagion effects? Evidence based on Asian emerging stock markets. *Pacific-Basin Finance Journal, 7,* 251-282. https://doi.org/10.1016/S0927-538X(99)00013-X

Najand, M. (1996). A causality of the October crash of 1987: Evidence from Asian stock markets. *Journal of Business Finance and Accounting, 23,* 439-447. https://doi.org/10.1111/j.1468-5957.1996.tb01131.x

Nam, S. O., Oh, S., & Kim, H. K. (2008). The time difference effect of a measurement unit in the lead–lag relationship analysis of Korean financial market. *International Review of Financial Analysis, 17*(2), 259-273. https://doi.org/10.1016/j.irfa.2006.09.004

Ozdemir, Z. A., Olgun, H., & Saracoglu, B. (2009). Dynamic linkages between the center and periphery in international stock markets. *Research in International Business and Finance, 23,* 46-53. https://doi.org/10.1016/j.ribaf.2008.05.001

Percival, D. B. (1995). On estimation of the wavelet variance. *Biometrika, 82,* 619-631. https://doi.org/10.1093/biomet/82.3.619

Percival, D. B., & Walden, A. T. (2000). *Wavelet Methods for Time Series Analysis*. Cambridge University Press, Cambridge, UK, 2000. https://doi.org/10.1017/CBO9780511841040

Phylaktis, K., & Ravazzolo, F. (2005). Stock market linkages in emerging markets: implications for international portfolio diversification. *Journal of International Financial Markets, Institutions and Money, 15,* 91-106. https://doi.org/10.1016/j.intfin.2004.03.001

Ramsey, J., & Zhang, Z. (1996). The application of wave form dictionaries to stock market index data. In Y. Kratsov & J. Kadtke (Eds.). *Predictability of complex dynamical systems*. Springer. https://doi.org/10.1007/978-3-642-80254-6_11

Ramsey, J., & Lampart, C. (1998a). Decomposition of economic relationships by time scale using wavelets. *Macroeconomic dynamics, 2*(1), 49-71.

Ramsey, J., & Lampart, C. (1998b). The decomposition of economic relationships by time scale using wavelets: expenditure and income. *Studies in Nonlinear Dynamics and Econometrics, 3*(1), 23-42. https://doi.org/10.2202/1558-3708.1039

Ramsey, J., & Zhang, Z. (1997). The analysis of foreign exchange data using waveform dictionaries. *Journal of Empirical Finance, 4,* 341-372. https://doi.org/10.1016/S0927-5398(96)00013-8

Rua, A., & Nunes, L. C. (2009). International Comovement of stock market returns: A wavelet analysis. *Journal of Empirical Finance, 16,* 632-639. https://doi.org/10.1016/j.jempfin.2009.02.002

Saiti, B., & Masih, M. (2016). The Co-movement of Selective Conventional and Islamic Stock Indices: Is there any Impact on *Shariah* Compliant Equity Investment in China? *International Journal of Economics and Financial Issues, 6*(4), 1895-1905.

Saiti, B., Bacha, O. I., & Masih, M. (2013). Estimation of dynamic conditional correlations of Shariahcompliant stock indices through the application of multivariate GARCH approach. *Australian Journal of Basic & Applied Sciences, 7*(7), 259-267.

Saiti, B., Bacha, O. I., & Masih, M. (2014). The diversification benefits from Islamic investment during the financial turmoil: The case for the US-based equity investors. *Borsa Istanbul Review, 14*(4), 196-211. https://doi.org/10.1016/j.bir.2014.08.002

Saiti, B., Bacha, O. I., & Masih, M. (2016). Testing the conventional and Islamic financial market contagion: evidence from wavelet analysis. *Emerging Markets Finance and Trade, 52*(8), 1832-1849. https://doi.org/10.1080/1540496X.2015.1087784

Sandoval, L. (2014). To lag or not to lag? How to compare indices of stock markets that operate on different times. *Physica A: Statistical Mechanics and its Applications, 403,* 227-243. https://doi.org/10.1016/j.physa.2014.02.039

Tang, J., & Linowski, D. (2011). Corporate Governance at the Chinese Stock Market: How It Evolved. In *Corporate Governance and Business Ethics* (pp. 107-155). Springer Netherlands. https://doi.org/10.1007/978-94-007-1588-2_6

Whitcher, B., Guttorp, P., & Percival, D. B. (1999). Mathematical background for wavelet estimators for cross covariance and cross correlation. *Technical Report No. 38. National Research Centre for Statistics and the Environment*. Seattle.

Whitcher, B., Guttorp, P., & Percival, D. B. (2000). Wavelet analysis of covariance with application to atmospheric series. *Journal of Geophys. Res. Atmosph., 105,* 14941-14962. https://doi.org/10.1029/2000JD900110

Wu, C., & Su, Y. (1998). Dynamic relations among international stock markets. *International Review of Economics and Finance, 7,* 63-84. https://doi.org/10.1016/S1059-0560(99)80017-3

Yang, J., Kolari, J., & Min, I. (2003). Stock market integration and financial crises: the case of Asia. *Applied Financial Economics, 13,* 477-486. https://doi.org/10.1080/09603100210161965

Development of Physical Education Model for 7-12th Graders

Sheng-Kuang Yang[1], Yen-Chen Huang[2], Yi-Hsien Lin[3]

[1]Physical Education Office, Yeang Der Senior High School, Taiwan (R.O.C.)

[2]Department of Physical Education, National Taiwan Normal University, Taipei 106,Taiwan (R.O.C.)

[3]Department of Tourism and Travel Management, Da Yeh University, Taiwan (R.O.C.)

Correspondence: Yen-Chen Huang, Department of Physical Education, National Taiwan Normal University, Taipei 106, Taiwan (R.O.C.). E-mail: cynthia5321@gmail.com

Abstract

During physical, social support also affects the change in students' attitude towards sports. Therefore, in order to propose suggestions for improving physical education, this study enrolled students participating in sports team in Taiwan as the research subjects and performed investigations them to develop the participation model for students in sports teams and provide constructive strategies according to it, in order to effectively improve students' sports participation. According to the research conclusions, the goodness of fit of the overall measurement model is good, the convergent validity and discriminant validity are acceptable, and most of the relevant indices all meet the criteria. This study used path analysis to analyze the path coefficients among various variables, and discovered that all of the paths were significant. The potential variable that has the most significant influence on participation motivation is social support, namely, the influence of social support on participation motivation is more significant.

Keywords: 7-12th graders, physical education, participation motivation, social support, team support

1. Introduction

For compulsory education in Taiwan, because the concept of credentialism is still rooted in parents' mind, the value of sports tends to be overlooked, and parents usually develop a misconception about physical education. They suggest that, as long as students participate in a sports team, their academic performance and demeanor will become poor, and their future employment will encounter difficulties, especially for 7-12th graders (12-18 years old). These students face multiple stresses, such as academic performance, sports performance, and senior high school/university admission. If psychological adjustment and timely counseling and care cannot be provided, students certainly will face the predicament of both physical and psychological fatigue and their participation intention will be affected.

Sports participation is an important method for promotion health. In addition to alleviating stress (Iwasaki, 2006), long-term and regular exercise can also provide good social interaction environment, offer opportunities of making friends and engaging in social interactions (Young, Gittelsohn, Charleston, Felix-Aaron, & Appel, 2001), help learn teamwork and mutual assistance, and improve self-confidence and interpersonal relationship (Cordes & Ibrahim, 2001). Therefore, physical education is imperative to children's physiological, psychological, and social relationship development. The cultivation of sports habit is mainly originated from the stage of 5-12 years old (Cordes & Ibrahim, 2001). However, students over the age of 12 in Taiwan who are faced with the pressure of future school admission will overlook the importance of sports due to importance attached to school admission examination and academic performance. Therefore, how teachers engaging in sports teaching for 7-12th graders enable students to maintain a positive attitude towards sports and develop accurate perception is critical (Aicinena, 1991). Besides, students' positive/negative attitude towards school sports participation also will affect the possibility of their future actual sports participation (Silverman & Subramaniam, 1999).

The objective of group training of sports team is to use long-term, well-planned, and regular training project to cultivate students with sports potential, and the training process is extremely tough. Therefore, during physical education, it is very important to increase students' participation motivation. If there is a lack of the promotion of intrinsic motivation or extrinsic motivation, there will be a negative effect on students' learning interest (Corey, Charles, Michael, Kelly, & Ting, 2010). In addition to the improvement of motivation, social support also

changes students' attitude towards physical education (Beets, Vogel, Chapman, Pitetti, & Cardinal, 2007; Beets, Vogel, Forlaw, Pitetti, & Cardinal, 2006; Norman & Bente, 1992). Social support not only can increase the intention of sports participation, but also can convert participation intention into substantial sports participation (Fuchs, 1996). However, during sports participation, students will encounter barriers from different aspects, and individuals may also encounter different types of barriers due to the differences in motivation and need of sports participation, which affects their intention to participate in sports (Iwasaki, 2003).

In order to understand the correlation among sports participation motivation, social support, and participation barriers, as well as to propose suggestions for improving physical education, this study selected students participating in sports teams in Taiwan as the samples, and performed analyses to enable teachers engaging in physical education for students to effectively discover the problems and develop effective strategies to improve students' sports participation.

1.1 Participation Motivation

Motivation can be regarded as a specific behavior, as well as a direction for guiding the behavior and a persistent state of mind (Corey, Charles, Michael, Kelly, & Ting, 2010). It is also a stimulated need, which is sufficient to induce individuals' actions to meet their needs or reduce their tension (Kotler, 1997; Adams, 1963). In leisure field, the stronger the leisure motivation is, the higher the frequency of leisure participation is (Moutinho, 2000). Wuest and Bucher (2003) indicated that, sports motivation is the internalized physiological or psychological need, which facilitates individuals' development of intention or driving force to achieve a certain objective. If there is a lack of the promotion of intrinsic motivation or extrinsic motivation, there will be a negative effect on students' learning interest (Corey, Charles, Michael, Kelly, & Ting, 2010). Therefore, motivation can also be viewed as the driving force for individuals to develop future behaviors. In addition, the cause-and-effect relationship between motivation and behavior has also been verified. As a result, participation motivation will lead to the occurrence of participation behavior.

Deci and Ryan (1991) divided participation motivation of sports behavior into three types: intrinsic motivation, extrinsic motivation, and a-motivation. Hanqin and Lam (1999) proposed push motivations, such as knowledge, reputation, strengthening of interpersonal relationship, relaxation, and novelty. Gould and Petlichoff (1988) also suggested that the main motivations of sports include improvement of techniques, interest, social interactions, experience & excitement, success, and development of physical fitness. This study investigated two variables, social support and participation barriers, in order to understand the factors affecting sports participation motivation of 7-12th graders.

1.2 Participation Barriers

Many studies have investigated the classification of barrier factors of leisure and recreation (Ellis and Rademacher, 1986; Crawford and Godbey, 1987; Jackson, 1988). Participation barriers of leisure and recreational activities can be regarded as various factors inhibiting or reducing the participation frequency and pleasure perception of relevant activities (Crawford & Godbey, 1987; Jackson, 1988). In terms of the barriers of leisure and recreational activities, Crawford and Godbey (1987) divided theme into three types: intrapersonal barriers, interpersonal barriers, and structural barriers (or leisure barriers). After facing intrapersonal and interpersonal barriers, individuals eventually will face structural barriers. If they can overcome structural barriers, they can participate in leisure activities. If they can't, they will be affected and will not participate in leisure activities (Crawford, Jackson and Godbey, 1991). Moreover, individuals may also encounter different types of leisure participation barriers due to the differences in motivation and need. For the barrier factors affecting individuals' leisure participation, the level of barrier also directly affects individuals' level of participation and intention (Iwasaki, 2003). Barriers are one of the factors affecting individuals' participation in leisure activities, and participation frequency is negatively correlated with barriers (Caroll and Alexandris, 1997). Based on the said reasons, this study suggested that, sports participation barriers affects sports participation motivation.

1.3 Social Support

Social support is the function developed in individuals under a specific situation where they are pursing objectives and meeting their needs (Tolsdorf, 1976). It is also individuals' achievement of objectives of their inner desire through other people's help during participation in any activity (Caplan, 1974; Oh, 2005). Such a help or function is usually formed by resources provided by other people (Cohen and Syme, 1985), and directly or indirectly affects individuals' behavior (Forster, 1989). In sports behaviors, social support is one of the factors for maintain sports behaviors. In addition to increasing individuals' intention to participate in leisure sports, social support can further convert participation intention into substantial leisure sports participation (Fuchs, 1996). The study by Kingery (1990) discovered that, the higher the self-perceived social support for sports is, the

better the performance of sports behavior is. Moreover, social support for sports will also lead to the change in attitude towards physical education. Such a change is not limited to attitude, but also includes the transformations of behavior and performance, such as regular exercise, physical activity level, and sports participation (Beets, Vogel, Chapman, Pitetti, & Cardinal, 2007; Beets, Vogel, Forlaw, Pitetti, & Cardinal, 2006; Norman & Bente, 1992). To adolescent sports populations, peer participation, as well as obtainment of happiness, praise, and affirmation, are both important factors that stimulate sports participation (Young, Gittelsohn, Charleston, Felix-Aaron, & Appel, 2001; Cobb, 1976). In terms of the sources of social support, parents, teachers, and peers all will affect individuals' sports participation behaviors (Thoits, 1985; Nixon, 1984; Norman & Bente, 1992), and the influence of family and (Beets, Vogel,Forlaw, Pitetti, & Cardinal, 2006) professional sports coaches (Bucher and Krotee, 2000) is most important.

Many current studies have found that, social support is significantly positively correlated with sports participation motivation (Sallis, et al., 1992; King, 2001; Coleman & Iso-Ahola, 1993; Fuchs, 1996; Berkman, 1995; Seeman, Berkman, Charpentier, Blazer, Albert & Tinetti, 1995; Oh, 2005). In addition, social support has a significant influence on intention to participate in leisure sports (Bialeschki &Michener, 1994; Kay, 1998). In particularly, social support is highly positively correlated with sports participation motivation of adolescent population (King, 2001). Social support from friends is also highly positively correlated with physical activity level of adolescent population (Sallis, Simons-Morton & Stone, 1992). Based on the above, this study suggested that, social support has an influence on sports participation motivation. This study particularly found that, children aged 9-12 most need support from family (Bokhorst, Sumter, & Westenberg, 2010). Besides, past studies investigating participation barriers tended to discover that, participation barriers will also be developed in the aspect of "significant others," such as society, interpersonal relationship, companion, and group support or the lack of adequate or sufficient sports partners, and thus affects individuals' participation. The aforementioned factors are also the concept of social support. Therefore, this study also attempted to include social support into the discussion in order to make the model development more complete.

2. Method

2.1 Research Method and Tools

This study selected samples in Miaoli County, Taiwan. According to the needs of this study, this study used purposive sampling to enroll players participating in The 2015 National High School Athletics Games in Miaoli County as the subjects. The age of the subjects was 13-18 years old, and they studied in junior high schools or senior high schools (7-12th graders). For questionnaire design, this study mainly designed the questionnaire for players participating in athletic competitions in high schools. Wang (1999) indicated that, "The sample size of the pretest should be at least 100 people to meet the requirement for statistical analysis." From March 1, 2015 to March 15, 2015, this study randomly distributed the pretest questionnaires at two places, Hsinchu County Tongtex Secondary High School and Miaoli County Dalun Junior High School. A total of 120 questionnaires were distributed, after a total of 10 invalid questionnaires (with incomplete answers) were deleted, there were a total of 110 valid questionnaires, with a return rate of 91.7%. After the pretest questionnaires were returned, arranged, and coded, this study used statistical package software SPSS for Windows 18.0 to process data. Firstly, this study performed an item analysis to increase the instructions of questionnaire and the reliability and validity of final questionnaire. For the design of final questionnaire, in addition to taking into account the pretest results, this study also referred to the feedback and suggestions for questionnaire provide by school coaches of the pretest to make revisions. The final questionnaire was composed of a total of 4 parts. Part 1 was "Personal Basic Information," Part 2 was "Scale on Participation Motivation," Part 3 was "Scale on Barrier Factors," and Part 4 was "Scale on Social Support." After the questionnaire was properly revised and items were added and deleted according to this study, the pretest was performed after the questionnaire was reviewed by experts and scholars. This study used 5-point Likert scale for scoring. According to the subjects' answers, "strongly agree," "agree," "somewhat agree," "disagree," and "strongly disagree" were scored 5, 4, 3, 2, and 1 points, respectively. The higher the score was, the higher the satisfaction with experiences was. The lower the score was, the lower the satisfaction with experiences was. The explanations are given as follows:

(1) Personal Basic Information: including gender, grade, and seniority of group participation, weekly practice time, family socioeconomic background, and property of sports team where they participate.

(2) Scale on Participation Motivation: this scale was mainly modified from the questionnaires developed by Heapes (1978), Iso-Ahola (1982), Gould and Petlichoff (1988), Deci and Ryan (1991), Weissinger and Bandalos (1995), Murray and Nakajima (1999), and Hanqin and Lam (1999). This scale included 4 dimensions, self-improvement, social need, sense of accomplishment, and self-actualization.

(3) Scale on Barrier Factors: this scale was modified from the questionnaires developed by Townsend (1981), Crawford, Jackson and Godbey (1991), Dishman, (1991), and Raymore, Godbey, Crawford, and VonEye (1993), "scale on leisure barrier" comprehensively applied in Taiwan, and the questionnaire developed by Vallerand and Rousseau (2001). This scale included 4 dimensions, social support, self-stress, perception factors, personal performance, and administrative support.

(4) Scale on Social Support: this scale was modified from the questionnaires developed by Cobb (1976), Cobb (1979), Cohen and Wills (1985), Young, Gittelsohn, Charleston, Felix-Aaron, & Appel, 2001, and Robert and Angelo (2001). This scale included 4 dimensions, group support, family support, coaches and teachers, and classmates.

2.2 Questionnaire Survey and Analysis

This study conducted a questionnaire survey from May 1, 2015 to May 15, 2015. This study selected players in sports teams of all of the competitions of junior and senior high schools in Hsinchu and Miaoli Counties as the research subjects. For the implementation method, this study assigned surveying personnel to directly visit schools of the subjects, and the subjects completed the questionnaire in the company of coaches. This study distributed questionnaires at a total of 31 schools, and 420 questionnaires were returned. After 11 invalid questionnaires (with incomplete answers) were deleted, 399 valid questionnaires were returned, with a valid return rate of 95%. With the assistance of friendly surveying personnel and their careful inspection on completeness of questionnaires upon completion of questionnaires, the valid return rate of questionnaire survey was indeed improved (Lee, 2009).

In terms of reliability analysis, the Cronbach's α of three latent variables, motivation to participate in sports competition, barrier factor affecting player's participation in sports competition, and social support for player's participation in competition was .942, .935, and .934, respectively, and was higher than the basic standard value of .70 (Nunnally & Bernstein, 1994), suggesting that the reliability of questionnaire survey was acceptable.

2.3 Data Analysis

This study used SPSS 17.0 for Windows to perform Kaiser-Meyer-Olkin (KMO) and Bartlett's sphericity test on three variables, motivation to participate in sports, participation barriers, and social support for players. The results showed that, the KMO measure of sampling adequacy of all of them was > .900. In addition, Bartlett's test of all of them all reached significance (p0.001). Therefore, they were suitable for factor analysis (Kaiser, 1974). Moreover, this study used exploratory factor analysis (EFA) to extract factors. In general, principal axis factoring is mainly used to perform factor analysis in behavioral studies. Therefore, this study used this method to extract factors for developing structural equation modeling (Iacobucci, 2001; Preacher & MacCallum, 2003). In the end, this study used SPSS Amos 21.0 for Windows to test model theoretical correlation and model goodness-of-fit of the proposed structural equation modeling. This study used maximum likelihood estimation to test all of the variables for model estimation. In addition, this study also tested the hypotheses to understand whether there were significant correlations among variables.

2.4 Exploratory Factor Analysis

In terms of the Scale on Participation Motivation, according to the item analysis results, excessively low correlation coefficient may affect the accuracy of results. Therefore, this study deleted the items of Scale on Participation Motivation to 15 items. After the factor analysis, the items of the scale were reduced to three dimensions, which were named as "self-improvement," "social needs," and "fulfillment of achievement." The cumulative variance explained was 62.367%. Except for Item 12 (parents' suggestions or encouragements) of "social needs," the factor loading of all of the other items was >.45. After Item 12 was deleted, this study preliminarily confirmed that the construct validity of motivation to participate in sports competition was good (Tabachnick and Fidell, 2007). In order to understand the consistency and stability of the extracted factors, this study further analyzed the reliability of participation motivation. After Item 12 was deleted, the Cronbach's α of reliability of three factors was >.8, suggesting that each factor was highly reliable (Nunnally, 1978; George & Mallery, 2003).

In terms of the Scale on Participation Barriers, according to the item analysis results, this study deleted the items of Scale on Participation Barriers to 14 items. After the factor analysis, the items of the scale were reduced to three dimensions, which were named as "social barrier,' "training stress," and "personal factors." The cumulative variance explained was 60.996%. The factor loading of Item 4 of dimension "training stress," as well as Items 13 & 17 of dimension "personal factors" was <.45. Therefore, the said items were deleted to ensure that the construct validity of dimensions was good. In terms of reliability analysis, the original Cronbach's α of all of the

three barrier factors affecting player's participation in sports competition was >.8. After Item 4 was deleted, Cronbach's α of dimension "training stress" was slightly decreased to .873. After Items 13 and 17 of dimension "personal factors" were deleted, Cronbach's α increased to .835, suggesting that each factors was highly reliable.

In terms of the Scale on Social Support, according to the item analysis results, this study deleted the items of Scale on Social Support to 16 items. After the factor analysis, the items of the scale were reduced to 4 dimensions, which were named as "team's support," "teacher's support," "family's support," and "classmates' support." The cumulative variance explained was 67.935%. The factor loading of all of the items was >.45, and the construct validity was good. Therefore, there was no need to delete the items. In terms of reliability analysis, Cronbach's α of all of the 4 dimensions of social support was >.8, suggesting that each factor was highly reliable.

In order to confirm the reliability and construct validity of the entire questionnaire, after the first factor analysis, this study performed the second factor analysis and reliability analysis on various dimensions, and found that the entire questionnaire was composed of three dimensions. The cumulative variance explained was 68.299%. In addition, except for team's support and classmates' support, the factor loading of all of the other items was >.7. Therefore, this study preliminarily confirmed that the construct validity of the entire questionnaire was good. Moreover, the Cronbach's α (reliability) of all of the three dimensions was >.8, and was acceptable (Cuieford, 1965). Therefore, this study confirmed that the consistency and stability of the research tools were acceptable.

3. Results

3.1 Sample Data Analysis

In terms of gender, most of the subjects were male (73.9%). For grade, most of them were 8th graders (14-15 years old; 31.6%). For socioeconomic background, most of them were from common socioeconomic background (53.6%). Most of their seniority of participation in competition was 3 years and above (40.4%). However, that of 22.6% of them was less than 1 year. For weekly practice hours, 46.4% of students practiced at least 16 hours per week. However, 27.8% of them practiced less than 6 hours per week. For the property of sports team, 67.4% of the students belonged to group sports team.

3.2 Descriptive Statistical Analysis on Participation Motivation, Barrier Factors, and Social Support

In terms of participation motivation, the score of "self-improvement" was the highest, while that of "fulfillment of achievement" was the lowest. For barrier factors, the score of "personal factors" was the highest, while that of "social barrier" was the lowest. For social support, the score of "team's support" and "family's support" was the highest, while that of "teacher's support" was the lowest.

3.3 Structural Equation Modeling

Confirmatory factor analysis (CFA) should be performed before the SEM to perform measurement model analysis on various factors and dimensions (Thompson, 2004), assess and verify model, provide relevant information required by confidence level of structural model, and prove whether the measurement scale actually reflect the characteristics of latent variables (Kenny, 2006). This study used the two-stage analysis of SEM. Firstly, this study performed confirmatory factor analysis on various research dimensions and items to understand the composite reliability, convergent validity, and discriminant validity of various dimensions. Secondly, this study used linear structural relationship to develop the structural model, as well as test various research hypotheses (Williams & Hazer, 1986).

3.4 Measurement Model

Before the analysis is performed on measurement model and structural model, it is necessary to understand the goodness of fit of various dimensions and test relevant indices with acceptable goodness of fit. For the measurement model and structural model, the goodness of fit indices used in this study included chi-square and degree of freedom (DOF) ($\chi 2/df$), adjusted goodness of fit index (AGFI), goodness of fit index (GFI), normed fit index (NFI), comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean squared residual (SRMR).

Participation motivation and participation barriers were divided into three dimensions, respectively. Therefore, they were just identification (df-p=0), with a chi-square value=0 and GFI=1. Social support was divided into four dimensions, and was over identification (df-p=2). The variable $\chi 2/df$ =1.349, meeting the standard of <3 (Kline, 2005). AGFI=0.983, meeting the standard of >0.8 (MacCallum and Hong, 1997). GFI=0.997, NFI=0.996, CFI=0.999, SRMR=0.011, meeting the standards of GFI, NFI, and CFI >0.9, and SRMR <0.1 (Henry & Stone, 1994). RMSEA=0.030, meeting the standard of <0.05 (Schumacker and Lomax, 2004). Among the three variables in this study, two of them were just identification, while the other one was over identification. In

addition, all of the goodness of fit indices were higher than the recommended value. Therefore, as a whole, the goodness of fit of the measurement model was good.

The convergent validity has to meet the following conditions: factor loading >0.5, and shows significance in the t test (Hair et al., 1998). Composite reliability has to be >0.6 (Fornell & Lacker, 1981; Bagozzi & Yi; 1988). Average Variance Extracted (AVE) of latent variables has to be >0.5 (Fornell and Lacker, 1981). The factor loading of all of the items of three research variables was >0.6. The composite reliability was 0.91, 0.87, and 0.85, respectively. The AVE was 0.76, 0.68, and 0.59, respectively. Therefore, the three conditions of convergent validity were met. For discriminant validity, the judgment criterion is that the square root of AVE of each variable should be greater than the absolute value of correlation coefficients among various variables and should account for at least 75% of overall number for comparison (Hair et al., 1998). The square root of AVE in this study was greater than the absolute value of correlation coefficients among various variables. Therefore, the discriminant validity was good.

3.5 Structural Equation Modeling

For the use of SEM for verification of theoretical model, a good model goodness of fit is the basic condition for analysis (Byrne, 2010). The goodness of fit indices used in this study included chi-square and degree of freedom ($\chi2/df$), adjusted goodness of fit index (AGFI), goodness of fit index (GFI), normed fit index (NFI), comparative fit index (CFI), Root mean square error of approximation (RMSEA), and Standardized root mean squared residual (SRMR). $\chi2/df$ of this study was 4.742, meeting the standard of $\leqq5$ (Schumacker and Lomax, 2004). For other relevant indices, except for RMSEA, all of them all met the standards. In general, RMSEA <.06 is the threshold for a good model (Hu & Bentler, 1999), and .08 is the threshold for an acceptable model (McDonald & Ho, 2002). However, when the sample size is small, RMSEA value can be easily enlarged (Fan et al., 1999). The sample size of this study was 399. Although the basic threshold of 200 for SEM analysis was met (Barret, 2007), this study was still an analysis of smaller sample size in SEM analysis. Therefore, RMSEA could be affected and enlarged.

This study used path graph to analyze the path coefficients among various variables. Therefore, the significance of null hypothesis, as well as the explanatory power of variance, can be explained. As shown in Figure 1 and Table 4, all of the paths reached significance. In the research model, the standardized coefficient of each path was:

1. Social support->participation motivation (0.56)

2. Social support->barrier factors (-0.50)

3. Barrier factors->participation motivation (-0.21)

In the structural model, weighted standardized regression coefficient can be used to understand the relative influence of variables (Chen and Wang, 2010). As shown in Figure 1 and Table 4, the latent variable which had the most significant influence on participation motivation was social support. Square Multiple Correlations (SMCs) is explained variance (R2), representing the explanatory power of Exogenous variables for Endogenous variables (Chang and Cheng, 2012). In this study, R2 of barrier factors was .249, and that of participation motivation was .474, suggesting that social support indeed had a more significant influence on participation motivation.

4. Discussion

4.1 Discussion on Results of Participation Motivation, Barrier Factors, and Social Support

In the analysis on order of dimensions of participation motivation, the average score of "self-improvement" was the highest, while that of "fulfillment of achievement" was the lowest. Therefore, students' sports team participation motivation is to improve their physique, strengthen fitness, and enhance immunity to achieve better physical health, as well as to improve sports skills, create more outstanding performance in competitions, and show sports talent through school coach's physical training and sports technique instruction. This result is consistent with that of the studies by Hanqin and Lam (1999) and Gould and Petlichoff (1988). The research results showed that, the motivation of sports team participation is to pursue the development of sports perception, skills, and physical fitness, as well as to create more outstanding sports performance.

In the analysis on order of dimensions of barrier factors, the average score of "personal factors" was the highest, while that of "social barrier" was the lowest. Therefore, among all of the barriers preventing students from participating in sports team, students attached the highest importance to whether there are capable of participating in sports team, coach's expectation, outdated school training devices, and school funding. The score

of "social barrier" was the lowest. Among barrier factors, students still had their own assertive opinions and seldom refused to participate in sports team due to other people's opposition. This result is consistent with that of the studies by many scholars, such as Searle & Jackson (1985), Crawford & Godbey (1987), Hohepa, Schofield, Kolt (2006), and Ebben, and Brudzynski (2008).

In the analysis on order of dimensions of social support, the average score of "team's support" and "family's support" was the highest, while that of "teacher's support" was the lowest. The answers to questions in this scale of the subjects (sports team players) were moderate and above, suggesting that most of the subjects held a positive attitude towards social support. The score of "team's support" and "family's support" was the highest, suggesting that players participating in group sports at this age most need support from teammates and coach. This result is consistent with that of the studies by King (2001) and Bokhorst, Sumter, and Westenberg (2010).

4.2 Discussion on SEM

Measurement model: as a whole, the goodness of fit of measurement model was good. For convergent validity, the three conditions of convergent validity were met. For discriminant validity, the square root of AVE in this study was greater than the absolute value of correlation coefficients among various variables. Therefore, the discriminant validity was good.

SEM: the chi-square/degree of freedom was 4.742, meeting the standard of $\leqq 5$ (Schumacker and Lomax, 2004). For other relevant indices, except for RMSEA, all of them all met the standards. This study used path graph to analyze the path coefficients among various variables. All of the paths of research model reached significance. This study also found that, the latent variable which had the most significant influence on participation motivation was social support. This result is consistent with that of the past studies suggesting that social support affects participation motivation and is positively correlated with it during players' participation in training (Cobb, 1976; Kingery, 1990; Bucher and Krotee, 2000; King, 2001; Oh, 2005). The influence of social support on participation motivation was indeed more significant than that of barrier factors.

5. Conclusion

Most of the subjects in this study were male, and most of them were 8th graders. For socioeconomic background, most of them were from common socioeconomic background. The seniority of participation in competitions was mainly at least 3 years and less than 1 year. For weekly practice hours, because all of the subjects were sports team players, the weekly practice hours were at least 16 hours. In addition, most of them engaged in group sports. 2. In terms of participation motivation, the score of "self-improvement" was the highest, while that of "fulfillment of achievement" was the lowest. In terms of barrier factors, the score of "personal factors" was the highest, while that of "social barrier" was the lowest. In terms of social support, the score of "team's support" and "family's support" was the highest, while that of "teacher's support" was the lowest. 3. The goodness of fit of overall measurement model was good, and so was convergent validity and discriminant validity. Moreover, most of the relevant indices all met standards. This study used path graph to analyze the path coefficients among various variables. All of the paths of the research model reached significance. The latent variable that had the most significant influence on participation motivation was social support. In addition, social support had a more significant influence on participation motivation.

6. Recommendation

This study proposed the following suggestions according to the research results:

In the analysis on order of dimensions of participation motivation, the average score of "self-improvement" was the highest. It is hoped that schools can hire professional coaches and frequently hold in-campus class-to-class sports competitions to trigger participation motivation and passion of general students to enable students to develop more active participation motivation.

In terms of barrier factors, the score of "personal factors" was the highest. In other words, barriers were from physical and psychological adjustments of individuals. It is advised to establish complete counseling institutions in the future to effectively deal with and resolve possible predicaments faced by outstanding sports players.

In terms of social support, the score of "team's support" and "family's support" was the highest. Therefore, coaches should strengthen the contact and communication with parents and teachers to reduce stress in work and focus on assisting players in creating outstanding performances.

Because social support indeed had a significant influence on participation motivation and would reduce barrier factors, it is advised to aggressively establish parent support group or other supportive institutions, which will help resolve the issue of shortage of funds and assist in school team training.

Future studies are advised to use qualitative research methods, interviews, and observations to obtain more detailed information, as well as qualitative and quantitative research results.

References

Adams. (1963). Toward an understanding of inequity. *Journal of Abnormal and Social Psychology, 67,* 422-436. https://doi.org/10.1037/h0040968

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological bulletin, 103*(3), 411-423. https://doi.org/10.1037/0033-2909.103.3.411

Bagozzi, R. P., & Yi, Y. (1988). On the Evaluation for Structural Equation Models. *Journal of the Academy of Marketing Science, 16,* 74-94. https://doi.org/10.1007/BF02723327

Barrett, P. (2007). Structural equation modelling: Adjudging model fit. *Personality and Individual differences, 42*(5), 815-824. https://doi.org/10.1016/j.paid.2006.09.018

Beets, M. W., Vogel, R., Chapman, S., Pitetti, K. H., & Cardinal, B. J. (2007). Parent's support for children's outdoor physical activity: Do weekdays and weekends matter? *Sex Roles, 56,* 125-131. https://doi.org/10.1007/s11199-006-9154-4

Beets, M. W., Vogel, R., Forlaw, L., Pitetti, K. H., & Cardinal, B. J. (2006). Social support and youth physical activity: The role of providr and type. *American Journal of Health Behavior, 30*(3), 278-289. https://doi.org/10.5993/AJHB.30.3.6

Berkman, L. F. (1995). The role of social relations in health promotion. *Psychosomatic Medicine, 57,* 245-254. https://doi.org/10.1097/00006842-199505000-00006

Bialeschki, M. D., & Michener, S. (1994). Re-entering leisure: Transition within the role of motherhood. *Journal of Leisure Research, 26,* 57-74.

Bokhorst, C. L., Sumter, S. R., & Westenberg, P. M. (2010). Social Support from Parents, Friends, Classmates, and Teachers in Children and Adolescents Aged 9 to 18 Years: Who Is Perceived as Most Supportive? *Social Development, 19*(2), 417-426. https://doi.org/10.1111/j.1467-9507.2009.00540.x

Boothby, J., Tungatt, M. F., & Townsend, A. R. (1981). Ceasing participation in Sports activity: Reported reasons and their implications. *Journal of Leisure Research, 13,* 1-14.

Byrne. (2010). Structural equation modeling with AMOS: Basic concepts, applications, and programming (2nd ed.). Mahwah, NJ: Erlbaum.

Caplan, G. (1974). Support systems and community mental health: Lectures on concept development. New York: Behavioral Publications.

Caroll, B., & Alexandris, K. (1997). Perceptions of constraints and strength of motivation: Their relationship to recreational sport participation in Greece. *Journal of Leisure Research, 29*(3), 279-299.

Chang, W. H., & Cheng, S. Y. (2012). Dance with Structural Equation Modeling: The Light of Dawn. Taipei City: Chien Cheng Culture.

Chen, K. Y., & Wang, C. H. (2010). Practice of Structural Equation Modeling Analysis: The Application of AMOS. Taipei City: Wu Nan.

Cobb, S. (1976). Social support as Modereator or Life Stress. *Psychosomatic Medicine, 38*(5), 300-314. https://doi.org/10.1097/00006842-197609000-00003

Cohen, S., & Syme, S. L. (1985). Issues in the study and application of social support and health. New York: Academic Press.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering Hypothesis. *Psychological Bulletin, 98*(2), 310-357. https://doi.org/10.1037/0033-2909.98.2.310

Coleman, D., & Iso-Ahola, S. E. (1993). Leisure and health: The role of social support and self-determination. *Journal of Leisure Research, 25,* 111-128.

Cordes, K. A., & Ibrahim, H. M. (1999). Application in recreation & leisure for today and the future. New York: McGraw-Hill.

Corey, B. H., Charles, B. E., Michael, L., Kelly, M. R., & Ting, L. (2010). College students' academic motivation: differences by gender, class, and source of payment. *College Quarterly, 13*(1), 1-10.

Corey, S., McCleary, K. W., & Uysal, M. (1995). Travel motivations of Japanese overseas travelers: A

factor-cluster segmentation approach. *Journal of Travel Research, 34*(1), 33-39. https://doi.org/10.1177/004728759503400104

Crawford, D. W., & Godbey, G. (1987). Reconceptualizing barriers to family leisure. *Leisure sciences, 9*(2), 119-127. https://doi.org/10.1080/01490408709512151

Crawford, D. W., Jackson, E. L., & Godbey, G. C. (1991). The hierarchical model of leisure constraints. *Leisure Sciences, 13,* 313. https://doi.org/10.1080/01490409109513147

Cuieford, J. P. (1965). Fundamental Statistics in Psychology and Education. NY: McGraw-Hill Inc.

Deci, E. L. & Ryan, R. M. (1989). The empirical exploration of intrinsic motivational processes. In L. Berkowitz (ed .). Advances in experimental social psychology. New York: Academic Press.

Dishman, R. K. (1991). Increasing and maintaining exercise and physical activity. *Behavior Therapy, 22,* 345-378. https://doi.org/10.1016/S0005-7894(05)80371-5

Ebben, W., & Brudzynski, L. (2008). Motivations and barriers to exercise among college students. *Journal of Exercise Physiology Online, 11*(5), 1-11.

Ellis, G., & Rademacher, C. (1986). Barriers to recreation participation. A literature review: President's Commission on Americans Outdoors. Washington, DC: Government Printing Office.

Fan, X., Thompson, B., & Wang, L. (1999). Effects of sample size, estimation methods, and model specification on structural equation modeling fit indexes. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 56-83. https://doi.org/10.1080/10705519909540119

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable and measurement error. *Journal of Marketing Research, 18,* 39-50. https://doi.org/10.2307/3151312

Forster, J. E. (1989). The effect of self-efficacy, and smoking habit on participant success in smoking cessation program. U. M. I. Dissertation services.

Francken, D. A., & Raaij, W. (1981). Satisfaction with leisure time activities. *Journal of Leisure Research, 13*(4), 337.

Fuchs, R. (1996). Causal models of physical exercise participation: Testing the predictive power of the construct "pressure to change". *Journal of Applied Social Psychology, 26,* 1931-1960. https://doi.org/10.1111/j.1559-1816.1996.tb00106.x

George, D., & Mallery, P. (2003). SPSS for Windows step by step: A simple guide and reference. 11.0 update, (4th ed.). Boston: Allyn & Bacon.

Gould, D., & Petlichoff, L. (1988).Participation and attrition in young athletes. In F.Smoll, R. Magill, M. Ash(Eds), Children in sport (3rd ed., 161-178). Champaign, IL: Human Kinetics.

Hairs, Jr. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). Multivariate data analysis, (5th ed.). NY: Macmillan.

Hanqin, Z. Q., & Lam, T. (1999). An analysis of Mainland Chinese visitors' motivations to visit Hong Kong. *Tourism Management, 20*(5), 587-594. https://doi.org/10.1016/S0261-5177(99)00028-X

Heapes, R. A. (1978). Relating physical and psychological fitness: A psychological point of view. *Journal of Sports Medicine and Physical Fitness, 18,* 399-408.

Henry, J. W., & Stone, R. W. (1994). A structural equation model of end-user satisfaction with a computer-based medical information systems. *Information Resources Management Journal, 7*(3), 21-33. https://doi.org/10.4018/irmj.1994070102

Hohepa, M., Schofield, G., & Kolt, G. S. (2006). Physical activity: what do high school students think? *Journal of Adolescent Health, 39*(3), 328-336. https://doi.org/10.1016/j.jadohealth.2005.12.024

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance. *Structural Equation Modeling, 6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Iacobucci, D. (2001). Factor analysis. *Journal of Consumer Psychology, 10*(1/2), 75- 82.

Iso-Ahola, S. E. (1982). Toward a social psychological theory of tourism motivation: A rejoinder. *Annals of Tourism Research, 9*(2), 256-262. https://doi.org/10.1016/0160-7383(82)90049-4

Iwasaki, Y. (2003). Examining rival models of leisure coping mechanisms. *Leisure Sciences, 25,* 183-206. https://doi.org/10.1080/01490400306560

Jackson, E. L. (1988). Leisure constraints: A survey of past research. *Leisure Sciences, 10*(2), 203-215. https://doi.org/10.1080/01490408809512190

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika, 39*(1), 31-36. https://doi.org/10.1007/BF02291575

Kay, T. (1998). Having it all or doing it all? The construction of women's lifestyles in time-crunched household. *Society and Leisure, 21,* 435-454. https://doi.org/10.1080/07053436.1998.10753663

Kenny, D. A. (2006). Series editor's note. Im T. A. Brown (Ed.), Confirmatory factor analysis for applied research. NY: Guilford. Ix-x.

King, A. C. (2001). Interventions to promote physical activity by older adult. *Journal of Gerotology, 56,* 36-37. https://doi.org/10.1093/gerona/56.suppl_2.36

Kingery, P. M. (1990). Self-efficacy and self-monitoring of selected exercise and eating behavior of college students. *Healthy Education, 21*(1), 26-29.

Kotler, P. (1997). Market management：Analysis, Planning, Implementation and Control (9th ed.）. New Jersey：Prentice-Hall.

Lee, T. H. (2009). A structural model to examine how destination image, attitude, and motivation affect the future behavior of tourists. *Leisure Sciences, 31*(3), 215-236. https://doi.org/10.1080/01490400902837787

MacCallum, R. C., & Hong, S. (1997). Power analysis in covariance structure modeling using GFI and AGFI. *Multivariate Behavioral Research, 32*(2), 193-210. https://doi.org/10.1207/s15327906mbr3202_5

McDonald, R. P., & Ho, M. R. (2002). Principles and practice in reporting structural equation analysis. *Psychological Methods, 7,* 64-82. https://doi.org/10.1037/1082-989X.7.1.64

Moutinho. (2000). Tourism marketing and management handbook. 553-556. London: Prentice-Hall

Murray, C., & Nakajima, I. (1999). The leisure motivation of Japanese managers: A research note on scale development. *Leisure Studies, 18,* 57-65. https://doi.org/10.1080/026143699375050

Nixon, H. L. (1984). Sport and the American Dream. New York: Leisure.

Norman, A., & Bente, W. (1992). Parental and peer influences on leisure-physical activity in Young Adolescents. *Research Quarterly and Sport, 63*(4), 341-348. https://doi.org/10.1080/02701367.1992.10608754

Nunnally, J. C. (1978). Psychometric Theory,(2nd ed.). New York: McGraw-Hill.

Nunnally, J. C., & Bernstein, I. H. (1994). Psychometric Theory. New York: McGraw‐Hill.

Oh, S. S. (2005). Successful Aging Through Leisure Gardening: A Study on Constraints Negotiation. Unpublished doctoral dissertation, Pennsylvania State University, Pennsylvania.

Preacher, K. J., & MacCallum, R. C. (2003). Repairing Tom Swift's electric factor analysis machine. *Understanding Statistics, 2*(1), 13-43. https://doi.org/10.1207/S15328031US0201_02

Raymore, L., Godbey, G. C., Crawford, D. W., & VonEye, A. (1993). Nature and Process of leisure constraints: A Empirical Test. *Leisure Sciences, 15,* 99-113. https://doi.org/10.1080/01490409309513191

Robert, K., & Angelo, K. (2001). Organizational behavior (5th ed.). The New York: McGraw-Hill.

Sallis, J. F., Simons-Morton, B. G., & Stone, E. J. (1992). Determinations of physical activity and interventions in youth. *Medicine Science Sport Exercise, 24,* 248-257. https://doi.org/10.1249/00005768-199206001-00007

Schumacker, R. E., & Lomax, R. G. (2004). A beginner's guide to structural equation modeling, (2nd ed.). NJ: Lawrence Erlbaum Association.

Searle, M. S., & Jackson, E. L. (1985). Recreation non-participation and barriers to participation: Considerations for the management of recreation delivery systems. *Journal of Park and Recreation Administration, 3*(2), 23-35.

Seeman, T. E., Berkman, L. F., Charpentier, P. A., Blazer, D. G., Albert, M. S., & Tinetti, M. E. (1995). Behavior and psychological predictors of physical performance: MacArthur studies of successful aging. *Journal of Gerontology: Medical Sciences, 50*(4), 177-183. https://doi.org/10.1093/gerona/50A.4.M177

Silverman, S., & Subramaniam, P. R. (1999). Student attitude toward physical education and physical activity: A review of measurement issues and outcomes. *Journal of Teaching in Physical Education, 19,* 97-125.

https://doi.org/10.1123/jtpe.19.1.97

Tabachnick, B. G., & Fidell, L. S. (2007). Multivariate analysis of variance and covariance. *Using multivariate statistics, 3,* 402-407.

Thoits, P. A. (1985). Social support and psychological well-being: Theoretical possibilities. In I. G. Sarason & B. R. Sarason, Social Support Theory. Research and Applications. https://doi.org/10.1007/978-94-009-5115-0_4

Thoits, P. A. (1985). Social Support and Psychological Wellbeing: Theoretical Possibilities .In I. G. Sarason & B. R. Sarason (Eds), Social Support: Theory, Research and Applications. The Netherlands: Martinus Nijhoff. https://doi.org/10.1007/978-94-009-5115-0_4

Thompson, B. (2004). Exploratory and confirmatory factor analysis: Understanding concepts and applications. DC: American Psychological Association. https://doi.org/10.1037/10694-000

Tolsdorf, C. C. (1976). Social networks, support and coping: An exploratory study. *Family Process, 15*(4), 407-417. https://doi.org/10.1111/j.1545-5300.1976.00407.x

Vallerand, R. J., & Rousseau, F. L. (2001). Intrinsic and extrinsic motivation in sport and exercise: A review using the hierarchical model of intrinsic and extrinsic motivation. In R. N. Singer.H. A. Hausenblas. & C.M.Janelle (Eds.) Handbook of sport psychology (2nd). New York: Wiley.

Wang, W. K. (1999). Methods of Educational Research. Taipei City: Wu Nan.

Wearing, B. (1990). Beyond the ideology of motherhood: Leisure as resistance. *Australian and New Zealand of Sociology, 26,* 36-58. https://doi.org/10.1177/144078339002600102

Williams, L. J., & Hazer, J. T. (1986). Antecedents and consequences of satisfaction and commitment in turnover models: A reanalysis using latent variable structural equation methods. *Journal of applied psychology, 71*(2), 219. https://doi.org/10.1037/0021-9010.71.2.219

Wissinger, E., & Bandalos, D. (1995). Development, reliability and validity of a scale to measure intrinsic motivation in leisure. *Journal of Leisure Research, 27,* 379.

Wuest, D. A., & Bucher, C. A. (2003). Foundations of physical education, exercise science, and sport (14th ed.). McGraw-Hill Higher Education.

Young, D. R., Gittelsohn, J., Charleston, J., Felix-Aaron, K., & Appel, L. J. (2001).Motivation for exercise and weight loss among African-American women: Focusgroup results and their contribution towards program development. *Ethnicity & Health, 6*(3/4), 227-245. https://doi.org/10.1080/13557850120078143

Impact on Economic Growth of Technological Progress in the Turkey Economy:
Empirical Analysis on Political and Financial Stability Channel

Nazan Yelkikalan[1], Erdal Aydin[2], Unzule Kurt[3]

[1]Department of Banking and Finance, Çanakkale Onsekiz Mart University, Çanakkale, Biga, Turkey

[2]Department of Business Administration, Çanakkale Onsekiz Mart University, Çanakkale, Biga, Turkey

[3]Department of Economics, Ardahan University Ardahan, Turkey

Correspondence: Unzule Kurt, Department of Economics, Ardahan University Ardahan, Turkey. E-mail: unzulekurt@ardahan.dedu.tr

Abstract

As an important dynamic of economic growth in the literature, technological progress is addressed in the study in the context of political and financial stability channels. In this context, the aim of the study is to determine the relationship between effects of technological progress on economic growth and political and financial stability concepts. The study for Turkish economy is based on data of 1984-2014 period and technological progress variable is considered as advanced technology export. As a result of the study, the obtained results of causality analysis showed that political and financial stability are important channels in technological progress and economic growth relation.

Keywords: technological progress, economic growth, political stability, financial stability

1. Introduction

This approach, supported by Lucas (1988), Romer (1989), Grossman and Helpman (1991), Aghion and Howit (1992), argues that investments in technological progress will increase economic growth and countries/firms that have technology will gain a significant competitive advantage in the post-1980 period. In his study, Romer (1990) considers technological progress as an internal element of growth and also explains technological progress as an important factor in this process.

Furthermore, he argues that the concept of information/technological innovation integrated in the production process will increase the effectiveness of the industry by creating positive externalities. Grossman and Helpman (1991), driven by Romer (1990) work, argue that the firms will attempt to create a continuous innovation in order to protect the monopoly power that they achieved through technological progress and by this means, the relationship between growth and technological innovation gains continuity.

International trade, at the core of the concept of globalization, is crucial for ensuring competition superiority in global markets and supporting fixed capital investments in developing countries where capital is insufficient. Posner (1961), who determined that technological progress and production of high-tech products would increase the country's exports, suggests that countries to increase their high-tech production, that means the speed of technological progress increases the potential for new product production and in this case the countries / firms that are producing the technology have comparative advantage in the market. In this process that is called technological gap, Posner (1961) suggests that costs are an important element in the innovative process and therefore the innovation realized is spreading in the learning process, the fact that the country has comparative advantage is heavily dependent on the factor it has. Time is needed for creation of scale economies and expansion of innovation.

In new patterns of growth, starting with the inclusion of the concept of innovation into the economic growth process, and developing by inclusion of innovation into patterns of growth as an output of human capital; the concept of innovation has become a concept that can also be supplied from outside the enterprise over time ,going beyond a concept performed and spread inside the enterprise. This concept, called as open

innovation, was first described in the study by Chesbrough (2003). The concept of open innovation suggests that information that will reveal innovation can be supplied from inside or outside the enterprise. Chesbrough (2006) stated in his study that in the closed innovation model, company's research projects arise from its internal technology accumulation and develops, and go through production process and finally, some of them are put on market. Projects involve only the input and output phases of projects, that's why the system is called as closed. In the open innovation model, projects can arise from internal or external technology sources, and new technology can be integrated into the project at various stages. However projects can get into or come out market in many different ways.

Technological progress, which is placed on the basis of economic growth, is not only limited to the domestic market but also helps in that the country has an important advantage in international trade and supporting R&D activities by increasing total exports with advanced technology exports. On the other hand, the preservation of the technological innovations emerged as a result of R&D activities is another important point in the development of these activities. In this context, the functioning of legal regulations, such as the protection of intellectual property rights, supports technological innovations to emerge in the market. Because the number of patents in the country is an important factor on the country's technological progress and innovative image. In this case, the increase of the production of high technology in a country is related to R&D activities, therefore, to human capital accumulation. At the same time, the legal basis for the regulation of patents and trademarks of high technology products, emerged as a result of R&D activities carried out by human capital, must be sound. The investor, who benefits from the profit at the highest rate, is encouraged to make more production and develop technology with these rights protected in a sound legal basis.

The aim of this study is to determine the channels of the concept of technological progress that has an important place as a production factor for countries, which is affective in the said relation. This study is important at the point of determining the relation between the high technology exports, considered as a technological progress indicator that emerged as a result of R&D expenses, and political and financial stability of the country; evaluation of this relationship within the scope of economic growth and combining the concepts of stability and technological progress which are two important and prominent concepts in economic growth and achievement of international competitiveness. Because, as two different concepts in the country's economy, political and financial stability and technological progress are closely related to the important parameters, such as international trade, investment, capital movements, that determine the state of the countries in the world economy.

2. Literature Review

In literature review that is made in the scope of the study, it is detected that number of studies that examines the relationship between political and financial stability and advanced technology exports / technological progress is very limited. The literature focuses more on relationship of financial and political stability between economic growth, on the other hand studies that are made place the concept of technological progress on the basis of economic growth. In this context, in this study it is accepted that technological progress is an important influence on economic growth and it takes the factors in which this relationship interacts into account in context of stability. Literature search, which has been made in this direction, includes technological progress / innovation / human capital and economic growth relationship and the relationship of these variables with stability and listed in table 1.

Table 1. Literature Review

Author(s)	Country	Period	Variable(s)	Result(s)
Ülkü (2004)	20 OECD member 10 OECD non-member country	1991-1997	R&D expenditure Innovation GDP per-capita	Innovation effects positive and statistical significant to GDP per capita
Almeida and Teixero (2007)	88 developed country	1996-2003	Political stability High-tech export R&D expenditure Number of patent Direct foreign capital investments	There is a positive correlation between political stability and innovation with the high-technology export.
Erdil etc. (2009)	131 developed and developing country	1995-2006	Information communication technology exports GDP	Information communication technology exports effects to GDP
Falk (2009)	22 OECD member country	1980-2004	R&D expenditure High-tech export Economic growth	There is a positive correlation between R&D expenditure high-tech export and economic growth
Wu (2010)	China	1998-2007	R&D expenditure Innovation rate Number of patent Stock of patent Economic Growth	Innovation effects to economic growth in the regions where a number of regional R & D activities
Yapraklı and Sağlam (2010)	Turkey	1980-2008	Labor force Human capital Telecommunication investment Produce price index Population GDP	Information communication technology positive effects to economic growth in the short and long term.
Yeo (2010)	USA	1988-2007	Innovation Economic performance	Innovation positive effects to economic performance.
Güloğlu andTekin (2012)	High-income OECD countries	1991-2007	R&D expenditure Innovation Economic growth	R&D expenditure effects to innovation. Technological change effects to economic growth.
Kılavuz and A. Topçu (2012)	22 developing country	1998-2006	High - tech export and import Low - tech export and import Population Investment GDP	High-tech export, low-tech import and investment positive affects to economic growth.
Tüylüoğlu and Saraç (2012)	26 developed 18 developing country	1998-2007	R&D expenditure Human capital Intellectual property right Number of residents patent Direct foreign investment Trade openness	Protection of Intellectual property right negative effects to innovation in the developing country despite that positive effects in the developed country.
Zhang, Song and He (2012)	Pekin	1991-2010	Direct foreign investment Technology Number of patent Economic growth	There is relationship innovation and economic growth in the long term.
Amoghouss and Ibourg (2013)	19 OECD member country	2001-2009	entrepreneurship Innovation Economic growth	Entrepreneurship and innovation positive effect to economic growth.
Göçer (2013)	Developing 11 Asia County	1996-2012	R&D expenditure High-tech export Information communication Technologies export Economic growth	Increasing of R&D expenditure, High-tech export increases to information communication technologies export and economic growth
Işık (2014)	Turkey	1990-2010	Patent expenditure Economic growth	There is unidirectional causality relationship between patent expenditure and economic growth.
Erdem and Köseoğlu (2014)	Turkey	1970-2010	Number of patent competition power index	There is positivity relationship between technological change and competition power.
Dam and Yıldız (2016)	BRICS-TM countries	2000-2012	Public and private sector R&D expenditure Number of patent Economic growth	R&D positivity effects to economic growth and innovation.
Sungur, Aydın and Eren (2016)	Turkey	1990-2013	R&D expenditure Number of researchers Number of patent Export Economic growth	Innovation is support to R&D investment, export and economic growth .
Malatyalı (2016)	Turkey	1989-2014	Technological developments Economic growth	economic growth is supported by. technological developments.
Işık and Kılınç (2016)	Selected country group	1990-2011	R&D expenditure Electronic product export GDP	There is positive relationship between electronic product export and GDP with R&D expenditure

3. Econometric Analysis

The interrelationship between political stability, financial stability and high technology exports in Turkish economy are analyzed via the Vector OE Regression Model (VAR) model for the period 1984-2014. The interrelationship between these variables have been tried to be determined with Granger causality analysis, action and reaction functions, and variance separation methods. In the literature the high-tech export data used in the analysis is considered as the demonstration of technological progress which is one of the dynamics of economic growth, and its relationships with political stability and financial stability are expressed, as being the source of stable growth.

3.1 Data Set

The political stability and financial stability data used in the analysis were obtained from the PRS Group International Risk Quide database, and advanced technology export data were obtained from the World Bank database. The variables used in the analysis, their sources, and symbols representing them are given in table 2.

Table 2. Variables Used in Analysis

Symbol	Variable Name	Reference
tec	High-Tech Export	World Bank
pr	Political Stability	ICRG PRS
fr	Financial Stability	ICRG PRS
gr	Economic Growth	World Bank

According to Table 1; tec represents advanced technology export, pr represents political stability, gr represents economic growth and fr represents financial stability. In addition to this, d indicates that subtraction is applied to the series.

3.2 Method

In the study, the Vector Autoregressive Model (VAR) and Granger causality method were used in the determination of causality relations between variables. Moreover, the interrelationship between the variables were investigated by making use of the action and reaction functions and of the results of variance separation concerning model. The VAR model is used to determine the interrelationship between the series used at any moment in time. The VAR model, a dynamic model, considers the delayed values of all variables, and with this feature, it has a more flexible structure. Accordingly, bivariate VAR model is as follows (Mucuk and Alptekin 2008: 162).

$$yt = a_1 + \sum_{i=1}^{p} b_{1i} \; y_{t-i} \; + \sum_{i=1}^{p} b_{2i} \; x_{t-i} \; + v_{1t} \tag{1}$$

$$xt = c_1 + \sum_{i=1}^{p} d_{1i} \; y_{t-i} \; + \sum_{i=1}^{p} d_{2i} \; x_{t-i} \; + v_{2t} \tag{2}$$

In the model, p represents the length of the delays; v represents random error terms, of which means are zero, covariance with their delayed values are zero, variances are constant, with normal distribution.

In the VAR model it is possible to interpret variance separation and action and reaction functions. Variance separation and action and reaction functions allow to comment on the errors of the VAR model. A generalized action and reaction function not affected by the order of the variables included in the VAR model, is used in the action and reaction function revealing the direction and duration of the reaction given by the other variable for standard weekly shock occuring at a variable. In addition, variance separation denotes that to what extend the variances in the variables used are resulted from itself, and to what extend those are resulted from other variables (Bozdagli and Ozpinar, 2011: 52-56). Finally, Granger causality analysis equations used for the determination of causality relations between variables are as follows (Gujarati, 2001: 620-623).

$$X_t = \sum_{i=1}^{n} \alpha_i Y_{t-i} + \sum_{j=1}^{n} \beta_j X_{t-j} + u_{1t} \tag{3}$$

$$Y_t = \sum_{i=1}^{m} \gamma_i Y_{t-i} + \sum_{j=1}^{m} \delta_j X_{t-j} + u_{2t} \tag{4}$$

Here, if the predicted values of Y in the equation (3) are statistically significant and different from zero ($\sum_{i=1}^{n} \alpha_i \neq 0$), and , if the predicted values of X in the equation (4) are statistically significant and not different from zero($\sum_{j=1}^{m} \delta_j = 0$), then, the direction of the causality is toward $Y \rightarrow X$. Conversely, in the equation (3), if $\sum_{i=1}^{n} \alpha_i = 0$ ve $\sum_{j=1}^{m} \delta_j \neq 0$, then, the direction of the causality is toward X→Y. In both equations, if the coefficients of Y and X are statistically significant and different from zero, there is a mutual causality

relationship between the variables. In both equations, if the coefficient sets of Y and X variables are statistically insignificant, there is no causality relation between variables.

If we use equation (1) to identify ADF unit root test which is used to investigate the stability of time series, provision of $\gamma = 0$ equality in γ parameter in the equation shows that t Y contains unit root.

$$\Delta Y_t = \alpha + \gamma Y_{t-1} + u_t \tag{5}$$

Including additional differences of terms in the test equation leads to a decrease in degree of freedom in ADF test and loss of power in the test procedure.

$$H_0: \gamma = 0, : Serial\ is\ contains\ unit\ root.$$
$$H_1: \gamma < 0, : Serial\ is\ not\ contains\ unit\ root.$$

PP approach, which is an alternative test, considers the existence of unknown forms of autocorrelation and the conditional variable variance situation in the error term and uses non-parametric correction to solve the autocorrelation problem. For both tests, the fact that t statistic is larger than critical values leads to the rejection of null hypothesis which implies that the corresponding series contains unit root. Dickey-Fuller Test (DF) and Augmented Dickey-Fuller Test assume that error terms are statistically independent and have a constant variance. In their study, Phillips and Perron (1988) stated that it is necessary to make sure that there is no correlation between error terms and that they have a constant variance while DF and ADF procedure is being performed and expanded this assumption about error terms (Balan 2016:528).

3.3 Pre - Test Results

Unit root tests with Augmented Dickey Fuller and Phillips Perron unit root test models were conducted through three options which are stationary, trend stationary and trendless non-stationary. In both model all variables, except economic growth, include unit root at values for the level. In this case, there was subtraction applied to free the series from the unit root, and determined that in the first differences of all series no unit root included.

Table 3. Unit Roots Test Results

	ADF Unit Root Test			PP Unit Root Test		
	Intercept	Trend-Intercept	None	Intercept	Trend-Intercept	None
pr	-2.43	-2.04	-0.54	-1.83	-2.02	-054
dpr	-4.17*	-3.86**	-4.25*	-4.86*	-5.00*	-5.27*
fr	-1.88	-3.77**	-0.26	-1.92	-2.98	0.26
dfr	-4.04*	-3.97**	-5.44*	-5.38*	-5.30*	-5.44*
tec	-2.86	-2.85	-0.73	-2.31	-2.30	-0.65
dtec	-4.19*	-4.12*	-4.22*	-4.13*	-4.12**	-4.25*
gr	-6.10*	-6.01*	-3.54*	-7.83*	-7.68*	-3.58*
dgr	-9.28*	-9.11*	-9.45*	-24.76*	-24.10*	-25.12*

*;0.01, **;0.05 shows significance level.

Another precondition of VAR model is the definition of the lag length. Test results applied for this indicate that pursuant to Akaike Information Criterion the pertinent lag length in the model is 2.

Determination of whether or not forecasted VAR model dynamically stable is executed via autoregressive reverse root. In figure 1, all of the autoregressive reverse roots lying inside the unit circle indicates that the model is dynamically stable.

Inverse Roots of AR Characteristic Polynomial
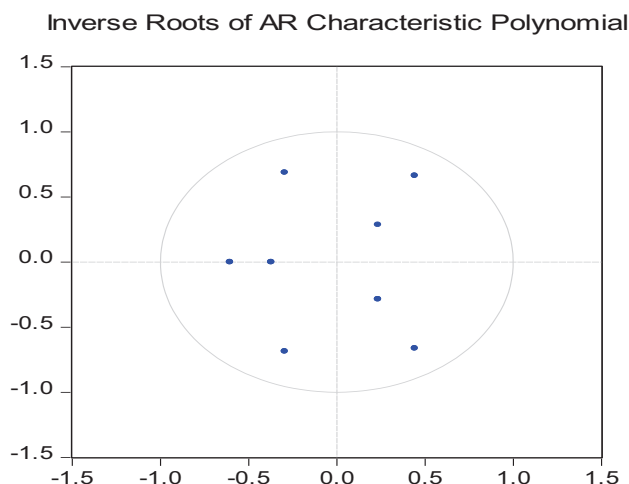
Figure 1. Dynamic Stability Graph

Two significant hypothesis of VAR model is the absence of the autocorrelation and heteroscedasticity issues in the error terms. Lastly, autocorrelation and heteroscedasticity test results of the model are shown in Table 4.

Table 4. Autocorrelation and Varying Variance Test Results

Autocorrelation Test (LM Test)		
Lag	LM Stat.	Prob. Value
1	16.05935	0.4488
2	8.975984	0.9144
3	16.96004	0.3882
Varying Variance Test (Joint Test)		
Che-Square	df	Prob. Value
163.0039	160	0.4191

LM test statistics where the existence of autocorrelation is examined and p value is bigger than 0.05 in Table 3 indicate that there is no autocorrelation issue. In addition to this, it is evident from the results of the joint test conducted to examine the heteroscedasticity issue in the model with chi-square probability value is bigger than 0.05 that there is no heteroscedasticity problem in the model.

3.3 Granger Causality Analysis Results

To determine causality relations between the variables of political stability, financial stability, export of advanced technology and economic growth that are used in the study Granger causality analysis method was used. Statistical data obtained as result of Granger causality analysis where the lag length (2) that determined in the framework of VAR model was used are shown in Table 5.

Table 5. Granger Causality Test Results

	dpr			dfr			dtec			gr		
	dfr	dtec	dgr	dpr	dtec	dgr	dpr	dfr	Dgr	dpr	dtec	dfr
cq	4.60	6.05	1.39	5.38	11.23	13.3	5.53	0.93	2.78	5.43	3.19	8.48
s.d.	2	2	2	2	2	2	2	2	2	2	2	2
o.d	0.09	0.04	0.49	0.06	0.00	0.00	0.06	0.62	0.24	0.06	0.20	0.01

According to Granger causality analysis results, in the model of political stability as an independent variable, a causality relationship from financial stability and export of advanced technology to political stability was detected. In the model where the export of advanced technology is an independent variable, a causality relation from political stability to advanced technology stability was determined. In the model of economic growth as an independent variable, there is a causality relation of political stability and financial stability to economic growth. All these relations are shown more clearly in Figure 2.
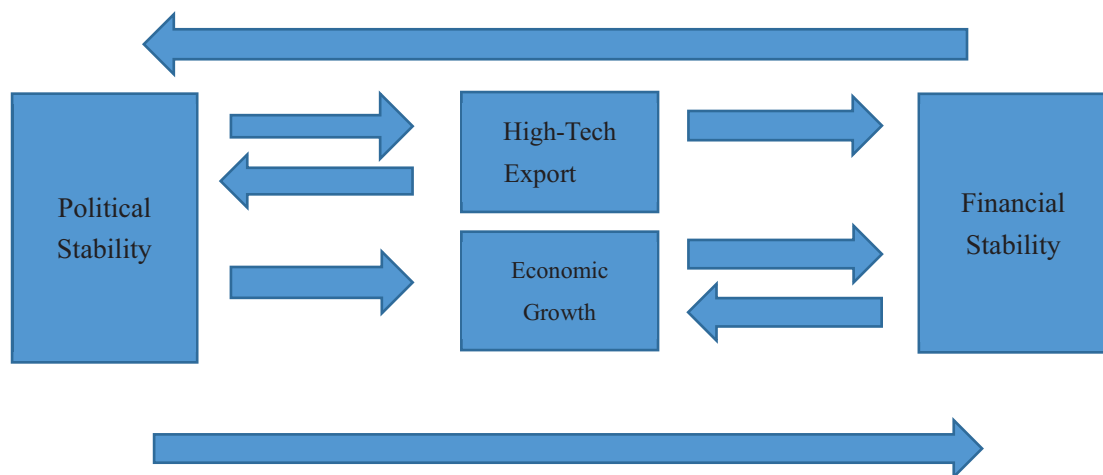
Figure 2. Relationship Granger Causality

The main purpose of the study is by determining the relation of political and financial stability with technological advancement based on the fact that technological advancement is a component that supports economic growth, to contribute to the development of this important factor of the economy. The results of causality analysis that conducted for the purpose indicate that the political stability in the country supports technology exports, and the export of advanced technology supports financial stability. With bi-directional causality relation between financial stability and economic growth added to these results, it is clearly seen that technological advancement supports economic growth through the financial stability. Additionally, investment in advanced technology of the country is an important variable to ensure political and financial stability. These circular results between stability-technological advancement and economic growth reveal the importance of the interaction of political and financial stability with technological advancement in ensuring economic growth as a final goal of country's economic policies. The political stability provided in the country, protection of property rights, governance stability, corruption, domestic and foreign unrest ensure that technological advancement and human capital remain in the country. Technological advancement that lies in the basis of economic growth brings financial stability providing a competitive advantage and investment increase and stable financial and political order ensures economic growth. Especially the causality relation from technological advancement to financial stability reveals influential channel of human capital on economic growth. On the other hand, mutual causality between technological advancement and political stability indicates that stability on the legal grounds is an important element that had the effect on the notion of human capital, at the same time, technological advancement is an important element that has the effect in creating the legal ground. Additionally, the relation of political stability with economic growth indicates that technological advancement is another channel between economic growth and political stability.

The impulse response of other variables to one standard error shock in the export of advanced technology and impulse responses of technology export to one standard error shock in other variables are shown in Figure 3 function graphics on action and reaction.

Here, the sequence of variables that are in causality relation obtained with VAR model is important. The action and reaction method which eliminates the sequencing problem was utilized and confidence intervals are used as +-2. According to action and reaction function graphics, first, to one standard error shock in technology export the political stability and financial stability reacts negatively up to four terms and as of this period this action turns to positive. Economic growth at the beginning reacts negatively, and the reaction turns into positive and continues with fluctuations.

Secondly, to one standard error shock in political stability, the advanced technology export reacts positively up to four terms, and later on, this reaction turns into negative. The reaction of technology export to one unit shock is negative in general sense. Lastly, it reacts positively to a shock occurred in economic growth.

With the determination of causality relations, another analysis that was made within the context of variables of political and financial stability that determined as a channel influencing the technological advancement and economic growth is variance separation. Obtained variance separation results are shown in Table 5.

Response to Generalized One S.D. Innovations ± 2 S.E. Response to Generalized One S.D. Innovations ± 2 S.E.
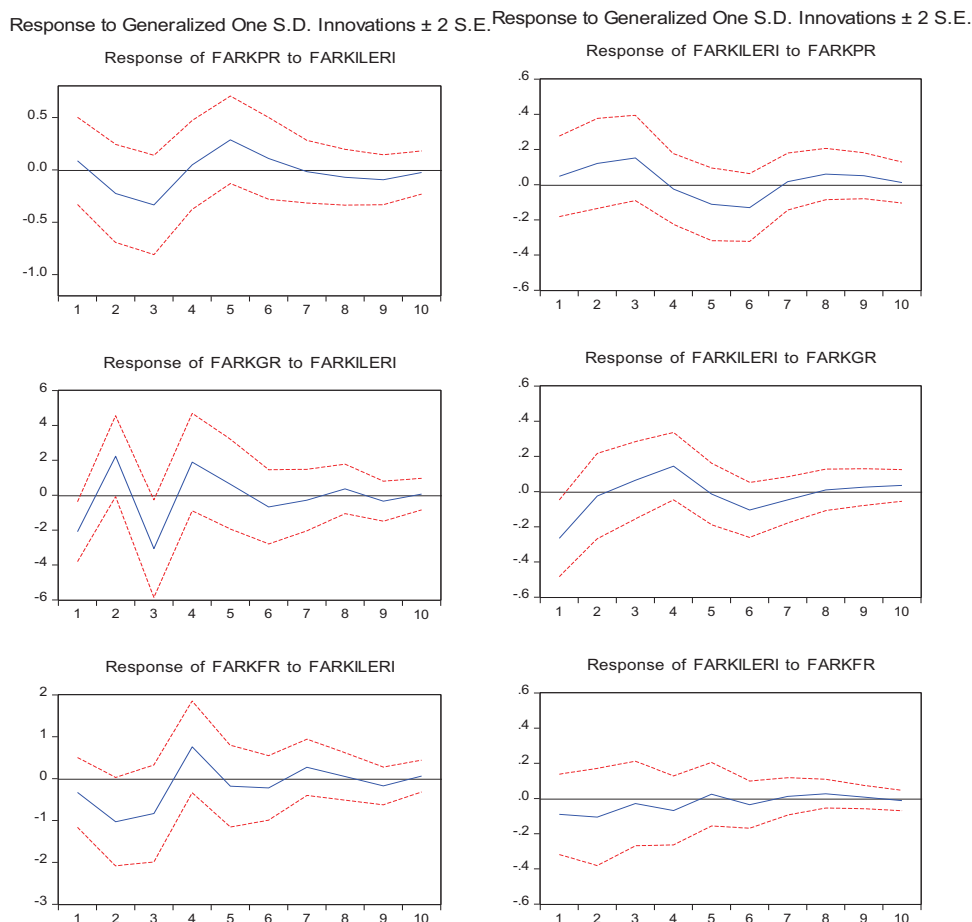
Figure 3. Impulse-Response Functions

Table 5. Variance Decomposition Results

			Dtec		
Period	**S.E.**	**dpr**	**dtec**	**dfr**	**gr**
10	0.761781	13.17811	76.10155	6.532370	4.187970
			Dpr		
Period	**S.E.**	**dpr**	**dtec**	**dfr**	**dgr**
10	1.424666	73.76699	14.11063	6.500953	5.621428
			Dfr		
Period	**S.E.**	**dpr**	**dtec**	**dfr**	**dgr**
10	3.361505	9.115310	24.72620	47.55592	18.60258
			Dgr		
Period	**S.E.**	**dpr**	**dtec**	**dfr**	**dgr**
10	8.325954	13.98702	34.80171	25.18792	26.02335

With the variance separation, according to the model where the export of advanced technology is an independent variable, at the end of 10 periods the changes in technological advancement were caused by political stability by 13.17%, by financial stability by 6.53%, by economic growth by 4.18%. On the other hand, 34.80% of economic growth was explained with technological advancement, 25.18% with financial stability, 13.98% political stability. This makes the acceptance of hypothesis stating that technological advancement is an important dynamic of economic growth, which was the starting point of the study accurate. On the other hand, at the point of answering the question of whether or not political and financial stability has effect on the explanatory power, which the study was built upon, it was found accurate that technological advancement has the highest explanatory power on financial stability with the rate of 24.72% and on political stability 24.72%. These results indicate that technological advancement is a significant factor in economic growth and the financial and political stability that provided in the process are effective channels.

4. Conclusion

The concept of technological progress, one of the main determinants of economic growth, is closely related to economic growth as well as many economic indicators in today's economies. In the frame of its importance, in this study, at the point of technological progress to increase economic growth, the parameters with which it has interacted has been examined in terms of stability and the ways of ensuring a more sound technological progress and a stable economic growth by determining stability elements that support technological progress and also the growth have been questioned.

According to the results of the causality analysis conducted within the scope of the study, it is understood that the technological progress which is detected to be in a reciprocal interaction with political stability contributes to economic growth through this factor (also, according to the causality relation with economic growth). At the same time, the results of variance research support the results achieved by the causality analysis with the fact that the changes in the exports of high technology are explained by the political stability to the greatest extent and correspondingly, the changes in the political stability are explained by high technology exports to the greatest extent. In addition, the fact that the changes in economic growth are explained by high-technology exports to the greatest extent and the political stability has a high share of 13.98% suggests that the channel of political stability is effective in the relationship between technological progress and economic growth.

Another result of causality analysis is the relationship detected between high technology exports and financial stability. At the same time, the relation of causality from financial stability to economic growth supports the acceptance of financial stability as a cannel between technological progress and economic growth. In addition, the results of the variance research show that the changes in financial stability are explained by high-technology exports at the highest rate after itself, and the changes in economic growth are explained by financial stability at the highest rate after itself. In this case, the finding that financial stability is a cannel between economic growth and technological progress gains accuracy.

In the context of the conclusions, strengthening the legal basis to achieve / increase technological progress as an important factor on economic growth of the country is closely related to the achievement of political stability. Moreover, the technological progress is important in ensuring political stability. Thus, ensuring technological progress and its effective use in economic growth are closely related to the political stability of the country. In this context, improvement of the government stability, evaluated within the scope of data content of the political stability used in the analysis, socioeconomic conditions, investment opportunities, internal threats, external threats, corruption, military policies, regional policies, rule of law and ethnic tension factors will strengthen the relationship between technological progress and economic growth in the country, thus this will affect these parameters positively. On the other hand, the financial stability, provided by technological progress, will ensure the support for the economic growth. Achieving stability in total external debt as a percentage of GNP, evaluated within the scope of the financial stability data, total external debt service as a percentage of total exports, current accounts as a percentage of total exports, accurate international liquidity on a monthly basis of at the time of imports, exchange rate stability factors as percentage change will be beneficial in economic growth process.

References

Aghion, P., & Howitt, P. (1992). A Model of Growth Trough Creative Destruction. *Econometrica*, *60*(2), 323-351. https://doi.org/10.2307/2951599

Almeida, A., & Teixeria, A. C. (2007). Does Patenting Negatively Impact on R&D Investment? An International Panel Data Assessment, *FEP Working Papers, 255*. http://www.fep.up.pt/investigacao/workingpapers/07.12.07_wp255.pdf

Amaghouss, J., & Ibourk, A. (2013). Entrepreneutial Activities, Innovation and Economic Growth: The Role of Cyclical Factors, Evidence from OECD Countries for the Period 2001-2009. *International Business Research, 6*(1), 153-162.

Balan, F. (2016). Politik İstikrar ve Devlet Harcamaları İlişkisi: 1986-2013 VAR Analizi. *Yönetim Bilimleri Dergisi, 14*(27), 519-537.

Chesbrough, H. (2003). Open Innovation: The New Imperative for Creating and Profiting from Technology, Harvard Business School Press Boston, USA.

Chesbrough, H. (2006). Open innovation: a new paradigm for understanding industrial innovation. Open innovation: Researching a new paradigm, 1-1.

Dam, M. M., & Yıldız, B. (2016). BRICS-TM Ülkelerinde AR-GE VE İnovasyonun Ekonomik Büyüme Üzerine

Etkisi: Ekonometrik Bir Analiz. *Akdeniz İİBF Dergisi, 33,* 220-236. http://iibf.akdeniz.edu.tr/wp-content/uploads/2016/04/33.220-236.pdf

Erdem, E., & Köseoğlu, A. (2014). Teknolojik Değişim ve Rekabet Gücü İlişkisi: Türkiye Üzerine Bir Uygulama, *Bilgi Ekonomisi ve Yönetimi Dergisi*, *IX*(I), 51-68. http://dergipark.ulakbim.gov.tr/beyder/article/view/5000098634

Erdil, E., Türkcan, B., & Yetkiner, H. (2009). Does Information and Communication Technologies Sustain Economic Growth? Underdevelopment and Developing Countries Case. *Science and Technology Policies Research Center Working Paper Series, 9*(3), 1-16. http://stps.metu.edu.tr/sites/stps.metu.edu.tr/files/0903_0.pdf

Falk, M. (2009). High-Tech Exports and Economic Growth in Industrialized Countries. *Applied Economics Letters, 16*(10), 1025-1028. http://dx.doi.org/10.1080/13504850701222228

Grossman, G. M., & Helpman, E. (1991). Quality Ladders in the Theory of the Growth. *The Review of Economic Studies, 58*(1), 43-61. https://doi.org/10.2307/2298044

Göçer, İ. (2013). AR-GE Harcamalarının Yüksek Teknolojili Ürün İhracatı, Dış Ticaret ve Ekonomik Büyüme Üzerindeki Etkileri. *Maliye Dergisi,* Sayı: *165,* 215-240. https://dergiler.sgb.gov.tr/calismalar/maliye_dergisi/yayinlar/md/165/165-11.pdf

Gujarati, D. N. (2001). Temel Ekonometri, Çeviri: Ümit Şenesen, Gülay Günlük Şenesen, Literatür Yayıncılık.

Güloğlu, B., & Tekin, R. B. (2012). A Panel Causility Analysisof the Relationship Among Research and Development, Innovation and Economic Growth in High Income OECD Countries. *Eurasian Economic Review*, *2*(1), 32-47.

Işık, C. (2014). Patent Harcamaları ve İktisadi Büyüme Arasındaki İlişki: Türkiye Örneği. *Sosyoekonomi, 21*(2), 70-86. http://dx.doi.org/10.17233/se.58047

Işık, N., & Kılınç, E. C. (2016). İnovasyon-Temelli Ekonomi: Seçilmiş Ülkeler Üzerine Bir Uygulama, *Anadolu Üniversitesi Sosyal Bilimler Dergisi, 16*(1), 13-28. http://dergipark.ulakbim.gov.tr/ausbd/article/view/5000186972

Kılavuz, E., & Altay, T. B. (2012). Export and Economic Growth in the Case of the Manufacturing Industry: Panel Data Analysis of Developing Countries. *International Journal of Economic and Financial Issues, 2*(2), 201-215. http://www.econjournals.com/index.php/ijefi/article/view/175

Lucas, R. (1988) On the Mechanics of Economic Development. *Journal of Monatary Economics, 22,* 3-42. https://doi.org/10.1016/0304-3932(88)90168-7

Malatyalı, Ö. (2016). Teknoloji Transferinin Ekonomik Büyüme Üzerine Etkisi: Türkiye Örneği 1989-2014, *Kastamonu Üniversitesi İİBF Dergisi, Sayı: 13,* 6-73. http://iibf.kastamonu.edu.tr/images/dergi/s13/sayi.13.mak.5.pdf

Mucuk, M., & Alptekin V. (2008). Türkiye'de Vergi ve Ekonomik Büyüme İlişkisi: VAR Analizi (1975-2006), *Maliye Dergisi, Sayı: 155,* 159-174. https://dergiler.sgb.gov.tr/calismalar/maliye_dergisi/yayinlar/md/155/10.Mehmet.MUCUK_Volkan.ALPTEKIN.pdf

Posner, M. V. (1961). International Trade and Technical Change. *Oxford Economic Papers, 13*(3), 321-343. http://www.jstor.org/stable/2662034?seq=1#page_scan_tab_contents

Romer P. M. (1989). What Determines the Rate of Growth and Technological Change? *World Bank WorkingPaper, 279.* http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.661.2385&rep=rep1&type=pdf

Romer, P. M. (1990). Endogenous Technological Change. *The Journal of Political Economy, 98*(5), 71-102. https://doi.org/10.1086/261725

Sungur, O., Aydın, H. İ., & Eren, M. V. (2016). Türkiye'de AR-GE, İnovasyon, İhracat ve Ekonomik Büyüme Arasındaki İlişki: Asimetrik Nedensellik Analizi, *Süleyman Demirel Üniversitesi İİBF Dergisi, 21*(1), 173-192. http://iibfdergi.sdu.edu.tr/assets/uploads/sites/352/files/yil-2016-cilt-21-sayi-1-yazi10-10032016.pdf

Tüylüğlu, Ş., & Saraç Ş. (2012). Gelişmiş ve Gelişmekte Olan Ülkelerde İnovasyonun Belirleyicileri: Ampirik Bir Analiz, *Eskişehir Osmangazi Üniversitesi İİBF Dergisi, 7*(1), 39-74.

http://dergipark.ulakbim.gov.tr/eoguiibfd/article/view/5000074885

Ülkü, H. (2004). R&D, Innovation and Economic Growth An Empirical Analysis. *IMF Working Paper, 185.* https://www.researchgate.net/profile/Hulya_Ulku2/publication/5124422_RD_Innovation_and_Economic_G rowth_An_Empirical_Analysis/links/54de2a5e0cf22a26721f4e5b.pdf

Wu, Y. (2010). Innovation and Economic Growth in China. *The University of Western Australia Discussion Paper, 10.* https://timedotcom.files.wordpress.com/2015/04/1010_innovation_and_economic_growth_in_china.pdf

Yapraklı, S., & Sağlam, T. (2010). 'Türkiye'de Bilgi İletişim Teknolojileri ve Ekonomik Büyüme: Ekonometrik Bir Analiz (1980-2008). *Ege Akademik Bakış, 10*(2), 575-596. http://www.onlinedergi.com/makaledosyalari/51/pdf2010_2_8.pdf

Yeo, J. K. (2010). Driving the Knowledge Economy: Explaining the Impact of Regional Innovation Capacity on Economic Performance, *Contemporary Management Research, 6*(1), 71-86. https://doi.org/10.7903/cmr.2884

Zhang, L., Song, W., & He, J. (2012). Empirical research on the Relationship between Scientific Innovation and Economic Growth in Beijing, *Scientific Research, Technology and Investment, 3,* 168-173. http://file.scirp.org/pdf/TI20120300006_71638618.pdf

Excessive Debt or Excess Savings -- Transition Countries Sovereign Bond Spread Assessment

Boris T. Petkov[1]

[1]Department of Economics, Birmingham Business School, College of Social Sciences, University of Birmingham, the United Kingdom

Correspondence: Boris T. Petkov, Department of Economics, Birmingham Business School, College of Social Sciences, University of Birmingham, the United Kingdom. E-mail: borispetk@gmail.com

Abstract

We study the sovereign yield spreads determinants in transition – Central and Eastern Europe (CEE) and Caucasus and Central Asia (CCA) -- countries and try to provide an answer to the key question: was the narrowing of the spreads and their compression a result of improvement of CEECCA countries sovereign's macroeconomic policy (implemented in early to mid 2000s), or was it due to global excess liquidity provision? If better domestic macroeconomic policy efforts and solid reforms implemented in this period have led to: i) improvement in sovereign debt management e.g., by increasing the average debt portfolio duration and reducing the stock of FOREX debt; ii) development of domestic financial markets with enlargement of the investor's base and enhancement of the risk management techniques; iii) continuing financial liberalization; iv) sustainable fiscal adjustment, reserve accumulation and price stability; and v) adoption of the most conductive to prosperity institutional structure, then it would be expected that any tighter monetary policy environment in the developed economies should have only a tiny effect on spreads.

The models are estimated on an individual basis -- country by country -- using a framework allowing for fractionally integrated variables (ARDL) as well as, by utilising panel data (cross-sectional-time-series) estimation whenever data availability allows.

We utilise daily data over the period 2006-2012 and quarterly data over the period 2002-2011. These are the periods for which meaningful comparable data are available for Bulgaria, Croatia, Hungary, Kazakhstan, Poland, Russia, Serbia, and Ukraine (in various combinations).

We are careful not to attempt to split the sample into (say two) potential segments for comparison of "normal" versus "crises" period estimates (as customary) as since 2002 / 2003 the transition economies have started to experience the powerful financial effect generated by the excess global liquidity, i.e., the entire period under consideration is constituted by two phases characterised by: i) excess liquidity (2002-2008); and, ii) the Great Depression Mark II (2008 – to present).

Keywords: sovereign yield spreads determinants, government debt and risk management, transition markets bond indices, credit default swaps, financial market volatility, transition economies

1. Introduction

"Half-knowledge is more victorious than whole knowledge: it understands things as being more simple than they are and this renders its opinions more easily intelligible and more convincing."

Nietzsche: Human, All Too Human: A Book for Free Spirits

A range of academic studies have analysed the determinants of the difference between the sovereign's emerging market debt securities and US Treasury bonds and/or German bunds of similar maturities. Still, while there have been a number of papers dealing with yield spreads on Eurozone government bonds (e.g., Codogno, Favero and Missale (2003), Pagano and Von Thadden (2004), Mody (2009), and Klepsch and Wollmershauser, (2011)) there have not been many methodical studies on the price determination of sovereign bonds in emerging markets; particularly in the group of Central and Eastern Europe (CEE) and Caucasus and Central Asia (CCA) countries.

One early (partial exception) is the paper of Eichengreen and Mody (1998) examining launch spreads based on data for a mixed group of 55 emerging market countries over the period 1991 to 1996. They collect information on altogether 1,033 bonds split as follows: 670 from Latin America; 233 from East Asia; and 81 from Eastern Europe. Regressing spreads on various potential determinants they detect: "But the same explanatory variables have different effects in the principal debt issuing regions (Latin America, East Asia, and Eastern Europe)."

It is interesting to compare the coefficients of regression on the variables Debt/GNP and GDP growth between the combined group of Latin America and East Asia countries with the Eastern Europe bond issues. While for the former group the coefficient on Debt/GNP is relatively small, has positive sign (0.437) and is significant (t-stat 2.054), for Eastern Europe its value is big, negative (-1.255) and it is insignificant (t-stat -1.367). In the same vein the coefficient on GDP growth for Latin America and East Asia is positive sizable (2.253) though insignificant (t-stat 0.616) and the equivalent coefficient for Eastern Europe is negative, vast (-14.250) and significant (t-stat -1.954). Furthermore, the coefficient of mutual determination corrected for degrees of freedom for the Latin America and East Asia estimated model is close to 0.6, while it is only about 0.09 for Eastern Europe. These OLS results suggest that about 60 per cent of the variation in spreads is explained for Latin America and East Asia and just about 9 per cent for Eastern Europe, anticipating the authors' statement: "And when it comes to changes in spreads over time, we find that these are explained mainly by shifts in market sentiment rather than by shifts in fundamentals."

Hence, the established state of knowledge in this area is as yet by no means sufficient to resolve the question of what are the major determinants of sovereign bond spreads. Our research paper aims to help to reveal definite empirical regularities, plausible interconnections, and credible causalities in this area, providing an answer to the question -- was the general narrowing of the spreads and their compression a result of an improvement of CEECCA countries macroeconomic policy, implemented after 2002, or was it due to global excess liquidity provision.

2. Literature Review

The empirical research on the determinants of government bonds spreads in advanced economies is vast, whilst the existence of similar analytical papers dealing with the emerging markets economies is more restricted. Still, both have recently enlarged, in particular since the beginning of the financial and economic crisis -- the Great Depression Mark II -- from 2008.

The main focus is: macroeconomic fundamentals determining sovereign risk; external shocks related to global liquidity; risk aversion / appetite; state of development of domestic financial markets; and, quality of governance indicators.

Contributions about the influence of macroeconomic variables on sovereign spreads, include Min (1998), Eichengreen and Mody (1998), Kamin and von Kleist (1999), and Hilscher and Nosbusch (2010). In general, these studies find considerable association with macroeconomic fundamentals and evidence that sovereign spreads in the 1990s declined more than country fundamentals' changes could account for. Baek et al (2005), among others, offer a possible explanation: they "[p]ostulate that the market-assessed country risk premium is determined not only by economic fundamentals of a sovereign but also by non-country-specific factors, especially the market's attitude towards risk." In their analysis they find that the yield spreads, although reacting to alterations in economic aggregates, in principal are driven by changes in the market perception of risk. This finding is supported by the conclusions of the studies of various authors including: McGuire and Schrijvers (2003), Jaramillo and Weber (2013), Arora and Cerisola (2001), Ferrucci (2003), and Baldacci and Kumar (2010).

Arezki and Bruckner (2010), construct an individual international commodity price index per country that allows them to confine revenue windfalls from rising prices of exported commodities and in addition exploit two measures of political institutions. Their main findings are: i) "[p]ositive international commodity price shocks lead on average to a significant reduction in commodity exporting countries' spread on sovereign bonds."; ii) allowing for cross-country differences in political institutions entails that for democracies "[a] positive commodity price shock of size 1 standard deviation significantly reduced the spread on sovereign bonds by over 0.4 standard deviation. On the other hand [...] autocracies a shock of similar magnitude was associated with a significant increase in the spread on sovereign bonds by 0.3 standard deviations."; and, iii) "[i]n democracies [...] windfalls from international commodity price shocks were significantly positively associated with real per capita GDP growth, in autocracies they were associated with a significant decrease in real per capita GDP."

Hartelius, Kashiwase and Kodres (2008), and Gonzalez-Rozada and Levy-Yeyati (2008) find that macroeconomic fundamentals, global market liquidity and risk sensitivity mutually comprise the key causes of

sovereign spread changes. Similar conclusions are established by Favero, Pagano and Von Thadden (2008), who analysed the sovereign spreads of European Union countries. Mody (2009) examines the interrelations linking sovereign bond spreads in the euro area countries and financial exposure and finds that financial exposure (calculated as a ratio of an equity index for the relevant country's financial sector to the equity index taken as a whole) is strongly correlated with spread changes.

Dell'Erba and Sola (2011) – estimate the effect of the monetary and fiscal policy stance on both long-term interest rates and sovereign spreads by constructing a semi-annual dataset of macroeconomic and fiscal forecasts for 17 OECD countries over the period 1989-2009. They find that more than 60% of the variance in the data can be accounted for by monetary and fiscal policy positions.

Kaminsky, Reinhart and Vegh (2005) examine the important question of procyclical versus countercyclical capital flows and monetary and fiscal policies depending on the country's level of economic development. Their major findings are: "While macroeconomic policies in OECD countries seem to be aimed mostly at stabilizing the business cycle (or, at the very least, remaining neutral), macroeconomic policies in developing countries seem mostly to reinforce the business cycle, turning sunny days into scorching infernos and rainy days into torrential downpours."

What's more, fiscal policies are incorporated as powerful forces of sovereign spread determination in European Union countries by Bernoth, Von Hagen and Schuknecht (2004); Afonso and Strauch (2004); and, Hallerberg and Wolff (2006). Hallerberg and Wolff (2006) after controlling for institutional changes, conclude that fiscal policy remains a significant determinant of the risk premium. According to them deficits and surpluses matter less for the risk premium in countries with better institutions. Apparently this reflects the market view that proper institutions will be able to deal with fiscal problems and make the monitoring of annual developments less important. The results are robust to controlling for country fixed effects and different estimation methodologies.

Maltriz (2012), embark upon the subject-matter with Bayesian Model Averaging (BMA). In his study the author applies BMA "[t]o identify the best models and assess the quality of potential regressors." They "[f]ind that the most important drivers of default risk in the Eurozone are government debt to GDP, budget balance to GDP and terms of trade. For economic growth, export growth, import growth and the US interest rate the likelihood is between 10 and 50%, whereas for some variables found to be significant in the literature, as interest rate costs, capital formation and inflation, this likelihood is below 10%."

Gibson, Hall, and Tavlas (2011), concentrate on a single country – Greece – and macroeconomic variables shaping spreads, providing evidence that "both undershooting and overshooting of spreads have occurred." This analysis is confirmed and extended additionally in space, time, and causality by De Grauwe and Ji (2012) who "[f]ind evidence that a significant part of the surge in the spreads of the PIGS countries (Portugal, Ireland, Greece and Spain) in the eurozone during 2010-11 was disconnected from underlying increases in the debt-to-GDP ratios and fiscal space variables, but rather was the result of negative self-fulfilling market sentiments [...]." They suppose that given the state of affairs: liquidity crisis, imposed austerity measures (presumably leading the country to recession), plus high interest rates on government securities could result in a solvency crisis. According to their model investors try to factor in the costs and benefits to the government from defaulting. "A major insight of the model is that the benefit of a default depends on whether this default is expected or not." If investors expect a default, a default would occur, if they do not, no such would take place. Furthermore, they consider that if a country is not a member of the Eurozone, "This makes it possible for the country to always avoid outright default because the central bank can be forced to provide all the liquidity that is necessary to avoid such an outcome."

While this argument may add up within its settings, one should not forget that investors may lose their confidence in the ability of the government of the "stand-alone country" to sustain its currency and take flight to safety by promptly exchanging the domestic currency denominated debt for cash – Euro or/and USD. Thus the self-fulfilling prophecy (or speculative crisis) may well become true – the country would rapidly lose foreign reserves; in time it would have no choice but to devalue its currency; the level of the external debt would increase in local currency units; this would lead eventually to monetisation of the debt; this state of affairs brings forth new speculative attacks. Hence, just being a "stand-alone country" is not likely to be sufficient to insulate you from self-fulfilling expectations or speculative attacks.

Akitoby and Stratmann (2006) emphasises the importance of sustainable fiscal policy and high fiscal adjustment, where reduction in current expenditures proves to be more effective on spread reduction than tax increases. The shaping power of liberalisation of the capital account, the currency convertibility risk premium, and the rule of law are investigated by Bacha, Holland and Goncalves (2008) as determinants of the local interest rates of

emerging economies. Whereas, Edwards (2005), by means of the bidirectional interrelation between interest rates and capital account liberalisation shows that the degree of convergence of domestic and international interest rates could be used to assess the real degree of openness of the capital account.

A connected subject matter that has received considerable attention is the relationship between sovereign spreads and default risk. Favero and Missale (2011) "[f]ind that default risk is the main driver of yield spreads, suggesting small gains from greater liquidity. Fiscal fundamentals matter in the pricing of default risk but only as they interact with other countries' yield spreads; that is, with the global risk that the market perceives. More importantly, the impact of this global risk variable is not constant over time, a clear sign of contagion driven by shifts in market."

Hilscher and Nosbusch (2010), investigate spread determinants by focusing on the volatility of fundamentals. They observe "[t]hat the volatility of the terms of trade is both statistically and economically significant in explaining spread variation. A one standard deviation increase in the volatility of terms of trade is associated with an increase of 164 basis points in spreads, which corresponds to around half of the standard deviation of observed spreads." The authors assert as well that the terms of trade volatility is a significant predictor of country default. However, an important restriction of their conclusions is the regional and economic divergence of the countries included in their sample (Latin America 12, Africa 5, Eastern Europe 6, and Middle East and Asia 9) for which (time-invariant factors) no controls are provided.

Another important area of research is the detection of short-term and long-term factors determining the sovereign bond spreads. Bellas, Papaioannou, and Petrova (2010) results indicate that in the long run, fundamentals are considerable determinants of emerging market sovereign bond spreads, while in the short run, financial volatility is rather the substantial determinant of spreads. Furthermore, researchers have also distinguished between the determinants of sovereign bond spreads during normal and crisis periods. Ebner (2009) highlights a noteworthy distinction in government bond spreads in Central and Eastern Europe throughout crisis and non-crisis periods. He provides evidence that market volatility, political instability and global causes gain in importance and predominantly explain the increase in spreads during crisis periods, while macroeconomic aggregates become less important.

Belhochine and Dell'Erba (2013), applying spread regression to a panel of 26 emerging economies (including 7 transition economies: Bulgaria, Hungary, Kazakhstan, Poland, Russia, Serbia, and Ukraine) and bringing in the difference between the debt stabilising primary balance and the factual primary balance as a measure of debt sustainability, they find "[t]hat debt sustainability is a major determinant of spreads with an elasticity of about 25 basis points for each 1 percentage point departure of the primary balance from its debt stabilizing level." Furthermore they claim "[t]hat the sensitivity of spreads to debt sustainability doubles as public debt increases above 45 percent of GDP."

In addition, another related approach in the literature deals with the interrelations between debt levels and their impact on economic growth (trough implicit transmission mechanisms) within the framework of a threshold model, where the behaviour of the variables is expected to change distinctly, when certain – threshold – levels are reached. The most influential paper in this respect has been (until very recently) the one published by Reinhart and Rogoff in 2010 (Growth in a Time of Debt). There the authors claim to have identified a key stylized fact: a burden of public debt larger than ninety percent of GDP notably and consistently reduces GDP growth. Examining public debt and GDP growth among twenty advanced economies in the period after the second world war, they determine that the average real GDP growth rate for countries having a public-debt-to-GDP ratio of over ninety per cent is, in fact, negative, amounting to -0.1 per cent.

However, Herndon Th., M. Ash and R. Pollin (2013) have replicated Reinhart and Rogoff (2010) and were able to establish that coding errors, biased exclusion of available data, and unconventional weighting of summary statistics have led to miscalculations that provide a misleading picture of the relationship between public debt and GDP growth. They reveal that when accurately calculated, the annual average real GDP growth for national economies with a public-debt-to-GDP ratio of over ninety per cent is actually 2.2 percent, not -0.1 percent as stated in Reinhart and Rogoff. That is to say, that average GDP growth, when public debt/GDP ratios are in excess of ninety per cent is not significantly different from the average GDP growth when debt/GDP ratios are lower.

Consequently, the conventional state of knowledge in this area is not adequate to resolve the question: was the general narrowing of the spreads and their compression in the CEECCA countries a result of these countries enhanced macroeconomic policies, implemented after 2002, or was it due to global excess liquidity provision (excess savings / underinvestment in real capital).

3. Methodology

In aiming to provide an answer (and illustrative evidence) to the above question we estimate various models: i) an individual basis model -- country by country -- using a framework allowing for fractionally integrated variables (ARDL); and, ii) a panel data model (cross-sectional-time-series) estimation.

We utilise daily data over the period 2006-2012 and quarterly data over the period 2002-2011. These are the periods for which meaningful comparable data -- for Bulgaria, Croatia, Hungary, Kazakhstan, Poland, Russia, Serbia, and Ukraine -- are available.

We start with the following equation with daily sampling frequencies:

eq. 1 $$SSEMBI_t = \alpha + \beta VIX_t + \gamma CDS_t + \varepsilon_t$$

Where:

SSEMBI--Stripped Spread JPM EMBI GLOBAL

VIX – Volatility Index (proxy for global risk aversion)

CDS – Credit Default Swap (perceived individual country risk)

Initially we estimate the model on an individual country by country basis and then we move to panel data (cross-sectional-time-series) estimation. Our motivation for using a framework allowing for fractionally integrated variables (ARDL) is based on various important factors, including:

- The conventional (dichotomous) choice between unit root I(1) and level stationarity I(0) is overly restrictive many economic time series show signs of being neither I(0) nor I(1);

- Much more general and flexible apparatus than the traditional approach;

- Important for modelling a wide range of macroeconomic relationships;

- The standard practice of taking first differences may still lead to series with a component of long memory behaviour

Many researchers are accustomed to think in terms of the stationarity of any time series used in the construction of whichever econometric model is being developed. As the assumption of stationarity is an important one, non-stationary time series are commonly transformed to stationary ones by differencing. This would suggest that a model specified in differences of economic time series should be favoured for finding estimates of parameters. But one of the important notions in macroeconomics is the concept of the existence of a long-run equilibrium relationship. Theoretically in steady-state equilibrium economic variables remain unchanged, until the system is shocked. Therefore, if such an equilibrium relationship is specified in first differences, the steady-state differences would be zero and there is no solution.

Hence, in what follows we apply the (Autoregressive Distributed Lag) ARDL procedure developed by Pesaran and Shin (1995).

4. Data Availability and Data Integrity

Using data from transition economies necessitate careful discussion of its quality and consistency. These data may sometimes be characterised from pointless, through distorted, to completely inaccurate. Statistical and book-keeping standards under the socialist economic system have been very different from those commonly accepted in Western Europe. It has taken time to learn and understand it and to switch to the accepted international statistical standards.

Much of the necessary fundamental data are still to be composed and / or disclosed and made easily available to the public. We hope to provide an impetus to serious data collection and complete disclosure for all transition economies for enabling deep economic analysis and informing consistent policy-making. The situation on the statistical front is made even more complex by the supranational economic institutions (e.g., IMF and WB) practice not to distribute all the data they have (see Annex 1) and to avoid publishing the data they hand out in high frequencies[1] (quarterly and monthly). Moreover, the data published in the International Financial Statistics

---

[1]The data frequency used may have potentially significant effects on empirical results. Of course there are pros and cons – if low frequency data is used it may not be able to grasp the dynamic changes/variability in the data generation process, whereas if daily or weekly data is analysed, it may lead to an incorrect association of bond spreads and CDS observations, particularly at a time when market activity is low and trades take place infrequently.

(IFS) and the World Economic Outlook (WEO) formats may and do differ, with access to the full database available only to internal IMF staff.

Tables 1 to 3 including (below) illustrate the data availability for the group of countries we examine.

Table 1. Macroeconomic aggregates, Quarterly – Data Availability

	(1) Gross Domestic Product, Nominal, National currency, millions	(2) Gross Domestic Product, Deflator, Index, 2010=100	(3) Consumer Prices, All items, Index, 2010=100	(4) Consumer Prices, All items; Percent Change over Corresponding Period of Previous Year	(5) General Govt. Public Sector Debt (PSDGG)	(6) Cash surplus/deficit, Cash (Budg. Cen. Govt.) National Currency Millions	(7) Saving, Gross, Nominal, National Currency, millions	(8) Import Prices, All Commodities, Index 2010=100	(9) Export Prices, All Commodities, Index 2010=100	(10) National Currency per U.S. Dollar, period average	(11) Gross capital outflows (portfolio investment assets+ direct investment assets+ other investment	(12) Official reserves
1 Albania	2009Q1-13Q3	--	2000Q1-14Q3	--	2009Q3-14Q2	--	--	--	--	2000Q1-14Q3	--	--
2 Armenia	2000Q1-14Q2	--	2000Q1-14Q3							2000Q1-08Q4	--	
3 Azerbaijan	2001Q1-13Q4	--	--	2000Q1-14Q2	--	--	--	--	--	2000Q1-14Q3	--	--
4 Belarus	2000Q1-14Q1			2000Q1-14Q3						2000Q1-14Q3	--	--
5 BiH	--	--	2006Q1-13Q4	--	--		--			2000Q1-14Q3	--	--
6 Bulgaria	2000Q1-14Q2	2000Q1-13Q4	2000Q1-14Q3	2000Q1-14Q3	2008Q1-14Q1	--	2000Q1-13Q4	--	--	2000Q1-14Q3	--	--
7 Croatia	2000Q1-14Q2	2000Q1-14Q2	2000Q1-14Q3	--	2000Q4-14Q2	--	--	--	--	2000Q1-14Q3	--	--
8 Czech Republic	2000Q1-14Q2	2000Q1-14Q2	2000Q1-14Q3	2000Q1-14Q1	2000Q1-14Q1	--	2000Q1-14Q2	--	--	2000Q1-14Q3	--	--
9 Estonia	2000Q1-14Q1	2000Q1-14Q2	2000Q1-14Q3	2000Q1-14Q3	2000Q1-14Q1	--	2000Q1-14Q1	--	--	2000Q1-14Q3	--	--
10 Georgia	2000Q1-14Q2	2000Q1-14Q2	2000Q1-14Q3	2000Q1-14Q3	2009Q3-14Q2	--	--	--	--	2000Q1-14Q3	--	--
11 Hungary	2000Q1-14Q2	2000Q1-14Q2	2000Q1-14Q2	2000Q1-14Q1	--	--	--	2000Q1-14Q2	2000Q1-14Q2	2000Q1-14Q3	--	--
12 Kazakhstan	2000Q1-13Q3	--	2000Q1-14Q1	2000Q1-14Q1						2000Q1-14Q3	--	--
13 Kyrgyz Republic	2000Q1-14Q2	2000Q1-14Q2	2000Q1-14Q2	2000Q1-14Q2	--	--	--	--	--	2000Q1-14Q3	--	--
14 Latvia	2000Q1-14Q2	2000Q1-14Q2	2000Q1-14Q3	2000Q1-14Q3	2000Q1-14Q3	--	2000Q1-14Q2	--	--	2000Q1-14Q3	--	--
15 Lithuania	2000Q1-14Q2	2000Q1-14Q2	2000Q1-14Q3	2000Q1-14Q3	2005Q1-14Q2	--	--	--	--	2000Q1-14Q3	--	--
16 Macedonia	2003Q1-13Q4	2004Q1-13Q4	2000Q1-14Q2	2000Q1-14Q3	--	--	--	--	--	2000Q1-14Q3	--	--
17 Moldova	2000Q1-13Q4	--	2000Q1-14Q3	2000Q1-14Q3	2009Q3-14Q2	--	--	--	--	2000Q1-14Q3	--	--
18 Montenegro	--	--	2005Q1-14Q1	2006Q1-14Q1	--		--			2000Q1-14Q3	--	--
19 Poland	2000Q1-14Q2	2000Q1-14Q2	2000Q1-14Q3	2000Q1-14Q3	2009Q4-14Q1	--	--	2000Q1-09Q4	2000Q1-09Q4	2000Q1-14Q3	--	--
20 Romania	2000Q1-14Q2	2000Q1-13Q4	2000Q1-14Q3	2000Q1-14Q3	2009Q2-14Q2	--	--	--	--	2000Q1-14Q3	--	--
21 Russian Federation	2000Q1-14Q2	2000Q1-14Q2	2000Q1-14Q3	2000Q1-14Q3	2005Q2-08Q4	--	--	--	--	2000Q1-14Q3	--	--
22 Serbia	2001Q1-14Q1	2001Q1-14Q1	2000Q1-14Q3	2000Q1-14Q3	--	--	--	--	--	2000Q1-14Q3	--	--
23 Slovakia	2000Q1-14Q2	2000Q1-14Q2	2000Q1-14Q3	2000Q1-14Q3	2006Q4-14Q2	--	--	--	--	2000Q1-14Q3	--	--
24 Slovenia	2000Q1-14Q2	2000Q1-14Q2	2000Q1-14Q3	2000Q1-14Q3	--	--	2000Q1-14Q1	--	--	2000Q1-14Q3	--	--
25 Tajikistan	--	--	2000Q2-13Q4	2001Q1-13Q4	--		--	--	--	2000Q1-14Q3	--	--
26 Turkmenistan	--	--	--	--						--		--
27 Ukraine	2000Q1-14Q2	2001Q1-14Q1	2000Q1-14Q3	2000Q1-14Q3	--	--	--	--	--	2000Q1-14Q3	--	--
28 Uzbekistan	--	--	--	--			--			--		

Source: International Financial Statistics, IMF eLibrary (accessed December 2014)

Table 2. JPM EMBI Global Stripped Spread[2], Daily -- Data Availability

		From	to	obs
1	Bulgaria	29/07/1994	05/11/2012	4767
2	Poland	24/10/1995	05/11/2012	4445
3	Croatia	30/08/1996	05/11/2012	4222
4	Russia	31/12/1997	05/11/2012	3874
5	Hungary	29/01/1999	05/11/2012	3592
6	Ukraine	31/05/2000	05/11/2012	3244
7	Serbia	01/07/2005	05/11/2012	1917
8	Kazakhstan	29/06/2007	05/11/2012	1398
9	Georgia	30/06/2008	05/11/2012	1136
10	Lithuania	31/11/2009	05/11/2012	766
11	Belarus	30/09/2010	05/11/2012	548
12	Romania	29/02/2012	05/11/2012	179

Source: DataStream (accessed November 2012)

While we have only been able to use data at the intersection of the table 2 and table 3 for daily frequencies empirical analysis and no more than the data, which overlap among all of the tables 1, 2, and 3 (for quarterly data estimates), we have been careful not to push our analysis beyond what both available and reliable data permits.

---

[2]*Note: Time until maturity -- Of the issues with at least a current face amount outstanding of US$500 million, only those instruments with at least 2½ years until maturity are considered for inclusion. Once added, an instrument may remain in the EMBI Global until 12 months before it matures. On the month-end preceding this anniversary, the instrument is removed from the EMBI Global (JP Morgan Securities Inc, Introducing the JP Morgan Emerging Markets Global (EMBI Global), 1999, New York).*

Table 3. Credit Default Swaps (CDS USD 5Y), Daily – Data Availability

		From	to	obs
1	Bulgaria	17/10/2005	19/11/2012	1405
2	Poland	25/01/2006	19/11/2012	1339
3	Croatia	02/12/2005	19/11/2012	1374
4	Russia	24/02/2006	19/11/2012	1576
5	Hungary	21/10/2005	19/11/2012	1324
6	Ukraine	27/02/2006	19/11/2012	1508
7	Serbia	04/05/2006	19/11/2012	1065
8	Kazakhstan	03/04/2007	10/10/2012	1243

Source: Bloomberg (accessed November 2012)

The dataset

We use daily data obtained directly from Bloomberg and ThompsonReuters. In general the data set for each country starts approximately mid-2006 and ends at mid-2012, comprising on average about 1600 observation per country. Technically the estimation is executed in Microfit 4.1 and EViews 6.

5. Sovereign Bond Spreads, Financial Markets Determinants – Spread Regressions by Country

A potential default is often mostly associated with an increase in yield spreads. To examine the determinants of sovereign bond spreads we estimate an equation for the sovereign bond spread (as dependent variable) determined by a range of exogenous variables.

Furthermore we assess the long-term determinants and short-run dynamics (error-correction model) of the sovereign bond spreads of Bulgaria, Croatia, Hungary, Kazakhstan, Poland, Russia, Serbia, and Ukraine – these are the relevant countries for which we have managed to obtain meaningful data, both statistically and economically. Likewise, we gain some additional understanding of the convergence process. Based on this specification we may be able to illustrate quantitatively the impact improved investors' confidence may have upon financing conditions as depicted by government bond spreads.

Emerging Markets Bond Indices

Figure 1 (below) depicts the developments in sovereign stripped spreads for selected CEE and Caucasus and Central Asia (CCA) countries over the period of 1994 to 2012. Over the period starting from the end of 2005 to around the first quarter of 2007, sovereign spreads clustered closely together, reaching their historically lowest point of below 200 basis points. Given that, undoubtedly, there were significant differences in the creditworthiness of the borrowers in the index -- this state of affairs at that time might suggest that investors did not differentiate adequately among borrowers. This situation was followed eventually by the Bear Sterns alarm in March 2008, which led to the increased discrimination in spreads across countries. Furthermore, the spreads widened extensively after September 2008, following the bankruptcy of the Lehman Brothers.

Hence, the key question is: was the narrowing of the spreads and their compression a result of an improvement of CEECCA country sovereigns' macroeconomic policy, implemented after 2002, or was it due to global excess liquidity provision?
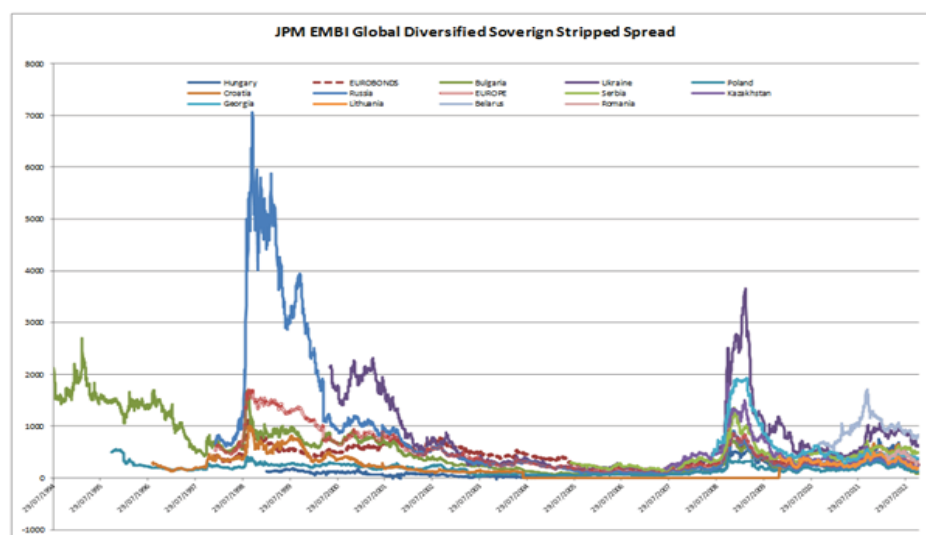
Figure 1. The Emerging Markets Bond Indices (EMBI) Sovereign Stripped Spread, Daily

Credit default swaps (CDS)

The spreads in Figure 2 (below) are for five-year contracts on CDSs with the spreads measured in basis points -- each basis point is equal to USD 1,000. Seemingly comparable to an insurance contract, purchasers of a CDS pay for insurance against a credit event on the public debt. Hence, they can be used as a convenient, standard risk measure on government debt quality. For illustration, the Ukraine five-year CDS, the insurance premium is the annual insurance payment relative to the amount of debt; in March 2009, these CDSs reached a spread of more than 3,800 basis points (with even more extreme values on a daily basis, as can be seen at chart 3, below), meaning that the buyer pays an insurance premium of about 38 percent per year of the value of the securities (i.e., USD 3,800,000 on $10,000,000 worth of debt). The credit default swap seller collects the premiums and pays out (the face value) if a credit event occurs. Thus CDS spreads can be interpreted as a measure of the perceived risk that a government will restructure or default on its debt. CDS spreads in April 2012 imply that the perceived probability of the Ukraine government defaulting is substantially higher than it was one year earlier, but lower than in 2009.
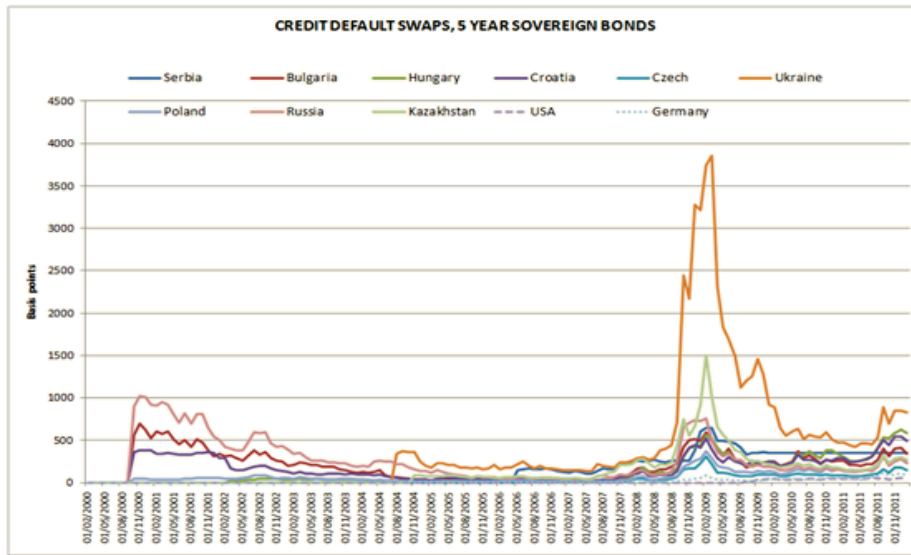
Figure 2. Emerging Markets Credit Default Swaps, Monthly
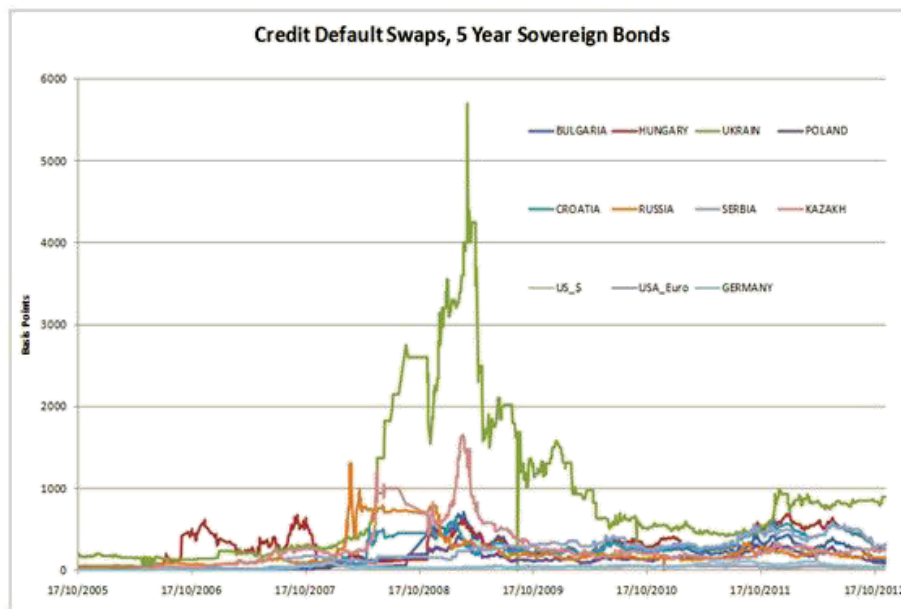
Figure 3. Emerging Markets Credit Default Swaps, Daily

Figures 2 and 3 (above) show the levels of spreads on credit default swaps (CDSs) for selected CEECCA countries sovereign debt plus the same indicators for two industrialized countries –-USA and Germany. Three

countries are notable with high spreads at present (Nov 2012): Ukraine, Hungary, and Serbia (all above 300bp).

Credit default swaps pros and cons are debatable, to say the least, and the question are they instrument providing type of insurance or are they rather a device providing an unobstructed way to taking part in speculation is yet to be answered.

In May 2010 the German Federal Financial Supervisory Authority (BaFin) put into operation a complete ban on taking naked sovereign CDS positions.3 On March 14, 2012, the European Commission adopted a proposal for regulating short selling and certain aspects of credit default swaps, de facto permitting the use of CDS only for the purpose of hedging long positions already held by investors.4 As the Commission points out, there are resemblances between short selling stocks that one does not own and buying CDSs on assets that one does not have. These positions are such that speculators profit from adverse developments in the underlying security, and the positions could contribute to a decline in prices in the underlying assets, e.g., prices of government debt.

Economic theory is yet to provide an unambiguous answer to the long standing question about whether speculation in general and in derivative markets in particular is proving predominantly stabilizing or rather destabilizing to any given economic system. For example Portes (2010) concludes: "Banning naked CDS will require common action in the US and in the EU, but the political environment is right. We should not lose this opportunity."At the same time, Duffie (2010) argues that "Regulations that severely restrict speculation in credit default swap markets could have the unintended consequences of reducing market liquidity, which raises trading execution costs for investors who are not speculating, and lowering the quality of information provided by credit default swap rates regarding the credit qualities of bond issuers. Regulations that severely restrict speculation in credit default swap markets could, as a result, increase sovereign borrowing costs somewhat."

More obviously sovereign CDS spreads can have a potentially important functional role in the process of price discovery. Still, empirical results concerning who leads the price discovery – the sovereign CDS market or the government bond market are mixed and imprecise. These divergences may be partly related to the different time periods, sampling frequency, methodology and a choice of data. The empirical studies have revealed the following mixed conclusions so far: a number of papers provide support for the dominance of the government bond market, while others claim to have verified the primacy of CDS market. Gyntelberg et. al. (2013) find that CDS prices have a tendency to shift first in reaction to news followed by alteration in bond prices in the same direction and eventual convergence. Palladini and Portes (2011) conclude as well that CDS market spreads in general lead bond markets, but the adjustment towards equilibrium is sluggish. Fontana and Scheicher (2010) examine ten euro sovereigns (January 2006 – June 2010) and find that price discovery is uniformly divided between CDS and bond markets. O'Kane (2012) presents comparable results. Aktug et al. (2012) study thirty emerging markets and find that bond markets lead CDS markets largely, but not always. Support for the bond markets leading role is also found in Ammer and Cai (2011). They find a long-term relationship between CDS and bond markets for the majority of countries. Overall tentatively they conclude that the bond market leads the CDS market more often. Giannikos et al. (2013) inspect the links of price discovery via, daily CDS spreads; bond spreads and stock prices over the period 2005-2008 for ten US financial firms. They find that throughout

---

3General Decree of the Federal Financial Supervisory Authority (BaFin) on the prohibition of naked short-selling transactions in debt securities of Member States of the EU whose legal currency is the euro of 18 May 2010 (revoked with effect from 27 July 2010)

4(14)Buying credit default swaps without having a long position in underlying sovereign debt or any assets, portfolio of assets, financial obligations or financial contracts the value of which is correlated to the value of the sovereign debt, can be, economically speaking, equivalent to taking a short position on the underlying debt instrument. The calculation of a net short position in relation to sovereign debt should therefore include credit default swaps relating to an obligation of a sovereign debt issuer. The credit default swap position should be taken into account both for the purposes of determining whether a natural or legal person has a significant net short position relating to sovereign debt that needs to be notified to a competent authority and where a competent authority suspends restrictions on uncovered credit default swap transactions for the purposes of determining the significant uncovered position in a credit default swap relating to a sovereign debt issuer that needs to be notified to the competent authority.

REGULATION (EU) No 236/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 14 March 2012   on short selling and certain aspects of credit default swaps

the sample period, CDS and bond spreads are evidently cointegrated -- the CDS market dominating in price discovery. Examining 18 industrial and emerging economies from January 2007 to March 2010, Coudert and Gex (2013) conclude that bonds appear to lead for "low-yield countries" (developed) European economies, while the derivative market tend to be the direction-finder for "high-yield" emerging economies.

Thus the evidence on price discovery presented above is, at any rate, adequate to challenge the conviction that the relatively small CDS market cannot influence bond spreads in sovereign debt markets as its net exposure is just a few per cent of the total government bond stock. Typically the proponents' justification of this view may go like this: "Profitable manipulation through price impact is difficult. [...] [a]chieving a sizable price impact would require CDS manipulators to take positions that are large relative to the amount of debt outstanding. In the case of the financially weaker Eurozone sovereigns, the aggregate net CDS positions […] represent small fractions of their respective amounts of debt outstanding. With Greece, for example, the aggregate of the net CDS positions held in the entire market has remained well under 3% of the total amount of Greek debt outstanding. […] That is, even if all CDS protection buyers in the market were manipulators, and had conspired to drive up CDS rates, they would have had only a marginal impact on the total amount of sovereign credit risk borne by bond owners and sellers of protection. Supply and demand for the sovereign's credit would cross at a new price that is relatively close to the "fair-market" (unmanipulated) price (Duffie, 2010)."

A crisp competent answer – with which we completely concur -- is provided by Portes (2010), "We are told [...] that because net CDS exposures are only a few percent of the stock of outstanding government bonds, 'the tail can't wag the dog', so the CDS market can't be responsible for the rising spreads on the bonds. This of course contradicts the argument that the CDS market leads in price discovery because of its superior liquidity. More important, it is nonsense. Over a period of several days in September 1992, George Soros bet around $ 10 billion against sterling, and most observers believe that significantly affected the market – and the outcome. But daily foreign exchange trading in sterling then before serious speculation began was somewhat over $100 billion. The issue is how CDS prices affect market sentiment, whether they serve as a coordinating device for speculation."

Furthermore, strong empirical support is provided from Shim and Zhu (2010). The authors analyse the time period of January 2003 to June 2009 and conclude: "[t]hat at the peak of the financial crisis the CDS market contributed to higher spreads in the bond market."

Based on the evidence presented above we identify CDS as explanatory variable.

Chicago Board Options Exchange Volatility Index (VIX) -- Global Risk Aversion Proxy

VIX, was first initiated by the CBOE in 1993 (data series commencing in January 1986), as a weighted measure of the implicit volatility of eight S&P 100 at-the-money options (both put and call). In ten years time, it has been extended to exploit options based on the broader index (S&P 500), offering more precise scrutiny of investors' expectations on future market volatility. Thus VIX is a commonly used measure of market risk and is often referred to as the "investor fear gauge". VIX values bigger than 30 are normally associated with a large amount of volatility due to investor's fear or insecurity, whereas values under 20 in general correspond to tranquil periods in the markets. When VIX reaches excessively high levels, this tends to imply that economic agents have bought puts as insurance against a falling market (the explanation is following on Investopedia.com, "VIX - CBOE volatility Index").
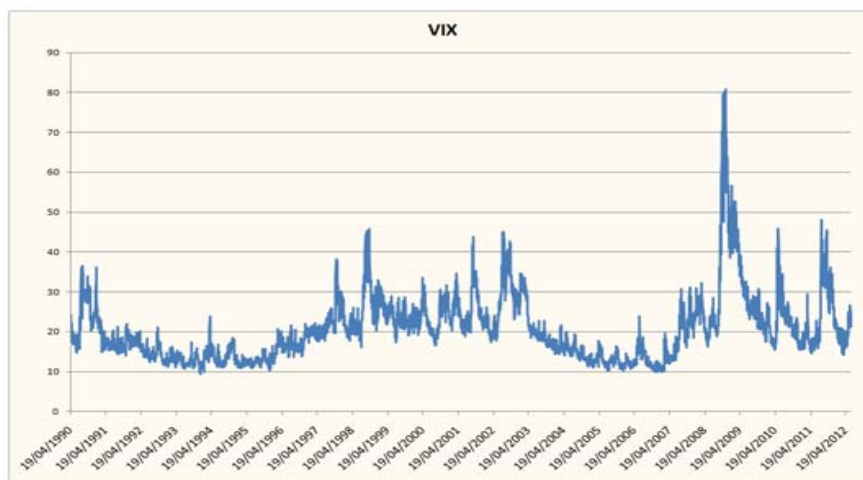
Figure 4. Chicago Board Options Exchange Volatility Index (VIX) – Global Risk Aversion Proxy, daily

We take VIX is an appropriate index to be used in our analysis due to its broad acceptance as representation of investor's expectations market volatility of S&P 500, plus its high frequency, long period time-series availability.

5.1 Sovereign Bond Yield Spreads, Financial Markets Determinants, June 2006 – June 2012, Daily, Estimated Equations and Results

Bulgaria

eq. 2   **SSEMBI = -77.4299 INPT + 0.38379 CDS + 9.9309 VIX - 0.044895 ECM (-1)**

                          (-6.2919)   **(7.9586)**   **(13.6259)**   **(-8.3508)**

No. obs: 1667

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic   CHSQ(3) =   27.2769[.000]

Likelihood Ratio Statistic   CHSQ(3) =   27.5043[.000]

F Statistic   **F(3,1614) =   9.0212[.000]**

R-bar-squared: **0.2137**

DW-statistics: **2.0085**

The results of the F-statistic for the joint test of zero restrictions on the coefficients of additional variables for Bulgaria reject the null hypothesis in favour of the existence of long-run relationship between SSEMBI, CDS and VIX. We estimate eq.2 and get the long-run coefficient; then we obtain the estimates of the error correction model associated with these long-run estimates and report the outcome as eq.2 above. All the explanatory variables are strongly significant (t-ratios shown in parenthesis) and with the expected sign. One point increase in the Bulgaria's risk (approximated by the CDS) would lead to increase of about 0.38 basis points in the dependent variable SSEMBI (Bulgaria's bond's spread) *ceteris paribus*. If the global risk aversion (proxied by VIX) goes up by one point an increase of about 9.9 basis points in SSEMBI would be induced everything else remaining the same. The error correction coefficient of about -0.045 implies just less than 15 working days half-life to equilibrium of the Bulgarian bond spread. The coefficient for mutual determination corrected for degrees of freedom equals 0.2137 suggesting that about 21 per cent of variability in the dependent variable is explained.

Croatia

The joint test for zero restrictions on the coefficients of the lagged level variables does not reject the null hypothesis. Given that the unit root tests suggest that the underlying data series are non-stationary, they have to be modelled in an appropriate – cointegration -- econometric framework to avoid making inferences based on spurious regressions results. However, as the variables are not cointegrated such option is precluded.

Hungary

eq. 3   **SSEMBI = -24.369 INPT + 0.82123 CDS + 3.9391 VIX - 0.0416385 ECM (-1)**

                          (-1.3285)   **(18.3975)**   **(4.8582)**   **(-6.3525)**

No. obs: 1662

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic   CHSQ(3) = 158.6390[.000]

Likelihood Ratio Statistic   CHSQ(3) = 166.8028[.000]

F Statistic   **F(3,1608) =   57.0919[.000]**

R-bar-squared: **0.0675**

DW-statistics: **1.8846**

The results of the F-statistic for the joint test of zero restrictions on the coefficients of additional variables for Hungary reject the null hypothesis in favour of the existence of long-run relationship between SSEMBI, CDS and VIX. We estimate eq.3 and get the long-run coefficient; then we obtain the estimates of the error correction model associated with these long-run estimates and report the outcome as eq.3 above. All the explanatory variables are strongly significant (t-ratios shown in parenthesis) and with the expected sign. One point increase in the Hungary's risk (approximated by the CDS) would lead to increase of about 0.82 basis points in the dependent variable SSEMBI (Hungary's bond's spread) *ceteris paribus*. If the global risk aversion (proxied by

VIX) goes up by one point an increase of about 3.9 basis points in SSEMBI would be induced everything else remaining the same. The error correction coefficient of about -0.042 implies just less than 17 working days half-life to equilibrium of the Hungarian bond spread. The coefficient for mutual determination corrected for degrees of freedom equals 0.0675 suggesting that just less than 1 per cent of variability in the dependent variable is explained.

Poland

eq. 4   **SSEMBI = -35.8277 INPT + 0.007321 CDS + 8.3595 VIX - 0.0151 ECM (-1)**

                                                     (-1.1903)   (0.3946)   **(6.8532)**   **(-4.9359)**

No. obs: 1664

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic   CHSQ(3) =   13.5771[.004]

Likelihood Ratio Statistic   CHSQ(3) =   13.6332[.003]

F Statistic   **F(3,1611) =   4.4527[.004]**

R-bar-squared: **0.0329**

DW-statistics: **2.0014**

The results of the F-statistic for the joint test of zero restrictions on the coefficients of additional variables for Poland reject the null hypothesis in favour of the existence of long-run relationship between SSEMBI, CDS and VIX. We estimate eq.4 and get the long-run coefficient; then we obtain the estimates of the error correction model associated with these long-run estimates and report the outcome as eq.4 above. The explanatory variable VIX and the ECM term are strongly significant (t-ratios shown in parenthesis) and with the expected sign. However, the increase in the Polands's risk effect is too small and not statistically significantly different from zero. If the global risk aversion (proxied by VIX) goes up by one point an increase of about 8.4 basis points in SSEMBI would be induced everything else remaining the same. The error correction coefficient of about -0.015 implies about 45 working days half-life to equilibrium of the Poland bond spread. The coefficient for mutual determination corrected for degrees of freedom equals 0.0329 suggesting that just less than 1 per cent of variability in the dependent variable is explained.

Russia

eq. 5   **SSEMBI = -3.3664 INPT + 0.6300 CDS + 6.0133 VIX - 0.0417 ECM (-1)**

                                      (-0.1722)   **(8.7187)**   **(4.6800)**   **(-6.5702)**

No. obs: 1642

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic   CHSQ(3) =   31.6218[.000]

Likelihood Ratio Statistic   CHSQ(3) =   31.9328[.000]

F Statistic   **F(3,1589) =   10.4853[.000]**

R-bar-squared: **0.4946**

DW-statistics: **1.9889**

The results of the F-statistic for the joint test of zero restrictions on the coefficients of additional variables for Russia reject the null hypothesis in favour of the existence of long-run relationship between SSEMBI, CDS and VIX. We estimate eq.5 and get the long-run coefficient; then we obtain the estimates of the error correction model associated with these long-run estimates and report the outcome as eq.5 above. All the explanatory variables are strongly significant (t-ratios shown in parenthesis) and with the expected sign. One point increase in the Russia's risk (approximated by the CDS) would lead to increase of about 0.63 basis points in the dependent variable SSEMBI (Russia's bond's spread) ceteris paribus. If the global risk aversion (proxied by VIX) goes up by one point an increase of about 6.0 basis points in SSEMBI would be induced everything else remaining the same. The error correction coefficient of about -0.042 implies just about 17 working days half-life to equilibrium of the Russian bond spread. The coefficient for mutual determination corrected for degrees of freedom equals 0.4946 suggesting that almost exactly 50 per cent of variability in the dependent variable is explained.

Ukraine

eq. 6   **SSEMBI = 8280.6 INPT + 8.0964 CDS - 604.8879 VIX - 0.0008373 ECM (-1)**

                                                (0.15186)   (0.16603)   (-0.15024)

(0.15269)

No. obs: 1641

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic   CHSQ(3) =   21.5655[.000]

Likelihood Ratio Statistic   CHSQ(3) =   21.7096[.000]

F Statistic   **F(3,1588) =   7.1060[.000]**

R-bar-squared: **0.23489**

DW-statistics: **2.0134**

The results of the F-statistic for the joint test of zero restrictions on the coefficients of additional variables for Ukraine reject the null hypothesis in favour of the existence of long-run relationship between SSEMBI, CDS and VIX. We estimate eq.6 and get the long-run coefficient; then we obtain the estimates of the error correction model associated with these long-run estimates and report the outcome as eq.6 above. All the explanatory variables turn out to be statistically insignificant (t-ratios shown in parenthesis) and VIX is with the "wrong" sign. The error correction coefficient of about -0.0008 implies about 866 working days half-life to equilibrium of the Ukraine bond spread, but is statistically insignificant. The coefficient for mutual determination corrected for degrees of freedom equals 0.2348 suggesting that about 23 per cent of variability in the dependent variable is explained. All the explanatory variables being insignificant only in the specific case of Ukraine tend to suggest that the bond spread of the country is driven by other forces, possibly including low quality of governance, corruption and heavy speculation.

Serbia

eq. 7   **SSEMBI = -198.8189INPT + 0.47910CDS + 21.0931VIX - 0.020865ECM (-1)**

                        (-3.3529)   **(2.7677)**   **(11.5718)**   **(-5.8916**)

No. obs: 1592

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic   CHSQ(3) =   50.9643[.000]

Likelihood Ratio Statistic   CHSQ(3) =   51.8049[.000]

F Statistic   **F(3,1539) =   17.1100[.000]**

R-bar-squared: **0.1965**

DW-statistics: **2.0069**

The results of the F-statistic for the joint test of zero restrictions on the coefficients of additional variables for Serbia reject the null hypothesis in favour of the existence of long-run relationship between SSEMBI, CDS and VIX. We estimate eq.7 and get the long-run coefficient; then we obtain the estimates of the error correction model associated with these long-run estimates and report the outcome as eq.7 above. All the explanatory variables are strongly significant (t-ratios shown in parenthesis) and with the expected sign. One point increase in the Serbia's risk (approximated by the CDS) would lead to increase of about 0.48 basis points in the dependent variable SSEMBI (Hungary's bond's spread) ceteris paribus. If the global risk aversion (proxied by VIX) goes up by one point an increase of about 21 basis points in SSEMBI would be induced everything else remaining the same. The error correction coefficient of about -0.020 implies just about 34 working days half-life to equilibrium of the Serbian bond spread. The coefficient for mutual determination corrected for degrees of freedom equals 0.1965 suggesting that just around 20 per cent of variability in the dependent variable is explained.

Kazakhstan

eq. 8   **SSEMBI = -173.21 INPT + 0.3261 CDS + 20.9384 VIX - 0.0417 ECM (-1)**

                        (-2.5738)   **(3.3923)**   **(7.3869)**   **(-5.1551**)

No. obs: 1292

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic   CHSQ(3) =   18.0163[.000]

Likelihood Ratio Statistic   CHSQ(3) =   18.1444[.000]

F Statistic   **F(3,1239) =   5.9007[.001]**

R-bar-squared: **0.2903**

DW-statistics: **1.9953**

The results of the F-statistic for the joint test of zero restrictions on the coefficients of additional variables for Kazakhstan reject the null hypothesis in favour of the existence of long-run relationship between SSEMBI, CDS and VIX. We estimate eq.8 and get the long-run coefficient; then we obtain the estimates of the error correction model associated with these long-run estimates and report the outcome as eq.8 above. All the explanatory variables are strongly significant (t-ratios shown in parenthesis) and with the expected sign. One point increase in the Kazakhstan's risk (approximated by the CDS) would lead to increase of about 0.33 basis points in the dependent variable SSEMBI (Kazakhstan's bond's spread) ceteris paribus. If the global risk aversion (proxied by VIX) goes up by one point an increase of about 21 basis points in SSEMBI would be induced everything else remaining the same. The error correction coefficient of about -0.042 implies just about 16 working days half-life to equilibrium of the Kazakhstan bond spread. The coefficient for mutual determination corrected for degrees of freedom equals 0.2903 suggesting that about 29 per cent of variability in the dependent variable is explained.

6. Sovereign Bond Spreads, Financial Markets Determinants: Cross Sectional Time Series Estimate – Pooled Least Squares

The cross-sectional-time-series (CSTS) data contains valuable information about both: i) changes between the subjects (cross-sectional information); and, ii) changes within the subjects (time-series information).

Turning to the panel data model, first we perform series of unit-root tests (checking both for individual and common unit root processes), on the basis of which, we are not able to reject the presence of unit roots (detailed results of the tests are presented in Annex 1) in the data.

Next we perform panel cointegration tests (see Annex 2), all of which reject the null hypothesis of no cointegration. Hence, given that our variables are cointegrated we proceed with estimating both fixed and random effects (cointegrated panels) models. In general, the fixed effects model assumes that each country differs in its intercept term, while the random effects model assumes that each country differs in its error term. We perform two test: i) Pedroni residual cointegration test; and Kao residual cointegrtion test.

All of the eleven statistics reported in the test of Pedroni reject the null hypothesis of no cointegration at a very high level of significance. The same strong result is obtained from the Kao test (Annex 2).

It should be noted that the literature on panel cointegration is still in a process of development and fine-tuning. In particular cointegration tests based on cross sectional dependence when improved further should replace / should be used together with the Pedroni and Kao (first-generation) tests which assume cross-sectional independence.

As a next step we proceed with estimating a fixed effect (FE) model. The results are shown at Table 5. below.

Table 4. Pooled Least Squares Fixed Effects Model, Estimation Results

Dependent Variable: SSEMBI
Total pool (balanced) observations: 9546

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-31.91908	4.139766	-7.710360	0.0000
CDS	0.424554	0.004007	105.9562	0.0000
VIX	10.13878	0.169247	59.90516	0.0000
Fixed Effects (Cross)				
BGN--C	-62.44306			
HUN--C	-51.47301			
POL--C	-118.8528			
RUS--C	-32.03785			
SER--C	99.14332			
UKR--C	165.6634			

R-squared	0.780282	Mean dependent var		342.4605
Adjusted R-squared	0.780121	S.D. dependent var		361.3367
S.E. of regression	169.4354	Akaike info criterion		13.10366
Sum squared resid	2.74E+08	Schwarz criterion		13.10966
Log likelihood	-62535.76	Hannan-Quinn criter.		13.10570
F-statistic	4838.884	Durbin-Watson stat		0.731852
Prob(F-statistic)	0.000000			

The fixed effects coefficients differ in sign and size. Consequently, we test for (unobserved) heterogeneity. The

test applied is the standard (in EViews) Redundant Fixed Effects Tests, where the null hypothesis is that the fixed effects are all equal to each other.

Table 5. Redundant fixed effects test

Redundant Fixed Effects Tests
Pool: POOL01
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	559.253226	(5,9538)	**0.0000**
Cross-section Chi-square	2454.252098	5	**0.0000**

The p-values related to the F-statistic and the Chi-square statistics are both very small, (see Table 5, above) providing strong evidence against the null hypothesis and suggesting the existence of heterogeneity.

Next we plot and examine both the residual correlation and residual covariance matrices:

Table 6. Residual Correlation Matrix

	BGN	HUN	POL	RUS	SER	UKR
BGN	**1.000000**	0.616180	0.111101	0.833714	0.378806	0.010543
HUN	0.616180	**1.000000**	0.204054	0.742839	0.179843	-0.015597
POL	0.111101	0.204054	**1.000000**	0.146597	-0.060416	-0.075385
RUS	0.833714	0.742839	0.146597	**1.000000**	0.458929	0.097838
SER	0.378806	0.179843	-0.060416	0.458929	**1.000000**	0.761338
UKR	0.010543	-0.015597	-0.075385	0.097838	0.761338	**1.000000**

The correlation matrix indicates that there certainly is correlation observed among cross-sections. Interestingly, Ukraine displays negative correlations with Poland and Hungary, and such effect obtains between Serbia and Poland: an "anti-contagion" effect.

Table 7. Residual Covariance Matrix

	BGN	HUN	POL	RUS	SER	UKR
BGN	**2906.718**	3412.749	1702.920	2866.242	2700.845	134.8261
HUN	3412.749	**10553.35**	5959.585	4866.135	2443.262	-380.0592
POL	1702.920	5959.585	**80826.37**	2657.636	-2271.468	-5083.698
RUS	2866.242	4866.135	2657.636	**4066.196**	3870.088	1479.853
SER	2700.845	2443.262	-2271.468	3870.088	**17488.88**	23882.24
UKR	134.8261	-380.0592	-5083.698	1479.853	23882.24	**56264.30**

The diagonal demonstrates the variances of the residuals for each cross-section in bold; the remaining numbers of the matrix show the covariance of the residuals across cross-sectional units. Based on the results from tables 6 and 7, above, we explore the opportunity to obtain an efficient estimator (using EGLS with SUR weights) by utilising the correlations between the residuals. The results of the re-estimated model are presented below.

Table 8. Fixed effects model using estimated generalized least squares (EGLS) with seemingly unrelated regression (SUR) weights

Dependent Variable: SSEMBI
Total pool (balanced) observations: 9546

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.87775	2.999460	4.960143	0.0000
CDS	0.417642	0.002665	156.7225	0.0000
VIX	8.265180	0.123106	67.13875	0.0000
Fixed Effects (Cross)				
BGN--C	-63.15626			
HUN--C	-51.96075			
POL--C	-119.9469			
RUS--C	-32.85247			
SER--C	98.86306			
UKR--C	169.0533			
	Weighted Statistics			
R-squared	0.844508	Mean dependent var		1.607103
Adjusted R-squared	0.844394	S.D. dependent var		2.841986
S.E. of regression	0.983804	Sum squared resid		9231.543
F-statistic	7400.421	Durbin-Watson stat		0.343481
Prob(F-statistic)	0.000000			
	Unweighted Statistics			
R-squared	0.776572	Mean dependent var		342.4605
Sum squared resid	2.78E+08	Durbin-Watson stat		0.691820

The estimates of CDS and VIX are to some extent smaller, but as the heteroscedasticity EGLS is more efficient than OLS estimator the standard error of CDS and VIX are less significant.

Next we experiment with estimating a random effects (RE) model (Table 9, below)

Table 9. Random Effects Model, Estimation Results

Dependent Variable: SSEMBI
Method: Pooled EGLS (Cross-section random effects)
Total pool (balanced) observations: 9546
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-31.80419	12.44861	-2.554839	0.0106
CDS?	0.426632	0.003996	106.7746	0.0000
VIX?	10.10665	0.169184	59.73777	0.0000
Random Effects (Cross)				
BGN--C	-60.89944			
HUN--C	-50.22998			
POL--C	-115.9926			
RUS--C	-31.11365			
SER--C	97.10691			
UKR--C	161.1287			

			S.D.	Rho
Cross-section random			28.75731	0.0280
Idiosyncratic random			169.4354	0.9720

Weighted Statistics

R-squared	0.702054	Mean dependent var	50.04312
Adjusted R-squared	0.701992	S.D. dependent var	311.4249
S.E. of regression	170.0072	Sum squared resid	2.76E+08
F-statistic	11243.17	Durbin-Watson stat	0.733375
Prob(F-statistic)	0.000000		

While the regression coefficients obtained are practically identical to those of the fixed effects model, the random effects model presumes that the random effects are uncorrelated with the explanatory variables – if not the estimators would be rendered inconsistent (endogeneity problem). We apply the Hausman test (Correlated Random Effects) to test this hypothesis.

Table 10. Correlated random effects – Hausman test

Correlated Random Effects - Hausman Test
Pool: POOL01
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	66.519114	2	0.0000

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
CDS?	0.424554	0.426632	0.000000	0.0000
VIX?	10.138775	10.106654	0.000021	0.0000

The test (Table 11, above) rejects the null hypothesis at all conventional levels of confidence. Hence, the assumption that the random effects are uncorrelated to the explanatory variables is not acceptable, not allowing us to continue further with this approach.

7. Sovereign Bond Spreads, Macroeconomic Determinants – Spread Regressions by Country

In what follows we move to quarterly data frequency and try to assess the effect of the macroeconomic variables listed below as determinants of the sovereign bond spreads. We continue by applying the ARDL procedure.

SSEMBI **--** Stripped Spread JPM EMBI GLOBAL

VIX -- Volatility Index (proxy for global risk aversion)

PDGDP -- Government debt as per cent of GDP (Bulgaria, Croatia and Hungary)
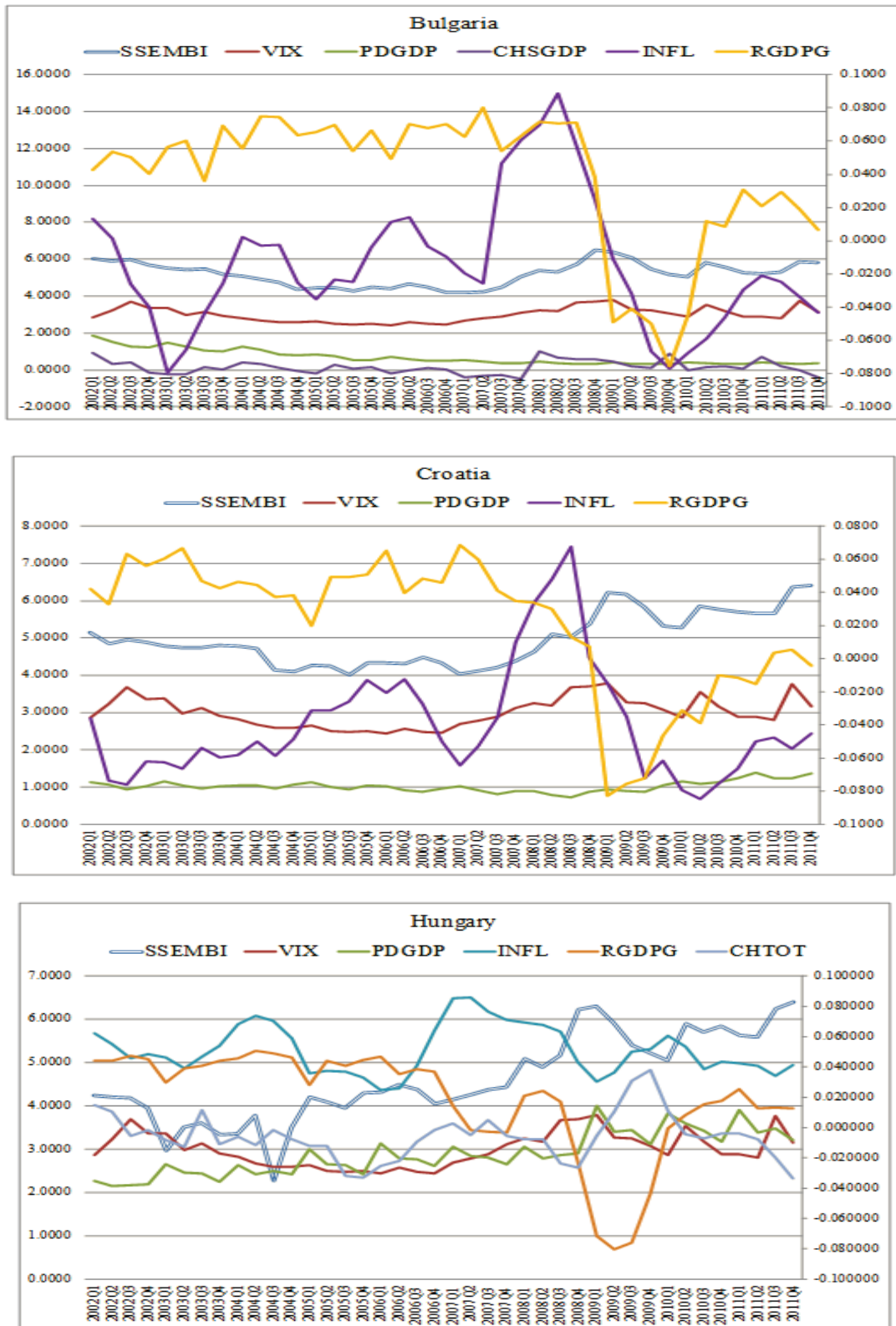
RGDPG -- Real GDP growth
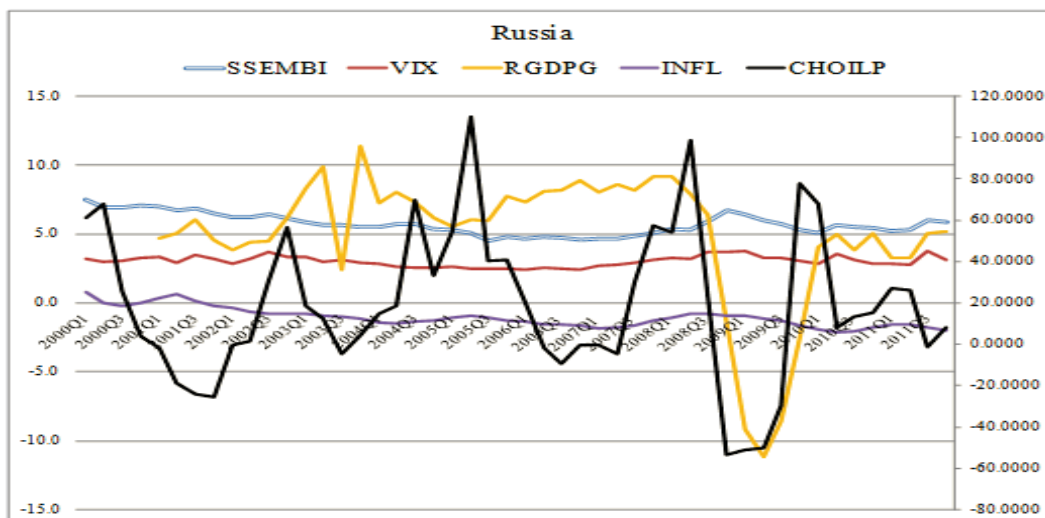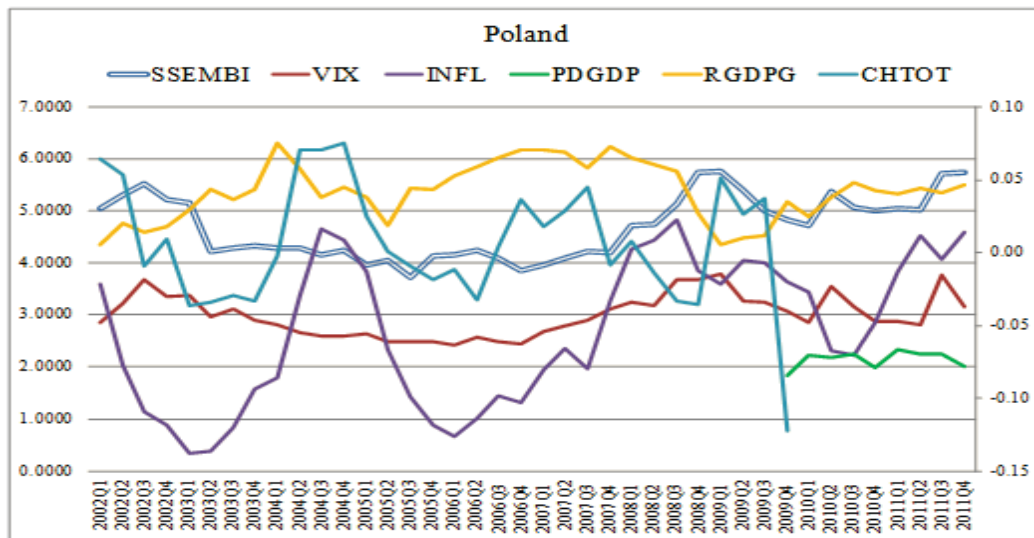
INFL -- Relative change in CPI

CHTOT – Change in the Terms of Trade (only for Hungary and Poland)

CHOILP – Change in Oil Prices (only for Russia)

Figure 5. Sovereign bond yield spreads, potential macroeconomic determinants: Bulgaria, Croatia, Hungary, Poland, and Russia

Poland

Russia

To test the existence of a long-run relationship between variables we estimate the error correction depiction of an underlying ARDL for five countries (Bulgaria, Croatia, Hungary, Poland, and Russia) for which there are data (to a degree) available over the period 2002Q2 to 2011Q4.

For Bulgaria and Croatia the ARDL model is:

$$DSSMBI_t = INPT + \sum_{i=1}^{4} \alpha DSSEMBI_{t-i} + \sum_{i=1}^{4} \beta DVIX_{t-i} + \sum_{i=1}^{4} \gamma DPDGDP_{t-i} + \sum_{i=1}^{4} \delta DRGDPG_{t-i}$$

$$+ \sum_{i=1}^{4} \theta DINFL_{t-i} + \pi_1 SSEMBI_{t-1}\ \pi_2 VIX_{t-1} + \pi_3 PDGDP_{t-1} + \pi_4 RGDPG_{t-1}$$

$$+ \pi_5 INFL_{t-1} + \varepsilon_t$$

We test the null hypothesis of the non-existence of a long-run relationship, i.e.,

$\quad H_0: \pi_1 = \pi_2 = \pi_3 = \pi_4 = \pi_5 = 0$

versus

$\quad\quad\quad H_1: \pi_1 \neq 0,\ \pi_2 \neq 0, \pi_3 \neq 0, \pi_4 \neq 0,\ \pi_5 \neq 0$

Bulgaria

Comparing the F-statistic (2.0662) obtained (below) with the critical value bounds determined by Pesaran, Shin and Smith (1996), the critical values at the 90 per cent level are specified as 2.425 to 3.574. Since the F-statistics is below the lower bound of the critical range, we cannot reject the null of no long-run relationship independent of the order of integration of the respective variables.

No. obs: 39

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic   CHSQ(5) = 17.2694[.004]

Likelihood Ratio Statistic   CHSQ(5) = 22.8087[.000]

F Statistic   **F(5, 13) = 2.0662[.135]**

R-bar-squared: 0.6154

DW-statistic: 1.756

Still only for illustrative purposes we estimate the long-run coefficients and their levels of significance (t-statistics):

eq. 9 **SSEMBI = -.19174*INPT + 1.7028*VIX + .15018*PDGDP - .92055*RGDPG +.053177*INFL -.44284*ECM(-1)**

             (-0.2468)   **(2.8587)**   (0.8537)

(-0.7010)   (1.7650)   **(5.7035)**

Croatia

Following the same procedure we obtain:

No. obs: 39

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic   CHSQ(5) = 14.7731[.011]

Likelihood Ratio Statistic   CHSQ(5) = 18.5678[.002]

F Statistic   **F(5, 28) = 3.4148[.016]**

R-bar-squared: 0.47318

DW-statistic: 1.8718

The value of the F-statistic (3.4148) obtained (above) falls within the critical value band (at the 90 per cent level) specified by 2.425 to 3.574. Hence, the results are inconclusive.

Again, only for illustrative purposes we estimate the long-run coefficients and their levels of significance (t-statistics):

eq. 10 **SSEMBI= -1.4081*INPT + 1.3656*VIX + 2.2858*PDGDP - .3836*RGDPG +.20194*INFL -.4093*ECM(-1)**

             (-0.9671)   **(4.8073)**   **(3.1512)**

(-3.8066)   (-2.5435)   (-4.1130)

Next we extend slightly the model to include the change in the terms of trade variable (CHTOT), below, and apply it for Hungary and Poland

$$DSSMBI_t = INPT + \sum_{i=1}^{4} \alpha DSSEMBI_{t-i} + \sum_{i=1}^{4} \beta DVIX_{t-i} + \sum_{i=1}^{4} \gamma DPDGDP_{t-i} + \sum_{i=1}^{4} \delta DRGDPG_{t-i}$$

$$+ \sum_{i=1}^{4} \theta DINFL_{t-i} + \sum_{i=1}^{4} \varphi DCHTOT_{t-i} + \pi_1 SSEMBI_{t-1} + \pi_2 VIX_{t-1} + \pi_3 PDGDP_{t-1}$$

$$+ \pi_4 RGDPG_{t-1} + \pi_5 INFL_{t-1} + \pi_6 CHTOT_{t-1} + \varepsilon_t$$

We test the null hypothesis of the non-existence of a long-run relationship, i.e.,

$$H_0: \pi_1 = \pi_2 = \pi_3 = \pi_4 = \pi_5 = \pi_6 = 0$$

versus

$$H_1: \pi_1 \neq 0,\ \pi_2 \neq 0, \pi_3 \neq 0, \pi_4 \neq 0,\ \pi_5 \neq 0,\ \pi_6 \neq 0$$

Hungary:

No. obs: 39

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic   CHSQ(6) =   33.4248[.000]

Likelihood Ratio Statistic   CHSQ(6) = 108.5336[.000]

F Statistic   **F(6,   4) =   14.1462[.011]**

R-bar-squared: 0.3526

DW-statistic: 2.2134

We compare the F-statistic (14.1462) with the critical value bounds determined by Pesaran, Shin and Smith (1996). The critical values at the 99 per cent level are specified by 3.516 to 4.781. Since the F-statistics is above the upper bound of the critical value, we reject the null of no long-run relationship unconnected of the order of integration of the respective variables.

Then based on the Schwartz Bayesian information criteria (SBC) we select the ARDL(1,0,1,0,0,0) model specification and estimate the long-run coefficients; subsequently we estimate the error correction model related to these long-run coefficients and we get:

eq. 11 **SSEMBI = -3.4149*INPT + .93477*VIX + 1.7531*PDGDP - 3.1682*RGDPG + 2.2919*INFL - 24.6521*CHTOT - .59845*ECM(-1)**

                              (-2.1494)   **(2.8587)**   **(4.7103)**
(-0.6100)   **(-0.4263)**   **(-2.5381)**   **(-4.2383)**

Not including RGDPG and INFL all other coefficients are statistically significant and with the expected sign. It is interesting to observe that for Hungary the CHTOT is exercising the most substantial effect on SSEMBI, i.e., one unit increase in the terms of trade would lead to an almost 25 basis points reduction in the spread (SSEMBI). The error correction coefficient is strongly significant, has the correct sign and implies a half-life to convergence of about 50 working days.

Poland

The value of the F-statistic (3.6998) attained (below) is just above the higher critical value bound (at the 90 per cent level) specified by 2.425 to 3.574. Hence, at this level, we can reject the null hypothesis of no long run relationship.

No. obs: 39

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic   CHSQ(5) =   17.0314[.004]

Likelihood Ratio Statistic   CHSQ(5) = 25.6654[.000]

F Statistic   **F(5,   13) =   3.6998[.027]**

R-bar-squared: 0.67176

DW-statistic: 2.2495

Next, on the basis of the SBC we select the ARDL(1,2,1,1,0) model specification, then estimate the long-run coefficients and the error-correction model related to them.

eq. 12   **SSEMBI= -1.9125*INPT + .96280*VIX - 7.0988*RGDPG +.17453*INFL + 1.1700*CHTOT -.7010*ECM(-1)**

                            (3.1198)   **(5.4058)**   **(-2.5313)**
(2.6459)   **(0.8464)**   **(4.4196)**

With the exception of CHTOT all coefficients are statistically significant and with the expected sign. We observe that for Poland the RGDPG is having the most important effect on SSEMBI, i.e., one unit increase in the terms

of trade would lead to about seven basis points reduction in the spread (SSEMBI). The error correction coefficient is strongly significant, has the correct sign and implies a half-life to convergence of about 38 working days.

Finally, we amend somewhat the model to include the change in oil prices variable (CHOILP), and remove the PDGDP (public debt as per cent of GDP – for which we do not have data) below, and apply it for Russia

$$DSSMBI_t = INPT + \sum_{i=1}^{4} \alpha DSSEMBI_{t-i} + \sum_{i=1}^{4} \beta DVIX_{t-i} + \sum_{i=1}^{4} \delta DRGDPG_{t-i}$$

$$+ \sum_{i=1}^{4} \theta DINFL_{t-i} + \sum_{i=1}^{4} \varphi DCHOILP_{t-i} + \pi_1 SSEMBI_{t-1} + \pi_2 VIX_{t-1} + \pi_3 PDGDP_{t-1}$$

$$+ \pi_4 RGDPG_{t-1} + \pi_5 INFL_{t-1} + \pi_6 CHOILP_{t-1} + \varepsilon_t$$

We test the null hypothesis of the non-existence of a long-run relationship, i.e.,

$$H_0: \pi_1 = \pi_2 = \pi_3 = \pi_4 = \pi_5 = \pi_6 = 0$$

versus

$$H_1: \pi_1 \neq 0, \ \pi_2 \neq 0, \pi_3 \neq 0, \pi_4 \neq 0, \ \pi_5 \neq 0, \ \pi_6 \neq 0$$

Russia

The value of the F-statistic (3.8821) attained (below) is above the upper critical value bound (at the 90 per cent level) specified by 2.425 to 3.574. Hence, at this level, we can reject the null hypothesis of no long run relationship.

No. obs: 41

Joint test of zero restrictions on the coefficients of additional variables:

Lagrange Multiplier Statistic	CHSQ(5) =	17.9200[.003]
Likelihood Ratio Statistic	CHSQ(5) =	23.5588[.000]
F Statistic	F(5, 25) =	3.8821[.010]
R-bar-squared: 0.62109		
DW-statistic: 2.0471		

Next, on the basis of the SBC we select the ARDL(1,1,0,0,0) model specification, then estimate the long-run coefficients and the error-correction model related to them.

eq. 13   SSEMBI = -2.7018*INPT + 2.5998*VIX + .090291*RGDPG -.016650*INFL + 0.00552*CHOILP -.19191*ECM(-1)

                              (0.98488)   **(2.7383)**   (1.4145)
(-0.27910)   (0.8464)   **(2.0286)**

With the exception of VIX all coefficients are not statistically significant and with the "wrong" sign. Interestingly, one of these coefficnts is CHOILP. The error correction coefficient is significant and has the correct sign. However, it implies quite a long half-life to convergence of about 215 working days.

8. Concluding Remarks and Policy Implications

First we analyse the financial markets (variables) explanatory power (using proxies for change in market sentiment (VIX) and for adjustment in country's risk (CDS)) over the emerging market bond index spread on a country by country basis.

Using the F-statistic test for joint significance of zero restrictions on the lagged levels of the additional variables (Pesaran, Shin and Smith, 1996) we cannot reject at conventional significance levels the null hypothesis that sovereign bond spreads are cointegrated with the VIX and the country specific CDS[5].

---

[5]With the single exception of Croatia.

On examination most of the explanatory variables are strongly significant (t-ratios are presented in parenthesis) and have the expected signs. The underlying ARDL equations also pass the diagnostic tests in the majority of cases.

Studying the range of the estimated values we observe that a one point increase in the country's risk (as measured by the CDS) would induce an increase in the region of about half a basis point (ranging from about 0.33 to 0.82) in the dependent variable SSEMBI (bond's spread), everything else remaining the same. If VIX (the proxy for global risk aversion) goes up by one point, this will induce on average about an 11 basis points increase (displaying values from about 3.9 to just above 21) in the country's spread.

The error correction coefficient estimates are within the cluster of –0.015 to -0.044 suggesting a reasonable speed of convergence to equilibrium, with a half-life reporting from fewer than 15 working days to about 45 working days. Hence, in just about two-thirds of a quarter the spread (SSEMBI) should return to its equilibrium. Interestingly, the error correction coefficients and hence the speed of convergence for most of the countries (Bulgaria, Hungary, Russia, and Kazakhstan) is almost one and the same (in the vicinity of –0.042 to -0.044). Therefore it is evident that hypothetically they would converge back to their respective equilibrium values for the SSEMBI more than three times as fast as Serbia and Poland.

The coefficients for mutual determination corrected for degrees of freedom are generally in-between 0.2 to 0.5 suggesting that about 20 to 50 per cent of the variability in the dependent variable (SSEMBI) has been explained. The exceptions are Hungary and Poland, where just about five per cent (on average) of the variability of the respective dependent variable is explained.

Furthermore, for Serbia the tests (for joint significance) suggest that the variables CDS and VIX can be treated as the long-run forcing variables for the dependent variable SSEMBI. Interestingly while this is valid for Serbia, for Poland, Russia and Ukraine our results suggest a bidirectional relationship between CDS (as potential dependent variable) and SSEMBI and VIX, and non-rejection of the null hypothesis that the lagged level variables CDS and SSEMBI do not enter significantly in the potential determination (potential equation) of VIX. In the case of Kazakhstan the null hypothesis that the lagged values of SSEMBI and VIX do not enter significantly in the determination of CDS cannot be rejected, but there is an apparent relationship between VIX and CDS and SSEMBI. Regarding Bulgaria and Hungary we observe complete bidirectional interrelations among all three variables.

In our analysis we estimate separate equations / data generation processes for the various (former centrally planned) economies and find statistically significant and economically perceivable coefficients. The data shortage precluded any potential experimentation with different specifications or another dataset. Hence, if the coefficients tend to be homogenous, pooled panel estimation would be useful and suitable to be exploited.

For this reason we estimate cointegrated pooled panel models. The results from the fixed effects and random effects pooled panel data models are practically identical and are consistent with our previous findings from the individual equation estimates. Concretely, a one point increase in CDS (proxy for country risk) would add about 0.42 basis points to the variable SSEMBI, *ceteris paribus*; whereas a one unit increase of VIX (stand-in for global risk aversion) would bring about an 8.3 basis points increase in SSEMBI. The coefficient of mutual determination corrected for degrees of freedom is very high, suggesting that about 84 per cent of the variability of the dependent variable (sovereign bond spreads) is explained.

Next we examine the effect of a change in macroeconomic fundamentals on changes of spreads. A relatively noteworthy proportion of fluctuations in transition economies market spreads may be attributed to be driven by country-specific fundamentals. The results imply that improved macroeconomic fundamentals, such as lower ratios of debt to GDP, higher rates of real GDP growth, and low inflation help in reducing sovereign spreads.

For example, reduced indebtedness seems to contribute positively to sovereign spreads in Hungary; one may expect the same to be valid for Poland, but in the case of Poland, the model did not include any measure of indebtedness due to the lack of a time series from (at least) 2001Q1.

It is interesting that in the cases of Bulgaria and Russia we find four insignificant independent variables, whereas these are significant for some of the other countries. This seems to be a possible indication of institutional weakness, limiting the effect of the stance of the macroeconomic aggregates and making their impact trivial. This result is in agreement with Hallerberg and Wolff (2006).

Still, macroeconomic aggregates play a certain role in determining bond spreads, but mostly through the channel of global risk aversion / appetite corroborating Favero and Missale (2011) for our specific set of (CEE and CCA) countries.

Evidently, the only variable which appears in both financial market reaction and macroeconomic fundamentals equations and works strongly and consistently in the same direction is VIX. This suggest that the levels of spreads can be subject to significant alteration from the impact of financial market volatility (as measured by VIX) and could potentially be pushed up or down in ways that have little to do with their respective macroeconomic fundamentals.

The error correction coefficients suggest a return to equilibrium (with half-life) in the range of about 38 to 50 working days[6] – a very similar order of magnitude to that derived in the financial market high frequency data sample equations.

This sheds light and provides clear evidence on the critical factors that have a significant influence on the variation in spreads in the transition countries environment -- in reality worldwide factors are principally responsible for the changes in spreads. Hence, any kind of government intervention aiming to to bring down spreads may prove ineffective, unless strongly determined and unfalteringly pre-coordinated.

Now we may ask: has the transition ended? It is debatable, and an agreement on the appraisal of the results of transition is impractical as there are expectations, attitudes and beliefs involved. What would be the appropriate criteria? Obvious cases to look at for constructive suggestions would be Japan, South Korea and China. In their cases it seemed to be self-evident: supreme economic success guided by the respective government (developmental state). Considering transition economies; whatever their pros and cons; neither of them matches the remarkable economic growth achieved by the previous group. Why might that be? The answer is closely linked to the quality of governance, human capital development and corruption, and as a result the level of development of the social knowledge and its practical implementation, i.e., this generally is manifested by the stage of development of manufacturing.

Transition would then end when the transition economies find their place in the global production process and become equal partners with the industrialised world economies -- to become integrated into the international economic framework rather than to be subordinated to it. This would depend on their abilities in developing and exploiting knowledge in the contemporary exceptionally competitive world economy. If Government maintains strong incentives to provide public goods and retains motivation for wealth creation through the efficient use of capital and labour, as an outcome, the economy would remain connected to its comparative advantage, which (for a low-rent country) lies initially in labour-intensive manufactured goods. The brief initial dependence on primary product exports (of low-rent economies) encourages industrialization at a relatively low per capita income, which is therefore labour-intensive and competitive and triggers a beneficial economic advancement. Moreover, competitive diversification increases the capacity of the economy to cope with economic shocks and reinforces the resilience that arises from sustained high rates of investment.

There is a relationship between macroeconomic sustainable growth and the financial sector development. Adequate attention needs to be paid to institutional development and regulatory structure. The financial sector / banking sector features that are critical for successful intermediation and indispensible for growth include: i) transparency (e.g., independence of commercial bank governance from detrimental oligarchic "clients"; ii) sufficient central bank independence from government control; iii) macro-prudential policy needs to be oriented towards the resilience of the entire system and careful judgement (rather than just fixed rules) need to be exercised when applying macro-prudential instruments (in dealing with market failures, e.g., moral hazard, information frictions, risk illusion, herd behaviour, etc.); and, iv) enhanced efficiency of international cooperation in this area.

Potential major future research areas would include: dynamic interaction of local and international developments; absorbing capacity of transition economies; markets in transition economies; and, importance of modern manufacturing for transition economies.

References

Afonso, A., & Strauch, R. (2004). Fiscal Policy Events and Interest Rate SWAP Spreads: Evidence from the EU. *ECB Working Paper Series, 303,* February 2004.

Akitoby, B., & Stratmann, T. (2006). Fiscal Policy and Financial Markets. *IMF Working Paper*, January 2006. https://doi.org/10.5089/9781451862768.001

Aktug, E., Vasconcellos, G., & Bae, Y. (2012). The Dynamics of Sovereign Credit Default Swap and Bond Markets: Empirical Evidence from the 2001-2007 Period. *Applied Economics Letters, 19*(3), February,

---

[6]With the exception of Russia where the half-life is about 215 working days

251-259. https://doi.org/10.1080/13504851.2011.572839

Arezki, R., & Brückner, M. (2010). *Resource Windfalls and Emerging Market Sovereign Bond Spreads: The Role of Political Institutions*. International Monetary Fund: Washington, DC.

Arora, V. B., & Cerisola, M. B. (2001). How does U.S. monetary policy influence economic conditions in emerging Markets? *IMF Staff Papers, 48*(3), 474-498.

Bacha, E., Holland, M., & Goncalves, F. (2008). Systemic Risk Dollarization and Interest Rates in Emerging Markets: A Panel-Based Approach. *The World Bank Economic Review, 23*(1), 101-117. https://doi.org/10.1093/wber/lhn012

Baek, In-Mee, Bandopadhyaya, A., &Ch. Du, (2005). Determinants of market-assessed sovereign risk: Economic fundamentals or market risk appetite? *Journal of International Money and Finance, 24,* 533-548. https://doi.org/10.1016/j.jimonfin.2005.03.007

Baldacci, E., & Kumar, M. (2010). Fiscal Deficits, Public Debt, and Sovereign Bond Yields. *IMF Working Paper*, *184,* August 2010.

Belhocine, N., & Dell'Erba, S. (2013). The Impact of Debt Sustainability and the Level of Debt on Emerging Markets Spreads. *IMF Working Paper, 93,* May 2013. https://doi.org/10.5089/9781484382769.001

Bellas, D., Papaioannou, M., & Petrova, I. (2010). Determinants of Emerging Market Sovereign Bond Spreads: Fundamentals vs. Financial Stress. *IMF Working Paper*, December 2010. https://doi.org/10.1596/9780821384831_ch04

Bernoth, K., von Hagen, J., & Schuknecht, L. (2004). Sovereign Risk Premia in the European Government Bond Market. *ECB Working Paper Series, 369,* June, 2004.

Codogno, L., Favero, C., & Missale, A. (2003). Yield spreads on EMU government bonds. *Economic Policy*, *18*(37), 503-532. https://doi.org/10.1111/1468-0327.00114_1

De Grauwe, P., & Ji, Y. (2012). Self-Fulfilling Crises in the Eurozone: An Empirical Test. *CEPS Working Document, 366,* June 2012. https://doi.org/10.2139/ssrn.2122899

Dell'Erba, S., & Sola, S. (2011). Fiscal Policy, Interest Rates and Risk Premia in Open Economy. *The Graduate Institute of International and Development Studies (IHEID) Working Paper*.

Duffie, D. (2010). Is there a case for banning short speculation in sovereign bond markets? *Banque de France Financial Stability Review, 14*, Derivatives – Financial innovation and stability, July 2010.

Ebner, A. (2009). An empirical analysis on the determinants of CEE government bond spreads. *Emerging Markets Review, 10*(2), 97-121. https://doi.org/10.1016/j.ememar.2009.02.001

Edwards, S. (2005). Capital controls, sudden stops and current account reversals. *NBER Working Paper, 11170.* Cambridge, MA. https://doi.org/10.3386/w11170

Eichengreen, B., & Moody, A. (1998). What Explains Changing Spreads on Emerging Markets Debt? In *Capital Flows and the Emerging Economies: Theory, Evidence and Controversies*, NBER, 107-136, University of Chicago Press.

Favero, C., Pagano, M., & von Thadden, E. (2008). How Does Liquidity Affect Government Bond Yields, *Working Paper*. http://vonthadden.vwl.uni-mannheim.de/fileadmin/user_upload/thadden/research/FavPagavT.pdf

Favero, C., & Missale, A. (2011). Sovereign Spreads in the Euro Area. Which Prospects for a Eurobond? *Economic Policy*, Fifty-fourth Panel Meeting Hosted by the National Bank of Poland, Warsaw, 27-28 October, 2011.

Ferrucci, G. (2003). Empirical determinants of emerging market economies sovereign bond spreads. *Bank of England Working Paper, 205.* https://doi.org/10.2139/ssrn.597422

Fontana, A., & Scheicher, M. (2010), An Analysis of Euro Area Sovereign CDS and Their Relation with Government Bonds. *ECB Working Paper Series, 1271,* December 2010.

Gibson, H., Hall, St., & Tavlas, G. (2011). The Greek Financial Crisis - Growing Imbalances and Sovereign Spreads. *Bank of Greece Working Paper, 124,* March 2011.

Giannikos, C., Guirguis, H., & Suen, M. (2013). The 2008 Financial Crisis and the Dynamics of Price discovery among Stock Prices, CDS Spreads, and Bond Spreads for U.S. Financial Firms. *The Journal of Derivatives,*

21(1), 27-48. https://doi.org/10.3905/jod.2013.21.1.027

Gonzales-Rozada, M., & Levy-Yeyati, E. (2008). Global Factors and Emerging Market Spreads. *The Economic Journal, 118,* November 2008. https://doi.org/10.1111/j.1468-0297.2008.02196.x

Gyntelberg, J., Hordahl, P., Ters, K., & Urban, J. (2013). Intraday dynamics of euro area sovereign CDS and bonds. *BIS Working Papers, 423.*

Halleberg, M., & Wolff, G. (2006). Fiscal institutions, fiscal policy and sovereign risk premia. *Deutsche Bundesbank Discussion Paper Series 1: Economic Studie*s, 35.

Harrod, R. F. (1933) .*International Economics*, London: James Nisbet and Cambridge University Press.

Hartelius, K., Kashiwase, K., & Kodres, L. (2008). Emerging Market Spread Compression: Is it Real or is it Liquidity? *IMF Working Paper*, January, 2008.

Herndon, Th., Ash, M., & Pollin, R. (2013). Does High Public Debt Consistently Stifle Economic Growth? A Critique of Reinhart and Rogoff, *Political Economy Research Institute Working Paper Series*. University of Massachusetts Amhers, No. 322, April, 2013.

Hilscher, J., & Nosbusch, Y. (2010). Determinants of Sovereign Risk: Macroeconomic Fundamentals and the Pricing of Sovereign Debt. *Review of Finance, 14,* 235-262. https://doi.org/10.1093/rof/rfq005

Jaramilo, L., & Weber, A. (2013). Global Spillovers into Domestic Bond Markets in Emerging Market Economies. *IMF Working Paper, 264,* November, 2013. https://doi.org/10.5089/9781484328446.001

Kamin, S., & von Kleist, K. (1999). The Evolution and Determinants of Emerging Markets Credit Spreads in the 1990s. *Boards of Governors of the Federal Reserve System, International Finance Discussion Paper, 653,* November, 1999. https://doi.org/10.2139/ssrn.850104

Kaminsky, G., Reinhart, C., & Vegh, C. (2005). When It Rains, It Pours: Procyclical Capital Flows and Macroeconomic Policies. *NBER Macroeconomics Annual 2004, 19,* April 2005.

Klepsch, C., & Wollmershauser, T. (2011). Yield spreads on EMU government bonds: How the financial crisis has helped investors to rediscover risk. *Intereconomics, ISSN 1613-964X, Springer, Heidelberg, 46*(3), 169-176. https://doi.org/10.1007/s10272-011-0379-2

Maltriz, D. (2012). Determinants of Default Risk in the Eurozone: A Bayesian Approach. *Journal of International Money and Finance, 31,* 657-672. https://doi.org/10.1016/j.jimonfin.2011.10.010

McGuire, P., & Schrijvers, M. (2003). Common factors in emerging market spreads. *BIS Quarterly Review*, December.

Min, H. (1998). Determinants of Emerging Market Bond Spreads, Do Economic Fundamentals Matter? *Policy Research Working Paper*. The World Bank Development Research Group, March 1998.

Mody, A. (2009). From Bear Stearns to Anglo Irish: How Eurozone Sovereign Spreads Related to Financial Sector Vulnerability. *IMF Working Paper, 108,* May 2009. https://doi.org/10.5089/9781451872552.001

O'Kane, D. (2012). The link between eurozone sovereign debt and CDS prices. *Banks, Markets and Investors* 117.

Pagano, M., & von Thadden, L. W. (2004). The European bond markets under EMU. *Oxford Review of Economic Policy, 20*(4). https://doi.org/10.1093/oxrep/grh031

Pesaran, M. H., Shin, Y., & Smith, R. J. (1996). Testing for the Existence of Long-Run Relationship. *DAE Working Paper, 9622,* Department of Applied Economics, University of Cambridge.

Portes, R. (2010). Ban Naked CDS. *Euro Intelligence.*

Reinhart, C., & Rogoff, K. (2010). Growth in a Time of Debt. *American Economic Review: Papers & Proceedings, 100,* May 2010, 573-578. https://doi.org/10.1257/aer.100.2.573

Shim, I., & Zhu, H. (2010).The Impact of CDS Trading on the Bond Market: Evidence from Asia. *BIS Working Paper, 332*, November, 2010. https://doi.org/10.2139/ssrn.1718423

Annex 1

Unit root tests

a) Null Hypothesis: Unit root (individual unit root process)
Series: SSBGN, SSHUN, SSPOL, SSRUS, SSSER, SSUKR
Date: 01/13/15   Time: 20:12
Sample: 5/04/2006 6/08/2012
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 0 to 6
Total number of observations: 9533
Cross-sections included: 6

Method	Statistic	Prob.**
Im, Pesaran and Shin W-stat	-0.23493	0.4071

** Probabilities are computed assuming asympotic normality

b) Null Hypothesis: Unit root (individual unit root process)
Series: SSBGN, SSHUN, SSPOL, SSRUS, SSSER, SSUKR
Date: 01/13/15   Time: 20:15
Sample: 5/04/2006 6/08/2012
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 0 to 6
Total number of observations: 9533
Cross-sections included: 6

Method	Statistic	Prob.**
ADmnjjjF - Fisher Chi-square	9.11905	0.6927
ADF - Choi Z-stat	-0.11368	0.4547

** Probabilities for Fisher tests are computed using an asymptotic Chi
    -square distribution. All other tests assume asymptotic normality.

c) Null Hypothesis: Unit root (common unit root process)
Series: SSBGN, SSHUN, SSPOL, SSRUS, SSSER, SSUKR
Date: 01/13/15   Time: 20:14
Sample: 5/04/2006 6/08/2012
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 0 to 6
Newey-West bandwidth selection using Bartlett kernel
Total number of observations: 9533
Cross-sections included: 6

Method	Statistic	Prob.**
Levin, Lin & Chu t*	0.23601	0.5933

** Probabilities are computed assuming asymptotic normality

d) Null Hypothesis: Unit root (individual unit root process)
Series: CDSBGN, CDSHUN, CDSPOL, CDSRUS, CDSSER, CDSUKR
Date: 01/14/15   Time: 18:22
Sample: 5/04/2006 6/08/2012
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 0 to 19
Total number of observations: 9501
Cross-sections included: 6

Method	Statistic	Prob.**
Im, Pesaran and Shin W-stat	-2.77327	0.0028

** Probabilities are computed assuming asymptotic normality

e) Null Hypothesis: Unit root (individual unit root process)
Series: CDSBGN, CDSHUN, CDSPOL, CDSRUS, CDSSER, CDSUKR
Date: 01/14/15   Time: 18:26
Sample: 5/04/2006 6/08/2012
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 0 to 19
Total number of observations: 9501
Cross-sections included: 6

Method	Statistic	Prob.**
ADF - Fisher Chi-square	54.2077	0.0000
ADF - Choi Z-stat	-2.57448	0.0050

** Probabilities for Fisher tests are computed using an asymptotic Chi
   -square distribution. All other tests assume asymptotic normality.

f) Null Hypothesis: Unit root (common unit root process)
Series: CDSBGN, CDSHUN, CDSPOL, CDSRUS, CDSSER, CDSUKR
Date: 01/14/15   Time: 18:24
Sample: 5/04/2006 6/08/2012
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 0 to 19
Newey-West bandwidth selection using Bartlett kernel
Total number of observations: 9501
Cross-sections included: 6

Method	Statistic	Prob.**
Levin, Lin & Chu t*	0.66475	0.7469

** Probabilities are computed assuming asymptotic normality

g) Null Hypothesis: Unit root (individual unit root process)
Series: VIXBGN, VIXHUN, VIXPOL, VIXRUS, VIXSER, VIXUKR
Date: 01/14/15   Time: 18:33
Sample: 5/04/2006 6/08/2012
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 2
Total number of observations: 9530
Cross-sections included: 6

Method	Statistic	Prob.**
Im, Pesaran and Shin W-stat	-4.86102	0.0000

** Probabilities are computed assuming asymptotic normality

h) Null Hypothesis: Unit root (individual unit root process)
Series: VIXBGN, VIXHUN, VIXPOL, VIXRUS, VIXSER, VIXUKR
Date: 01/14/15 Time: 18:34
Sample: 5/04/2006 6/08/2012
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 2
Total number of observations: 9530
Cross-sections included: 6

Method	Statistic	Prob.**
ADF - Fisher Chi-square	48.1221	0.0000
ADF - Choi Z-stat	-5.12922	0.0000

** Probabilities for Fisher tests are computed using an asymptotic Chi
   -square distribution. All other tests assume asymptotic normality.

i) Null Hypothesis: Unit root (common unit root process)
Series: VIXBGN, VIXHUN, VIXPOL, VIXRUS, VIXSER, VIXUKR
Date: 01/14/15 Time: 18:34
Sample: 5/04/2006 6/08/2012
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 2
Newey-West bandwidth selection using Bartlett kernel
Total number of observations: 9530
Cross-sections included: 6

Method	Statistic	Prob.**
Levin, Lin & Chu t*	-2.81335	0.0025

** Probabilities are computed assuming asymptotic normality

Annex 2:

Pedroni Residual Cointegration Test

Pedroni Residual Cointegration Test
Series: SS? CDS? VIX?
Date: 01/13/15 Time: 20:00
Sample: 5/04/2006 6/08/2012
Included observations: 1592
Cross-sections included: 6
Null Hypothesis: No cointegration
Trend assumption: No deterministic trend
Lag selection: fixed at 1
Newey-West bandwidth selection with Bartlett kernel

Alternative hypothesis: common AR coefs. (within-dimension)

	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	28.64915	0.0000	11.19017	0.0000
Panel rho-Statistic	-28.67736	0.0000	-17.61534	0.0000
Panel PP-Statistic	-12.43802	0.0000	-8.880309	0.0000
Panel ADF-Statistic	-9.136756	0.0000	-7.728234	0.0000

Alternative hypothesis: individual AR coefs. (between-dimension)

	Statistic	Prob.
Group rho-Statistic	-26.71138	0.0000
Group PP-Statistic	-13.06744	0.0000
Group ADF-Statistic	-10.82616	0.0000

Kao Residual Cointegration Test

Kao Residual Cointegration Test
Series: SS? CDS? VIX?
hyDate: 01/13/15   Time: 20:06
Sample: 5/04/2006 6/08/2012
Included observations: 1592
Null Hypothesis: No cointegration
Trend assumption: No deterministic trend
Lag selection: fixed at 1
Newey-West bandwidth selection using Bartlett kernel

	t-Statistic	Prob.
ADF	-21.36444	0.0000
Residual variance	277.8210	
HAC variance	500.8972	

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RESID?)
Method: Panel Least Squares
Date: 01/13/15   Time: 20:06
Sample (adjusted): 5/08/2006 6/08/2012
Included observations: 1590 after adjustments
Cross-sections included: 6
Total pool (unbalanced) observations: 9537

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID?(-1)	-0.181642	0.007573	-23.98541	0.0000
D(RESID?(-1))	-0.502852	0.008854	-56.79385	0.0000
R-squared	0.389329	Mean dependent var		0.070368
Adjusted R-squared	0.389265	S.D. dependent var		144.8971
S.E. of regression	113.2364	Akaike info criterion		12.29704
Sum squared resid	1.22E+08	Schwarz criterion		12.29854
Log likelihood	-58636.45	Hannan-Quinn criter.		12.29755
Durbin-Watson stat	2.171898			

Copyrights

The Role of Small Businesses (Small Scale Economic Projects) in Alleviating the Acuity of Unemployment

Haga Elimam[1]

[1]King Abdulaziz University, KSA

Correspondence: Haga Elimam, King Abdulaziz University, KSA. E-mail: helimam@outlook.com

Abstract

Small businesses are the essential constituents in the development of economy and generating employment opportunities within country. Unemployment is the major concern, which is spreading its roots in various forms and dimensions. The objective of the study was to examine the role of small businesses in alleviating the acuity of unemployment rate. Quantitative approach has been utilized to examine the role of small businesses. Therefore, data was collected from general statistics, directorate of the Kingdom of Saudi Arabia, during the years 2005-2013. Multiple Regression Analysis using the time series approach has been implemented to analyze the gathered information through SPSS version 20.0. The findings have stated that there was a significant impact of small projects on the unemployment rate of Saudi Arabia (p=0.097). Furthermore, statistically insignificant results were revealed for amount of funding variable (p=0.451). A negative relationship has been determined between unemployment rate and amount of funding; while positive and direct relationship was determined between unemployment rate and population. Small businesses are vital in escalating the economy of the country and sustaining the environmental protection. However, small businesses must amend themselves according to the strategies devised for large projects to contribute more to alleviate unemployment rate in the Kingdom of Saudi Arabia.

Keywords: GDP, labor, small businesses, population, unemployment

1. Introduction

Small businesses can be identified as one of the important mechanisms that provides a main share in the economic development of any country (Al-Khatib et al., 2015). The small scale businesses are associated in the globalization, progression of the employment creation, and economic development of the country. The unconstructive effects of economic turndown critically affect the socio-economic circumstances of the individuals (Salem, 2014).

The small business history has turned into the most provocative stories in the economic expansion of the world (Solomon et al., 2013). In an economy, the role of small businesses were supposed to obstruct the economic growth by attracting scarce resources from the larger complements. Community stability, job creation and innovation discovery are included in the global small business contributions. Small businesses employed over sixty million people in 2010 in USA, but many of these corporations have terminated operations; only fifty percent survived for five years (Bressler, Bressler & Bressler, 2013). Though, small businesses are the builders of many newer organizations, in which many are unprepared for the long-term sustainability (Ji & Hanna, 2012). Hotels are the second main private employer in USA with around 14 million workers. However, there is a premature closure with the industry related risk in the smaller enterprises (Frazer, 2012).

80% of the new jobs are created by the small businesses in the USA with 99.7% of the firms having less than five hundred employees (Link & Scott, 2012). Jobs are lost and the community losses the tax paying institution when the small businesses dissolve for any reason. Although, it has been confirmed by the researchers that small businesses tend to collapse before completing 5 years. Limited data is available on the contribution of such factors, which may result in the closure. Therefore, more firms would flourish and survive in case of data presence during first four years (Ji & Hanna, 2012). A study conducted by Welsh et al., (2014) has revealed that the women in Saudi Arabia are highly educated and gain strong support for being an entrepreneur from their family and friends. Women also rate themselves as successful individuals and have excellent innovative skills. It has been observed that 55% of the women owned businesses in Saudi Arabia. More than 51% of the businesses

have been owned by 70% of the Saudi women and 42% women started their business themselves.

1.1 Problem Statement

The problem of unemployment in Saudi Arabian society is multi-dimensional because the factors of its existence and ways are linked to multiple variables. Some of these variables are connected to the social and cultural factors in society, while others are linked to educational system and its output, and third groups are connected to the economic system.

1.2 Significance

The importance of the study comes out from the significance of small scale economic business projects to Saudi national economy because these projects employ simple productivity techniques that are characterized by high labor intensity. Thereby, they create job opportunities that absorb a sizable portion of unemployed manpower and reduce the increasing demand for government jobs. Furthermore, it has been indicated that the proposed solutions to the problems of small scale economic business projects are major strengths for national economy. Small businesses provide employment opportunities for job seekers and; reduces the unemployment rates in the Kingdom of Saudi Arabia (Al-Qahtani, 1433 AH, 6).

1.3 Objective

Following objectives have been devised to explore the role of small businesses in the Kingdom of Saudi Arabia:

- To define the concept of unemployment, its types, its causes and its impact on society.
- To propose possible solutions for overcoming the problem of unemployment.
- To shed light on small –scale economic business projects (small businesses), their importance and role expected to play in alleviating the problem of unemployment.
- To highlight the problems that confront small-scale economic business projects (small businesses) in the Kingdom of Saudi Arabia.

1.4 Research Questions

Question 1: What are the causes of unemployment in a country?

Question 2: Does unemployment has certain negative consequences on society?

Question 3: Is unemployment linked to high population growth rates?

Question 4: Does provision of employment opportunities through small scale economic business projects (small businesses) lead to reduce unemployment phenomenon?

Question 5: What is the impact of the small scale economic business projects on the national economy?

2. Theoretical Framework

The most important feature of the third millennium is represented in the problems of growing unemployment in its various forms including escalating rate of poverty, destitution and social exclusion. The priorities of the international community are topped at different official and popular levels. The economic, social, and humanitarian dimensions have become a constant as well as disturbing concern for governments and countries as it eventually constitutes a continuous threat to peace, security and mankind. Additionally, the consequences of this phenomenon still stand as a stumbling block before achieving the goal of comprehensive and sustainable development (Dahlan, 2005).

Unemployment can be defined as the presence of individuals in a society who are able to work, and qualified for both required type and level. These individuals desire for it, seek and agree to accept it under the framework of prevailing wages, but they did not find it at a particular period of time (Abdul Wahab, 2005). Furthermore, unemployment is defined as the situation in which society did not use the labor force fully or optimally. Hence, the actual product of this community is less than potential product where an act leads to a low level of welfare of individuals to be reached (Abdul Wahab, 2005).

2.1 The official Measure of Unemployment

The unemployment rate is the division of the number of unemployed individuals by the total size of work force and multiplied by 100% (Jamei, 2008). The formula is as follows:

Unemployment rate = (number of unemployed individuals) divided by / (work force) ×100%

The work force refers to all employed and unemployed capable individuals, who want to work under the prevailing wage. It is important to point out that the measurement of unemployment rate is a difficult measure in

developing countries as compared to developed countries (Abdulwahab, 2005). The non-possession of official authorities for sound data is the major cause that can be taken as a measure for the unemployment size. This is due to the lack of unemployment benefits that motivate unemployed individuals to register themselves. Another reason for the measurement of unemployment rate is relied on the relative weight of the so-called hidden or black or parallel illegal economy, which is greater in developing countries as compared to developed countries. Relative weight cannot be neglected as the activities of this economy are not included in the official statistics. Furthermore, the lack of accurate statistics and data about the informal sector in developing countries is considered usually in urban sector including small projects and handy individuals.

2.2 Types of Unemployment

Appropriate identification of research participants is critical to the science and practice of psychology, particularly for generalizing the findings, making comparisons across replications, and using the evidence in research syntheses and secondary data analyses. If humans participated in the study, report the eligibility and exclusion criteria, including any restrictions based on demographic characteristics.

2.2.1 Visible Unemployment

Visible unemployment is emerged in the form of individuals who have not utilize their capabilities at the work places. These individuals are observed as the most widespread and common form of unemployment and; therefore, divided into two sub-types: compulsory unemployment and optional unemployment. Compulsory unemployment is the presence of individuals, who are able and willing to work, but they did not find it under the prevailing wage in the market. Compulsory unemployment can be represented in the form of individuals who are capable and willing to search for occupations that are appropriate as compared to their prior ones. Despite the fact that there are occupations that are appropriate in accordance to their qualifications and skills, but they did not acquire them. The main reason for this assertion is the unfamiliarity regarding particular occupation and departments. Similarly, structural unemployment refers to the occurrence of structural changes in the economy, leading to non-conformity of job opportunities available with the skills of workers seeking work.

Numerous causative agents have been defined that lead towards the structural unemployment. The modifications in demand structure are mainly focused in the structural unemployment, which eradicate the demand for manpower due to recession suffered by the economy. Moreover, these modifications are also observed towards the affected industries and emergence of demand for particular types of skills (Zaki, 1997). Technological development can lead to the creation and invention of new goods and products as such incidence will consequently lead to exposing workers involved in the production of old goods and products. The paucity of awareness for modern technology can create chances for unemployment as these technologies are advanced to develop goods and products without the assistance of mankind. Modifications in the labor force increases the percentage of inexperienced females and fresh graduates. This augmentation might be emerged due to the non-conformity of educational outputs with the labor market requirements.

Cyclical unemployment is linked to economic fluctuations or the so-called economic business cycle, as it surfaces in recession periods in which the aggregate demand for goods and services usually declines. The seasonal unemployment arises when demand for workers in certain seasons diminishes and it spreads mostly in dense populated developing countries that are largely dependent on agricultural activity. Therefore, the increment of manpower in this sector reflects a kind of seasonal unemployment due to the nature of agricultural activity.

2.2.2 Disguised or Invisible Underemployment

Invisible underemployment is revealed as the constituent of the surplus manpower having the excess of the actual need of the work. It is comprehensively appeared in the work to achieve consequent increase in the total product and with zero marginal productivity of up to zero. Disguised or invisible unemployment was found in the past at the agricultural sector of developing countries; however, it escalated due to the increase in government employment process.

2.3 Unemployment Rates for the Years 2007-2012

According to the survey conducted by the Central Department of Statistics and Information of the Kingdom of Saudi Arabia (2007-2012), the increase in the general unemployment is examined from the overall unemployment rate of the Saudi Arabia among both sexes, which has reached to 12.1% in 2012. Furthermore, the unemployment rate of Saudi males is reduced up to 6.1% in 2012. Similarly, increase in the Saudi females' unemployment rate by (9.1%) is reached at 35.7% in 2012 (compared to 26.6 % in 2007). Furthermore, it was remarked that the total number of unemployed Saudis (male and female) rose in 2012 by (24.7%) and the number of the unemployed individuals increased by 149 thousand (149,000) to reach 603 thousand (603,000)

unemployed individuals (compared to 454 thousand (454,000) in 2007). This was mainly resulted due to decline in both the percentage of total number of unemployed male Saudis by (9.9%) and their number by 27 thousand (27,000), to reach 244 thousand (244,000). Increase in both the percentage of total number of unemployed Saudi females by (49%) and their number by 176 thousand (176,000) to reach 359 thousand (359,000) was also the major reason for unemployment extent.

Table 1. Unemployed Saudis by Sex and Unemployment rates for the years (2007-2012)

Unemployed Individuals				Unemployment Rates		
Year	Male	Female	Total No.	Male	Female	Total No.
2007	271,007	182,987	453,994	8.0	26.6	11.2
2008	239,170	177,180	416,350	6.8	26.9	10.0
2009	248,162	200,385	448,547	6.9	28.4	10.5
2011	282,930	302,797	585,727	7.4	33.4	12.4
2012	243,983	358,870	602,853	6.1	35.73	12.1

Source: Statistical Yearbook of 2012 (Chapter II, Part V, p. 18) Access date (06/29/2013) (http://portal.mol.gov.sa)

The Saudi Ministry of Labor has indicated that the unemployment rate in the Kingdom of Saudi Arabia escalated to 12.1% in 2012, and the highest percentage of unemployed Saudis holding bachelor's degrees were 49.4%, followed by those holding secondary school certificates with 29.9%.

2.4 Solutions for Addressing the Problem of Unemployment in the Kingdom of Saudi Arabia

Mankind has been encouraged to associate with the state to achieve sustainable development. The government has been focused to address the major dilemma of unemployment among youth category. Therefore, self-efforts and assistance have been escalated by government along with societal and governmental organizations such as Centennial (Centenary) Fund and Bab Riziq Jameel to help them establish their own economic small economic projects. These assistance add values to the national economy and provide new job opportunities. Small economic projects are considered among the solutions used by the Kingdom of Saudi Arabia in combating unemployment and in the absorption of the possible portion of the national workforce, which were not employed successfully by the Kingdom.

The Ministry of Labor and Employment in the Kingdom of Saudi Arabia has applied the Saudi employment strategy to achieve three general objectives including full employment of the labor force, a continuous increase in the contribution of national human resources and the productivity of the national labor. The launch of the Program for assistance of the Incentive has been developed in implementation to the Royal Decree No. A / 61 dated 13/04/1432 H. Furthermore, Human Resource Fund was able through adopting employment support programs to train 139,899 Saudi beneficiaries (male and female).

The launch of Program encourages companies, establishments, firms and factories to develop a new criteria for the employment of Saudi nationals under the Saudization process at the private sector enterprises and to reduce the number of unemployed individuals. In fact, in 1433 AH 459,400 Saudis were employed by the private sector enterprises. The Ministry of Labor and Employment in the Kingdom of Saudi Arabia has given particular attention to women's work, by adopting a number of measures that facilitate the employment of women and secure them for honorable work areas. The development of wage protection program guarantees the receipt of labors at the private sector for their wages and salaries through depositing them at their respective bank accounts. Thus, this process addressed the problems of illegal hidden employment.

2.5 The Concept of Small Projects

Abulfahm (2009) has mentioned concept of small projects by observing the volume standard of the capital invested in the project: This standard is comprised of the strategies, which distinguish the types of the small business. It is assumed that the small project did not intensively use capital but the determination of the capital of small project differs from one country to another. Small businesses are characterized by the reduction of the value of its products, and hence the value of its sales. This standard is considered an honest measure for the level of project activity. Furthermore, small businesses are known for the low value of their sales, link to the local markets and their inability to market their products in international markets. Similarly, different sales volume is classified from one country to another. Number of Employees Standard is the most common standard for the definition of small economic projects, as small businesses employ a limited number of workers. The Ministry of Finance and National Economy uses the number of employee's standard as the basic standard for determining the number of corporations or small businesses. In fact, 86.8% corporations or small businesses employ between (10-100) workers in various cities of the Kingdom of Saudi Arabia (Juhani, 2008).

2.6 Small Businesses and Their Role in Tackling Unemployment

The increasing concern of the Kingdom of Saudi Arabia with increased small projects resulted to play a significant role in the development of the national economy and in the employment opportunities. In fact, the Kingdom of Saudi Arabia has commenced to encourage the establishment and running of such projects to contribute in the achievement of economic and social development in these countries. When complex atmosphere was created and the required funding was provided, these projects were given the right climate and funding in terms of promulgation of required laws and facilitation of the government's procedures.

The importance of small projects in the economic development is apparent that they directly contributes to the national income. These projects lead to increase the added values and contributes to the balance of payments via reducing the importation of goods. Furthermore, products and the application of the policy of substituting imports with locally produced goods and the development of the export sector of the state is examined through such projects. Furthermore, these small projects exploit raw materials available locally upon which many large industries depend. They also constitute an arena for the development of administrative, technical, and productive and marketing skills to open up a wide range for individual initiatives and self-employment (Al-Qahtani, 1433 AH).

2.7 The Current Status of Small-scale Projects in the Kingdom of Saudi Arabia

The report of the Social Insurance Organization has indicated that the growth indicators in the businesses achieved high growth rates in recent years. This is confirmed by the fact that, the number of enterprises are subscribed to the Social Insurance system with the Social Insurance Organization, as the social security system emerged between 121,500 in 1426 AH to 218,4000 in 1430 AH with an average annual growth rate of 16%. The economic activity of the small scale-economic projects (small businesses/establishments) in the Kingdom of Saudi Arabia has been confined to three activities; namely trade with 34.3%, construction with 32.3% and transformational industries with 14.6%, as indicated in the figure 1 below:
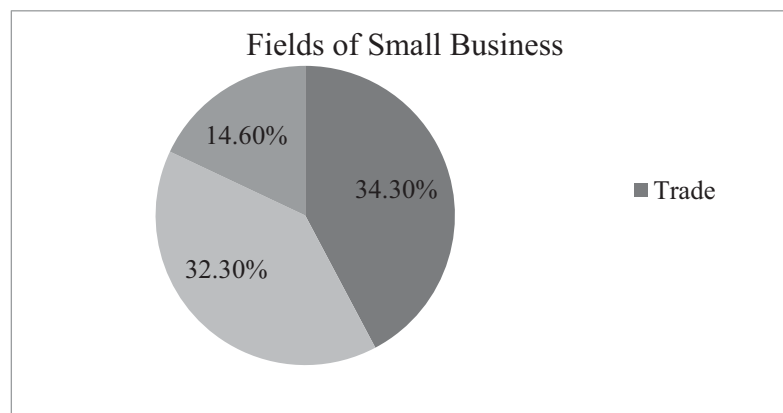

Figure 1. Areas of work of the small businesses in the Kingdom of Saudi Arabia

Source: Saudi Economic Journal, No. 39, p. 44

The classification of the small scale economic projects indicated that the percentage for 5 workers (employees) is 54.4% and firms employing 5 to 59 workers accounted about 41.8% and the remaining 3.8% occupied by enterprises with more than 60 workers, as shown in the figure 2. Based on the number of workers standard, it is clear that small enterprises in the Kingdom of Saudi Arabia accounted for 96%.
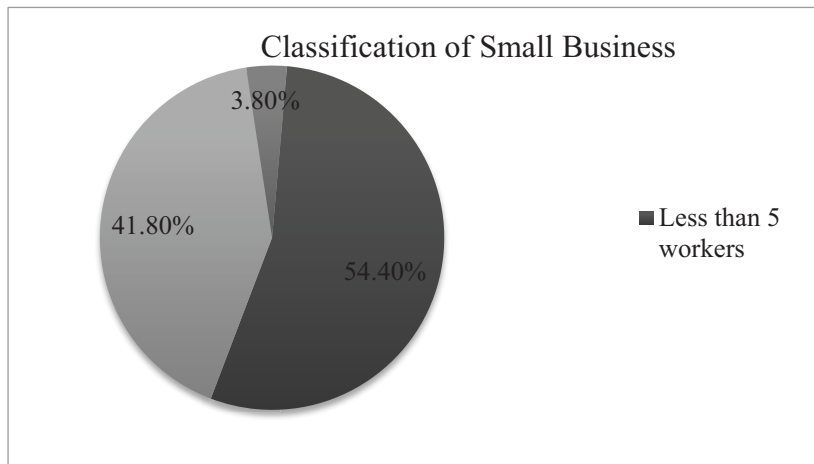
Figure 2. Classification of small and medium–scale economic projects (enterprises) based on the number of workers standard used in the Kingdom of Saudi Arabia.

Source: Saudi Economic Journal, No. 39, p. 44

2.8 Social Importance of Small Projects

The entrepreneurial culture and the establishment of small businesses directly affect the proprietors, children, work, and on their daily lives. The establishment of small projects improves their living conditions by raising their incomes, meeting their needs and to ensure stability for themselves and their families. This aspect will develop certain opportunities to express themselves and their abilities to achieve social cohesion among members of society through the relationships that are created among employees as well as to create a balanced relationship among the various segments of society. It is a fact that the opportunity will be available to all those who work, persevere, strive and aspire for the best.

2.9 Economic Importance of Small Projects

The economic significance of the small businesses in the Kingdom of Saudi Arabia can rely on the intensity of the work factor more than its dependence on the intensity capital factor. These projects are dependent on the commencement of unskilled workforce while it shifts into the skilled one, because it gained required technical experience through working in these projects. Furthermore, these small projects have supplied the long run major projects with technical trained manpower.

The small enterprises in the Kingdom of Saudi Arabia constitute 90% of the total number of projects functioning in the country; and absorb at least 35% of the total workforce. Furthermore, individual establishments make up 94.8% of the total number of commercial registries issued so far (Shalaby, 2008, 228).

During the period 2005-2012, an increase in the tendency of youth for establishing their private projects as well as spread the awareness towards the significance of this sector was indicated. The number of small projects funded in 2010 was (2960), 4880 in 2012 with an increment rate of (39.34%). Furthermore, the number of Saudi individuals working in small enterprises reached in 2010 (690) was compared with number of small enterprises in 2012, which reached (750), with an increasing rate of (8%).

Table 2. Number of small enterprises and the number of Saudi employees joining them

Year	No. of Small Projects	No. of Saudis joining small projects
2005	25	12
2006	417	60
2007	540	263
2008	1040	300
2009	2000	648
2010	2960*	690
2011	3920*	720
2012	4880*	750*

Source: Centennial Fund for the years (2005-2012) (* This data is only estimated figures, not actual ones)

The increase and diversification of Gross Domestic Product (GDP) increase the size and diversity by effective means of expanding and diversifying the productive base as they meet the needs of the local market for commodities or services. Furthermore, such projects seek to take advantage of the available local resources, an act that may lead to the increment and diversification of GDP and; thus, elevation of the economic growth rate.

Furthermore, small businesses in the Kingdom of Saudi Arabia contributed 28.7% of the GDP generated by the private sector (excluding oil) (Shalabi, 2004). The Ninth Development Plan (2010-2015) has allocated its thirteen objectives for the development of corporations and small projects as well as for the creation of development of frameworks necessary for its patronage and organization to increase the proportion to the gross domestic product (GDP) (Saudi Economic Journal, 1432 AH).

Balanced regional development is achieved due to their small size and the possibility of their spread in most geographical areas in the Kingdom of Saudi Arabia. The specialized abilities provided in different areas (industrial, agricultural and service) by the small-scale projects (small businesses) develops rural communities and; therefore, reduce migration of individuals to the most developed cities in the Kingdom of Saudi Arabia.

2.10 Role of Small Businesses in Economic Development

Small businesses have endowed catalytic reimbursements to the economic growth. The contribution of small businesses is observed on the national output as well as to the local populace in spite of the consumption and profit they produce. Within the new global economy, manufacturing is perceived less important while services have dominated its existence, which consequently played a vital role for small businesses in dominating service sectors. However, the contribution of small businesses is perceived by several economists in escalating the economic development. It is being argued, that small businesses might innovate, customize products and shift rapidly to fluctuate situations. These businesses have less unionized workforces and ordered management systems to strengthen the economy (Decker et al., 2014). Economic activity by small businesses is significantly considerable for accomplishing economic progression. Furthermore, small businesses became more dominant by adopting tangible resources.

2.11 Small Businesses and Sustainability

Small businesses maintain the technological lead in the international marketplace as well as drive the economy into new dynamics. Indeed, small firms are essential in determining the fiscal conditions of the country and equivalently significant in playing role in the health of the local populace. Specific and general environmental analysis is being the most dominant factor influencing consequently on the external environment of a system or an organization (Williams & Schaefer, 2013). Furthermore, the concentrations are faced in terms of sustainability and sustainable development to identify the wider-ranging practices. Financial limitations and costs are the major factors through which the existence of small businesses is restricted towards environmental sustainability. Similarly, it is being notified that paucity of financial awareness and employee management obstructed the adoption of sustainability practices (Loorbach & Wijsman, 2013).

Strong pressures from external stakeholders are being the cause for small firms to react towards sustainability; however, large businesses were mostly associated to entail in preventive sustainability practices. Numerous studies have observed that small businesses are largely ignorant regarding their environmental regulation, environmental influence and assessment tools constructed to enhance their environmental performance. However, the involvement of small businesses towards sustainability endows them with initial reimbursements and strength. These firms have the potential to utilize innovative strategies in their business practices. There is a need for small businesses to adopt and implement sustainable business practices (Roxas & Coetzer, 2012).

2.12 Environmental Conservation and Sustainable Development

Sustainable development is devised to sustain and attain the dimensions in social, political, environmental and economic spheres. The sustainable development has searched for the primacy of social, political and environmental dimensions through environmental conservation. Environmental conservation is the enduring presence of mankind, which depends on the preservation of the biosphere diversity (Ciegis, Ramanauskiene & Martinkus, 2015). Furthermore, the mankind cannot depend on other natural resources and cannot survive without appropriate air and water provisions. The welfare and existence of mankind is endangered unless the biosphere is adequately conserved. The environment conservation is largely influenced through economic systems; whereas, operations of economic systems are affected by social and political systems. Governance and property rights have been shifted time to time and considered to be the dominant aspect for performance of society and environment conservation (Hobbs & Saunders, 2012).

3. Methodology

Quantitative approach has been employed along with descriptive method to elucidate the concept of unemployment, and the factors influencing it as well as its types and consequences on society. The descriptive method was also utilized to examine the role of small scale economic business projects.

3.1 Data Collection

The data for small-scale economic businesses was also retrieved through general statistics directorate of the Kingdom of Saudi Arabia. Unemployment - population at working age -small-scale economic projects (small businesses) - small projects funding were defined as the study variables. The data was retrieved through centennial fund during the years 2005-2013 to support small-scale economic business projects.

3.2 Data Analysis

The data retrieved from the general statistics directorate of the Kingdom of Saudi Arabia was analyzed to test whether there is significant correlation between the variable dependent on unemployment rate and independent variables (the total number of population and the number of small projects and the amount of funding available). Therefore, Multiple Regression Analysis (MRA) has been applied on the collected information using Statistical Package for Social Sciences (SPSS). The Multiple Regression Analysis have advantages that it can incorporate fairly the general functional forms of the variables. It allows more flexibility than the linear regression model. It is the most widely used empirical analysis in the social sciences and other fields. MRA technique allows functional form of relationships between the variables (Stanley & Doucouliagos, 2012; Cohen, 1983).

4. Results

The findings of the regression analysis have revealed that number of small projects significantly (p=0.051) influenced the unemployment rate in Saudi Arabia. Furthermore, there is a statistically significant (p = 0.097) impact of population on the unemployment rate in Saudi Arabia. However, amount of funding available (p=0.451) is statistically insignificant on the dependent variable. MRA technique has shown the results clearly by presenting the impact of multiple independent variables on dependent variables as shown in the following results.

Table 3. Coefficients of independent variables

Model	Unstandardized coefficients		standardized coefficients	t	Sig.
	B	Std. Error	Beta		
1(constant)	49.119	17.815	--	2.757	0.40
Population	-2.119	1.039	-3.121	-2.040	0.097
No. of small projects	0.001	0.001	3.988	2.550	0.051
Amount of funding available	-0.008	0.009	-0.514	-.818	0.451

$Y = \alpha + \beta_1 x_1 - \beta_2 x_2 - \beta_3 x_3 + e$

Whereas,

Y= the unemployment rate in Saudi Arabia

α=constant

X_1= population

X_2= the number of projects or small businesses

X_3= the amount of funding available for small businesses

E= random error or residuum

Thus, the equation is as follows:

Y = 49.119 - 2.119 X1 + x 0.001 x2-0.008 3 x 0.62199

Table 4. Relationship between the unemployment rate and the number of population

Model	B	Std. Error	Beta	T	Sig.
Population	-2.119	1.039	-3.121	-2.040	0.097

The value of "population" coefficient in the table above was (-2.119). This negative sign indicated the existence of an inverse relationship between the unemployment rate and the number of people as the population increase leads to lower unemployment and vice versa. Furthermore, the value of possible significance in Table (4) was (0.097); and this was greater than the level of significance (0.05). Thus, the findings indicated that there is no statistically significant difference (relation) between the dependent variable pertaining to unemployment rate and the independent variable concerning population.

Table 5. Relationship between the unemployment rate and the number of small projects

Model	B	Std.Error	Beta	T	Sig.
Number of small projects	0.001	0.001	3.988	2.550	0.051

The value of coefficient of the "number of small projects" reached (0.001) and positive sign is indicative of the existence of direct relation between the unemployment rate and the number of small projects, as an increase in the number of small projects leads to the increase of the unemployment rate and vice versa. Moreover, the value of possible significance reached (0.097) in Table (5) and it is greater than the level of significance (0.05). Thus, it is accepted that there is no statistically significant relation between the dependent variable pertaining to unemployment rate and the independent variable concerning the number of small projects.

Table 6. Relationship between the unemployment rate and the amount of funding available

Model	B	Std.Error	Beta	T	Sig.
Amount of funding available	-.008	0. 009	-0.514	-0.818	0.451

The value of coefficient of the "amount of funding available" reached (0.008) and negative sign is indicative of the existence of a reverse relation between the unemployment rate and amount of funding available, as an increase in the amount of funding available leads to the decrease of the unemployment rate and vice versa. Moreover, the value of possible significance reached (0.451) in Table (6) and it is greater than the level of significance (0.05). Thus, it is accepted that there is no statistically significant relation between the dependent variable pertaining to unemployment rate and the independent variable concerning the amount of funding available.

It is observed from the results that data was not in conformity with the study assumptions. Therefore, it is assumed that there was a direct relationship between the unemployment rate and the number of the population. There was an inverse relationship between the unemployment rate and both the number of small projects and the amount of funding available. This is due to the lack of sufficient available data because of both the short life of the Centennial Fund and shortage of time series available. Therefore, as longer the time series data, the more reliable are the accurate results.

Table 7. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		Statistic Change			
					R square change	F change	Df1	Df2	Sig. F Change	Durbin-Watson
1	0.768	0.618	0.388	0.6220	0.618	2.693	3	5	50.157	2.259

a.   Predictors: (constant), the amount of funding available, population, number of small projects

b.   Dependent Variable: Unemployment rate

It is clear that the value of the overall correlation coefficient is R= 0.786. The correlation coefficient is revealed for the independent variables (the number of the population, the number of small projects and the amount of funding available) and the dependent variable (the unemployment rate). It is indicated that the existence of a direct and strong correlation between the dependent and independent variables is closer to one (0.786). It is noted that the value of the determination coefficient R square is equal to 0.618; and the value of the adjusted determination coefficient is 0.388. The coefficient of determination is referred as the amount of explained variance by the regression model, which makes it beneficial as a measure of success of predicting (Nagelkerke, 1991).

The dependent variable from the independent variables.

Table 8. Analysis of Variance (ANOVA)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3.126	3	1.042	2.693	0.157
Residual	1.934	5	0.387		
Total	5.060	8			

a- Predictors: (constant), the amount of funding available, population, number of small projects

b- Dependent Variable: Unemployment rate

The value of possible significance reached (0.157) and it is greater than the value of significance (0.05). Thus, the relation is significant, which explains a significant percentage in the dependent variable (unemployment rate).

5. Discussion

The role of small businesses in the alleviation of unemployment as applied in the Kingdom of Saudi Arabia for the years 2007-2012 is revealed through the time-series regression. The role played by the small businesses is emerged in the economies internationally. Therefore, these small businesses have proved their ability to achieve a number of social and economic objectives, and that they also provided job opportunities for those seeking employment. Governmental and private bodies, such as Centennial Fund, Abdul Latif Jameel Fund for Community Services and the Human Resources Development Fund and others have focused on encouraging young people to establish small businesses to secure solutions to unemployment.

The data of variables concerning this study was obtained from both the Centennial Fund on the Support Small Projects and the Department of Statistics, Saudi Arabia. The paucity of time series data did not provide appropriate results in accordance to the hypothesis. One of the most important results of the study was the presence of a strong direct correlation relationship between the dependent variable (the unemployment rate) and independent variables (the number of the population and the number of small projects and the amount of available funding). Therefore, the value of correlation coefficient R and the value of the determination coefficient R^2 indicated that the independent variables affect the dependent variable by 62%. There is a direct relationship between the unemployment rate and the number of small projects; whereas, an inverse relationship was revealed between the unemployment rate and both the amount of funding available and the number of population.

The developing countries have worked hard to embark effective strategies that support the initiation of small businesses that would help to meet the needs for economic growth of the country. For starting up a successful business, the entrepreneurs need training, empowerment of the minority groups, and most importantly capital. There is a need for efficient business policies for the economic improvements of the country to cope up with the changes in global economy and technological advancement. The Saudi government favored the promotion of business programs, especially it facilitates the establishment of small business which have low financial capacity (Salem, 2014). In Saudi Arabia, the year 2010 has been marked as the launch of new entrepreneurship innovations and efforts to start small scale business. It has been indicated through economic research that in the developing countries the small scale business make up approximately 92% of overall businesses. Moreover, these small scale businesses offer employment to approximately 80% of the population residing in those countries (Ellison et al., 2003). Therefore, it is important for the developing countries to nurture the generation of leaders, innovators, and businessmen for effective growth in the economy of the country.

Small businesses are apprehending the existence of foreign markets and foreign sources by means of internet for augmenting success and growth. Numerous business opportunities have been developed as majority of the large businesses eradicated their activities to minimize costs. Small businesses facilitated progression of society by desirable private investment back into lagging regions and extent the incentives of economic growth to individuals (Gronum, Verreynne & Kastelle, 2012). The existence of small businesses have provided a mechanism to augment the interaction among markets and organizations. The association of small firms is apparently linked with the vendors and customers. The connectivity is escalating the progression of dynamic organizational associations between entities. Tax incentives and other inducements are focused by small business sectors towards the unemployment and economic development.

Sustainable development is largely associated with the existence of large businesses; whereas, it appears difficult for small businesses to adopt these practices. The major cause for this assertion is the practices, which are structured for large businesses on the basis of revenues, budgets and number of workforce. The contribution of small businesses towards sustainability is observed through internal and external attributes including ownership structure, business culture and employees knowledge despite of these barriers. Therefore, small businesses have perceived sustainability and adopted sustainability business practices as a moral obligation to local populace (Keskin, Diehl & Molenaar, 2013). It has been examined that instigation of sustainability practices endowed small businesses to eradicate costs. Operational measures are the most dominant initiative that focus comprehensively on the environmental dimension of business practices. Imperative and positive public relations can be observed through sustainable business practices. These reimbursements can differentiate small businesses from its competitors and can be appeared as the source of market opportunities and competitive advantages. Increased financial profile might allow small businesses to more quickly adapt dynamic opportunities (Carroll & Buchholtz, 2014).

Economic and environmental outcomes can be emerged through the inadequate strategies of property rights including the use of environment. The governance is regarded as a constituent for sustainable development,

which stresses the importance of local community's empowerment. Expansion in market systems and property rights can extend the achievement of sustainable development and its environmental conservation (Sen, 2013). It is being observed that advancement of technologies provides determined environmental consequences, to accomplish sustainable development and environmental conservation. Resources are the fundamental asset in the economic growth and endow two vital principles: environmental principles and raw materials for production of goods and services. The problem of reduction notifies a significant role in the implementation of renewable and non-renewable resources. Environmental resources might be degraded through rendered useless and pollution (García-Amado, Pérez & García, 2013).

6. Conclusion

It has been concluded that a special body should be created to support and develop small enterprises, because it is intended to coordinate between projects and government agencies. Furthermore, a database containing all the data should be provided to concern the proprietors of the small businesses. The function of the centennial fund has been emphasized for supporting small projects and to enhance its mechanisms as an independent non-profit institution. Furthermore, an appropriate environment must be provided to small businesses to embrace and construct their potentials. Procedural restrictions should be overwhelmed, which eradicated the guarantees needed by the lending institutions from the owners of small business. It has been suggested that training programs should be developed to enhance technical and managerial skills of young people in a manner that copes with the needs of the labor market.

6.1 Limitations

Only the small scaled business has been considered and the data gathered was specifically from the general statistics, directorate of the Kingdom of Saudi Arabia, during the years 2005-2013. Limited resources were considered as another limitation for the study, which have somehow affected the nature of study. Similarly, limited time frame was another limitation for the study.

Acknowledgments

References

Abu Al-faham, Z. (2009). The role of small businesses in the fight against poverty and unemployment in the Arab world (first edition, Abu Dhabi Dar Culture for Publishing and Distribution: 2009).

Al-Khatib, J., Dant, R. P., & Vitell, S. J. (2015). Marketing and Economic Development: the Saudi Arabian Experience. In Proceedings of the 1989 Academy of Marketing Science (AMS) Annual Conference (pp. 659-664). Springer International Publishing. https://doi.org/10.1007/978-3-319-17055-8_134

Al-Qahtani, Reem, A. Estimate the request function for small and medium enterprises against finance by specialized lending institutions in Saudi Arabia, Master Thesis (not published), King Abdul Aziz University, Jeddah function (1433 AH).

Arab business: the high unemployment rate in Saudi Arabia to 12.1% in 2012 (the date of entry 9/8 / 2013): arabic.arabianbusiness.com/society/politics-economic.www

Asharqal-awsatelectronic Newspaper: Practical solutions for solving the problem of unemployment, (the date of entry, 17/6/2013), www.alsharq.net.sa

Carroll, A. B., & Buchholtz, A. K. (2014). Business and society: Ethics, sustainability, and stakeholder management. Nelson Education.

Ciegis, R., Ramanauskiene, J., & Martinkus, B. (2015). The concept of sustainable development and its use for sustainability scenarios. *Engineering Economics, 62*(2).

Cohen, J. (1983). The cost of dichotomization. *Applied psychological measurement*, *7*(3), 249-253. https://doi.org/10.1177/014662168300700301

Dahlan, A. S. (2005). small enterprises and their role in addressing poverty and unemployment (Swiss Arab Center for Research on Employment and Human Rights at Work, 2005).

Decker, R., Haltiwanger, J., Jarmin, R., & Miranda, J. (2013). The Secular Decline in Business Dynamism in the US. Manuscript, University of Maryland.

Ellison, C., Hummer, R., & Sakamoto, A. (2003). Business incubation in inner-city emerging markets as an

economic development tool.

Frazer, L. (2012). The effect of internal control on the operating activities of small restaurants. *Journal of Business & Economics Research, 10*(6), 361. https://doi.org/10.19030/jber.v10i6.7027

García-Amado, L. R., Pérez, M. R. & García, S. B. (2013). Motivation for conservation: Assessing integrated conservation and development projects and payments for environmental services in La Sepultura Biosphere Reserve, Chiapas, Mexico. *Ecological Economics, 89,* 92-100. https://doi.org/10.1016/j.ecolecon.2013.02.002

Gronum, S., Verreynne, M. L., & Kastelle, T. (2012). The role of networks in small and medium-sized enterprise innovation and firm performance. *Journal of Small Business Management, 50*(2), 257-282. https://doi.org/10.1111/j.1540-627X.2012.00353.x

Hobbs, R. J., & Saunders, D. (Eds.). (2012). Reintegrating fragmented landscapes: towards sustainable production and nature conservation. Springer Science & Business Media.

Jamei, M. N. (2008). Unemployment: a time bomb – Its Deciphering and Talk with young people, (Alexandria, Dar Al-Fath, 2008).

Juhani, A. C. (2008). Success factors of small enterprises supported by the private sector in Saudi Arabia: Evaluate the experience of the Abdul LatifJameel Fund for the support small enterprises, Master's Degree dissertation which was not published) King Abdul Aziz University, Jeddah (2008).

Keskin, D., Diehl, J. C., & Molenaar, N. (2013). Innovation process of new ventures driven by sustainability. *Journal of Cleaner Production, 45,* 50-60. https://doi.org/10.1016/j.jclepro.2012.05.012

Link, A. N., & Scott, J. T. (2012). Employment growth from the small business innovation research program. *Small Business Economics, 39*(2), 265-287. https://doi.org/10.1007/s11187-010-9303-6

Loorbach, D., & Wijsman, K. (2013). Business transition management: exploring a new role for business in sustainability transitions. *Journal of Cleaner Production, 45,* 20-28. https://doi.org/10.1016/j.jclepro.2012.11.002

Nagelkerke, N. J. (1991). A note on a general definition of the coefficient of determination. *Biometrika*, *78*(3), 691-692. https://doi.org/10.1093/biomet/78.3.691

Naja', A. A. W. (2005). The problem of unemployment and the impact of the economic reform program on it. An analytical Applied study (Alexandria, University House, 2005).

Official site of the Centennial Fund, the access date (9/7/2013), www.tcf.org.sa

Roxas, B., & Coetzer, A. (2012). Institutional environment, managerial attitudes and environmental sustainability orientation of small firms. *Journal of Business Ethics, 111*(4), 461-476. https://doi.org/10.1007/s10551-012-1211-z

Salem, M. I. (2014). The role of business incubators in the economic development of Saudi Arabia. *The International Business & Economics Research Journal, 13*(4), 853. https://doi.org/10.19030/iber.v13i4.8694

Saudi Economic Journal: Economy and small- and medium-sized enterprises, No. 39 (Spring 1432).

Sen, A. (2013). The ends and means of sustainability. *Journal of Human Development and Capabilities, 14*(1), 6-20. https://doi.org/10.1080/19452829.2012.747492

Shalabi, N. M. (2004). The role of incubators of small projects in the support the Arab Creativity. *Journal of Economic Prospects, 97*.

Solomon, G. T., Bryant, A., May, K., & Perry, V. (2013). Survival of the fittest: Technical assistance, survival and growth of small businesses and implications for public policy. *Technovation, 33*(8), 292-301. https://doi.org/10.1016/j.technovation.2013.06.002

Stanley, T. D., & Doucouliagos, H. (2012). *Meta-regression analysis in economics and business* (Vol. 5). Routledge.

The Ministry of Labour: Statistical Yearbook of 2012 (the date of ACCESS 29 / 6/2013), http://portal.mol.gov.sa

Welsh, D. H., Memili, E., Kaciak, E., & Al Sadoon, A. (2014). Saudi women entrepreneurs: a growing economic segment. *Journal of Business Research, 67*(5), 758-762. https://doi.org/10.1016/j.jbusres.2013.11.040

Williams, S., & Schaefer, A. (2013). Small and medium-sized enterprises and sustainability: Managers' values

and engagement with environmental and climate change issues. *Business Strategy and the Environment, 22*(3), 173-186. https://doi.org/10.1002/bse.1740

Zaki, R. (1997). The Political Economy of unemployment (Kuwait, the world of knowledge, 1997).

The Influence of Employee Empowerment on Employee Job Satisfaction in Five-Star Hotels in Jordan

Mukhles Al-Ababneh[1], Samer Al-Sabi[1], Firas Al-Shakhsheer[1], Mousa Masadeh[1]

[1]Department of Hotel and Tourism Management, Petra College for Tourism and Archaeology, Al-Hussein Bin Talal University, Ma'an, Jordan

Correspondence: Mukhles Al-Ababneh, Assistant Professor, Department of Hotel and Tourism Management, Petra College for Tourism and Archaeology, Al-Hussein Bin Talal University, P. O. Box 20, Ma'an 71111, Jordan. E-mail: mukhles.ababneh@gmail.com

Abstract

This paper examines the influence of empowerment on job satisfaction in five-star hotels in Jordan. The influence of empowerment on job satisfaction remains a relatively unexplored area. A 52-item questionnaire, measuring empowerment and job satisfaction, was distributed to 332 employees in 12 five-star hotels in Jordan with a 56% response rate. Principal components analysis determined the factor structure and regression analysis determined the influence of empowerment on job satisfaction. The results revealed both structural and psychological empowerment have significant individual influences on job satisfaction, but more significant when structural and psychological empowerment are combined. Most of previous studies were conducted in western economies and little in the Middle East generally and Jordan in particular. This research contributes to the literature by including both dimensions of empowerment where previous scholars used only one.

Keywords: employee empowerment, psychological/structural empowerment, job satisfaction, hotels, Jordan

1. Introduction

Responding to rapid changes in the business environment, competitive strategies and customer demands (Cho et al., 2006), human resource departments have begun to improve the performance of their organisations using empowerment as a tool for handling these rapidly changing and complex situations, with the purpose of establishing a satisfactory environment that can respond to customer demands, improve the quality of service (Ginnodo, 1997), enhance operations and maximize profits (Lashley, 1995, 1999; Meihem, 2004; Ueno, 2008; Biron and Bamberger, 2010). Empowering employees is an approach to better overall organisational strategy harmonizing performance of employees and their job satisfaction. Employees feel that they can add valuable contributions to their organisations (i.e. participate in decision-making, provide new ideas, and present better ways of doing work), and those employees are more motivated and more productive in the work (Kemp and Dwyer, 2001). Research suggests that empowerment can enhance job satisfaction (Salazar et al., 2006), particularly in the hospitality industry (Hechanova et al., 2006; Dickson and Lorenz, 2009; Patah et al., 2009; Gazzoli et al., 2010; Pelit et al., 2011) and thus a way to improve workplace environments, reduce employee turnover, and help organisations function effectively (Erstad, 1997).

Empowerment has been studied very well in the previous research, but the role that empowerment plays in particular contexts is still under-researched. How empowerment influences job satisfaction remains a relatively unexplored research area. There is therefore a need to examine, from the employees' perspective, the levels of empowerment that are evident in the hotel industry and the influence on job satisfaction. This study was conducted in five-star hotels in Jordan. Many previous studies on empowerment and job satisfaction have been conducted in the context of western economies and very little research has been done in the Middle East in general and Jordan in particular. However, there is evidence to suggest that different geographic or industrial contexts, cultural values, as well as demographic factors can change the nature of relationship between empowerment and job satisfaction (e.g. Fock et al., 2011; Dimitriades, 2005; Boudrias et al., 2004; Hui et al., 2004; Sigler and Pearson, 2000).

2. Literature Review

2.1 Empowerment

Empowerment can be defined in different ways. It defined in a general definition as a collection of practices that consists of information sharing, employee autonomy, and delegation of authority (Randolph, 1995, 2000; Blanchard et al., 1999). Empowerment is seen by other scholars (e.g, Conger and Kanungo, 1988; Thomas and Velthouse, 1990; Zimmerman, 1990) as intrinsic task motivation, or as the process of decentralizing decision-making in an organisation (Brymer, 1991). However, most scholars agree that the key element of empowerment involves giving employee freehand on certain activities with the full responsibilities that come with it (Sashkin, 1984; Conger and Kanungo, 1988; Schlessinger and Heskett, 1991; Bowen and Lawler, 1992).Thus, empowerment was focus on empowering management practices (Mainiero, 1986; Bowen and Lawler, 1992) as a set of procedures and that involves empowering workers (Conger and Kanungo, 1988), and that requires eliminating the levels of hierarchy to get less direct supervision (Randolph, 1995).

Numerous studies have revealed that empowerment was applied in service organisations in different forms (e.g. Conger and Kanungo, 1988; Thomas and Velthouse, 1990; Spreitzer, 1992, 1995; Zimmerman, 1995). Scholars realised the need to distinguish between employees' feelings or perceptions of empowerment and management practices designed to empower employees (Thomas and Velthouse, 1990). Thus, the literature has confirmed two distinct dimensions of empowerment, namely: structural/relational empowerment and psychological/motivational empowerment (Eylon and Bamberger, 2000; Greasley et al., 2008).

2.1.1 Structural Empowerment

Structural empowerment can be defined as a management technique which involves the sharing and delegation of authority between managers and their employees (Kanter, 1983; Conger and Kanungo, 1988), and therefore employees and managers solving problems and taking decisions (Ginnodo, 1997). It is also defined as an organisational practice and structure that devolves power through information, knowledge, resources, skills development, support and responsibility (Eylon and Bamberger, 2000). Due to structural empowerment is seen differently by scholars in the literature, this study defines structural empowerment as "*the extent to which employees believe that they have been given the autonomy and authority to act independently deriving from aspects such as training, reward systems and management style*". Many scholars argued that structural empowerment consists of several dimensions rather than one dimension, namely: employees discretion (Bowen and Lawler, 1992; Rafiq and Ahmed, 1998), information sharing (i.e. confidence in the staff) autonomy, trust, rewards, responsibility, accountability, knowledge and resources (Bowen and Lawler, 1992; Rafiq and Ahmed, 1998; Eylon and Au, 1999; Eylon and Bamberger, 2000; Randolph and Sashkin, 2002; Seibert et al, 2004).

The application of empowerment in the service industry provides employees with different experiences and benefits (Lashley, 2001) that include fostering employees feelings of self-efficacy in highly confidence ways (Conger and Kanungo, 1988; Conger, 1989), providing employees with the necessary discretion and autonomy to produce successful service in general and to achieve customer satisfaction in particular (Bowen and Lawler, 1992; Ford and Fottler, 1995; Lashley, 1995) and this subsequently increases the success of organisation as a main concern by employees (Spreitzer, 1995). Thus, empowered employees in the hospitality industry are more committed to improving service quality (Lashley, 1995).

2.1.2 Psychological Empowerment

Conger and Kanungo (1988) defined psychological empowerment as a motivational concept of self-efficacy. While, Spreitzer (1995: p.1444) defined empowerment as "*a motivational construct manifested in four cognitions: meaning, competence, self-determination, and impact. Together, these four cognitions reflect an active rather than a passive, orientation to a work role*". Similarly, Lee and Koh (2001: p.686) presented an inclusive definition, they defined psychological empowerment as "*the psychological state of a subordinate perceiving four dimensions of meaningfulness, competence, self-determination and impact, which is affected by the empowering behaviours of the supervisor*".

Empowerment is a continuous variable, where employees feel they are empowered, and therefore psychological empowerment is more about employees' perceptions that hold about their roles in the organisation (Spreitzer, 1995). Moreover, psychological empowerment can be considered as a unidimensional construct (Conger and Kanungo, 1988) or multifaceted construct that includes a model focused on power practices in organisations to energise or internally motivate employees, and therefore psychological empowerment results from a set of four cognitive tasks related to the individual role: meaning, self-determination, impact and competence (i.e. self-efficacy) (Thomas and Velthouse, 1990).

Psychological empowerment consists of four dimensions were developed by (Spreitzer, 1995), namely: self-determination, competence, impact, and meaning. The dimension "self-determination" reflects autonomy (Bell and Staw, 1989), self-regulated, resilient, creative and more flexible (Deci and Ryan, 1985). The dimension of "competence" means self-efficacy to work effectively and is a belief that one feels able to perform work activities skilfully. The dimension of "impact" refers to the degree to which employees can influence strategic, management or operational results at work (Spreitzer, 1996). The dimension of "meaning" refers to a sense of meaning regarding the evaluation of specific tasks (Hackman and Oldham, 1980), or as "the engine of empowerment" (Spreitzer et al., 1997).Moreover, Spreitzer et al. (1997) found that each dimension has different effects on various work outcomes throughout different relationships with work outcomes. Thus, they concluded that the "*employees need to experience each of the empowerment dimensions in order to achieve effective and desirable outcomes*" (Spreitzer et al., 1997: p. 679). However, psychological empowerment is still a different concept as seen by scholars, for example, Spreitzer (1995) revealed that psychological empowerment is consists of four distinct dimensions in the manufacturing industry, whereas Kim and George (2005), and Al-Sabi (2011) found a two dimensional model of psychological empowerment in the service industry. These dimensions are 'attitude' and 'influence' which both reflect the four dimensions that developed by Thomas and Velthouse (1990) and Spreitzer (1995).

2.2 Job Satisfaction

Hoppock (1935) introduced the concept of job satisfaction as employees' reactions or satisfaction physically and mentally toward the environment of work. Job satisfaction is defined by Locke (1976: p. 1300) as "*a pleasurable or positive emotional state resulting from one's job or job experiences*", or an employee's feelings and attitudes toward his/her job (Armstrong, 2003). It means also as an overall measurement of employees' working attitudes of reception, happiness, and pleasure in a job (Edward and Scullion, 1982). Job satisfaction is widely known as an employees' feeling toward their jobs, or employee's attitudes about different facets that related to the job (Robbins and Coulter, 1996; Armstrong, 2003). Furthermore, Armstrong (2003) explained that job satisfaction can be happened when employees have positive attitudes and feelings about their job, while job dissatisfaction can be happened when employees have negative attitudes and feelings about their job. Smith et al. (1969) confirmed that job satisfaction is the result of job's distinctive nature and other worker's feelings towards comparative jobs, comparative colleagues, work experiences, and competent levels.

The antecedents of job satisfaction can be categorised into two groups, namely: job environment factors, and individual factors. The both groups of job satisfaction antecedents work together, and therefore job satisfaction is determined by a combination of job environment factors and individual factors (Spector, 1985).While, Armstrong (2003) suggested other factors that led to job satisfaction such as intrinsic factors, individuals' work abilities, extrinsic factors, supervision's quality, and social relationships in work. With reference to Locke (1976) and Spector (1997), the facets of job satisfaction were classified into four groups: rewards such as fringe benefits or pay, other people such as co-workers or supervisors, the organisation itself, and the nature of work itself.

Herzberg's theory of job satisfaction and motivation at work consists of motivating factors and hygiene factors. Motivating factors include work itself, achievement, recognition, autonomy, responsibility and advancement; these motivating factors led to job satisfaction. Hygiene factors include salary, benefits, interpersonal relations, working conditions, supervision, company policies and management, and job security. The acceptable level of hygiene factors prevented job dissatisfaction, but the unacceptable level of these factors led to job dissatisfaction (Herzberg et al., 1959). It was found that hygiene factors were more common and dominant in the hospitality industry than in other industries, this can be refereed to some employees who are working in the hospitality industry start their jobs with low expectations of being able to satisfy their high needs (Mullins, 1998). Chitiris (1988) confirmed also that employees in the hospitality industry were more concerned with hygiene factors than motivating factors.

2.3 Empowerment and Job Satisfaction

Empowerment can have an important positive impacts on organisational performance, when it implemented successfully by reaching the organisation's desired goals and expectations, and outcomes of employee such as motivation and job satisfaction. Thus, empowerment can play a significant role in enhancing job satisfaction. It provides a mechanism by which individuals and teams have the responsibilities for making decisions (Ford and Fottler, 1995), these responsibilities are considered as a positive means to enhance employees' creativity and productivity. Thus, the previous studies have highlighted the significant relationship between empowerment and job satisfaction (e.g. Fulford and Enz, 1995; Spreitzer, 1996; Hancer and George, 2003; Hechanova et al., 2006; Dickson and Lorenz, 2009; Patah et al., 2009; Gazzoli et al., 2010; Pelit et al., 2011). When employees perceived

they are empowered and that lead them to have more positive emotional states and their overall attachment to the environment of work (Fulford and Enz, 1995).When empowerment is implemented properly at workplace, it can be effective in improving job satisfaction, performance and productivity (Sashkin, 1984), and therefore empowerment may contribute to enhance job satisfaction (Fulford and Enz, 1995). These results confirmed the importance of empowerment in enhancing job satisfaction (Heskett et al., 1994).

In the hospitality industry, Hechanova et al. (2006) argued that psychological empowerment has a positive relationship withjob satisfaction. Patah et al. (2009) showed also that psychological empowerment is positively and significantly related to receptionists' job satisfaction by using three dimensions of psychological empowerment (influence, meaningfulness and competence). Dickson and Lorenz (2009) confirmed that empowerment has a positive relationship with job satisfaction. Similar results were argued by Gazzoli et al. (2010), they found that restaurant staff empowerment has a significant influence on job satisfaction. More recently, Pelit et al. (2011) found that both behavioural empowerment and psychological empowerment have significant influence on job satisfaction in hotels, but the influence of whole empowerment is much greater when is combining both behavioural empowerment and psychological empowerment together.

3. Theoretical Framework

Figure 1 illustrates the study's theoretical framework. The independent variables were structural empowerment, psychological empowerment and empowerment, while the dependent variable was job satisfaction.
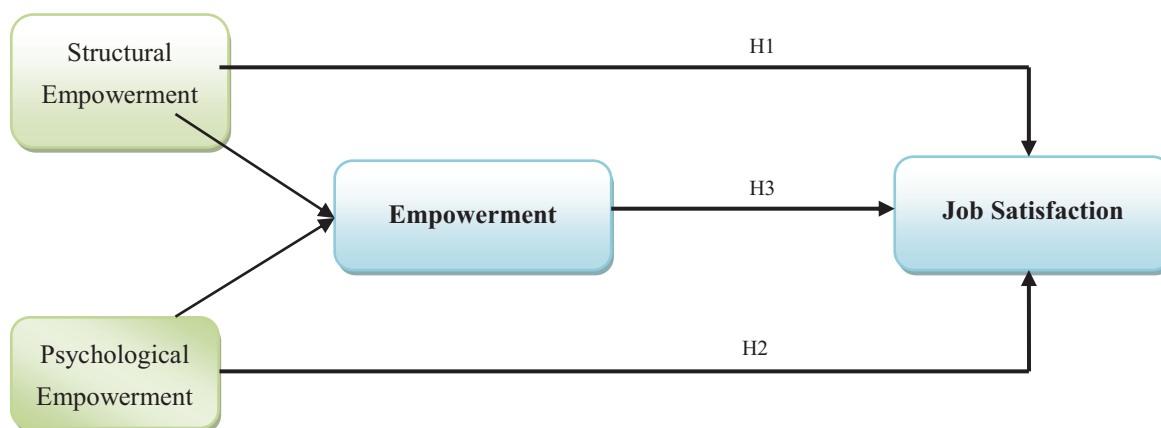

Figure 1. The Theoretical Framework

4. Hypotheses

Based on the literature review highlighted above, the following hypotheses were proposed:

H1: Structural empowerment has a positive and significant influence on job satisfaction.

H2: Psychological empowerment has a positive and significant influence on job satisfaction.

H3: Merging structural and psychological empowerment has a higher level of influence on job satisfaction than structural and psychological empowerment taken individually.

5. Method

5.1 Measurement

To measure the scales of this study, Spreitzer's (1995) scale was used to measure psychological empowerment, Hayes' (1994) scale was used to measure structural empowerment, and Spector's (1985) scale was used to measure job satisfaction. Four dimensions of psychological empowerment were assessed: impact (3 items), self-determination (3 items), competence (3 items) and meaning (3 items). Structural empowerment was assessed as one dimensional construct with (14 items), and finally nine dimension of job satisfaction were assessed: benefits (4 items), promotion (4 items), pay (4 items), contingent rewards (4 items), nature of work (4 items), supervision (4 items), communication (4 items), co-workers (4 items) and operating conditions (4 items). A five-point Likert scale was used in this study to measure all items (where 1= strongly disagree and 5= strongly agree). Demographic questions were also included in the second part of the questionnaire such as gender, age, education, working department and experience. In order to have the right translation for the study's items, all items in the questionnaire were translated from English to Arabic using a back translation procedure.

5.2 Sample and Procedure

The data were collected from a sample of employees who are working in five-star hotels in Jordan. The sample size amounted to a total of 332 employees. The questionnaires were distributed and collected by the researchers, using a face-face approach. Of 332 distributed, 186 were usable and valid questionnaires for data coding. The gathered questionnaires represent 56 percent of the total questionnaires distributed earlier. Data were analysed by using SPSS throughout several analyses such as descriptive analysis, exploratory factor analysis, correlation analysis, and multiple regression analysis.

6. Results

6.1 Sample Characteristics

Data were analysed by using descriptive analysis in order to describe the study's sample. Table 1 presents the demographic profile of the sample.

Table 1. Sample Characteristics (N=186)

Characteristics		Percentage
Age:	25 or under	36%
	26-35	30%
	36-45	22%
	46-55	8%
	56 and more	4%
Gender:	Male	92%
	Female	8%
Experience:	Less than one year	20%
(number of years in five-star hotels)	2-4 years	35%
	5-7 years	25%
	8 year and more	20%
Educational Level:	Secondary School	67%
	Diploma	10%
	Bachelor	22%
	Master	1%
Working Department:	Room Division	20%
	Food &Beverage	23%
	Security	13%
	Maintenance	17%
	Finance, sales, and marketing	12%
	Human Resource	15%

Table 1 shows that 92% of respondents were male and only 8 % were female. These numbers are close to the hotel workforce statistics in Jordan, where males constitute 90% of the industry workforce and females just 10% (Jordanian Ministry of Tourism, 2016). 36% of respondents were 25 years of age and under, 30 % were between 26 and 35, 22% were between 36 and 45, and 12% were 46 or over. The education reported by respondents showed 67 % had completed secondary school, 10 % were two year college graduates, 22% had a bachelor degree, and 1% had a graduate degree. By department, 20 % were working in the rooms division department, 23 % in food and beverage, and other departments accounted for 57%. Finally, 20 percent of the respondents reported working in five-star hotels in Jordan for less than 1 year, 35% between 2 and 4 years, and 25 % between 5 and 7 years, 20 % reported working longer than 8 years. All aspects of this demographic profile reflect the known composition of the workforce in the Jordanian hospitality industry.

6.2 Validity and Reliability

The study's scales were originally developed in a western culture and successfully showed good validity and reliability in different contexts. Since this study was conducted in a non-western culture, it was necessary to examine the validity for those scales. To do so, an exploratory factor analysis - principal components analysis with Varimax rotation - was used to show the significant factor loadings for this study.

Table 2. Output of Factor Analysis for Structural Empowerment

Items	Factor Loading	
	Structural Empowerment α= 0.717	Communality
SE3	0.70	0.49
SE19	0.69	0.36
SE16	0.68	0.50
SE26	0.64	0.39
SE18	0.62	0.48
SE15	0.60	0.41
Eigenvalue	2.5	
Percentage of variance explained	43%	
Cumulative (Total explained)	43%	

As shown above, the result of the factor analysis reveals a single factor with an Eigenvalue exceeding 1. The one factor solution is consistent with previous studies which considered structural empowerment as a one-dimensional construct. The only difference between this study and previous studies was the number of items that have been used to form the measure. Item loadings on this component ranged from 0.60 to 0.70 and all the items loadings were above 0.60. Furthermore, the obtained Cronbach Alpha shows that the extracted dimension has clearly exceeded the minimum recommended value (α = 0.70), which is acceptable for exploratory research (Hair et al., 2010).

Table 3. Output of Factor Analysis for Psychological Empowerment

Items	Factor Loading		
	Attitude α = .777	Influence α = 0.743	Communality
PE2	0.79	------	0.64
PE9	0.79	------	0.63
PE4	0.73	------	0.57
PE5	0.70	------	0.58
PE14	------	0.84	0.641
PE24	------	0.75	0.599
PE23	------	0.71	0.590
Eigenvalue	3.015	1.260	------
Percentage of variance explained	34.035	27.036	------
Cumulative (Total explained)	34.035	27.036	61.071

As shown above, somewhat contrary to expectations, and deviating from the initial four dimensions, the factor analysis presented a dual-dimensional structure for psychological empowerment. The extracted dimensions are however consistent with other studies that used Spreitzer's scale in the hospitality industry (e.g. Kim and George, 2005). The first dimension, 'influence', is made up of two of the initial self-determination and one of the impact items. Item loadings on this dimension ranged from 0.71 to 0.84. The study found that the meaning and competence dimensions also merged to a single factor. The combined factor was named "attitude". Item loadings were all above 0.70. Furthermore, the obtained Cronbach alpha show that both dimensions "attitude" and "influence" have clearly exceeded the minimum recommended value (α = 0.70). These two dimensions are therefore maintained.

Table 4. Output of Factor Analysis for Job Satisfaction

Items	Factor Loading		
	Operational Working System α = .735	Rewarding System α = 0.726	Communality
JS7	0.70	------	0.50
JS5	0.70	------	0.50
JS30	0.73	------	0.54
JS3	0.61	------	0.41
JS35	0.52	------	0.31
JS9	0.51	------	0.37
JS15	0.60	------	0.43
JS8	0.48	------	0.40
JS25	0.51	------	0.39
JS17	0.53	------	0.31
JS27	0.46	------	0.31
JS19	------	0.67	0.45
JS10	------	0.75	0.56
JS4	------	0.66	0.53
JS29	------	0.73	0.53
JS14	------	0.76	0.58
JS23	------	0.46	0.38
Eigenvalue	5.663	1.824	------
Percentage of variance explained	26.038	18.001	------
Cumulative (Total explained)	26.038	18.001	44.039

As shown above, with somewhat unexpected results, and deviating from the initial nine dimensions, the factor analysis presented a dual-dimensional structure for job satisfaction. The extracted dimensions are named in this study as operational working system and reward system respectively. The first dimension, 'operational working system', is made up of five of the initial factors, being nature of work, operating conditions, co-workers, supervision and communication. Item loadings on this dimension ranged from 0.46 to 0.73. The second dimension, 'rewarding system', is made up of three of the initial factors, being pay, fringe benefits and contingent rewards. Item loadings on this dimension ranged from 0.46 to 0.76. Furthermore, the obtained Cronbach's alphas show that the extracted dimensions have clearly met the minimum recommended value (α = 0.70). These two dimensions are therefore maintained.

6.3 Descriptive Statistics

Having established the validity and the reliability of the scales, descriptive analysis is another statistical test that was performed for the extracted dimensions and overall scales.

Table 5. Output of the Descriptive Analysis (N=186)

Scale	Extracted Dimensions	Mean	Std. Deviation
Empowerment	**Overall**	**3.50**	**0.541**
Structural Empowerment		3.37	0.544
Psychological Empowerment		3.63	0.673
Attitude		3.71	0.748
Influence		3.55	0.852
Job Satisfaction	**Overall**	**3.51**	**0.524**
Operational working system		3.62	0.648
Rewarding system		3.41	0.601

From Table 5, it is necessary to note that all the scales of this research were computed by the means' scores of its sub-scales. Therefore, the structural empowerment scale as a one-dimensional scale was computed by summing up its 6 items. The mean score is 3.37 with standard deviation (S.D) at 0.544. This means the employees believe highly that they were given the autonomy and the authority to act independently, which illustrates in other words that the employees were highly structurally empowered. With regards to psychological empowerment, an overall empowerment score was computed by summing up the two sub-scales. The mean score is 3.63 with S.D at 0.673.

This shows that the employees hold all the cognitions of psychological empowerment effectively, on one hand, meaning and competence (attitude) and on the other hand, self-determination and impact (influence). In other words, most of the employees have high levels of confidence in their values, beliefs, and on how well they will perform their goals and tasks and also have high level of trust in their abilities and choices in influencing, initiating and regulating their own work. Regarding job satisfaction, an overall job satisfaction score was computed by the means' scores of the two sub-scales. The mean score is 3.51 with S.D at 0.524. This indicates that the employees in five-star hotels in Jordan were slightly satisfied with their jobs.

6.4 Correlation Analysis

For further analysis of the relationships among the variables of the study, correlation analysis is performed. All the variables and their dimensions were subjected to this analysis. Correlation at this stage of the research gives an initial indicator of the relationships among the variables of the study. Table 6, shows the correlation output among the variables of the study.

Table 6. Output of the Correlations between Variables

		Structural Empowerment	Psychological Empowerment	Empowerment	Rewarding System	Operational Working System	Job Satisfaction
Structural Empowerment	Pearson Correlation Sig. (2-tailed) **	1	.578** .000	.862** .000	.182** .005	.536** .000	.424** .000
Psychological Empowerment	Pearson Correlation Sig. (2-tailed) **	.578** .000	1	.912** .000	.271** .000	.573** .000	.510** .000
Empowerment	Pearson Correlation Sig. (2-tailed) **	.862** .000	.912** .000	1	.326** .000	.625** .000	.652** .000
Rewarding System	Pearson Correlation Sig. (2-tailed) **	.182** .005	.271** .000	.326** .000	1	.409** .000	.826** .000
Operational Working System	Pearson Correlation Sig. (2-tailed) **	.536** .000	. .573** .000	.625** .000	.409** .000	1	.852** .000
Job Satisfaction	Pearson Correlation Sig. (2-tailed) **	.424** .000	.510** .000	.652** .000	.826** .000	.852** .000	1

**Correlation is significant at the 0.01 level (2-tailed)

As shown in Table 6, a high correlation appears between 'empowerment' and 'job satisfaction' (r = 0.652).The 'structural empowerment' variable shows a medium correlation with 'job satisfaction' (r= 0.424). The 'psychological empowerment' variable shows a medium correlation with 'job satisfaction' (r= 0.510). At the dimensional level, it can be noticed from the table above that 'psychological empowerment' and 'structural empowerment' are highly correlated with 'operational working system' (r= 0.573, r=0.536) respectively, while 'psychological empowerment' and 'structural empowerment' show also a moderate correlation with 'rewarding system' (i.e. r= 0.271, r= 0.182) respectively. These findings confirmed that both extracted dimensions of empowerment are highly correlated one extracted dimension of job satisfaction 'operational working system', and empowerment's dimensions are moderately correlated with another extracted dimension of job satisfaction 'rewarding system'.

6.5 Testing Hypotheses

To test the hypotheses of this study, multiple regression analysis is performed to analyse and measure the relationship between a single dependent variable and several independent variables (Hair, et al., 2010). In other words, this measure provides an idea about how well the independent variable will contribute to the overall prediction. In this study, all the variables are metric and therefore divided into dependent and independent. Empowerment, psychological empowerment and structural empowerment worked as the independent variables and job satisfaction worked as the dependent variable. Testing hypotheses is presented as follows:

H1: Structural empowerment has a positive and significant influence on job satisfaction.

In this research, structural empowerment is proposed to have a positive influence on job satisfaction. Table 7 shows the statistical results of the regression analysis.

Table 7. Regression Model Statistics Dependent Variable: Job Satisfaction

Independent	Dependent				
	Job Satisfaction				
Structural Empowerment	β	t	P Value	R^2	F Ratio
	0.424	6.784	.000	0.179	52.811

As shown in Table 7, the result of the regression analysis reveals that structural empowerment is a significant predictor of employee job satisfaction. At the dimensional level, it can be seen from Table 8 below that structural empowerment is moderately significant to the two dimensions of job satisfaction, but it was greater with operational working system. However, the strongest influence is between structural empowerment and satisfaction with the operational working system (β = 0.536 and P value <0.01). Finally, the overall model statistic in Table 7 (R^2 = 0.179, P = 0.000) supported the view that structural empowerment has a positive influence on job satisfaction. Hence, hypothesis one is accepted.

Table 8. Regression Model Statistics Dependent Variable: Job Satisfaction

Independent	Dependent									
	Operational working system					Rewarding system				
	β	t	P	R^2	F Ratio	β	t	P	R^2	F Ratio
Structural Empowerment	0.536	8.614	.000	0.287	74.206	0.182	2.924	.005	0.033	10.905

H1: Psychological empowerment has a positive and significant influence on job satisfaction.

Psychological empowerment is proposed to have a positive influence on job satisfaction. Table 9 shows the statistical results of the regression analysis.

Table 9. Regression Model Statistics Dependent Variable: Job Satisfaction

Independent	Dependent				
	Job Satisfaction				
Psychological Empowerment	β	t	P Value	R^2	F Ratio
	0.510	8.032	.000	0.26	64.516

As shown in Table 9, the result of the regression analysis reveals that psychological empowerment is a significant predictor of job satisfaction. At the dimensional level, it can be seen from the Table 10 below that psychological empowerment is significant to both dimensions of job satisfaction. However, the strongest is between psychological empowerment and satisfaction with the operational working system (β = 0.573 and P value <0.01). Finally, the overall model statistic in Table 9 (R^2 = 0.26, P = 0.000) supports the view that psychological empowerment has a positive influence on job satisfaction. Hence, hypothesis two is accepted.

Table 10. Regression Model Statistics Dependent Variable: Job Satisfaction

Independent	Dependent									
	Operational working system					Rewarding system				
	β	t	P	R^2	F Ratio	β	t	P	R^2	F Ratio
Psychological Empowerment	0.573	9.48	.000	0.328	89.872	0.271	3.824	.000	0.074	14.626

H3: Merging structural and psychological empowerment has a higher level of influence on job satisfaction than structural and psychological empowerment taken individually.

Empowerment is proposed to have a positive influence on job satisfaction. Table 11 shows the statistical results as the regression analysis.

Table 11. Regression Model Statistics Dependent Variable: Job Satisfaction

Independent	Dependent				
	Job Satisfaction				
Empowerment	β	t	P Value	R^2	F Ratio
	0.652	11.344	.000	0.425	123.681

As shown in Table 11, the result of the regression analysis reveals that empowerment which includes structural empowerment and psychological empowerment is more significant predictor of job satisfaction than structural empowerment and psychological empowerment taken individually. At the dimensional level, it can be seen from the Table 12 below that empowerment is highly significant to the two dimensions of job satisfaction. However, the strongest relationship is between empowerment and satisfaction with the operational working system (β = 0.625 and P value <0.01). Finally, the overall model statistic in Table 11 (R^2 = 0.425, P = 0.000) supports the view that empowerment has a positive influence on job satisfaction. Hence, hypothesis three is accepted.

Table 12. Regression Model Statistics Dependent Variable: Job Satisfaction

Independent	Dependent									
	Operational working system					Rewarding system				
	β	t	P	R^2	F Ratio	β	t	P	R^2	F Ratio
Empowerment	0.625	10.875	.000	0.391	118.256	0.326	4.600	.000	0.106	17.594

Based on the above results, Table 13 shows the results of hypotheses testing.

Table 13. The Results of Hypotheses Testing

Hypothesis	Result
H1: Structural empowerment has a positive and significant influence on job satisfaction.	acceptance
H2: Psychological empowerment has a positive and significant influence on job satisfaction.	acceptance
H3: Merging structural and psychological empowerment has a higher level of influence on job satisfaction than structural and psychological empowerment taken individually.	acceptance

7. Discussion

This study aimed to examine the influence of empowerment on job satisfaction in five-star hotels in Jordan. The results of the regression analysis in this study provide a support for the significant effect of structural empowerment on employee job satisfaction (R^2 = 0.179, p<0.000). The probable explanation of this result is that creating an employment environment (structural empowerment), where employees feel that they have the autonomy and authority to act independently and take control of their work, will lead them to be more satisfied in their job. These findings were consistent with previous empirical studies that showed that a significant relationship between structural empowerment and job satisfaction (e.g. Fulford and Enz, 1995; Dickson and Lorenz, 2009; Gazzoli et al., 2010; Pelit et al., 2011). This study also provides a support for the significant effect of psychological empowerment on employee job satisfaction (R^2 = 0.26, p<0.000). The explanation of this result is that when the employees have the confidence in their values and beliefs on how well they will perform their goals and tasks (attitude), and have the trust in their abilities and choices in influencing, initiating and regulating their own work (influence), they will be more positive and satisfied towards their work. The study's findings were supported by previous studies, which confirmed a significant relationship between psychological empowerment and job satisfaction (e.g. Spreitzer, 1996; Hancer and George, 2003; Hechanova et al., 2006; Patah et al., 2009; Pelit et al., 2011). It is worth noting here that psychological empowerment was a more significant predictor of employee job satisfaction than structural empowerment. On one hand, this implies that implementing structural empowerment effectively will in turn lead automatically to the other elements of empowerment (psychological empowerment) and consequently lead to the achievement of employee job satisfaction, in addition, psychological empowerment is more related in the workplace to psychological issues (i.e. motivation) than practical issues on the other (i.e. decision making).

Most of the previous studies focused on either correlating the structural dimension of empowerment and job satisfaction (e.g. Fulford and Enz, 1995; Dickson and Lorenz, 2009; Gazzoli et al., 2010; and Pelit et al., 2011) or correlating the psychological dimension of empowerment and job satisfaction (e.g. Spreitzer, 1996, 1997;

Hancer and George, 2003; Hechanova et al., 2006; Patah et al., 2009; Pelit et al., 2011) rather than focusing on the two dimensions of empowerment jointly. The study's results argued that when structural empowerment and psychological empowerment are merged together as a whole, the influence of empowerment on job satisfaction achieves a higher level ($R^2 = 0.425$, p<0.000), which distinguishes this study from other studies were conducted. This result was supported by Pelit et al. (2011) who indicated that when both dimensions of empowerment (psychological and structural empowerment) are taken as a whole, the influence on job satisfaction yields a higher rate. This result implies that merging empowerment in the sequence of structural empowerment and then psychological empowerment will lead the employees at five-star hotels in Jordan to be more satisfied in their work. In other words, the ability that the employer has to structurally empower his/her employees would affect the employees' assessment of psychological empowerment. Thus, the ability the employer has to empower employees would affect the extent of employee's value and belief on how well they will perform their goals or tasks, as well as employee's ability and choice in influencing, initiating and regulating their own work. Accordingly, employees will be more satisfied at their work.

The results presented above reflect theoretical contributions to knowledge and reveal several important implications for theory and research on empowerment and employee job satisfaction. The main contribution of this study is that although previous studies have tended to adopt and measure one of the two dimensions of empowerment either psychological empowerment or structural empowerment on Job satisfaction in a western context, this study is one of the first studies that attempts to adopt and measure the two main dimensions of empowerment (structural empowerment and psychological empowerment) on job satisfaction in a non-western context. In addition, the results indicated that the structural empowerment scale with one dimension, and psychological empowerment scale with two dimensions, as well as job satisfaction scale with two dimensions are valid and reliable among employees working in five-star hotels in Jordan.

It also showed that there is a significant relationship between employee structural empowerment and employee job satisfaction, as well between employee psychological empowerment and employee job satisfaction in five-star hotels in Jordan. The consistency of these results with previous empirical studies (e.g. Fulford and Enz, 1995; Spreitzer, 1996; Hancer and George, 2003; Hechanova et al., 2006; Dickson and Lorenz, 2009; Patah et al., 2009; Gazzoli et al., 2010; Pelit et al., 2011) gives more support for the validity of the translated scales, which can be used in future as valid measures in a non-western context. In this study, a number of managerial implications can be highlighted. First, it is important that managers understand the need to find different ways to implement structural empowerment that lead to higher levels of employee job satisfaction. This can be done by creating an environment where employees feel that they have the authority and autonomy to act independently, so they can feel more comfortable and satisfied in terms of their operational working system and reward system (job satisfaction) on one hand, and through management being able to rely on employees, through delegating and giving discretion regarding decision making over tasks, on the other. Second, it is also necessary for managers at all levels in hotels to recognise the significant benefits of employee empowerment on employee job satisfaction. Furthermore, it is essential to design different training, reward and development programmes, which lead to improving employees' feelings of job satisfaction. Third, it is also important for managers to recognise the complementary role of structural empowerment on psychological empowerment, as both of them have provided significant results in terms of job satisfaction.

Although this study has identified theoretical contributions to knowledge and revealed several important implications for research on empowerment and job satisfaction, some limitations have arisen which may require more attention when understanding the study's findings. Dealing with them can draw and provide a clear direction for future research. Five-star-hotels in Jordan, concentrating on employees, were chosen for this study and for better generalisations of the study's findings, this study suggests that testing and validating the research model of this study in other service contexts, such as restaurants, banks, hospitals, etc., both in Jordan and elsewhere, would be an interesting research area. Investigating this research model in other service contexts from both managerial and customer perspectives, rather than concentrating on the employee perspective, may expand our knowledge with regard to the link between empowerment and job satisfaction, and possibly requiring some modifications to the hypothesised model. This study has adopted structural empowerment and psychological empowerment for the purpose of discovering their effect on job satisfaction. Therefore, including other perspectives of empowerment such as leadership empowerment would be an interesting research area. More specifically, future research could include some of the antecedents of leadership empowerment behaviours such as delegation of authority, information sharing, self-directed, coaching, developing of people, participative decision making and accountability for outcomes. As this study examined the influence of psychological empowerment and structural empowerment on employee job satisfaction, future research could also identify the potential influence leadership empowerment on job satisfaction.

8. Conclusion

This study has provided a significant new contribution to research on employee empowerment and job satisfaction. It has explored and verified outstanding findings that are related to the relationship between employee empowerment and job satisfaction. The results of this study have supported this relationship and bridged the gaps between the empowerment and job satisfaction literature and the empirical findings. The current study was conducted only in five-star hotels in Jordan, and as such the results are not claimed to be totally representative. They do however provide insights that can form the direction of future research into this important topic. It is the wish of the researchers that this contribution will be built upon by other researchers and practitioners, to shed further light on important aspects related to empowerment and job satisfaction in the hotel industry.

References

Al-Sabi, S. (2011). The effect of empowerment on the service recovery performance of front office agents in five star hotels in Jordan (Doctoral dissertation, University of Surrey).

Armstrong, M. (2003). *A Handbook of Human Resource Management Practice* (9th ed.). London: Kogan Page.

Bell, N. E., & Staw, B. M. (1989). People as sculptors versus sculpture: the roles of personality and personal control in organizations. In: Arthur, M.B., Hall, D.T., & Lawrence B.S. Handbook of Career Theory, Cambridge University Press, New York, 232-251. https://doi.org/10.1017/cbo9780511625459.014

Biron, M., & Bamberger, P. (2010). The impact of structural empowerment on individual well-being and performance: Taking agent preferences, self-efficacy and operational constraints into account. *Human Relations, 63*(2), 163-191. https://doi.org/10.1177/0018726709337039

Blanchard, K. H., Carlos, J. P., & Randolph, W. A. (1999). *The 3 Keys to Empowerment*. San Francisco: Berrett-Koehler Publishers.

Boudrias, J., Gaudreau, P., & Laschinger, H. K. (2004). Testing the structural of psychological empowerment: does gender make a difference? *Educational and psychological Measurement, 64*(5), 861-877. https://doi.org/10.1177/0013164404264840

Bowen, D. E., & Lawler III, E. E. (1992). The empowerment of service workers: What, why, how and when.*Sloan Management Review*, 31-39.

Brymer, R. (1991). Empowerment: a guest-driven leadership strategy. *Cornell Hotel and Restaurant Administration Quarterly, 32*(1), 58-68. https://doi.org/10.1177/001088049103200116

Chitiris, L. (1988). Herzberg's proposals and their applicability to the hotel industry. *Hospitality Education and Research Journal, 12*(1), 67-79. https://doi.org/10.1177/109634808801200106

Cho, S., Woods, R. H., Jang, S. S., & Erdem, M. (2006). Measuring the impact of human resources management practice on hospitality firms' performances. *Hospitality Management, 25*(2), 262-277. https://doi.org/10.1016/j.ijhm.2005.04.001

Conger, J. A. (1989). Leadership: the art of empowering others. *The Academy of Management Executive, 3*(1), 17-24. https://doi.org/10.5465/ame.1989.4277145

Conger, J. A., & Kanungo, R. N. (1988). The empowerment process: integrating theory and practice. *Academy of Management Review, 13*(3), 471-482. https://doi.org/10.5465/amr.1988.4306983

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic Motivation and Self-Determination in Human Behaviour*. New York: Plenum Press. https://doi.org/10.1007/978-1-4899-2271-7

Dickson, K. E., & Lorenz, A. (2009). Psychological empowerment and job satisfaction of temporary and part-time nonstandard workers: a preliminary investigation. *Journal of Behavioral and Applied Management, 10,* 166-192.

Dimitriades, Z. S. (2005). Employee empowerment in the Greek context. *International Journal of Manpower*, *26*(1), 80-92. https://doi.org/10.1108/01437720510587299

Edward, P. K., & Scullion, H. (1982). *The Social Organization of Industrial Conflict: Control and Resistance in the Workplace*. Oxford: Basil Blackwell.

Erstad, M. (1997). Empowerment and organisational change. *International Journal of Contemporary Hospitality Management, 9*(7), 325-333. https://doi.org/10.1108/09596119710190976

Eylon, D., & Au, K. Y. (1999). Exploring empowerment cross-cultural differences along the power distance

dimension. *International Journal Intercultural Relations, 23*(3), 373-385. https://doi.org/10.1016/s0147-1767(99)00002-4

Eylon, D., & Bamberger, P. (2000). Empowerment cognitions and empowerment acts: Recognise the importance of gender. *Group and Organization Management, 25*(4), 354-372. https://doi.org/10.1177/1059601100254003

Fock, H., Chiang, F., Au, K. Y., & Hui, M. K. (2011). The moderating effect of collectivistic orientation in psychological empowerment and job satisfaction relationship. *International Journal of Hospitality Management, 30*(2), 319-328. https://doi.org/10.1016/j.ijhm.2010.08.002

Ford, R., & Fottler, M. (1995). Empowerment: a matter of degree. *Academy of Management Executive, 9*(3), 21-29. https://doi.org/10.5465/ame.1995.9509210269

Fulford, M. D., &Enz, C. A. (1995). The impact of empowerment on service employees. *Journal of Managerial Issues, 7*(2), 161-175.

Gazzoli, G., Hancer, M., & Park, Y. (2010). The role and effect of job satisfaction and empowerment on customers' perception of service quality: A study in the restaurant industry. *Journal of Hospitality & Tourism Research, 34*(1), 56-77. https://doi.org/10.1177/1096348009344235

Ginnodo, B. (1997). *The Power of Empowerment*. Illinois: Pride Publications, Inc., Arlington heights.

Greasley, K., Bryman, A., Dainty, A., Price, A., Naismith, N., & Soetanto, R. (2008). Understanding empowerment from an employee perspective: What does it mean and do they want it? *Team Performance Management, 14*(1/2), 39-55. https://doi.org/10.1108/13527590810860195

Hackman, J. R., & Oldham, G. R. (1980). *Work Redesign*. MA: Addison Wesley, Reading.

Hair, J. F. Jr., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2010). *Multivariate Data Analysis*. New Jersey: Prentice-Hall.

Hancer, M., & George, R. T. (2003). Psychological empowerment of non-supervisory employees working in full-service restaurants. *International Journal of Hospitality Management, 22*(1), 3-16. https://doi.org/10.1016/s0278-4319(02)00032-4

Hayes, B. E. (1994). How to measure empowerment.*Quality Progress, 27*(2), 41-6.

Hechanova, M., Alampay, R., & Franco, E. (2006). Psychological empowerment, job satisfaction and performance among Filipino service workers. *Asian Journal of Social Psychology, 9*(1), 72-78. https://doi.org/10.1111/j.1467-839x.2006.00177.x

Herzberg, F., Mausner, B., & Snyderman, B. B. (1959). *The Motivation to Work*. New York: John Wiley and Sons, Inc.

Heskett, J. L., Jones, T. O., Loveman, G. W., Sasser, W. E., & Schlesinger, L. A. (1994). Putting the service-profit chain to work. *Harvard Business Review, 72*(2), 164-174.

Hoppock, R. (1935). *Job Satisfaction*. New York: Harper and Brothers.

Hui, M. K. Au, K. & Fock, H. (2004). Empowerment effects across cultures. *Journal of International Business Studies*, 35(1), 46-60. https://doi.org/10.1057/palgrave.jibs.8400067

Jordanian Ministry of Tourism & Antiquities. (2016). *Tourism statistics in Jordan.* Retrieved from http://www.tourism.jo

Kanter, R. M. (1983). Frontiers for strategic human resource planning and management. *Human Resource Management, 22*(1/2), 9-21. https://doi.org/10.1002/hrm.3930220104

Kemp, S., & Dwyer, L. (2001). An examination of organizational culture – the Regent hotel, Sydney. *International Journal of Hospitality Management, 20*(1), 77-93. https://doi.org/10.1016/s0278-4319(00)00045-1

Kim, B., & George, R. T. (2005). The Relationship between leader-member exchange (LMX) and psychological empowerment: a quick casual restaurants employee correlation study. *Journal of Hospitality & Tourism Research, 29*(4), 468-483. https://doi.org/10.1177/1096348005276498

Lashley, C. (1995). Towards an understanding of employee empowerment in hospitality services. *International Journal of Contemporary Hospitality Management, 7*(1), 27-33. https://doi.org/10.1108/09596119510078207

Lashley, C. (1999). Employee empowerment in services: A framework for analysis. *Personnel Review, 28*(3), 169-191. https://doi.org/10.1108/00483489910264570

Lashley, C. (2001). *Empowerment HR Strategies for Service Excellent*. Oxford: Linacre House, Jordan Hill, Elsevier Butterworth Heinemann.

Lee, M., &Koh, J. (2001). Is empowerment really a new concept? *The international Journal of Human Resource Management, 12*(4), 684-695. https://doi.org/10.1080/09585190122134

Locke, E. A. (1976). The nature and consequences of job satisfaction. In M. D. Dunnetter, Handbook of industrial and organizational psychology. Chicago: Rand-McNally.

Mainiero, L. A. (1986). Coping with powerlessness: The relationship of gender and job dependency to empowerment-strategy usage. *Administrative Science Quarterly, 31*(4), 633-653. https://doi.org/10.2307/2392967

Meihem, Y. (2004). The antecedents of customer-contact employees' empowerment. *Employee Relations, 26*(1), 72-93. https://doi.org/10.1108/01425450410506913

Mullins, L. J. (1998). *Managing People in the Hospitality Industry* (3rd ed.). Harlow: Addison Wesley Longman Limited.

Patah, M. et al. (2009). The influence of psychological empowerment on overall job satisfaction of front office receptionists. *International Journal of Business and Management, 4*(11), 167-176. https://doi.org/10.5539/ijbm.v4n11p167

Pelit, E. Ozturk, Y., & Arslanturk, Y. (2011). The effects of employee empowerment on employee job satisfaction A study on hotels in Turkey. *International Journal of Contemporary Hospitality Management, 23*(6), 784-802. https://doi.org/10.1108/09596111111153475

Rafiq, M., & Ahmed, P. K. (1998).A customer-oriented framework for empowering service employees. *Journal of Services Marketing, 12*(5), 279-396. https://doi.org/10.1108/08876049810235423

Randolph, W. A. (1995). Navigating the journey to empowerment. *Organizational Dynamics, 23*(4), 19-32. https://doi.org/10.1016/0090-2616(95)90014-4

Randolph, W. A. (2000). Re-thinking empowerment: Why is it so hard to achieve? *Organizational Dynamics*, *29*(2), 94-107. https://doi.org/10.1016/s0090-2616(00)00017-6

Randolph, W. A., & Sashkin, M. (2002). Can organisational empowerment work in multinational settings? *Academy of Management Executive, 16*(1), 102-115. https://doi.org/10.5465/ame.2002.6640205

Robbins, S. P., & Coulter, M. (1996). *Management*. NJ: Prentice Hall, Upper Saddle River.

Salazar, J., Pfaffenberg, C., & Salazar, L. (2006). Locus of control vs. employee empowerment and the relationship with hotel managers' job satisfaction. *Journal of Human Resources in Hospitality & Tourism*, *5*(1), 1-16. https://doi.org/10.1300/j171v05n01_01

Sashkin, M. (1984). Participative management is an ethical imperative. *Organizational Dynamics, 12*(4), 5-22. https://doi.org/10.1016/0090-2616(84)90008-1

Schlessinger, L. A., & Heskett, J. L. (1991). Breaking the cycle of failure in services.*Sloan Management Review*, *23*(3), 17-28.

Seibert, S. E., Silver, S. R., & Randolph, W. A. (2004). Taking empowerment to the next level: A multiple-level model of empowerment performance, and satisfaction. *Academy of Management Journal, 47*(3), 332-349. https://doi.org/10.2307/20159585

Sigler, T. H., & Pearson, C. M. (2000). Creating an empowering culture: Examining the relationship between organizational culture and perceptions of empowerment. *Journal of Quality Management, 1,* 27-52. https://doi.org/10.1016/s1084-8568(00)00011-0

Smith, P. C., Kendall, L., & Hulin, C. L. (1969). *The Measurement of Satisfaction Work and Retirement*. Chicago: Rand McNally.

Spector, P. (1985). Measurement of human service staff satisfaction: Development of the job satisfaction survey. *American Journal of Community Psychology, 13*(6), 693-713. https://doi.org/10.1007/bf00929796

Spector, P. E. (1997). *Job Satisfaction: Application, Assessment, Causes, and Consequences*. California: Sage Publications, Inc. https://doi.org/10.4135/9781452231549

Spreitzer, G. M. (1992). When organizations dare: the dynamics of psychological empowerment in the workplace. Doctoral dissertation, University of Michigan, Ann Arbor, Michigan. *Dissertation Abstract International, 53*(11) (UMI No: AAT 9308456).

Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement and validation. *Academy of Management Journal, 38*(5), 1442-1465. https://doi.org/10.2307/256865

Spreitzer, G. M. (1996). Social structural characteristics of psychological empowerment. *Academy of Management Journal, 39*(2), 483-504. https://doi.org/10.2307/256789

Spreitzer, G. M., Kizilos, M. A., & Nason, S. W. (1997). A dimensional analysis of the relationship between psychological empowerment and effectiveness satisfaction, and strain. *Journal of Management, 23*(5), 679-704. https://doi.org/10.1177/014920639702300504

Thomas, K. W., & Velthouse, B. A. (1990). Cognitive elements of empowerment: An 'interpretive' model of intrinsic task motivation. *Academy of Management Review, 15*(4), 666-681. https://doi.org/10.5465/amr.1990.4310926

Ueno, A. (2008). Is empowerment really a contributory factor to service quality? *The Service Industries Journal*, *28*(9), 1321-1337. https://doi.org/10.1080/02642060802230262

Zimmerman, M. A. (1990). Taking aim on empowerment research: On the distinction between individual and psychological conceptions. *American Journal of Community Psychology, 18*(1), 169-177. https://doi.org/10.1007/bf00922695

Zimmerman, M. A. (1995). Psychological empowerment: Issues and illustrations. *American Journal of Community Psychology, 23*(5), 581-599. https://doi.org/10.1007/bf02506983

Entrepreneurs, Strategy, Venturing Process and Industry Environment: A Configurational Approach to New Venture Emergence

Qian Ye[1]

[1]Business Department, University of Wisconsin Parkside, Kenosha, U.S.A

Correspondence: Qian Ye, Business Department, University of Wisconsin Parkside, 900 Wood Road, Kenosha, WI, 53141-2000. E-mail: ye@uwp.edu

Abstract

This study applied qualitative comparative analysis (QCA) as a viable method for new venture emergence. Through the inclusion of four-dimension variables from individuals, founding strategy, startup process, and environment, the study illuminates the importance of factor independence, factor interdependence, and factor complex causality in understanding new venture emergence. This study demonstrates the benefits of QCA approach to entrepreneurship research, a complement to the conventional variance-based approach. Limitations of QCA and future research directions are provided.

Keywords: new venture emergence, new venture creation, entrepreneurship, nascent entrepreneurs, venturing process, configuration, QCA

1. Introduction

New venture emergence is a complex and multidimensional phenomenon (Low & MacMillan, 1988). It remains one of the most prominent and enduring research questions in the field of entrepreneurship (Low & Abrahamson, 1997; Aldrich, 2012). A fundamental question of this line of research is what factors contribute to emergence variations. Previous theoretical and empirical researches from different standpoints have improved our knowledge of new venture emergence (Gartner, 1985; Shook, Priem, & McGee, 2003; Brush, Manolova, & Edelman, 2008; Jones & Holt, 2008). However, it has also shown that this phenomenon is much more complex and heterogeneous than was thought (Lichtenstein, Carter, Dooley, & Gartner, 2007). The extant literature has not found consistent patterns that are common to all emerging organizations.

Back to as early as 1980s, Gartner (1985) proposed a framework that describes new venture emergence as a process that involves four dimensions of factors: individuals, venturing process, organizational structure and strategies, and environmental contexts. Factors in the four dimensions are interdependent to each other, forming various configurations that have non-linear effects on venturing outcomes (Lichtenstein et al., 2007). A question arises: what types of configurations best explain new venture emergence? To address this question, this study applied a qualitative comparative analysis technique (QCA), an alternative approach grounded in classical set theory to the traditional variance-based research, to examine the interdependence of determining factors and its casual effects on venture formation. QCA conceptualizes cases as combinations of attributes that lead to unique outcomes (Ragin, 1987, 2000; Fiss, 2007). Compared with the methods used by traditional research, QCA focuses on configurations of factors that lead emergence of new ventures, rather than focusing on specific explanatory factors themselves. It has a few advantages. First, QCA assumes nonlinear relationships and complex causality of factors that lead venture emergence, which goes beyond traditional method that examines bivariate interaction effects of influential factors.   Second, it addresses equifinality which assumes that two or more configurations of venture gestation process can be equally effective in venture emergence. Finally, at the center of QCA lies Boolean algebra that determines various combinations of variables from different levels that result in new venture emergence. QCA allows to answer a question "How various factors at individual, firm, and environmental levels are combined together impacting new venture emergence?" that the traditional regression models hardly solve.

The rest of the paper first reviews factors that were found to impact new venture emergence, and presents the limitations of conventional configurational approach and the advantages of QCA approach to new venture emergence. Next, the author analyzes and reports the results of the diversity and causal complexity underlying

venture formation, using a sample of nascent entrepreneurs from the Panel Study of Entrepreneurial Dynamics (PSED). Discussion and conclusion are included in the end.

2. Literature Review and Theoretical Framework

2.1 Toward a Configurational Theory of New Venture Emergence

New venture emergence is a complicated and dynamic phenomenon that involves numerous preparatory activities and decisions. Gartner (1985) outlined a four-dimensional framework that includes individual characteristics, venturing activities, strategy, and environments. A new venture, as an organizational entity, evolves overtime rather than being produced instantaneously. The startup process begins with a set of actions taken by nascent entrepreneurs, and ends with an independent entity established. During this process, individuals identify and refine business ideas, seek out resources, pursue specific strategies, and make the first entry into the marketplace. The emergence of new venture is a person-environment interactions (Korunka, Frank, Lueger, & Mugler, 2003; Chuang, Hsu, Wang, & Judge, 2015; Aragon-Mendoza, Raposo, & Roig-Dobón, 2016). Entrepreneurs and their expertise are key elements to venturing outcomes. Specific types of events, or organizing activities occur in a temporally complex and nonlinear manner (Lichtenstein et al., 2007), and they are rooted within a context of its environment (Gartner, 1985). Thus, examining unidimensional and a single aspect of new venture emergence only palpates different parts of the elephant (Gartner, 1985). Without showing the complexity, heterogeneity, and multidimensional nature, it is not possible to provide a completed insight into the phenomenon.

The promising basis of multi-facet theory of new venture emergence could be found in the configuration approach that goes beyond the concepts of unidirectional causal relationships. Configurations is defined as "any multidimensional constellation of conceptually distinct characteristics that commonly occur together" (Meyer, Tsui, & Hinings, 1993:1175). Researchers advocate configurational approach as an important way to improve understanding and theory building (i.e., Doty & Glick, 1994). In essence, a configurational approach suggests that venture emergence is best understood as clusters of interconnected behaviors, practices and contexts, rather than as various components loosely coupled. A configurational approach therefore takes a systematic and holistic view of the process, where patterns rather than individual independent variables are related to the outcome. The outcome of startup efforts of an emerging venture depend on the individual, structural, strategic, and contextual variables. There is a growing body of research has explored the mutual interdependent relationships of new venture emergence. For example, firm formation has been examined in the contingency of founder attributes (Phillips, Tracey, & Karra, 2013), startup activities (Gatewood, Shaver, & Gartner, 1995), founding strategies (Gartner, Starr, & Bhat, 1999), and environments (Gartner & Liao, 2012). However, only a few empirical studies have adopted a configurational approach to understand the "fit" among multiple contingent variables. For instance, using the configurational approach, Korunka et al. (2003) examined the personality of nascent entrepreneurs in the startup process. They revealed three configurations that are composed with different patterns of personality characteristics interpreted in the context of environment, resources, and startup process.

Drawing on Gartner's framework, in the following sessions, this paper discusses how new venture emergence evolves from person-process-firm-environment interactions, specifically, how new venture emergence is affected by individual's attributes, venturing activities, startup strategies, and environments. The mutual interdependent relationships of new venture emergence are shown in the diagram.
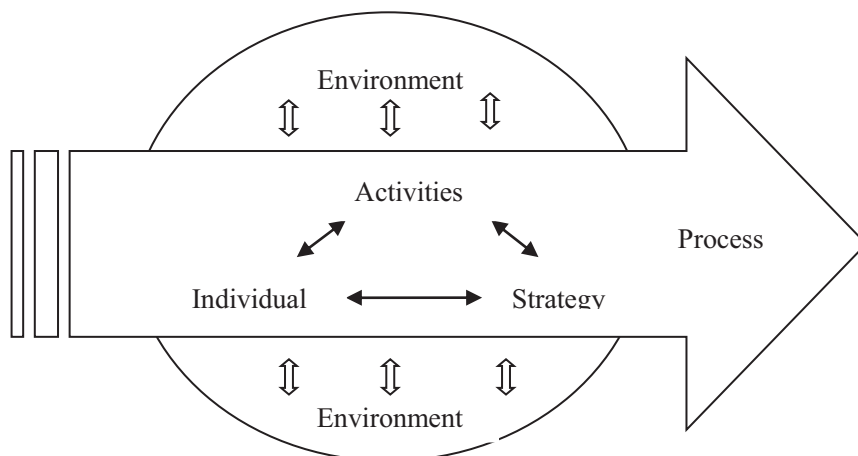

Figure 1. The process of new venture creation is rooted within its context of environment

2.1.1 The Individual Characteristics - Entrepreneurs (E)

It has been broadly accepted that entrepreneur is the core element for venture emergence. New venture is created by nascent entrepreneurs who have a set of particular characteristics. The extant literature provides a whole array of entrepreneurs' characteristics that matter for new venture emergence, among which three individual characteristics are mostly documented: personal experience (Gartner et al., 1999; Davidsson & Honig, 2003), family background of self-employment (Brüderl, Preisendörfe, & Ziegler, 1992), and the presence of entrepreneurial team (Klotz, Hmieleski, Bradley, & Busenitz, 2014).

Individuals are the central agent of new venture creation (Eckhardt & Shane, 2013). Entrepreneurs' prior knowledge and experiences are critical factors for venture emergence (Gruber, MacMillan, & Thompson, 2013). Some knowledge necessary to firm establishment generally is obtained from personal past experience. Founders with richer prior experience of startups are able to recognize attractive business opportunities, and have greater knowledge of successfully setting up a business (Brüderl et al., 1992). A broad set of skills and expertise exhibited by nascent entrepreneurs has been found to be positively related to success startups (Van de Ven, Hudson, & Schroeder, 1984). Carter et al. (1997) found that experience of starting other businesses, industry experience, starting a business with partners, and having employees all significantly decrease the odds of discontinuance of venturing.

Entrepreneur's family background is also an important determinant for new venture emergence. People create their own business might have obtained necessary knowledge and skills from role models of their self-employed parents (Brüderl et al., 1992). Research also suggests that people grow up in these families perceive entrepreneurship as more viable career than those do not have such family backgrounds (Shapero & Giglierano, 1982). In addition, individuals who come from families with self-owned businesses background have higher social capital and stronger bonding ties that assist information transfer and knowledge accumulation, therefore these people are more likely to discover opportunities than those do not (Davidsson & Honig, 2003).

Entrepreneurial team is another important factor that determines the success of venture formation (Klotz et al., 2014). When individual entrepreneurs form a team, they bring various knowledge, skills, and competencies therefore the team has advantages of gathering information required for business venturing (Cooper & Daily, 1997). Entrepreneurial teams verify the validity of business ideas better (Cooper & Daily, 1998), and have more completed knowledge than their solo counterparts (Forbes, Borchert, Zellmer-Bruhn, & Sapienza, 2006).

Drawing on the above evidence, it can reasonably assume that if an entrepreneur has rich startup experiences; or has grown up in a family whose parents are self-employed; or starts a venture with other people, he/she should be more successful in venture creation than those do not. However, current empirical studies do not provided conclusive findings. For example, specific entrepreneurial experiences are found to be related to both venture performance and survival in some studies (i.e. Gimeno, Folta, Cooper, & Woo, 1997), but not in others (Brüderl et al., 1992; Davidsson & Honig, 2003; Haber & Reichel, 2007). The inconsistent results may due to the fact that there is no fixed rules that skills and knowledge gained from prior experience or observed others during growing up period will be definitely transferred into subsequent founding process (Alsos & Kolvereid, 1998). The lessons learned by individual entrepreneurs are highly contextual dependent. The learning capacities of entrepreneurs and their abilities to involve themselves in the changing circumstances are also various across individuals (Cope, 2005). Entrepreneurs either learn from their past experience or do not. In addition, it is possible that the knowledge and skills obtained from past startup experiences will hinder the success of establishing a new organizational entity if competitive dynamics of an industry have changed but these changes are not recognized (Starr & Bygrave, 1991).

2.1.2 The Venturing Activities - Processes (P)

What entrepreneurs do in the venturing process is another critical determinant of venture emergence (Carter, Gartner, & Reynolds, 1996). Venturing activities include obtaining resources, developing new products, seeking funding, doing sales and hiring employees etc. The extant literature suggests significant variations exist in the number of activities reported, the sequence of activities, and the amount of time between activity events in the dynamic and complex venturing process (Reynolds & Miller, 1992). The rate of organizing, concentration, and timing have direct impacts on new venture emergence (Lichtenstein et al., 2007). Not all startup activities are needed for the entrepreneurs or founding teams. For example, if an entrepreneur has inherited money, there is no need to seek external financial support. The patterns of startup activities also vary due to individual demographic, cognitive, or psychological attributes. Entrepreneurs have limited cognitive capabilities and may not possibly engage in all startup activities simultaneously. They have to make intentional choices to reach maximum utilization of limited resources. As a result, there may be a high degree of variation in terms of which activities they undertake first and which later. In addition, the ability to undertake certain activities depends on the

completion of other activities. For instance, a contract with a major customer would enable an entrepreneur to secure a capital infusion from venture capitalists. Venkataraman et al (1990) referred it as a leveraging strategy in which a set of transactions (activities) of the firm are tightly coupled. The completion of one activity event triggers the occurrence of others, like a domino effect. Finally, startup activities differ in their relative importance, depending on the stage of venture development. Some activities are more important at early stages and others are more important at later stages. Previous research has provided empirical evidence for the contextual and individual dependent relationships of new venture creation. For example, Dean and Meyer (1996) found that new venture formation vary according to industry dynamics. Liao and Gartner (2006) suggest that the likelihood of venture persistence increased when nascent entrepreneurs engaged in planning early in the sequence of start-up activities, especially under perceived uncertain financial and competitive environments. The specific organizing activities carried out during the venture gestation process differ among novice, serial, and parallel business founders (Alsos & Kolvereid, 1998).

Thus, it is expected that the activity pattern of entrepreneurs engage in the firm gestation process is highly contextual and individual dependent. Not all potential startup activities need to be initiated or will be initiated; the time to complete the process will vary; the links between activities will be divergent; and the sequencing patterns of these activities will also differ.

2.1.3 The Nascent Firm – Founding Strategy (S)

Entrepreneurs pursue diverse founding strategies that determine new venture emergence. Researchers have used "generalist" (r-strategists) and "specialist" (k-strategists) strategies as the classification scheme for new ventures (Hannan and Freeman, 1977). The generalists offer a wide array of products or services that are aiming at a broad range of customers, whereas the specialists focus on a niche market to avoid direct competition with large and more established firms. However, whether a generalist or specialists strategy leads to a better chance of new venture survival is still an open question (i.e., Romanelli, 1989; Carter, Williams, & Reynolds, 1997).

Another dimension of founding strategies is market aggressiveness, which is defined as "the depth and rapidity of resource-acquiring activities in either broad or narrow market domains" (Romanelli, 1989, p. 374). Aggressive firms seek to acquire and control as many resources as possible, and as quickly as possible. By contrast, efficient firms seek to protect an established position by using scarce organizational resources. Therefore, it is generally expected that aggressive firms have a higher likelihood of surviving in early years of business development than efficient firms. However, this is not always the case. Li (2001) uses data from 184 ventures in China's high technology industries and found that new venture strategies play differential roles in dealing with different environmental dimensions, thereby affecting performance differently. New ventures are proactive in benign environments, while they become reactive in hostile environments, and the effects of specific founding strategies are environmental dependent.

2.1.4 The Contexts - Environment (E)

There has been a long-standing argument about the relative importance of environmental determinism and market conditions at the time of founding as explanations of organizational survival and failure (Hannan & Carroll, 1992). It is intuitive to think that attractive industries (i.e., growing industries) should make survival easier and therefore have low failure rates. More specifically, Low and Abrahamson (1997) suggested that organizations' operations in growing industries are being viewed as more legitimate than other nascent organizations, therefore, these organizations are more likely to survive.

Competitive concentration, which is calculated as percentage of sales, plant capacity, and distribution channels controlled by the largest four or eight competitors, is related to firm's ability to acquire or increase control of available resources in the industry. Thus, increasing competitive concentration should indicate increased difficulties for young and small firms in acquiring resources and subsequently lead to high failure rates. In support, Dean and Meyer (1996) found that the creation of new ventures are positively related to industry dynamism variables.

Overall, new venture emergence is a context-dependent social process. A new venture formation is rooted within a given context of its environment. Entrepreneurship researchers should pay sufficient attention to the context in which new business are started. Identified factors that lead to entrepreneurial success in one context may lead to failure in another. This is because entrepreneurs undertake specific activities and pursue particular founding strategies in organizing a new venture within its own context of environment. What works in one context for one person will not necessarily work in another. As a consequence, studies examining the independent effects of the factors at the individual, contextual, strategy and process level continue to yield inconclusive findings. It is highly plausible that the effects of variables from one level are to be moderated by variables from the other

category. For example, the effectiveness of venture gestation process may vary depending on the type of founding strategy and industry condition. Similarly, given different industry conditions, nascent entrepreneurs with different attributes may adopt different venture strategies and subsequently pursue different patterns in gestation process. We need to identify patterns of combinations of factors (configurations) determining new venture creation rather than focusing on specific explanatory factors themselves.

In the next section, the author discusses major drawbacks of conventional configurational approach, and then build a model that uses a qualitative comparative approach to examine the combinative effects of variables from these the above-mentioned four categories.

3. Qualitative Comparative Approach to Venture Emergence

3.1 Conventional Configurational Approach in Methodology

Because of the multi-dimensional nature of venture formation, the configurational approach is routinely used by researchers as a relevant methodology to study venture creation process. A configurational approach provides a useful insight into entrepreneurial behaviors, but the progress of empirical research remains limited because of using classic linear regression model to examine interaction effects. For example, both two-and three-way interactions, with a number of notable limitations, have been normally used to study configurations in entrepreneurship. Although interaction effect is aimed to overcome this limitation of linear regression model, this approach assumes that interaction effects are relevant for all cases under examination and there is an optimal combination among variables under investigation. This approach largely ignores the fact that different paths may result in the same outcome (Fiss, 2007). Furthermore, traditional approaches to configurational relationships have other drawbacks. First, it is extremely difficult to interpret results when interactions go beyond two-way effects (Fiss, 2007), which essentially limits the number of variables under consideration for configurations. Second, the stability of the results of interactions that involve three or more variables remains an open question (Van de Ven & Drazin, 1985). Third, the classic linear regression model focuses on the unique contribution of a variable and treats variables as competing alternatives in explaining variation in the outcome by holding other variables constant. It therefore emphasizes the independent, rather than interdependent effects. Fourth, conventional linear regression model shows the extent to which an individual variable is related to an outcome, but it does not take into account how all variables combine to create outcomes. Finally, traditional statistic methods use language to describe correlation between variables, thereby failing to account for necessary and sufficient conditions, the two basic concepts of identifying causal relationships (Fiss, 2007). The combinative impacts of all these factors may render the conventional configurational approach less effective, which calls for qualitative comparative approach to delineate the necessary conditions or configurations under which firm emergence may take place.

3.2 Qualitative Comparative Approach (QCA)

Applying QCA approach has important methodological contributions to the extant empirical literature. A common characteristic in the extant empirical literature is that studies mainly focus on partial aspects of new venture emergence and only examine linear contingencies in a specific relationship. First, conceptually, most existing studies on new venture creation assume that new venture creation is a linear, unitary process, which begins with the recognition of a business opportunity and culminates with first sales and first hires. This linear model implies that an additive combination of events will lead to the creation of a new firm (Reynolds & Miller, 1992; Carter et al., 1996). However, new venture emergence has a strong nature of being context dependent, complex, and heterogeneous, which suggests that simple relationships may be inadequate to explain the whole phenomenon. Thus, multivariate approaches are needed to explore how nascent entrepreneurs, their startup activities and startup process, the competitive environment, and founding strategies combine together influencing the emergence of new ventures. Second, methodologically, most of, if not all, the previous empirical studies mainly relies on a variance-based correlational approach that focuses on the unique contribution of a particular variable by holding constant values of all other variables in the equation (Fiss, 2007). The widely used classical linear regression model treats all explanatory factors as competing in explaining variation of new venture emergence rather than examining effects of combinations. Although some studies have attempted to incorporate multiple contextual variables by employing two way or three interactions to identify configurations and their combinative effects (Dess, Lumpkin, & Covin, 1997), these approaches place an emphasis on the *unique* contribution of variance explained by each variable and assume an *optimal* configuration for venture creation.

Firm emergence could result from different combinations of causal conditions that constitute different factors. To address the limitations of conventional configuration approach, this study employs a qualitative comparative approach to analyze multiple configurations of entrepreneurial characteristics, founding conditions, startup

strategies, and nascent behaviors. A QCA is uniquely suited to address theoretical arguments, given its advantages in analyzing complex combinations of causes in relation to a particular outcome. It has been widely used in the literature of political science and sociology (Amenta & Halfmann, 2000; Kvist, 2006), and management (Kogut, MacDuffie, & Ragin, 2004; Roscigno & Hodson, 2004; Kogut & Ragin, 2006).

A qualitative comparative approach considers all possible combinations of causal factors and specifies the configurations of variables that lead to unique outcomes (Ragin, 2000; Ragin, 2006). Compared with the conventional methods used by previous research, a QCA method has a number of significant advantages. Firstly, unlike a linear regression model, a QCA assumes nonlinear relationships and uses Boolean algebra to determine what combination of various variables resulting in firm emergence. Secondly, it stresses the concept of equifinality which assumes that two or more configurations can be equally effective in firm emergence. Equifinality refers to a situation in which the same final state can be achieved by a variety of different paths or from different initial conditions (Ragin, 2000). Put in another way, by centering on the concept of equifinality, QCA assumes that two or more configurations of variables can be equally effective in leading to venture emergence, rather than assumes only one optimal configuration exists. Finally, going beyond traditional two-or three-way interaction effects, a QCA approach can help researchers to identify necessary or sufficient conditions for venture gestation, therefore it enhances our capability of incorporating complex causal relationships into theory building (Fiss, 2007). Therefore QCA distinguishes itself from those conventional methods by emphasizing holisticity, casual complexity, and nonlinearity.

3.3 Set Theory and Configurations of New Venture Emergence

Instead of using interaction effects, QCA is based upon classic set theory and uses Boolean algebra to determine what combinations of attributes lead to interested outcomes (Ragin, 2000). The basic idea of set theory is that relationships among different variables are often best understood as set membership (Fiss, 2007). In mathematics, set means a collection of entities, also called elements or members of the set (Zadeh, 1965). Set members can be anything including numbers, people, letters, other sets, and so on. Conventionally, sets are denoted with capital letters. If set A and B are equal, it means that they have precisely the same members. If every members of set A is also a member of set Z, then A is said to be a subset of Z, (written A$\subseteq$ Z). If A is a subset of, but not equal to, set Z, then A is called a proper subset of Z (written A $\subset$ Z). Consider a simple case that set A is a member of the set Z (written A $\subset$ Z, A is a subset of set Z). Let A be an entrepreneur who grows up in a self-employment family, and Z be the set of new ventures being successfully created. The statement that people who have self-employment parents tend to successfully create new ventures may be restated as these people form a subset of new venture creation.
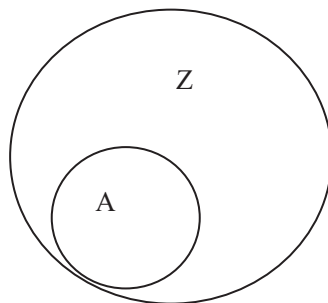

A is a subset of Z

Figure 2. Set A is a subset of set Z

There are three basic set operations: intersection, union, and complementation. The intersection of two sets is the set containing members common to two sets, denoted by the symbol ∩. The union of two sets is the set containing all members belonging to either set or to both, denoted by the symbol ∪. Two sets can also be in complementation, denoted by B \A, (or B −A). It means all members of set B are not members of A. Now we consider a simple case again. There are many other characteristics may also result in new venture emergence. Consider another set B, a set of individuals with a high rate of startup activities in venture creation process also leads to new venture creation, making set B a subset of successfully created new ventures (written B $\subset$ Z). It is possible that subset A and B are non-overlap. The union of set A and B result in new venture creation, either set A or B or both implies Z: new venture creation. Thus, if A={1, 2, 3, 4} and B={5, 6, 7}, and Z displays when A ∪B={1, 2, 3, 4, 5, 6, 7}.It may be expressed in the following logic statement:

$$A+B \rightarrow Z$$

Where "+" denotes a logical operator "*or*", and "→" denotes a logical implication, meaning "A or B implies Z". In the case of this study, it presents different ways of attaining successful new venture creation: having self-employment parents and engaging in high rate of startup activities.
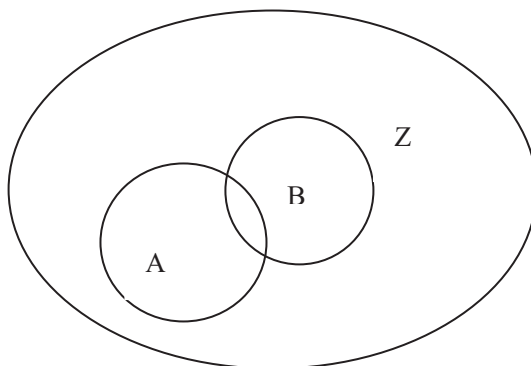
Characteristic A, or B, or both A and B can result in outcome of Z.

Figure 3. The union of set A and B is subset of set Z

If Z displays when A∩B, it may be expressed in the following logic statement. The relationship is shown in a diagram in Figure 4:

$$A \cdot B \rightarrow Z$$
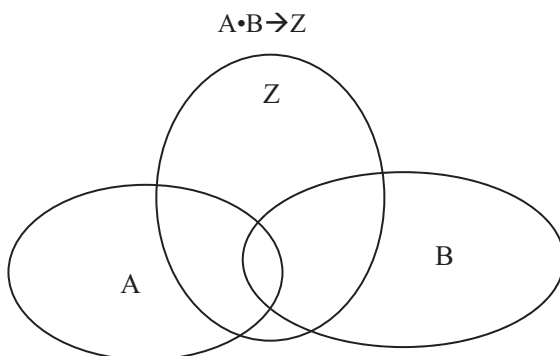
Characteristic A and B result in outcome of Z

Figure 4. The intersection of set A and B is subset of Z

Now we consider a situation where new ventures (Z) are created by individuals having self-employment parents (A), engaging in high rate of startup activities (B), and under the condition of low competitive environment (C'). Thus, if A={1, 2, 3, 4}, B={5, 6, 7}, and C'={3, 4, 5, 6}, then A∩C'={3, 4}, and B∩C'={5, 6}, and Z displays when (A∩C') ∪ (B∩C') = {3, 4, 5, 6}. It may be expressed as following logic:

A • ~C +B • ~C → Z

Where "•" denotes a logical operator "*and*", while "~" denotes the logical "*not*". The above logical statement uses a formulation of a set theory to present a classic contingency hypotheses: H_1: High competitive environment condition moderates the effects of having self-employment parents on new ventures creation; and H_2: High competitive environment condition moderates the effects of engaging in high rate of startup activities on new ventures creation. Thus, the above Boolean statements summarize two contingency statements about the configurational relationships: individual attributes, environment, startup activities, and the outcome of new venture emergence.

Crisp sets are classical sets in set theory. In the crisp sets, all attributes are defined into dichotomous variables (membership versus nonmembership). Each variable only takes value of 1 or 0, indicating "in" or "out" the set. Classifications of membership in sets rely on the presence of attributes. If A = {X_1,...,X_n}, for each $x \in A$, the crisp set can be denoted as A → (Ragin, 2006).

Crisp sets use Boolean algebra by reconstructing a raw data matrix as a truth table. A truth table treats each case as a combination of the variables chosen by the researcher as causes for a given outcome. Only cases with exactly the same configuration are considered to be the same type of cases. A truth table indicates the number of cases with one configuration and whether or not the outcome occurs along with that configuration. In a truth table, each combination of values on the independent variables is represented as one row. Each row is assigned

an output value of the dependent variable (a score of 1 or 0) along with the number of cases that share such a combination of independent variables. From the truth table, we can get all possible configurations lead to new venture emergence.

4. Calibration of Variables into Property Space

4.1 Sampling

Data for this study was obtained from the Panel Study of Entrepreneurial Dynamics (PSED). The PSED is a longitudinal data set of individuals in the process of starting businesses who were identified from a random digit dialing telephone survey of 64,622 adults in the United States (Reynolds & Curtin, 2004a). Details of the survey process and descriptions of specific items in the questionnaires used for the initial and follow-up interviews can be found in the *Handbook of Entrepreneurial Dynamics* (Gartner, et. al., 2004).

The author followed Reynolds (2007) to select cases into this study. First, retain cases that did not report going into business prior to the initial interview. Then retain cases with at least one follow-up interview; have three or more startup acts; have two startup acts occurred within a 12 month period; and did not report positive monthly cash flow two years prior to any other start-up event. Finally retain cases where initial act was reported less than ten years before the initial interview. This results in the inclusion of 638 nascent startup cases.

4.2 Measures

Independent variables were selected at the individual, industry, strategy and process levels that are mostly related to the theoretical concerns. These variables are also described in Table 1.

Table 1. Definitions, Coding , and Means for Variables (n=488)

Variable	Definition	Coding	Mean	The number of firms without missing data
Firm emergence	Whether business is operating	1= yes		215
		0= no	.44	273
Venture gestation process				
Concentration of startup activities	High concentration: event-based pacing High degree to which organizing activities are clustered.	1=high		232
	Low concentration: time-based pacing, the Activities are widely dispersed.	0=low	.48	256
Timing	Timing late: most of the startup activities occur at late n gestation process	1=late		272
	Timing early: most of the startup activities occurs at the early stage of gestation process	0=early	.56	216
Rate of organizing	High intensity: there are a greater number of Activities accomplished for a given period in time.	1=high		177
	Low intensity: a smaller number of activities accomplished for a given period in time.	0=low	.36	311
Venture gestation strategy				
Strategic aggressiveness of business	High: Intent to start a business that was much more likely to make a millionaire but had a much higher chance of going bankrupt	1=high		82
	Low: intent to start a business that would provide a good living, but with little risk of failure, and little likelihood of making a millionaire	0=low	.17	406
Entrepreneur's attributes				
Owner Parents	Parents have worked for themselves or run their own business.	0=no	.50	244
		1=yes		244
Team	Venture gestation activities conducted by multiple members rather than a single person.	0=no	.52	232
		1=yes		256
Founding condition				
Degree of competition	High degree of competition for new business	0=low	.69	153
		1=high		335

Firm emergence. Firm emergence was measured by venture status variable by consolidating the four rounds of data collections, Q, R, S, T. Venture status is a self-reported categorical variable, indicating the status of start-up at the time of interviews. The start-up status of "an operating business" was coded as 1, indicating that firm has

emerged. The statuses of "still an active start-up, an inactive start-up, no longer being worked by anyone, or something else" are coded as 0, indicating that firm does not emerge. Since firm emergence could occur at any time during the four rounds of data collections, the author aggregated start-up activities in the four rounds into one firm emergence variable.

Gestation Process. The author followed the methodological approach of Van de Ven and Poole (1989) to code activity measures in the PSED. Eentrepreneur's chronological list of activity events was coded as dichotomous indicators. The PSED lists 26 startup behaviors with questions such as "Have marketing or promotional efforts been started?" If a nascent entrepreneur responded with a "Yes," follow-up questions were asked to document the specific month and year when the activity took place.

A dichotomous indicator was used, with "1" representing the presence and "0" the absence of certain informative features of the qualitative event in the venture creation process. For each event, there was a time stamp, including the year and month when the event occurred. For those who could not specifically remember the exact month of the event occurrence, the choices of spring, summer, winter, and fall were offered. And then recoded the season as: Winter equals "1;" Spring equals "4;" Summer equals "7;" and Fall equals "10."

The author followed a procedure by Reynolds and Miller (1992) to create a temporal sequence of events for each nascent entrepreneur. The time that elapsed from the first event to the last event was considered as the gestation period, regardless of the nature of the events. The time stamp for each event was calculated in the following steps: (1) The earliest year and the latest year among all the activities engaged in by an nascent entrepreneur in all four rounds (Q, R, S, T) of data collection were identified. This is viewed as the starting year of a venture gestation process of each nascent. (2) Converted the months and year for each event for all events across the Q, R, S, and T rounds. (3) If an event occurred in the follow-up interviews, the author kept the time and occurrence for the latest round. For example, if a nascent entrepreneur responded with a "Yes" to the question of "Have marketing or promotional efforts been started?" at Q round and S round, the author kept the time stamp of S round in the dataset. The final dataset has all the consolidated activities engaged in by each nascent entrepreneur coded in bitmap format, with the time stamp in the form of months.

The measurement of concentration, rate and timing is consistent with Lichtenstein et al. (2007). *Concentration* is measured by the degree to which organizing activities are clustered or spread in time. It is operationalized in terms of the variance of monthly activity time. The smaller the variance, the greater the degree of concentration, that is, activities are highly clustered. The larger the variance, the smaller the degree of concentration, that is, the activities are widely dispersed. Different from Lichtenstein et al. (2007), the author further transformed the variance measures in the following two ways: (1) as the variance for startup activities is large, do a log transformation; (2) to simply the interpretation of these scores, reverse code the log transformed variance by subtracting it from 5. Therefore, the greater the measure is, the greater the degree of concentration. Consistent with Crisp-set requirement, we recode "concentration" into 0 and 1 based on the mean, with 0 for "low concentration" meaning time-based pacing, and 1 for "high concentration" meaning event-based pacing. *Rate of organizing* is calculated by the total number of events divided by the duration of the gestation time which is the difference between the earliest time and the latest time, regardless of the nature of the event. A greater the rate of organizing will mean there are a greater number of activities accomplished for a given period of time. Similarly we recode "rate" into 0 and 1, with 0 for "low intensity" and 1 for "high intensity". *Timing* is measured by the average event time divided by the duration of gestation time. A value of timing closer to 0 means most of the startup activities occur at the early stage of gestation process, whereas a value of timing closer to 1 suggests that most of the startup activities occur at late in gestation process. Again, "timing" is recoded into 0 and 1, with 0 for "doer" (early timing – cent making) and 1 for "thinker" (late timing – sense making).

Individual Attributes. The author included two variables related nascent entrepreneur's demographic characteristics and human capital: owner parents (the parents of nascent entrepreneurs have worked for themselves or run their own business), and entrepreneurial team. Entrepreneurs' parents have self-employed or run their own business were coded 1, while others were coded 0. Entrepreneurial team sizes (the number of all owners) that were more than 1 were coded 1, while others were coded 0.

Venture Strategy. One of the most important measures of venture strategy is the measure of the degree of aggressiveness. Strategy literature provides important evidence of measuring strategic intent as a valid proxy measure of strategy. This intent-based measure is particularly salient at the nascent stage when intent would immediately drive the startup behaviors of a nascent entrepreneur. At PSED, each nascent entrepreneur was asked to choose the type of business they intend to start, with alpha for a business with little risk of failure and limited return, and beta for greater risk of failure and greater financial return. The first category is coded as 0 and the latter as 1.

Industry Conditions. One of most important industry conditions at the nascent stage is the degree of competition within the industry where a startup is taking place. At PSED, each nascent entrepreneur was asked to rank the degree of competition for new business with 0 for no competition, 1 for low competition, 2 for moderate and 3 for strong competition. Then the author recoded the first two categories as 0 for "low competition" and 1 for "high competition.

5. Evaluation of Calibrated Measures

Crisp sets of QCA approach have two basic measures evaluating the quality of configurations: consistency and coverage. Consistency is the proportion of cases with a given combinations of attributes in displaying with the given outcome (Ragin, 2006). In our view, consistency measure in QCA is similar to the concept of reliability in traditional statistic measures. It indicates the extent to which an effect of a configuration identified on an outcome has been found to be duplicated among cases that share the same configuration. Coverage score assesses the degree to which a configuration of variables "accounts for" instances of an outcome. Since QCA focuses on the concept of equifinality, it assumes that various configurations are equally effective in creating an outcome of interest. When there are several paths to the same outcome, the coverage of any given causal combination may be small. Coverage indicates the empirical importance of a given path (configuration). Consistency and coverage can be expressed as the following formulas:

Let Li: Xi $\rightarrow$ Zi, $i \in [1, n]$

where Xi = {Ai, Bi, Ci...},

Thus:

$$Consistency = \frac{\{Li | \text{Xi} = 1 \text{ and } Zi = 1\}}{\{Li | Xi = 1\}}$$

$$Coverage = \frac{\{Li | Xi = 1 \text{ and } Zi = 1\}}{\{Li | Zi = 1\}}$$

where "L" denotes a list of configurations of characteristics that imply Z among n cases. "X" denotes i subsets of A, B, C displaying value of 1. Consistency is calculated by examining the percentage of cases displaying an outcome as well as sharing a same configuration of characteristics. Consider a simple example, let us assume the truth table shows three different configurations of the four individual (A), behavior (B), strategic (C), and environmental (D) characteristics that result in new venture emergence (Z). The configurations are listed below:

L_1: A• B

L_2: A• ~B•C

L_3: A• B• C•D

Thus, all combinations cause new venture emergence: $L_1 + L_1 + L_1 \rightarrow$ Z. Let n=100 for configuration L_1 that involves individual (A) and behavior (B) characteristics. If there are 85 out of 100 cases display Z, the consistency score of configuration L_1 is as high as .85. Ragin (2006) suggests .75 as a cut-off value for a set-theoretic consistency, otherwise it is difficult to maintain that a subset relation exits (the relation between the configuration and an outcome).

Let the number of all cases displaying new venture creation are 1000, now there are 100 cases are identified for configuration L_1, then the coverage score of L_1 is .10. If the coverage value for L_2 is only .03, it indicates that the L_1 is more empirically important than the configuration of L_2. In our view, coverage score is similar to the R-square measure in traditional statistic techniques.

It should be kept in mind that "coverage is distinct from consistency, and the two sometimes work against each other because high consistency may yield low coverage"(Ragin, 2006:9). A configuration of causes with perfect consistency is not compelling because it is too narrowly formulated to achieve a large coverage among cases. Therefore, there is always a trade-off between consistency and coverage.

5.1 Results

QCA utilizes a Boolean algorithm to assess whether any causal combinations are sufficient to cause the outcome of interest. There are three fundamental operators and notations of Boolean algebra: logical *and* (symbolized by the operator ·), logical *or* (symbolized by the operator +), and logical *not* (symbolized by the operator ~). Logical

and (·), an operation commonly represents an interaction. It shows that a combination of causal attributes lead to an outcome. Logical *or* (+) represents the union of other logical sets of the causal attributes involved. It indicates that either one causal condition or another may lead to the same outcome. Logical *not* (Boolean Negation) presented in the equation represents nonmembership in a set of interest. It switches the membership scores from "1" to "0", and from "0" to "1". Combining these three Boolean operators enables researchers to examine complex causality underlying cases. In this study, instead of trying to isolate which individual, strategic, founding environmental, or founding process factors make the largest relative contribution to explaining the variance in new venture formation, QCA allows to examine which individual, strategic, environmental, and process attributes, and any and all combinations of configurations of these attributes, commonly occur across cases that have created new firms.

Table 2. Configurations, Consistency, and Coverage Displayed in Intermediate Solution

Configurations	Unique Coverage	Consistency
1. ~ OWNP ·TEAM ·~TIMING ·RATE ·CONC ·COMD +	.07	.71
2. OWNP ·~TEAM ~TIMING ~RATE ·~CONC ~COMD · ~STRA +	.03	.78
3. ~OWNP · TEAM · TIMING ~RATE ~CONC · ~COMD · STRA +	.01	.75
4. OWNP · ~TEAM ·~TIMING · ~RATE · CONC · COMD ·~STRA	+.03	.86
5. ~OWNP · TEAM · TIMING · ~RATE · CONC · COMD ·~STRA	.02	.71
Solution Coverage: .17		
Solution Consistency: .75		

Note: OWNP: Owner Parents; CONC: Concentration of Startup Activities; COMD: Degree of Competition; STRA: Strategic Aggressiveness

Table 2 reveals five combinations of individuals, founding environment, startup strategy and process on venture formation. The results show that the overall consistency of reported configurations is .75, suggesting that among those cases sharing these configurations there are 75% cases display venture emergence. The individual consistency of each configuration ranges from .71 to .86. The overall coverage is .17, indicating that the reported configurations account for 17% instances of venture emergence.

QCA employs the Boolean algorithm to reduce causal complexity to a minimal Boolean equation of the combinations of attributes. Boolean algorithm first establishes the number of logically possible groupings of attributes included in the study; incorporates all possible causal conditions; assesses the probabilistic sufficiency of each combination of attributes; then uses its containment rule to minimize the Boolean equation of all those combinations. Utilizing Boolean symbols, the results are represented as follows (where → denotes Boolean implication):

~ owner parents · team · ~timing · rate · concentration · competition +

owner parents · ~team · ~timing · ~rate · ~concentration · ~competition · ~ strategy +

~ owner parents · team · timing · ~rate · ~concentration · ~competition · strategy +

owner parents · ~team · ~timing · ~rate · concentration · competition · ~strategy +

~owner parents · team · timing · ~rate · concentration · competition · ~strategy

→ Firm emergence

All four categories of interested attributes display in every configuration above, illuminating that individual, strategic, environmental, and founding process attributes commonly occur across cases achieving venture creation. The above results also suggest that five categories of individual, strategic, founding environmental, and venture creation process attributes are usually sufficient for venture formation: "Each equation joined by the operator "· " represents a combination of attribute that is usually sufficient for venture emergence" (Greckhamer, Misangyi, Elms, & Lacey, 2007, p.717).

The operator "+" in the above equations also signifies that there are five alternative combinations of attributes that are sufficient for venture gestation. Each combination allows us to assess which causal factors are important to firm emergence. Recall that in these equations, the "~" denotes non-membership in a particular set and it switches the membership scores from "1" to "0", and from "0" to "1". ~owner parents illuminates "owner parents" is equal to 0: nascent entrepreneurs do not have parents who run their own business. ~team denotes that all startup activities are conducted by solo nascent entrepreneurs, rather than by a team. ~timing denotes that most of startup activities occur at the early stage of gestation process, while timing means most of startup activities occur at late in gestation process. ~rate suggests that there are a smaller number of organizing activities accomplished for a given period of time, while rate means a greater number of activities accomplished at a time.

~concentration denotes a pattern of time-based pacing activities, while concentration suggests event-based pacing venture creation activities. ~competition illuminates a low degree of competition in the industry. ~strategy means nascent entrepreneurs pursue a less risky startup strategy, while strategy indicates a great risky startup strategy conducted by nascent entrepreneurs.

The first configuration indicates that in the highly competitive industry, nascent entrepreneurs who do not have strong startup experience compensate their weakness by organizing teams. They perform as "doers" who complete startup activities at the early stage of gestation process, with high intensity of the number of activities at a given period of time, and these activities are highly clustered by showing event-based pacing.

The second configuration suggests that when founding environment is not competitive, nascent entrepreneurs who have owner parents normally create their business solely, with less risky startup strategy. They also act as "doers" who complete activities at early stage, with low intensity of activity accomplishment, and time-based pacing.

The third configuration demonstrates another causal condition of venture gestation. When the industrial competition level is low, entrepreneurial team is formed to compensate entrepreneur's weakness in startup knowledge. Nascent entrepreneurs pursue high risky startup strategy, act as "thinkers" who finish startup activities at late early stage, accomplish smaller number of activities that are widely dispersed.

The fourth configuration involves solo nascent entrepreneurs who create new ventures in highly competitive industrial environment. They pursue less aggressive startup strategy, accomplish startup activities at early stage (doers), conduct smaller number of activities during the venture gestation time, and show an event-based pacing pattern.

The fifth configuration fifth illuminate a pattern of new venture emergence: low level of environmental competition, less aggressive startup strategy, low level of intensity of activities, event-based pacing, entrepreneurial teams that complete activities at the late stage as thinkers.

6. Discussion and Conclusions

Patterns in the above five configurations suggest that all individual, strategic, environmental, and process behavioral factors are responsible for venture gestation. The results contributes to the entrepreneurship literature by shedding light on several important aspects: a) factor independence: the importance of single factors at various levels to new venture gestation, b) factor interdependence: the combinations of all factors among entrepreneurs, strategy, environment, and behavior are important to understanding new venture gestation process, and c) factor complex causality underlying the determination of new venture gestation.

First, results illuminate that new venture emergence is a function of individual attributes, venturing strategy, gestation process, and founding environment. All configurations reported in this study involve at least three categorical attributes: individual or team, venture gestation behavior, and founding environment. Although strategy attribute is absent in the first configuration, it display in the rest four configurations, which suggests that strategic factors are very important to venture creation. In general, each factor in the four- category model plays an essential role in venture gestation. Any single changed attribute may constitute a difference in kind that demonstrates a new path to venture formation. For instance, previous literature has acknowledged that new ventures established by solo entrepreneurs are more likely to fail than firms founded by entrepreneurial team, because teams draw upon complementary knowledge of the founders and give them more complete knowledge than single founder ventures (Roberts, 1991; Klepper, 2002). However, results of this study demonstrate that solo founder ventures are equally effective in determining venture formation as team founded ventures, but team or solo founder factors may have different and even opposite effects on venture creation, depending on the contexts. Therefore, a single factor independently matters, but the effectiveness of venture gestation process may rely on the degree to which this factor matches with other factors in a particular context. This leads to the second implication of this study to entrepreneurship literature: factor interdependence.

Consistent with what proposed, the results suggest that the individual effects of variables are moderated by factors at other analytical levels. Results demonstrates factor interdependence among entrepreneurs/ entrepreneurial team, strategy, environment, and venture gestation behavior in determining new venture emergence. The combinations of four categorical attributes are usually sufficient for venture formation. Findings of this study also signify that new venture emergence rarely have a single cause. Put in another way, causes for venture gestation rarely operate in isolation from each other.

Finally, the pattern of the results demonstrates a causal complexity of new venture emergence: a single cause matters in venture gestation; the effectiveness of venture gestation rarely has a single cause; the causes are

interdependent; and direction of the effect of a specific cause may change with causal conditions. Thus, although the findings show that startup knowledge and venture creation behaviors clearly matter for the outcome of startups, analyses also suggest that the importance of each factor is contingent in the founding environments and types of startup strategy pursued by nascent entrepreneurs. Causal complexity can also be demonstrated by the presence of membership or nonmembership of each of the factors. For instance, membership in owner parents is one of the conditions that are sufficient for venture emergence. However, a nonmembership in owner parents may also be sufficient to the effectiveness of venture gestation in other conditions. Hence, the outcome of venture creation depends on other factors at different levels of analysis, and the effectiveness of outcome could also vary along with the changes in membership or nonmembership in a theoretical set.

6.1 Limitations and Future Research Directions

Given its ability to analyze complex conjunctures of cases in relation to a particular outcome, QCA is uniquely suited to address theoretical arguments in the field of entrepreneurship. Although the addition of QCA to the methodologies available to entrepreneurship research is promising, like any methodology, this method has a few caveats which have received considerable attention. Firstly, because of the conditional logic of QCA and the number of possible configurations generated, the method limits the number of independent variables selected. The inclusion of large number of independent variables renders interpretation exponentially unwieldy (Roscigno & Hodson, 2004). Researchers who use QCA approach are forced to make a rigid selection of a limited number of independent variables that deem theoretical importance. One drawback of this technique is that it depends heavily on theoretical and conceptual developments to define which factors should be included in the analysis. This means that if we do not appropriately specify variables included in the investigation, the results will be invalid.

Secondly, QCA employs probabilistic criteria in capturing complex combination of attributes, however, the generated configurations may due to some degrees of chances; thereby the results may not generalized to different samples including the same variables (Greckhamer et al., 2007). Thus, researchers should examine the robustness of findings by performing a post hoc analysis such as splitting the sector samples into two random subsamples and verify the sufficiency of identified causal conditions. Researchers could also further valid the configurations by testing the configurations in a different set of data. Another approach is to adopt a multi-method strategy and re-estimate the robustness of significant configurations by using conventional quantitative methods (Roscigno & Hodson, 2004).

Another weakness of QCA is that control variables cannot be included as in the typical regression model. Although a set-theoretic approach has such drawbacks, scholars hold that the benefits of its theoretical rigor in selecting variables, the specification of complex causality and conditional configurations, and the analysis of equifinality outweigh the costs (Boswell & Brown, 1999; Ragin, 2000).

A final limitation of the current study is that the analysis is constrained in the assessment of crisp-set membership. A drawback of crisp-set QCA is the strict dichotomization of the variables, both dependent and independent ones. Researchers should carefully measure what is present and absent and to what degree and so forth. The future research could also benefit from utilizing "fuzzy sets" that employs qualitative states of full membership and full nonmembership that allow to examine not only difference in kind (yes or no, high or low, as do crisp-sets), but also differences in degree. Fuzzy set allows us to study both qualitative and quantitative variations simultaneously (Ragin, 2000). Thus, future research could consider fuzzy sets in the QCA approach as another appropriate method in entrepreneurship research to study interdependent relationships.

6.2 Conclusion

Unlike conventional linear regression models, QCA considers all possible combinations of causal factors and specifies the configurations of variables that lead to unique outcomes. QCA has been identified as an important method that is uniquely suited to address theoretical arguments. This approach has been widely used in other disciplines. This study applied QCA into entrepreneurship and has demonstrated that QCA is a valuable addition to the methodology toolkit of entrepreneurship researchers. From a methodological standpoint, this study has demonstrated the effectiveness of using a QCA approach to examine various configurations and their impacts. The author shows that QCA can advance our understanding of new venture emergence by investigating the interdependent relationships. QCA helps to reveal a causal complexity that is underlying venture emergence.

The present study not only illustrates the potential of using QCA method in entrepreneurship research, but also contributes to theoretical issues that have challenged entrepreneurship scholars. Findings clearly show that there is substantial interdependence among individual, team, behavioral, strategic, and contextual attributes in determining the effectiveness of venture creation. Results reveal five configurations of attributes that are

sufficient for attaining the same outcome, and any particular factor may have different effects depending on the contingency of other factors.

In the field of entrepreneurship research, there is a clear need to move beyond simple contingency approach, as venture creation faces multiple contingencies such as the entrepreneurs, the opportunity, the context, the process and the outcome, with significant inter-dependence among these contingencies. This paper contributes to both theory building and methodology by providing a configurational view and a combinational approach that goes beyond the conventional correlational view. From a practical standpoint, this study will inform would-be entrepreneurs a holistic view that various paths can lead to the success of firm emergence. This article is hoped to provide insights and severs as a catalyst calling for more studies that combine QCA and conventional methods in the field of entrepreneurship.

References

Aldrich, H. E. (2012). The emergence of entrepreneurship as an academic field: A personal essay on institutional entrepreneurship. *Research Policy, 41*(7), 1240-1248. https://doi.org/10.1016/j.respol.2012.03.013

Alsos, G. A., & Kolvereid, L. (1998). The business gestation process of novice, serial, and parallel business founders. *Entrepreneurship: Theory and Practice, 22*(4), 101-102.

Amenta, E., & Halfmann, D. (2000). Wage wars: Institutional politics, WPA wages, and the struggle for US social policy. *American Sociological Review*, 506-528. https://doi.org/10.2307/2657380

Aragon-Mendoza, J., Raposo, M., & Roig-Dobón, S. (2016). Gender matters in venture creation decision. *Journal of Business Research, 69*(6), 2081-2086. https://doi.org/10.1016/j.jbusres.2015.12.012

Boswell, T., & Brown, C. (1999). The Scope of General Theory Methods for Linking Deductive and Inductive Comparative History. *Sociological Methods & Research, 28*(2), 154-185. https://doi.org/10.1177/0049124199028002002

Brüderl, J., Preisendörfe, P., & Ziegler, R. (1992). Survival chances of newly founded business organizations. *American sociological review*, 227-242. https://doi.org/10.2307/2096207

Brush, C., Manolova, T., & Edelman, L. (2008). Properties of emerging organizations: An empirical test. *Journal of Business Venturing, 23*(5), 547-566. https://doi.org/10.1016/j.jbusvent.2007.09.002

Carter, N., Gartner, W., & Reynolds, P. (1996). Exploring start-up event sequences. *Journal of Business Venturing, 11*(3), 151-166. https://doi.org/10.1016/0883-9026(95)00129-8

Carter, N., Williams, M., & Reynolds, P. (1997). Discontinuance among new firms in retail: The influence of initial resources, strategy, and gender. *Journal of Business Venturing, 12*(2), 125-145. https://doi.org/10.1016/S0883-9026(96)00033-X

Chuang, A., Hsu, R. S., Wang, A.-C., & Judge, T. A. (2015). Does West "fit" with East? In search of a Chinese model of person–environment fit. *Academy of Management Journal, 58*(2), 480-510. https://doi.org/10.5465/amj.2012.1076

Cooper, A. C., & Daily, C. M. (1997). *Entrepreneurial Teams*: In D. L. Sexton & R. W. Smilor (Eds.), *Entrepreneurship 2000,* chapter 6. Chicago: Upstart Publishing Company.

Cope, J. (2005). Toward a dynamic learning perspective of entrepreneurship. *Entrepreneurship theory and practice, 29*(4), 373-397. https://doi.org/10.1111/j.1540-6520.2005.00090.x

Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of business venturing, 18*(3), 301-331. https://doi.org/10.1016/S0883-9026(02)00097-6

Dean, T. J., & Meyer, G. D. (1996). Industry environments and new venture formations in US manufacturing: A conceptual and empirical analysis of demand determinants. *Journal of Business Venturing, 11*(2), 107-132. https://doi.org/10.1016/0883-9026(95)00109-3

Dess, G. G., Lumpkin, G. T., & Covin, J. G. (1997). Entrepreneurial strategy making and firm performance: Tests of contingency and configurational models. *Strategic management journal*, 677-695. https://doi.org/10.1002/(SICI)1097-0266(199710)18:9<677::AID-SMJ905>3.0.CO;2-Q

Doty, D., & Glick, W. (1994). Typologies as a unique form of theory building: Toward improved understanding and modeling. *Academy of Management Review*, 230-251.

Eckhardt, J. T., & Shane, S. A. (2013). Response to the commentaries: The individual-opportunity (IO) nexus integrates objective and subjective aspects of entrepreneurship. *Academy of Management Review, 38*(1), 160-163. https://doi.org/10.5465/amr.2012.0192

Fiss, P. C. (2007). A set-theoretic approach to organizational configurations. *Academy of management review*, *32*(4), 1180-1198. https://doi.org/10.5465/AMR.2007.26586092

Forbes, D., Borchert, P., Zellmer-Bruhn, M., & Sapienza, H. (2006). Entrepreneurial team formation: an exploration of new member addition. *Entrepreneurship theory and practice, 30*(2), 225-248. https://doi.org/10.1111/j.1540-6520.2006.00119.x

Gartner, W., & Liao, J. (2012). The effects of perceptions of risk, environmental uncertainty, and growth aspirations on new venture creation success. *Small Business Economics, 39*(3), 703-712. https://doi.org/10.1007/s11187-011-9356-1

Gartner, W., Starr, J., & Bhat, S. (1999). Predicting new venture survival: an analysis of "anatomy of a start-up." cases from Inc. Magazine. *Journal of Business Venturing, 14*(2), 215-232. https://doi.org/10.1016/s0883-9026(97)00063-3

Gartner, W. B. (1985). A conceptual framework for describing the phenomenon of new venture creation. *Academy of management review, 10*(4), 696-706.

Gatewood, E. J., Shaver, K. G., & Gartner, W. B. (1995). A longitudinal study of cognitive factors influencing start-up behaviors and success at venture creation. *Journal of business venturing, 10*(5), 371-391. https://doi.org/10.1016/0883-9026(95)00035-7

Gimeno, J., Folta, T. B., Cooper, A. C., & Woo, C. Y. 1997. Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms, *Administrative Science Quarterly*, 750-783. https://doi.org/10.2307/2393656

Greckhamer, T., Misangyi, V. F., Elms, H., & Lacey, R. (2007). Using qualitative comparative analysis in strategic management research: An examination of combinations of industry, corporate, and business-unit effects. *Organizational Research Methods*.

Gruber, M., MacMillan, I. C., & Thompson, J. D. (2013). Escaping the prior knowledge corridor: What shapes the number and variety of market opportunities identified before market entry of technology start-ups? *Organization Science, 24*(1), 280-300. https://doi.org/10.1287/orsc.1110.0721

Haber, S., & Reichel, A. (2007). The cumulative nature of the entrepreneurial process: The contribution of human capital, planning and environment resources to small venture performance. *Journal of Business Venturing, 22*(1), 119-145. https://doi.org/10.1016/j.jbusvent.2005.09.005

Hannan, M., & Carroll, G. (1992). *Dynamics of organizational populations: Density, legitimation, and competition*: Oxford University Press, USA.

Jones, O., & Holt, R. (2008). The creation and evolution of new business ventures: an activity theory perspective. *Journal of small business and enterprise development, 15*(1), 51-73. https://doi.org/10.1108/14626000810850847

Klepper, S. (2002). The capabilities of new firms and the evolution of the US automobile industry. *Industrial and corporate change, 11*(4), 645-666. https://doi.org/10.1093/icc/11.4.645

Klotz, A. C., Hmieleski, K. M., Bradley, B. H., & Busenitz, L. W. (2014). New venture teams a review of the literature and roadmap for future research. *Journal of Management, 40*(1), 226-255. https://doi.org/10.1177/0149206313493325

Kogut, B., MacDuffie, J. P., & Ragin, C. (2004). Prototypes and strategy: Assigning causal credit using fuzzy sets. *European Management Review, 1*(2), 114-131. https://doi.org/10.1057/palgrave.emr.1500020

Kogut, B., & Ragin, C. (2006). Exploring complexity when diversity is limited: Institutional complementarity in theories of rule of law and national systems revisited. *European Management Review, 3*(1), 44-59. https://doi.org/10.1057/palgrave.emr.1500048

Korunka, C., Frank, H., Lueger, M., & Mugler, J. (2003). The entrepreneurial personality in the context of resources, environment, and the startup process—A configurational approach. *Entrepreneurship theory and practice, 28*(1), 23-42. https://doi.org/10.1111/1540-8520.00030

Kvist, J. 2006. Diversity, ideal types and fuzzy sets in comparative welfare state research, *Innovative Comparative Methods for Policy Analysis: Beyond the quantitative-qualitative divide,*167-184: New York: Springer.

Li, H. (2001). How does new venture strategy matter in the environment–performance relationship? *The journal of high technology management research, 12*(2), 183-204. https://doi.org/10.1016/S1047-8310(01)00036-0

Lichtenstein, B. B., Carter, N. M., Dooley, K. J., & Gartner, W. B. (2007). Complexity dynamics of nascent entrepreneurship. *Journal of Business Venturing, 22*(2), 236-261. https://doi.org/10.1016/j.jbusvent.2006.06.001

Low, M. B., & Abrahamson, E. (1997). Movements, bandwagons, and clones: Industry evolution and the entrepreneurial process. *Journal of Business Venturing, 12*(6), 435-457. https://doi.org/10.1016/S0883-9026(97)00001-3

Low, M. B., & MacMillan, I. C. (1988). Entrepreneurship: Past Research and Future Challenges. *Journal of Management, 14*(2), 139-161. https://doi.org/10.1177/014920638801400202

Meyer, A., Tsui, A., & Hinings, C. (1993). Configurational approaches to organizational analysis. *Academy of Management Journal*, 1175-1195. https://doi.org/10.2307/256809

Phillips, N., Tracey, P., & Karra, N. (2013). Building entrepreneurial tie portfolios through strategic homophily: The role of narrative identity work in venture creation and early growth. *Journal of Business Venturing*, *28*(1), 134-150. https://doi.org/10.1016/j.jbusvent.2011.12.002

Ragin, C. (2006). Set relations in social research: Evaluating their consistency and coverage. *Political Analysis*, *14*(3), 291-310. https://doi.org/10.1093/pan/mpj019

Ragin, C. C. (1987). *The comparative method: Moving beyond qualitative and quantitative strategies*: University of California Press.

Ragin, C. C. (2000). *Fuzzy-set social science*: University of Chicago Press.

Reynolds, P., & Miller, B. (1992). New firm gestation: Conception, birth, and implications for research. *Journal of Business Venturing, 7*(5), 405-417. https://doi.org/10.1016/0883-9026(92)90016-K

Roberts, E. B. (1991). *Entrepreneurs in high technology*: Oxford University Press, USA. https://doi.org/10.1093/acprof:oso/9780195067040.001.0001

Romanelli, E. (1989). Environments and strategies of organization start-up: Effects on early survival, *Administrative Science Quarterly*, 369-387. https://doi.org/10.2307/2393149

Roscigno, V. J., & Hodson, R. (2004). The organizational and social foundations of worker resistance. *American sociological review, 69*(1), 14-39. https://doi.org/10.1177/000312240406900103

Shapero, A., & Giglierano, J. (1982). Exits and entries: A study in yellow pages journalism. *Frontiers in entrepreneurship research*, 113-141.

Shook, C. L., Priem, R. L., & McGee, J. E. (2003). Venture creation and the enterprising individual: A review and synthesis. *Journal of Management, 29*(3), 379-399. https://doi.org/10.1016/S0149-2063(03)00016-3

Starr, J., & Bygrave, W. (1991). The second time around: The outcomes, assets and liabilities of prior start-up experience. *International perspectives on entrepreneurship research*, 340-363.

Van de Ven, A. H., & Drazin, R. (1985). The concept of fit in contingency theory. *Research in Organizational Behavior, 7,* 333-365.

Van de Ven, A. H., Hudson, R., & Schroeder, D. M. (1984). Designing new business startups: Entrepreneurial, organizational, and ecological considerations. *Journal of management, 10*(1), 87-108. https://doi.org/10.1177/014920638401000108

Zadeh, L. (1965). Fuzzy sets. *Information and control, 8,* 338-353. https://doi.org/10.1016/S0019-9958(65)90241-X

Copyrights

Quasilinear Utility and Two Market Monopoly

Stephen K. Layson[1]

[1]Bryan School of Business and Economics, UNCG, Greensboro, NC, USA

Correspondence: Stephen K. Layson, Department of Economics, Bryan School of Business and Economics, Bryan 462, PO Box 26170, Greensboro, NC, 27402-6170, USA. E-mail: sklayson@uncg.edu

Abstract

The use of quasilinear utility functions in economic analyses is widespread. This paper presents an overdue clarification on the implications of quasilinear utility for two market monopoly. The paper begins by deriving the demands facing a two market monopoly from a representative consumer with quasilinear utility. Expressions are derived for the profit margins expressed solely in terms of the own and cross-price elasticities of demand. The paper also analyzes the implications of quasilinear utility for other issues in two market monopoly: pricing below marginal cost in a market, third-degree price discrimination when the monopoly products are substitutes and pricing in the inelastic region of demands.

Keywords: quasilinear utility, two product monopoly, third-degree price discrimination

1. Introduction

Thanks in large part to Varian (1985, 1992) the assumption of quasilinear utility is ubiquitous in economic policy analyses because it allows one to simply measure social welfare as profit plus consumer surplus. This paper presents an overdue clarification of the implications of quasilinear utility for the behavior of two market monopoly and in the process corrects some errors in Varian (1989, 1992). After deriving the demands facing a two market monopoly from a representative consumer, the paper derives simple expressions for the monopoly profit margins expressed solely in terms of own and cross-price elasticities of demand. The paper also discusses three other implications of quasilinear utility for two market monopoly: (1) the possibility of pricing below marginal cost (2) the theory of third-degree price discrimination when the monopoly products are substitutes and (3) pricing in the inelastic region of demands.

2. Method

2.1 Quasilinear Utility, Monopoly Demands and Elasticities of Demand

Let the utility function of the representative consumer be given by $u(x_0, x_1, x_2) = x_0 + \varphi(x_1, x_2)$, where x_0 is a numeraire good and x_1 and x_2 are the two goods produced by the monopolist.[1] Assume that φ is a twice continuously differentiable, strictly concave function where $\varphi_1 \equiv \frac{\partial \varphi}{\partial x_1} > 0, \varphi_2 \equiv \frac{\partial \varphi}{\partial x_2} > 0$, $\varphi_{11} \equiv \frac{\partial \varphi_1}{\partial x_1} < 0, \varphi_{22} \equiv \frac{\partial \varphi_2}{\partial x_2} < 0, \varphi_{12} \equiv \frac{\partial \varphi_2}{\partial x_1}$ and $\varphi_{11}\varphi_{22} > \varphi_{12}^2$.

Let the price of the numeraire good be 1. Utility is maximized subject to the constraint: $x_0 + p_1 x_1 + p_2 x_2 \leq y$, where p_i is the price of good i and y is the consumer's exogenous income plus monopoly profit. Assuming an interior solution to the consumer's utility maximization problem, the consumer's inverse demand functions are: $p_1 = \varphi_1(x_1, x_2)$ and $p_2 = \varphi_2(x_1, x_2)$. Note that $\frac{\partial p_1}{\partial x_1} = \varphi_{11}, \frac{\partial p_2}{\partial x_2} = \varphi_{22}$ and, by Young's theorem, $\frac{\partial p_2}{\partial x_1} = \frac{\partial p_1}{\partial x_2} = \varphi_{12}$. Given the inverse demand functions,

---

[1]The analysis can easily be extended to the case where a monopolist sells n goods. For the case where the monopolist sells n goods let the utility function be $u(x_0, x_1, \cdots x_n) = x_0 + \varphi(x_1, \cdots x_n)$.

$\varphi_1(x_1, x_2)$ and $\varphi_2(x_1, x_2)$, one might ask under what conditions do the demand functions $x_1(p_1, p_2)$ and $x_2(p_1, p_2)$ exist and how are the partial derivatives of these demand functions related to the partial derivatives of the inverse demand functions?

Write the inverse demand functions as

(1) $F^i(p_i, x_1, x_2) = p_i - \varphi_i(x_1, x_2) = 0$, $i = 1,2.$

Using the implicit function theorem we know that the demand functions $x_i = x_i(p_1, p_2)$, $i = 1,2$, exist in a neighborhood around a point that satisfies equation (1) as long as the Jacobian $|J| = \begin{vmatrix} \frac{\partial F^1}{\partial x_1} & \frac{\partial F^1}{\partial x_2} \\ \frac{\partial F^2}{\partial x_1} & \frac{\partial F^2}{\partial x_2} \end{vmatrix} = \varphi_{11}\varphi_{22} -$

$\varphi_{12}^2 \neq 0$. Because $\varphi(x_1, x_2)$ is by assumption strictly concave it follows that the Jacobian is always positive and that the demand functions $x_i = x_i(p_1, p_2)$ do exist at every point satisfying equation (1).

The implicit function rule of differentiation applied to equation (1) yields:

(2) $\frac{\partial x_1}{\partial p_1} = \frac{\varphi_{22}}{\varphi_{11}\varphi_{22} - \varphi_{12}^2} < 0$

(3) $\frac{\partial x_2}{\partial p_2} = \frac{\varphi_{11}}{\varphi_{11}\varphi_{22} - \varphi_{12}^2} < 0$

and

(4) $\frac{\partial x_1}{\partial p_2} = \frac{\partial x_2}{\partial p_1} = \frac{-\varphi_{12}}{\varphi_{11}\varphi_{22} - \varphi_{12}^2}$.

The sign of φ_{12} determines whether products 1 and 2 are substitutes, complements or independent. Products 1 and 2 are substitutes, that is $\frac{\partial x_1}{\partial p_2} = \frac{\partial x_2}{\partial p_1} > 0$, if and only if $\varphi_{12} < 0$.[2] Products 1 and 2 are complements, that is

$\frac{\partial x_1}{\partial p_2} = \frac{\partial x_2}{\partial p_1} < 0$, if and only if $\varphi_{12} > 0$. The intuition for these latter results is that when products 1 and 2 are substitutes (complements) an increase in production of good 1 lowers (raises) the marginal utility of good 2 and lowers (raises) the maximum amount the representative consumer is willing to pay for good 2. Finally, if

$\varphi_{12} = 0$, $\frac{\partial x_1}{\partial p_2} = \frac{\partial x_2}{\partial p_1} = 0$, the two demand functions are independent. Only in this special case will it be true that

$\frac{\partial x_i}{\partial p_i} = \frac{1}{\varphi_{ii}} = \frac{1}{\frac{\partial p_i}{\partial x_i}}$.[3]

From the strict concavity of $\varphi(x_1, x_2)$ and equations (2) - (4) it also follows that $\frac{\partial x_1}{\partial p_1}\frac{\partial x_2}{\partial p_2} > \left(\frac{\partial x_1}{\partial p_2}\right)\left(\frac{\partial x_2}{\partial p_1}\right)$. Letting

$e_{ij} \equiv \frac{\partial x_j}{\partial p_i}\frac{p_i}{x_j}$ be the elasticity of product j with respect to the price of product i, the previous inequality expressed

---

[2] Varian (1989, p. 619, 1992, p. 249) mistakenly states that $\frac{\partial p_2}{\partial x_1} > 0$ when products 1 and 2 are substitutes. Note also from equation (4) that $\frac{\partial x_i}{\partial p_j} \neq 1 / \frac{\partial p_j}{\partial x_i}$ for $i \neq j$.

[3] Varian (1989, p. 618, 1992, p. 249) incorrectly assumes that $\frac{\partial x_i}{\partial p_i} = 1 / \frac{\partial p_i}{\partial x_i}$ when the two products are substitutes.

in elasticity form is

(5) $e_{11}e_{22} - e_{12}e_{21} > 0$

2.2 *Profit maximization for a two product firm*

Let the profit function for a two-market monopoly be $\pi(p_1, p_2)$ $(p_1 - c_1)x_1 + (p_2 - c_2)x_2$, where c_1 is constant marginal cost in market 1 and c_2 is constant marginal cost in market 2. The first order conditions for profit maximization are:

$$(6)\ \pi_1 = \frac{\partial \pi}{\partial p_1} = x_1 + (p_1 - c_1)\frac{\partial x_1}{\partial p_1} + (p_2 - c_2)\frac{\partial x_2}{\partial p_1} = 0$$

$$(7)\ \pi_2 = \frac{\partial \pi}{\partial p_2} = x_2 + (p_1 - c_1)\frac{\partial x_1}{\partial p_2} + (p_2 - c_2)\frac{\partial x_2}{\partial p_2} = 0$$

Let the profit margin in market i be $m_i = \frac{p_i - c_i}{p_i}$. Using the cross-price symmetry result $\frac{\partial x_1}{\partial p_2} = \frac{\partial x_2}{\partial p_1}$, equations (6) and (7) with some algebraic manipulation may be rewritten as:

(8) $m_1 e_{11} + m_2 e_{21} = -1$

(9) $m_1 e_{12} + m_2 e_{22} = -1$

Solving for the profit maximizing values of the profit margins yields:

$$(10)\ m_1^* = \frac{-e_{22} + e_{21}}{e_{11}e_{22} - e_{12}e_{21}}$$

$$(11)\ m_2^* = \frac{-e_{11} + e_{12}}{e_{11}e_{22} - e_{12}e_{21}}$$

It is assumed that the second order sufficient conditions for a maximum are satisfied at the profit margins given by equations (10) and (11). For $e_{12} = e_{21} = 0$, equations (10) and (11) simplify to $m_1^* = -\frac{1}{e_{11}}$ and $m_2^* = -\frac{1}{e_{22}}$.

The profit margin expressions given by equations (10) and (11) above are similar but somewhat simpler than expressions developed by Forbes (1988, 62). Forbes' expressions for the profit maximizing profit margins are: $m_1^* = \frac{-e_{22} + e_{12}\frac{R_2}{R_1}}{e_{11}e_{22} - e_{12}e_{21}}$ and $m_2^* = \frac{-e_{11} + e_{21}\frac{R_1}{R_2}}{e_{11}e_{22} - e_{12}e_{21}}$, where $R_i = p_i x_i$. Assuming cross-price symmetry it is easy to show that $e_{21} = e_{12}\frac{R_2}{R_1}$ and $e_{12} = e_{21}\frac{R_1}{R_2}$. Tirole's (1988,70) expressions for the profit maximizing profit margins in the two good case are: $m_1^* = -\frac{1}{e_{11}} - m_2^*\frac{R_2 e_{12}}{R_1 e_{11}}$ and $m_2^* = -\frac{1}{e_{22}} - m_1^*\frac{R_1 e_{21}}{R_2 e_{22}}$, which with some algebra can be shown to be equivalent to Forbes' expressions.

3. Results

3.1 *Pricing below Marginal Cost under Two Market Monopoly*

It has been well known for some time that if the two products are complements then it's possible that price may be below marginal cost in one market.[4] See Allen (1938, 359-62) and the references cited therein. Without loss

---

[4] If price were below marginal cost in both markets the monopolist's profit would be negative.

of generality let $m_1^* > m_2^*$. From equation (10) the condition for price to be below marginal cost in market 2 in the present model is $e_{11} - e_{12} > 0$. Because e_{11} is assumed to be negative, for the profit margin to be negative in market 2 we must have $e_{12} < 0$ and $|e_{12}| > |e_{11}|$. For example, a baseball team that sells beer (product 2) and tickets (product 1) would price beer below its marginal cost if lowering the price of tickets by 1% led to a greater % increase in beer sold than the % increase in tickets sold.

3.2 Third-degree Price Discrimination When Demands Are Interdependent

Suppose a monopolist sells a single product with the equal marginal costs in two markets at different prices but the two markets are not perfectly sealed off from each other so that there is some substitution between the markets. See for example Varian's discussion (1989, 1992) of this subject. An example of this type of price discrimination is a movie theatre that shows afternoon movies at a lower price than the same movie shown at night. Because movies shown at night and during the day are substitutes, $e_{12}, e_{21} > 0$. Profit maximization for the price discriminating monopolist requires satisfying equations (10) and (11). The condition for $m_1^* > m_2^*$ is $-e_{22} + e_{21} > -e_{11} + e_{12}$. Note if $e_{12} = e_{21}$ then the previous condition reduces to $|e_{22}| > |e_{11}|$, which is the well known result that a price discriminating monopoly has a lower profit margin in the more elastic market.

3.3 Pricing in the Inelastic Regions of Demands

It is well known that an unregulated single-product monopolist will never operate in the price inelastic region of demand because that implies marginal revenue is negative. We now investigate whether this result extends to the case of a two-market monopoly. Because $m_1^* \le 1$ and $m_2^* \le 1$, we can derive the following inequalities from equations (10) and (11):

(12) $e_{21}(e_{12} + 1) \le e_{22}(e_{11} + 1)$ (holds with equality if $m_1^* = 1$)

(13) $e_{12}(e_{21} + 1) \le e_{11}(e_{22} + 1)$ (holds with equality if $m_2^* = 1$)

If $|e_{11}| < 1$ then from inequality (12) we must have $e_{12} < 0, e_{21} < 0$ and $|e_{12}| < 1$. In words, if demand is inelastic in market 1, then the two products must be complements and the absolute value of e_{12} must be less than 1. Similarly, if demand is price inelastic in market 2 inequality (13) implies that the two products must be complements and that the absolute value of e_{21} must be less than 1. To verify that both markets can have price inelastic demands, let $e_{11} = -.8, e_{22} = -.9, e_{12} = e_{21} - .5$. From equations (10) and (11) we find $m_1^* = .851$ and $m_2^* = .638$.

If marginal cost is zero in a market, the two products are complements and the absolute values of the cross-price elasticities are less than 1, then it must be the case that demand is inelastic in that market. Consider the case where $c_1 = 0$ and hence $m_1^* = 1$. If $e_{12}, e_{21} < 0$, and $|e_{12}| < 1$ then it follows from equation (12) that $|e_{11}| < 1$. Similarly if $c_2 = 0$ and hence $m_2^* = 1$, then $e_{12}, e_{21} < 0$, and $|e_{21}| < 1$ implies $|e_{22}| < 1$. Finally, consider the case where $c_1 = c_2 = 0$ which implies $m_1^* = m_2^* = 1$, then $e_{12}, e_{21} < 0$, $|e_{12}| < 1$ and $|e_{21}| < 1$ implies $|e_{11}| < 1$ and $|e_{22}| < 1$.

Major league sports teams provide a good application of ticket pricing in the inelastic region of demand. All major league sports teams can be regarded as multiproduct monopolies selling complementary goods: tickets and concessions. The marginal cost of allowing another person to see a game is nearly zero as long as there are empty seats. It follows from the discussion above that ticket prices should be set in the inelastic region of demand as long as the absolute value of the cross-price elasticity of demand for concessions with respect to ticket prices is less than 1. Fort (2004) and Krautmann and Berri (2007) both argue forcefully that ticket pricing in the inelastic region of demand is commonplace in sporting events.

4. Discussion

This paper has clarified several implications of the assumption of quasilinear utility for two market monopoly. After deriving the demands facing a two market monopoly from a representative consumer, this paper derives

expressions for profit maximizing profit margins expressed solely in terms of own and cross-price elasticities of demand. The paper also derives and discusses the condition for a two market monopoly to price one of its products below marginal cost and clarifies the theory of third-degree price discrimination when the two monopoly products are substitutes. The paper ends with a discussion of pricing in the inelastic region of demand under two market monopoly. It is shown that a two market monopolist may (and in some conditions must) operate in the price inelastic region of demand in one or even both markets.

References

Allen, R. G. D. (1938). Mathematical Analysis for Economists, St. Martin's Press, New York.

Forbes, K. (1988). Pricing of related products by a multiproduct monopolist. *Review of Industrial Organization, 3,* 55-73. https://doi.org/10.1007/BF02229566

Fort, R. (2004). Inelastic sports pricing. *Management and Decision Economics, 25,* 87-94. https://doi.org/10.1002/mde.1108

Krautmann, A., & Berri, D. (2007). Can we find it at the concessions? *Journal of Sports Economics, 8,* 183-191. https://doi.org/10.1177/1527002505275093

Tirole, J. (1988). The Theory of Industrial Organization*, The MIT Press, Cambridge, Massachusetts.

Varian, H. (1978). A note on locally constant income elasticities. *Economics Letters, 1,* 9-13. https://doi.org/10.1016/0165-1765(78)90087-3

Varian, H. (1985). Price discrimination and social welfare.   American Economic Review 75, 870-875.

Varian, H. (1989). Price Discrimination, in: Schmalensee, R., Wilig, R. (Eds.) *Handbook of Industrial Organization, I,* Elsevier Publishers B. V, 597-654. https://doi.org/10.1016/S1573-448X(89)01013-7

Varian, H. (1992). Microeconomic Analysis, third ed. Norton New York.

Willig, R. (1976). Integrability implications for locally constant demand elasticities. *Journal of Economic Theory, 12,* 391-401. https://doi.org/10.1016/0022-0531(76)90035-1

Significance of Social Capital in Socio-economic Development of Bosnia and Herzegovina

Zlatan Delić[1], Hariz Šarić[1], Nedim Osmanović[2]

[1]PhD, Faculty of Philosophy, University of Tuzla, Bosnia and Herzegovina

[2]MA, Faculty of Philosophy, University of Tuzla, Bosnia and Herzegovina

Correspondence: Zlatan Delić, PhD, Faculty of Philosophy, University of Tuzla, Bosnia and Herzegovina. E-mail: zlatan.delic@untz.ba

Abstract

Social capital is used in interdisciplinary research as an analytical tool for explaining how culture, trust, and cooperation between people may be put into a function of general good, economic development and society in general. The objective of this paper consists of identification and analysis of status in the field of groups and networks, trust and solidarity, collective action and cooperation, information and communication, social cohesion and inclusion, and empowerment and political action, as key dimensions of social capital, and all in the context of overview of its significance in socio-economic development of Bosnia and Herzegovina. For the purpose of implementation of the named aim, a secondary and primary research has been conducted (by surveying 100 members of the top management teams in Bosnian and Herzegovinian SMEs). The research results show a relatively unsatisfactory status in the area of observed dimensions of social capital in Bosnia and Herzegovina, and the decision makers and creators of socio-economic policies should put in a more significant effort in the area of development of social capital which has a significant potential in the context of incitement of socio-economic development.

Keywords: social capital, socio-economic development, Bosnia and Herzegovina

JEL: A13, A14, O10, L26, Z10

1. Introduction

1.1 Introduction of the Research Problem

In the past decades, social scientists, as well as various financial institutions, such as the World Bank or the International Monetary Fund, have been researching various forms of capital, such as the social capital, cultural capital, transcultural capital, intellectual capital, symbolic capital, and such. These various forms of capital are brought to connection with the total degree of development and democracy of society. Social capital, as a concept, far-reaching aids understanding and critical analysis of the role some play in economic life (until actualisation of this concept, neglected noneconomic factors), such as norms, values, trust, networks, and such. From there, social capital may be a beneficial analytical tool for transdisciplinary connection of economic and sociological approaches. Social capital represents some form of unity of normative structure (axiology, value) that enables the existence of trust in ways of functioning of, not only the economy but the whole society.

A comprehensive overview of the mutual connection between social capital, entrepreneurship and economic development, may be found in scientific studies made by a large number of authors that use interdisciplinary research. David Skidmore (2001) has researched a mutual connection between social capital, civil society and economic development. He has found that, at the foundation of the research conducted in 29 countries, a significant positive connection between social capital (especially mutual trust) and rate of economic growth. Janusz Tanas (2007) has researched cognitive and behavioural aspects of relationships between entrepreneurship and social capital and their impact on a new appearance of modern operations. He has found that a high level of social capital may significantly decrease dysfunctional aspects of doing business (Tanas & Saee, 2007; Tanas, Dembek, Gillin & Spring, 2007). Krzysztof Dembek and Murray Gillin (2007), have determined that there will be a positive effect of social capital on entrepreneurship, and they have proposed a conceptual frame that connects entrepreneurship and social capital as the main drive for economic sustainability and deeper

understanding of economic activities. The cohesive energy that holds the society together, according to these authors, is the result of an integrative role of social capital, and from there, that the entrepreneurship may not be developed in the mistrustful environment. A large number of newer studies on modern problems of development and entrepreneurship, has been preoccupied with a question in which way norms of trust (mutual respect and recognition) may be directed towards outcomes of mutual benefits and the public good. In empirical researches on development (Knowles, 2005. and others), it has been emphasized that societies that are nurtured on the foundation of mutual trust have a greater probability to achieve a higher rate of economic growth when compared to societies that do not develop economic politics that is directed towards public good. According to Amartya Sen, social capital, understood as trust, norms, and networks that enable collective action is directly connected to entrepreneurship and economic development. Stephen Knowles (2006) has focused on studies of formal and informal dimensions of social capital in the context of theoretical and empirical researches of economic changes in many transitional countries, and he has come to a conclusion that social capital is one of the foundational determinants of development. Jan Fidrmuc and Klarita Gërxhani (2008) have researched a circular relationship: does social capital impact economic and social development, or the opposite, does the existence of social and economic development positively impacts accumulation of social capital. Adam Szirmai and associates (2009) have searched for an answer to the question of categories of human and social capital in the economy are used as an addition or replacement for improvement of entrepreneurial dynamics in developing countries? They have defined human capital as a sum of knowledge and skills owned by economic subject on which they generate income, and by social capital, they meant non-material resources that may be exploited from networks of entrepreneurial cooperation and mutual interactions. They have determined that social capital and network operations significantly improve entrepreneurship (see more in: Sadadinović, 2012; Delić, Sadadinović & Smajlović, 2014; Delić, Sadadinović & Delić, 2014).

Researching the impact of social capital on the quality of economic development in Italy, Sabatini (2005) warned that empirical researches of social capital have significant deficiencies. These deficiencies are connected with the non-existence of a universal method of measuring and with the generally accepted definition of social capital. Besides that, Sabatini recognises a significant potential in the actual multidimensional characteristics of social capital, and he states that with the help of that concept, we may improve our understanding of mutual connection between entrepreneurship and newer concepts of sustainable development. Accepting the mentioned, in this paper, social capital will be observed through groups and networks, trust and solidarity, collective actions and cooperation, information and communication, social cohesion and inclusion, and empowerment and political action, as well as its key dimensions, and all in the context of overview the significance of social capital in socio-economic development of Bosnia and Herzegovina. SMEs are connected with entrepreneurship and long since representing the framework of developed economies, and after the 1990s of the 20th century, the belief, that SMEs may also be key for the transformation of former socialist economies into market economies, has spread. For SMEs, it is considered that they are key factors of economic development, but also that their competitiveness in global frames is greatly conditioned by their orientation towards networking with other SMEs. It is considered that social capital plays an important role when forming efficient networks of SMEs, which is, besides all else, the focus of this research.

1.2 Research Question, Research Objective, and State Hypothesis

Many researches, which we will review in this paper, have shown that the concept of social capital may be used in order to explain one significant insight that economic activities are indeed social activities, and that they are, as such, deeply rooted in the culture of society. A significant number of economists and practitioners justifiably claim that formation, construction or preservation of social capital represents an engine of economic and social progress in general. It is often found that social capital positively supplements market effects, decreases transactional costs, incites entrepreneurship, innovations, the spread of technologies, and, in such way, generally leads to better economic results. In Bosnia and Herzegovina, there still are not enough relevant theoretical and especially empirical researches of levels of social capital and its significance in socio-economic development, and so it seems justified to ask the research question: *what is the status in field of groups and networks, trust and solidarity, collective action and cooperation, information and communication, social cohesion and inclusion, and empowerment and political action, as key dimensions of social capital, and all in the context of overview of its significance in socio-economic development of Bosnia and Herzegovina?*

The general research objective is determination and analysis of status in the field of groups and networks, trust and solidarity, collective action and cooperation, information and communication, social cohesion and inclusion, and empowerment and political action, as key dimensions of social capital, and all in the context of overview of its significance in socio-economic development of Bosnia and Herzegovina.

In accordance with the research problem, subject and general objective, it is possible to set the following research hypothesis: *Status in the field of groups and networks, trust and solidarity, collective action and cooperation, information and communication, social cohesion and inclusion, and empowerment and political action, as key dimensions of social capital, is unsatisfactory, which limits the significance of social capital in socio-economic development of Bosnia and Herzegovina.*
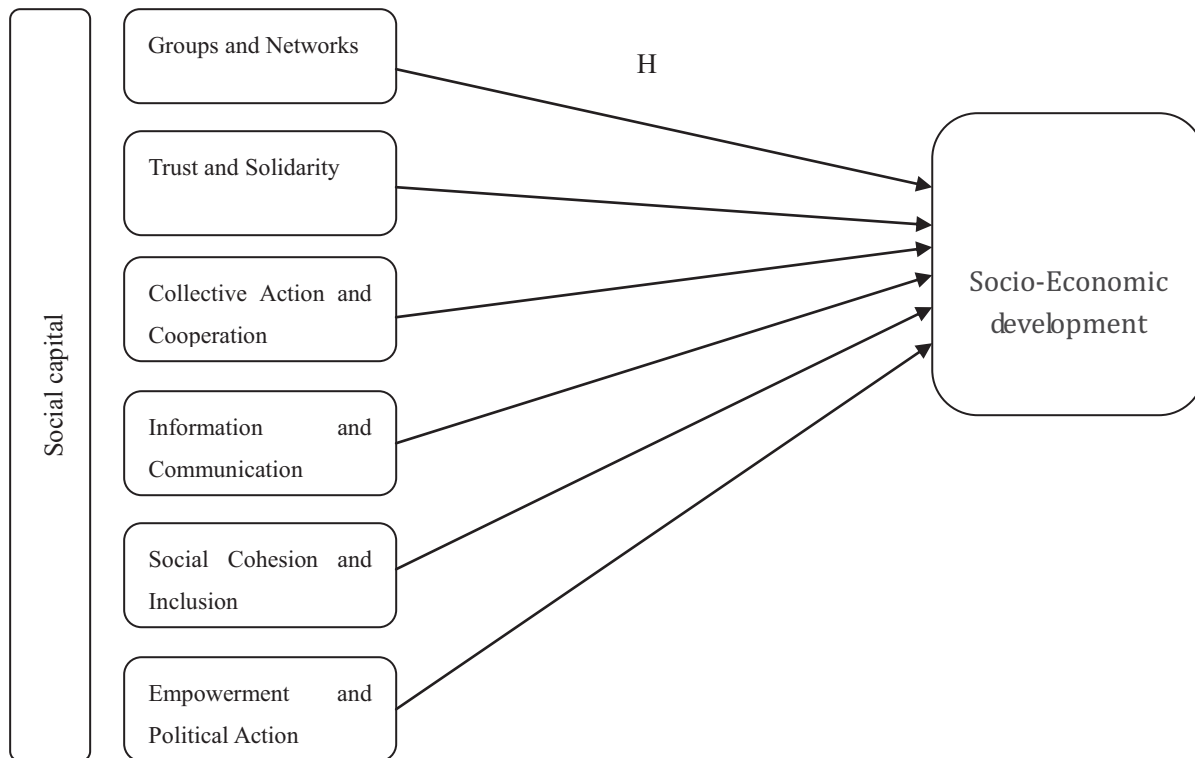

Figure 1. Hypothesis

2. Theoretical Framework and Literature Review

Various scientists define social capital in various ways. Therefore, some authors have brought social capital in relation to trust and norms upon which the cooperation is founded (Knack and Keefer (1997), Hram and Johnson (1998)), and some authors, however, connect social capital with values such as compassion, altruism and tolerance (Fukuyama (1995)), while others emphasize connection of capital with connecting and networking individuals (Narayan and Pritchett (1997), Grootaert (1998), Putnam, Leonardi and Nanetti (1993), Coleman (1988); see more in Fafchamps & Bart Minten, 1999). Since the mid-1990s of the 20th century, use of that term becomes unusually intensive, and the term itself experiences extraordinary popularity. In this way, it begins to be used in many contexts; and in many, very jagged, specific areas in sociological, economic and political theories that, before all, relate to economic, political and normative aspects of development. Since it gains outstanding symbolic power, social capital becomes an integral part of many programmes connected to public politics, and there are many papers on this topic out there.

The early papers on the concept of social capital are connected, before all, to a name Lyda Judson Hanifan (The Community Center, 1920) who argued that "social capital… refer[s] to … those tangible assets [that] count for most in the daily lives of people: namely goodwill, fellowship, sympathy, and social intercourse among the individuals and families who make up a social unit". The following are also included in the group of authors that have pioneered on the phenomenon of social capital: Jane Jacobs (The Life and Death of Great American Cities, 1961), Pierre Bourdieu and Jean-Claude Passeron (Reproduction in Education, Society and Culture, 1970), and Glenn Loury (A Dynamic Theory of Racial Income Differences, 1977); see more in Rossing Feldman & Susan Assaf, 1999).

After the initial texts on social capital, the most significant papers on this phenomenon, in the first half of the 1990s of the last century, have been written by Putnam, Bourdieu, Coleman and Fukuyama – while, during the last twenty years, hundreds of papers were written that contributed to theoretical and practical promotion of this concept for development purposes.

During the 1990s, Putnam has dealt with the analysis of social capital intensively and extensively. He has shown an envious level of competence to consolidate economic and sociological approaches. Putnam, in great detail, combines the approach of rational choice with historical analysis, searching for the origin of regional differences in Italy that are reflected on functioning of state administration, levels of trust and corruption (Putnam, 1993). According to Putnam, social capital enables the solution to a problem that all societies face. Moreover, this problem, in political sociology, is called a dilemma of collective action. Survival of every society assumes, in principle, a certain level of cooperation or collective action of its members, in order to achieve goals of mutual benefits. Social capital refers to characteristics of the social organisation, such as trust, norms, and networks that may improve the organisation of society, that is, social action, through realisation (support or ease) of coordinated engagements (Putnam, Leonardi, Nonetti, 1993: 167). For individual action in a system of reciprocity, Putnam agrees with the Michael Taylor's observations, claiming that individual action represents a combination of short-term altruism and long-term personal interests, showing, in such way, that he believes how reciprocity may also solve problems of collective action and reconcile personal interests with solidarity (Putnam, Leonardi, Nonetti, 1993: 172).

James Samuel Coleman determines social capital as various entities consisting of some aspect of social structure and supporting certain activities of individual and corporate actors within those structures (Coleman, 1988: 98). Nevertheless, he makes a difference between social and human capital. With skills and knowledge, he recognizes a certain part of human capital in abilities of people to come together with one another. This ability is important, not only for economic life but also for other spheres of society. The ability to come together depends on how much are norms and values respected in communities. Besides that, it depends on how individual interests succumb to interests of broader groups. Social capital is, therefore, primarily a relational concept (it is defined through its function). It is built in the social structure as a public good, while the human capital is directed towards private benefits (Coleman, 1990: 302). The structure of relationships may: (1) help the establishment of obligation between social actors; (2) create a social ambiance founded on trust; (3) open, informative channels; and (4) set norms and force sanctions for certain forms of behaviour (Coleman, 1988: 102–104).

Francis Fukuyama was included in the discussion about the social, economic, and political significance of social capital in 1995 with his work Trust. He started from rehabilitation of the philosophical and anthropological significance of the concept of recognition. In that sense, he pointed to a great significance that was given to the concept of recognition by a German philosopher Georg Wilhelm Friedrich Hegel (1770-1831). By combining several scientific disciplines, Fukuyama achieves to represent how much power and significance has that fact that we, human beings, in our interrelations mutually recognise. In that sense, he writes: "Most theoreticians in the field of political sciences have understood that the significance of recognition, as well as the way in which it is extremely important in the sphere of politics. One prince, for example, that is battling another prince does not have a need for new territory or money; he usually has more of that than he needs. What he wants is recognition of his ruling or sovereignty or recognition of the fact that he is the king of kings. Request for recognition often overweighs the economic interest" (Fukuyama, 2003: 59). Fukuyama was proving that the human desire for recognition is universal. Every human being has an elementary need for recognition by other human beings. An economic activity represents the key moment of social life that is intertwined with various norms, rules, moral orientation and various customs, that all together shape society. Considering the challenges of globalization and changed the role that a country has on the economy, Fukuyama believes that culture is coming to the center of attention now. Therefore, the key area of modern life is the economy, in which culture has an immediate impact on prosperity on the internal plan and international order. An outstanding progress, created by the so-called technologized capitals, has served as an incubator for a liberal system of universal and equal rights, where fighting for recognition of human dignity reaches its highest point. Even though the introduction of democratic institutions and the free market has many lead countries to difficulties, especially those parts of the former real socialism world in which there is danger from violence, Fukuyama states that there is no alternative model of political and economic organisation in relation to democratic capitalism. Fukuyama avoids economic reductionism and technocentrism in order to emphasize a crucial role that, cooperation, trust or insisting on public good generally have for both the individual national economies and the new global economy. In the book, Bowling Alone: The Collapse and Revival of American Community, Putnam refers to Fukuyama in only the one place. He does this to emphasize the mutual compatibility of their opinions: a social commentator, Francis Fukuyama, has argued that economies, where citizens show a high level of social trust – that is, have a high level of social capital – will dominate in the 21st century.

Bourdieu also writes about social capital. He unites sociological, philosophical, esthetic and economic traditions. He tries to enveil inner connections, correlations and mechanisms of activity between (a) social and (b) spiritual

structures: he tries to historically explain their interrelations. He has become famous because he introduced (or re-actualized) the terms "practice", "habitus", "cultural capital" and "research field" into social sciences. Since 1964, he lectured École des Hautes Études en Sciences Sociales (in Paris). Since 1975, he edited an interdisciplinary magazine Actes de la Recherche en Sciences Sociales. In 1981, he got tenure at Collège de France, the most prestige academic institution in France, and, at the end, became one of the leading French intellectuals. At first glance, Bourdieu's work includes a great number of topics. His theory system has been built with a consitant intent to overcome opposition of, in his opinion, unnatural and unuseful "objectivism" and "subjectivism" in social sciences, that is, those models that emphasize structures exclusively (classical structuralism), and those that primarily lean on experience and on representations of social actors (interactionism, ethnomethodology) (Bourdieu, 1999). "Social science should also incorporate, as its subject, social reality and observation of that reality, points of view which actors, depending on the position in the objective social space, have in relation to that reality."

He sees society as a multidimensional space within which social actors presume their position. This position is determined by the scope of their total capital. In that sense (by hierarchy), he differs dominant classes, that excel in the sense that they have strong global capital available, and dominated classes, which capital is of modest scope, considering that there is one dominated fraction within the dominating class made up of social actors whose cultural capital is stronger that economic (in modern societies, those are intellectuals, "freelance professionals", and such. Domination over lower classes does not rest so much on power (or on the influence of individual actors), as it does on the diverse and invisible play of symbolic violence. Thanks to the inner logic of activity of symbolic violence, a social system (that is, dominant classes) is reproduced by social segregations and classifications. By symbolic violence, Bourdieu understands power to force certain significance and values as official and legit, while, at the same time, the objective relations of strengths at the foundation of that power are hidden. The dominant classes play the card of own diversity (since capital is, in all three forms, a factor of differentiation). In order to confirm own identity and to force is onto everyone, they make it official as the only certain vision of the world. Social actors are not aware of such mechanism of domination, because it is secret, "covered with the veil of social ignorance", and the main task of sociologists is to unveil its structure.

The research objective in social sciences, according to Bourdieu, is understanding of the "deepest logic" of society, that is, also the structure of mechanism that constructs the social space and that reproduce it. In order to achieve that, it is necessary to "dive into uniqueness of one empirical reality" and to apply various methods of observation and measuring, quantitative and qualitative, statistical and ethnographic, macro-sociological (because opposition of those methods, according to the author's opinion, is stripped off sense and useless) in conjugation with the adequate theoretical model (Bourdieu, 1999). According to Bourdieu, social capital refers to the ability to mobilize networks of social connections (own or someone else's) in order to achieve own goals.

Stephen Knowles (2006) has made an overview of most often cited definitions of social capital in economic literature. He had no pretentions to make a final judgment about what definition is superior. His central thesis is that there is a significant degree of overlap between concepts of social capital and informal institutions.

Woolcock (1998) also pointed to the heuristic potential of social capital. He claimed that, in researches on social capital, economists, historians, help to overcome "disciplinary provincialism". Some authors believe that many societies become dysfunctional and less productive when lacking integration of structure of social capital (Rose, 1999). Social capital is one of the main catalysts of economic and social progress (Grafton & Knowles 2004; Durlauf & Fafchampas, 2004; Stiglitz, 2008.)

Here, also, we may name only a smaller number of scientific researches that dealt with socio-economic, and other aspects, that relate to some characteristic forms of connection between social capital and economic development (Bazan & Schmitz, 1997; Woolcock, 1998; Portes, 1998; Evans, 1997; Trigilia, 2001; Fukuyama, 2002.; Harper, 2002; Adler & Kwon, 2002.; Westlund & Boltona 2003; Taube, 2005.; Sabatini, 2005.; Akcomak & Weel 2006; Ahlerup, Olsson & Yanagizawa, 2009; Ramsey, 2009). Most of the above-mentioned researches are founded on the belief that social capital, as an analytical instrument and a normative concept, may contribute to a better understanding and explanation of economic and social development. However, it should be emphasized that individual authors, such as John Elster, are sceptical towards explanatory ranges of the concept of "social capital", that is, toward attempts of their measuring for the needs of the behavioral economy. Elster believes that measuring public opinion assumes the existence of stable opinion that may be measured. However, Elster has doubted such possibility. Therefore he was also sceptical towards both the qualitative and the empirical researches that refer to social capital (Elster, 2007).

Berto Šalaj has researched the status of social capital in Bosnia and Herzegovina. At the end of his study, he

admits that we should not see the results and interpretation of his descriptive-explorative research as definite answers about social capital in Bosnia and Herzegovina, but more as guidelines to directions of future analyses (Šalaj, 2009:29). Stojiljković, in his work Contribution to Research of Social Capital (2010), also deals with the problem of researching social capital in Bosnian and Herzegovinian environment. Only a few authors, in their studies and scientific papers, connect social capital, entrepreneurship, networking SMEs and socio-economic development in Bosnia and Herzegovina (see, for example: Sadadinović, 2012; Delić, Sadadinović & Smajlović, 2014; Delić, Sadadinović & Delić, 2014).

Table 1. Social Capital Dimensions: Groups and Networks, Trust and Solidarity

Variable	Social capital dimensions	Measuring attitudes					(df)			
		Completely agree	Agree	Somewhat agree	Disagree	Completely disagree	$\chi2$		P	$\mu\pm\sigma$
I	**GROUPS AND NETWORKS**									
...	....									
I-12.1	Membership of enterprise in chambers of commerce significantly contributes to improvement of operations.	5	18	37	35	5	48.40	4	0.000	3.17± 0.95
I-12.2	Membership of enterprise in associations from the same field of activity significantly contributes to improvement of operations.	1	10	34	42	13	59.50	4	0.000	3.56± 0.88
I-12.3	Membership of enterprise in clusters of small and medium enterprises significantly impacts improvement of operations.	3	13	13	34	4	73.30	4	0.000	3.23± 0.84
	...									
II	**TRUST AND SOLIDARITY**									
II-4.1	Enterprise has a high level of trust towards financial institutions.	8	42	40	10	0	41.12	3	0.000	3.48± 0.78
II-4.2	Enterprise has a high level of trust towards government institutions.	3	23	54	17	3	87.60	4	0.000	3.06± 0.80
II-4.3	Enterprise has a high level of trust towards efforts of political structures in the scope of ensuring better conditions for economic development.	1	11	44	31	13	59.40	4	0.000	2.56± 0.89
II-4.4	Enterprise has a high level of trust towards government incentive programmes for development of small and medium enterprises.	3	20	45	23	9	52.20	4	0.000	2.85± 0.95
II-4.5	Enterprise has a high level of trust towards programmes of education and training in the field of entrepreneurship.	4	30	48	14	4	71.60	4	0.000	3.16 ±0.86
II-4.6	Enterprise has a high level of trust towards business partners.	18	52	28	2	0	52.64	3	0.000	3.86± 0.73
II-4.7	Enterprise has a high level of trust when making alliances/clusters with other enterprises for an easier appearance on domestic and/or international market.	9	34	47	8	2	75.70	4	0.000	3.40± 0.84
...	...									
II-6.1	SMEs give back part of their profits to society by engaging in the field of important social projects and environment protection projects.	3	25	52	19	1	85.00	4	0.000	3.10± 0.77
II-6.2	Civic organisations are significant partners of small and medium enterprises during the realisation of environment protection projects, and projects significant for society and community.	2	23	54	20	1	92.50	4	0.000	3.5± 0.74
II-6.3	SMEs solve social, environmental, and problems in community, more efficiently than governments do.	10	44	37	9	0	39.44	3	0.000	3.55± 0.80
II-6.5	Governments are competent to connect potential entrepreneurs, enterprises and civic organisations on specific social, environmental or projects significant to communities.	4	18	43	28	7	51.10	4	0.000	2.84 ±0.94
II-6.7	Social responsibility is a significant source of competitive advantage for SMEs.	14	52	29	5	0	50.64	3	0.000	3.75 ±0.76
II-6.8	SMEs that promote their environmental, or social project comes across scepticism more often than they come across approval.	12	34	39	13	2	49.70	4	0.000	3.41± 0.93
...	...									

3. Research Methodology

Methodological research problems in this field are connected to difficulties in operationalization of the concept of social capital, which is the result of either unclear or tautological definitions (for example, it has been unclearly determined if the trust is the result of social capital or an assumption for development of social capital), or theoretical concepts that are hard to verify in practice (such as the Bourdieu determination of social capital, for example) (Ignajtović, 2011, p. 90; Portes,1998). In the subject research, a questionnaire was used as an instrument for data collection, developed on the foundation of a six-dimensional The Integrated Questionnaire, developed by Woolcock (Woolcock, 2001) for the needs of the World Bank, and, by respecting the guidelines and recommendation from the Conference on the Measurement of Social Capital, held in London, from

September 25-27, 2002, and organised by the Organization for Economic Co-operation and Development (OECD). The questionnaire consists of 7 parts, where the first refers to demographic data about the surveyed and the enterprise, and other six parts refer to 1) groups and networks, 2) trust and solidarity, 3) collective action and cooperation, 4) information and communication, 5) social cohesion and inclusion, and 6) empowerment and political action. The questionnaires were filled by members of top management teams of small and medium enterprises (72% male and 28% female; 31.00% aged between 31-40, 28% aged up to 30, 26% aged between 41-50, and 15% aged over 50 years) between December 2015 and March 2016 in 100 Bosnian and Herzegovinian enterprises that are classified in various branches of operations.

3.1 Results and Discussion

Research results show a relatively low level of participation of surveyed (members of the top management team in SMEs) in professional and other groups and networks from the field of social life in the local community. Namely, only 21% of surveyed (2.08±0.97) stated that they are an active member of professional associations, 19% stated that they are a member of business associations (1.9± 0.81), 8% are in political parties and movements (1.46±0.69), 9% in groups in the field of culture (1.73± 0.75), 17% in groups from the field of sports (1.87± 0.84), 15% in the field of education (1.67±0.84), 7% belong to faith and spiritual groups (1.42±0.71), 5% to ethnic and national groups (1.53± 0.69). Similar results have also been recorded in research conducted in Bosnia and Herzegovina in 2011/2012 (see: Sadadinovic. 2012 p. 105). Managers of SMEs perceive membership of enterprises in networks as a relatively significant determinant of the success of their operations.

It is interesting that research results show that, in Bosnia and Herzegovina, there is a higher level of trust managers give to financial institutions (3.48±0.78), towards business partners (3.86±0.73), as well as a higher level of trust when making alliances/clusters with other enterprises in order to more easily appear on domestic and/or international market (3.40±0.84), rather than towards government institutions (3.06±0.80) and government incentive programmes for development of small and medium enterprises (2.85±0.96). The lowest level of trust, the surveyed have shown towards political structures when questioning their actions in the field of ensuring better conditions for economic growth (2.56±0.89).

The average number of close friends in an enterprise, according to managers' answers is 4.21 (while in 2011, this number was 5.43, see Delić, Delić & Sadadinović, 2014), but with the long average deviance of 6.82, and an average number of friends outside the enterprise 6.02 (while in 2011, this number was 10.82, see Delić, Delić & Sadadinović, 2014) with an extremely high deviance of 9.67.

According to research results, in Bosnia and Herzegovina, in the past 5 years, there has been a noticeable relative growth of solidarity, where this relative growth of solidarity is greater among members of the network that the enterprise is part of (3.67±0.74), than among employees (3.38±0.85), and among people in local and wider social community (3.04±0.89).

The research results show that managers in SMEs see social responsibility as a relatively significant source for the realisation of competitive advantage (3.75 ±0.76), even though they believe that local and broader community does not still perceive socially responsible activity of an enterprise as extremely significant. The surveyed believe that the inability to realise a higher level of solidarity and social responsibility in local and broader community is due to a dysfunctional and irresponsible government in Bosnia and Herzegovina.

When it is the question of collective action and cooperation, it is noticeable that SMEs are more actively involved in the project for the well-being of the social community (3.32± 0.99) than they are involved in the creation of strategic partnerships with other SMEs (3.00 ±1.05). Social sensitivity and responsibility of SMEs is significant for the social community, however, so is networking of these Bosnian and Herzegovinian enterprises extremely important in the sense of strengthening their competitiveness, and with that, the economic development of Bosnia and Herzegovina. Managers of Bosnian and Herzegovinian SMEs show a high level of mistrust towards governments and government institution, and this is confirmed by data gotten in the field of information and communication. Namely, managers believe that information received from business partners (4.02± 0.78) are more relative than the ones received from government institutions (2.73± 1.13). A relatively low level of importance was given by managers to the daily newspaper (2.77± 1.00) and television and radio (2.90± 1.03), considering that these media are dealing more with the daily political information than the questions relevant for the socio-economic development of Bosnia and Herzegovina.

Table 2. Social Capital Dimensions: Collective Action and Cooperation, Information and Communication

Variable	Social capital dimensions	Completely agree	Agree	Somewhat agree	Disagree	Completely disagree	χ2	(df)	P	μ±σ
III	**COLLECTIVE ACTION AND COOPERATION**									
...	....									
	Collective action and cooperation of individuals									
III-1.1	In the past 12 months, you were actively involved in some of the actions for the well-being of the broader social or local community.	8	42	33	11	6	53.70	4	0.000	3.35± 0.99
III-1.2	People eagerly get involved in actions for well-being of the broader social or local community.	5	15	50	27	3	74.40	4	0.000	2.92± 0.86
	Collective action and cooperation of enterprises									
III-2.1	In the past 12 months, your enterprise was involved in many projects for the well-being of the broader social or local community.	12	31	37	17	3	38.60	4	0.000	3.32± 0.99
III-2.2	In the past 12 months, your enterprise entered into a strategic partnership with other small and/or medium enterprises.	7	28	29	30	6	30.50	4	0.000	3.00 ±1.05
	...									
IV	**INFORMATION AND COMMUNICATION**									
	...									
	Enterprise management receives important information from the following sources									
IV-2.1	Television and radio	5	25	33	29	8	32.20	4	0.000	2.90± 1.03
IV-2.2	Daily newspaper	4	22	28	39	7	42.70	4	0.000	2.77± 1.00
IV-2.3	Internet	36	32	24	6	2	46.80	4	0.000	3.94 ±1.01
IV-2.4	Scientific magazines	23	30	28	15	4	22.70	4	0.000	3.53± 1.12
IV-2.5	Professional associations	17	30	32	17	4	25.90	4	0.000	3.39 ±1.08
IV-2.6	Business partners	27	52	17	4	0	49.52	3	0.000	4.02± 0.78
IV-2.7	Market research	32	40	22	5	1	56.70	4	0.000	3.97 ±0.92
IV-2.8	Government institutions	6	19	33	26	16	20.90	4	0.000	2.73± 1.13
IV-2.9	Informal communication with persons involved in political structures.	7	12	28	33	20	23.30	4	0.000	2.53± 2.15
	....									

When it is the question of social cohesion or inclusion, as a dimension of social capital, the research results show that, according to the opinions of the surveyed, distance in interpersonal relations is significantly higher today than in the period before the past war in Bosnia and Herzegovina (3.43± 0.99), and that the relative growth of distance in interpersonal relations in the social community (3.13± 0.88), and material values are becoming growingly more important than ethical or moral ones. The presented result point towards the conclusion that the Bosnian and Herzegovinian society is still not consolidated in the post-war and transitional period, which means that the role of social capital in the socio-economic consolidation and integration is of great importance. The main reason, according to the opinion of the surveyed, for the growth in violence and insecurity in Bosnia and Herzegovina, is before all unemployment and poverty (3.65± 0.97), then incorrect politics of transition and privatisation (3.16± 1.07), rather than ethnic and religious tension (2.39± 0.93). Conflicts within enterprises are at a relatively low level.

Table 3. Social Capital Dimensions: Social Cohesion and Inclusion

Variable	Social capital dimensions	Measuring attitudes						df		
		Completely agree	Agree	Somewhat agree	Disagree	Completely disagree	χ2		P	μ±σ
V	**SOCIAL COHESION AND INCLUSION**									
...	....									
	Level of distance in interpersonal relations									
V-1.1	There is a high level of distance in interpersonal relations within the social community I live in.	3	36	33	27	1	56.20	4	0.000	3.13± 0.88
V-1.2	Distance in interpersonal relations in significantly higher today than it was in the period prior to the last war.	15	30	42	9	4	49.30	4	0.000	3.43± 0.99
V-1.3	Material values are becoming more important than the ethical and moral values in the community I live in.	31	22	40	6	1	54.10	4	0.000	3.76± 1.00
V-1.4	Distance in interpersonal relations is significantly higher among members of different ethnic groups than among members of the same ethnic community.	6	41	27	25	1	53.60	4	0.000	3.26± 0.94
	Conflicts and violence in the social community									
V-8.1	In the social community I live in, security is at the high level.	5	20	50	22	3	70.90	4	0.000	3.02 ±0.86
V-8.2	I think that violence levels in the past five years have grown significantly.	17	36	25	19	3	29.00	4	0.000	3.45± 1.08
V-8.3	I know a great number of people that have been victims of violence or robbery in the past 12 months.	5	19	30	40	6	46.10	4	0.000	2.77 ±0.99
V-8.4	The main reason for increase of violence and robberies in our community is unemployment and poverty.	24	27	40	8	1	48.50	4	0.000	3.65± 0.97
V-8.5	The main reason for increase of violence and robberies in our community is ethnic and religious tension.	2	9	30	43	16	54.50	4	0.000	2.39± 0.93
V-8.6	The main reason for increase of violence and robberies in our community are incorrect politics of transition and privatization.	13	22	38	22	5	30.30	4	0.000	3.16± 1.07
	…									
	Conflicts inside and outside of an enterprise									
V-9.1	In the past 12 months, the number of conflicts (between groups and/or individuals) in your enterprise has significantly increased.	0	4	13	52	31	54.00	3	0.000	1.90 ±0.77
V-9.2	In the past 12 months, the number of conflicts with strategic partners/customers/suppliers is growing.	0	3	15	49	33	48.96	3	0.000	1.88± 0.77
	…									

By analysing results gathered in the field of measuring opinions of the surveyed about the degree of control over own life, we may conclude that there is a proactive attitude of individuals towards own life ("I believe I have control when making decisions that might change my life path": 4.18 ± 0.73) and a relatively proactive attitude towards the social community ("I believe that I impact decision making that would make the social community I belong to a better place for living": 3.34 ± 1.00), which represents a solid foundation for strengthening social capital in Bosnia and Herzegovina.

Table 4. Social Capital Dimensions: Empowerment and Political Action

Variable	Social capital dimensions	Completely agree	Agree	Somewhat agree	Disagree	Completely disagree	χ2	df	P	μ±σ
VI	**EMPOWERMENT AND POLITICAL ACTION**									
...	....									
	Degree of control over own life									
VI-1.1	I believe I have control when making decisions that affect my everyday life.	40	51	8	1	0	70.64	3	0.000	4.30 ± 0.66
VI-1.2	I believe I have control when making decisions that might change my life path.	36	47	16	1	0	50.48	3	0.000	4.18 ± 0.73
VI-1.3	I believe I impact decision making that would make the social community I belong to a better place for living.	16	22	44	16	2	46.80	4	0.000	3.34 ± 1.00
	…									
	Attitudes towards networking and strategic partnerships									
VI-4.1	Your enterprise impacts development of local and broader social community.	18	34	43	5	0	34.16	3	0.000	3.65 ± 0.83
VI-4.2	Activities of business associations, whose member is your enterprise, also, may encourage a change of political or legal environment in order to improve enterprise competitiveness.	7	20	49	23	1	69.00	4	0.000	3.09 ± 0.87
VI-4.3	By making strategic partnerships/clusters of small and medium enterprises, their international affirmation may be realised.	10	39	39	12	0	31.44	3	0.000	3.47 ± 0.83
VI-4.4	The success of operations of your enterprise is mostly conditioned by business politics and quality of management, rather than the political, legal or economic environment in which enterprise operates.	19	43	25	11	2	48.00	4	0.000	3.66 ± 0.98
VI-4.5	Making strategic partnerships/clusters between small and medium enterprises should be encouraged by the country with special development programmes.	23	44	24	7	2	54.70	4	0.000	3.79 ± 0.95
	…									

Even though, on the grounds of earlier analyzed attitudes of SMEs managers, we may conclude that there is a relatively high level of mistrust towards governments, government insititutions, and political structures, these managers still believe that establishment of strategic partnerships/clusters between small and medium enterprises should be incented by government with special development programmes (3.79 ± 0.95), since these strategic unions and partnerships are significant for their international affirmation (3.47 ± 0.83).

4. Conclusion and Recommendations

Social capital is becoming a tool for understanding roles played by non-economic factors in economic life, such as norms, values, trust, social sensitivity, networks, and such. Since social capital positively supplements market actions, decreases transaction costs, incents entrepreneurship, innovations and technology spread, and in that way, generally, leads to better economic results, today, it is generally accepted opinion that establishment and perseverance of *social capital* represents one of the key starters of economic and social progress. From there, the connection between social capital, entrepreneurship, and economic development, becomes a subject of interest of numerous authors that deal with interdisciplinary researches. They believe that SMEs should be generators of the development of post-transitional economies. Globalization and internationalization of operations have generated to hyper-competitiveness a hyper-changeability of conditions in which these enterprises operate, and networking, that is, the formation of clusters of SMEs is considered one of the key strategic options for the achievement of competitiveness of these enterprises on markets. An important role in efficient networking of named enterprises plays social capital itself as an integrating mechanism. Methodological problems in researching social capital are connected with difficulties in its operationalization. As a consequence of named methodological problems, the difference in instruments, for the collection of empirical data about the degree of development of social capital and its impact on socio-economic development, is evident. In subject research, a six-dimensional instrument for measuring social capital was used, and it includes groups and networks, trust and solidarity, collective action and cooperation, information and communication, social cohesion and inclusion, and empowerment and political action. The results of the empirical research presented in this paper show a low level of interests of managers in

SMEs for membership in groups and networks, in professional ones, and those that are formed in other areas of social life in a community. Moreover, besides that, SMEs managers perceive membership of an enterprise in networks as a relatively significant determinant of the success of their operations.

A relatively low degree of trust as an important dimension of social capital was also determined, and this may be a significant obstacle for socio-economic growth in Bosnia and Herzegovina. Namely, research results show that, in Bosnia and Herzegovina, managers show a higher degree of trust towards financial institutions, towards business partners and members of networks and groups, than towards government institutions, political structures, and government programmes. The number of close friends inside and outside of an enterprise adapts a regressive rate in comparison to the previous period, even though, a relative growth of solidarity has been noticed. If we consider that the national culture of ex-Yugoslavian countries, and Bosnian and Herzegovinian as well, is dominantly collectivistic and solidaristic (Hofstede, 1991, 2001), these results have multiple significance and are unhelpful with the question of social capital and its positive implication on socio-economic development. The inability to achieve a higher level of solidarity and social responsibility in local and broader community is due to the dysfunctional and irresponsible government in Bosnia and Herzegovina, according to the surveyed. Similar results have also been recorded in the field of information and communication, as a dimension of social capital. Namely, managers believe that for an enterprise, more relevant information are received from business partners than from government institutions. A relatively low degree of importance is given by managers to a daily newspaper and television and radio since these media deal more with daily political information that questions relevant information for the socio-economic development of Bosnia and Herzegovina.

When we consider research results in the field of social cohesion and inclusion, it is significant that the distance in interpersonal relations is significantly higher today than in the period prior to the past war in Bosnia and Herzegovina, as well as that a relative growth of distance in interpersonal relations is noticeable, as is the growth in importance of material values in comparison to ethical and moral. The increase in violence and insecurity in Bosnia and Herzegovina is caused before all by unemployment and poverty, and incorrect politics of transition and privatization, rather than ethnic and religious tension. A proactive attitude of individuals towards own life has been determined, as was a relatively proactive attitude towards social community (which is surprising considering that for Bosnian and Herzegovina culture, a low level of individualism is immanent, Hofstad, 1991, 2001), which represents a good foundation for strengthening social capital in Bosnia and Herzegovina, and establishing strategic partnerships/clusters between small and medium enterprises should be incented by government through special development programmes. Considering the presented research results, we may conclude that the status in the field of groups and networks, trust and solidarity, collective action and cooperation, information and communication, social cohesion and inclusion, and empowerment and political action, as key dimensions of social capital, is unsatisfactory, which limits the significance of social capital on socio-economic development of Bosnia and Herzegovina, hence, the research hypothesis may be accepted. In that context, government, enterprises, decision makers, and creators of socio-economic politics, and such, should work on raising awareness about the positive significance of social capital for social and economic development in general; emphasize various economic and social implications of social capital, and especially on its significance on development of SMEs.

The results of theoretical and empirical research show the complexity of the phenomenon of social capital, but they also show his extraordinary potential in the context of socio-economic development. From there, recommendations for future research might consist of the following: a) qualitatively improve existing scientific knowledge about economic and non-economic factors of development, through comparison of various theoretical and empirical researches of relations between social capital, entrepreneurship and the total socio-economic and social development; and b) develop instruments for improvement of operationalization of social capital.

Acknowledgement

References

Adler, P. S., & Kwon, S. W. (2002). Social Capital: Prospects For a New Concept. *Academy of Management Review, 27,* 17-40. http://dx.doi.org/10.5465/AMR.2002.5922314

Ahlerup, P., Olsson, O., & Yanagizawa, D. (2009). Social Capital vs. Institutions in the Growth Process. *European Journal of Political Economy, 25,* 1-14. https://doi.org/10.1016/j.ejpoleco.2008.09.008

Akcomak, S., & Weel, B. (2006). Social Capital, Innovation and Growth: Evidence from Europe. http://collections.unu.edu/eserv/UNU:479/wp2006-040.pdf

Bazan, L., & Schmitz, H. (1997), Social Capital and Export growth: an industrial community in southern Brazil. http://www.ids.ac.uk/files/Dp361.pdf

Bourdieu, P. (1999). Draft for a Theory of Practice. Belgrade, Institute for Textbooks and Teaching Aids.

Bourdieu, P., & Passeron, J. (1970). Reproduction in Education, Society and Culture, SAGE Publications., London.

Coleman, J. (1988). Social Capital in the Creation of Human Capital. *American Journal of Sociology, 94,* 95-120. https://doi.org/10.1086/228943

Coleman, J. (1990). *Foundations of Social Theory*. Cambridge, Mass: Harvard University Press.

Delić, Z., Sadadinović, A., & Delić, A. (2014). The role of Social Capital in Building Interorganizational Design of Small and Medium Entreprises in Bosnia and Herzegovina. XIII International Conference for Business and Employment named, *Role of Governments and Ministries in Modern Management of Economic and Social Development in Kosovo and Other Countries*, Kosovo, 233-256.

Delić, Z., Sadadinović, A., & Smajlović, S. (2014). Importance of the Concept of Social Capital for Multidisciplinary Research of the Role of Small and Medium Enterprises in Sustainable Economic Development. International Conference SMEs Development and Innovation: Building Competitive Future of the South-Eastern Europe, Ohrid, Macedonia.

Durlauf, S. N., & Fafchamps, M. (2004). Social Capital. NBER Working Paper No. 18 10485. https://doi.org/10.3386/w10485

Elster, J. (2007). Explaining Social Behavior: More Nuts and Bolst for the Social Science. Cambridge University, New York. https://doi.org/10.1017/cbo9780511806421

Evans, P. (1997). State-Society Synergy: Government and Social Capital in Development. *Research Series 94*, Berkeley, University of California Regents.

Fidrmuc, J., & Gërxhani, K. (2008). Mind the gap! Social capital, East and West. *Journal of Comparative Economics, 36*(2), 264-286. http://dx.doi.org/10.1016/j.jce.2008.03.002

Fukuyama, F. (1995). *Trust: The Social Values and the Creation of Prosperity*. New York: Free Press.

Fukuyama, F. (2002). Social Capital and Development: The Coming Agenda, The SAIS Review. https://doi.org/10.1353/sais.2002.0009

Fukuyama, F. (2003). *Our Posthuman Future: Consequences of the Biotechnology Revolution*. CID, Podgorica, 2003.

Grafton, Q. R., & Knowles, S. (2004). Social Capital and National Environmental Performance: A Cross-Sectional Analysis.

Grootaert, C. (1997). Social Capital: The Missing Link? in Expanding the Measure of Wealth: Indicators of Environmentally Sustainable Development. *Environmentally Sustainable Development Studies and Monographs Series ,* No. 7. Washington, DC: The World Bank.

Hanifan, L. J. (1920). *The Community Center, Silver, Burdet & Company*. Boston, New York, Chicago, San Francisco, in *Rossing Feldman*, T. and Assaf, S. (1999), *Social Capital: Conceptual Frameworks and Empirical Evidence,* The World Bank. http://siteresources.worldbank.org/INTSOCIALCAPITAL/Resources/Social-Capital-Initiative-Working-Paper-Series/SCI-WPS-05.pdf

Harper, R. (2002). The Measurement of Social Capital in the United Kingdom. http://www.oecd.org/edu/innovation-education/2382339.pdf

Hofstede, G. (1991). *Culture and Organizations: Software of the Mind*. London: McGraw-Hill.

Hofstede, G. (2001). *Culture's Consequences: Comparing Values. Behaviours, Institutions. and Organizations across Nations.* 2nd edition. London: Sage. http://siteresources.worldbank.org/INTSOCIALCAPITAL/Resources/Social-Capital-Initiative-Working-Paper-Series/SCI-WPS-15.pdf

Ignjatović, S. (2011). *Social Capital: from Academic Debates to Public Politics*, Institue of Social Sciences, Belgrade.

Jacobs, J. (1961). *The Life and Death of Great American Cities*. New York in Rossing Feldman, T. and Assaf, S. (1999), *Social Capital: Conceptual Frameworks and Empirical Evidence.*The World Bank. http://siteresources.worldbank.org/INTSOCIALCAPITAL/Resources/Social-Capital-Initiative-Working-Paper-Series/SCI-WPS-05.pdf, accepted December 2015

Knack, S., & Keefer, P. (1997). Does Social Capital have an Economic Payoff? A Cross-Country Investigation. *Quarterly Journal of Economics, 112*(4), 1251-1288. https://doi.org/10.1162/003355300555475

Knowles, S. (2005). Inequality and Economic Growth: The Empirical Relationship Reconsidered in the Light of Comparable Data. *The Journal of Development Studies , 41*(1), 135-159. http://dx.doi.org/10.1080/0022038042000276590

Knowles, S. (2006). Is Social Capital Part of the Institutions Continuum and is it a Deep Determinant of Development? http://www.rrojasdatabank.info/unurp06/rp2006-25_1.pdf

Loury, G. C. (1977). *A Dynamic Theory of Racial Income Differences* in Rossing Feldman, T. and Assaf, S. (1999), *Social Capital: Conceptual Frameworks and Empirical Evidence,* The World Bank. http://siteresources.worldbank.org/INTSOCIALCAPITAL/Resources/Social-Capital-Initiative-Working-Paper-Series/SCI-WPS-05.pdf, accepted December 2015

Narayan, D., & Pritchett. L. (1996). Cents and Sociability: Household Income and Social Capital in Rural Tanzania. Policy Research Working Paper 1796, Washington, DC: The World Bank.

Portes, A. (1998). Social capital: It's Origins and Applications in Sociology. *Annual Review of Sociology, 24,* 1-24. https://doi.org/10.1146/annurev.soc.24.1.1

Putnam, R. (1993).The Prosperous Community — Social Capital and Public Life. *American Prospect, 4*(13), 35-42.

Putnam, R. (2000). Bowling Alone: The Collapse and Revival of American Community. New York: Simon and Schuster. https://doi.org/10.1145/358916.361990

Putnam, R. D., Leonardi, R., & Nanetti; R. Y. (1993). Making Democracy Work: Civic Traditions in Modern Italy. Princeton University Press.

Rooks, G., Szirmai, A., & Sserwanga, A. (2009). The Interplay of Human and Social Capital in Entrepreneurship in Developing Countries The Case of Uganda.

Rose, R. (1999). What does Social Capital add to individual Welfare? An Empirical Analysis of Russia, http://siteresources.worldbank.org/INTSOCIALCAPITAL/Resources/Social-Capital-Initiative-Working-Paper-Series/SCI-WPS-15.pdf

Sabatini, F. (2005). Social Capital as Social Networks. A New Framework for Measurement. http://dx.doi.org/10.2139/ssrn.755065

Sadadinović, A. (2012). Effects of Social Capital of Small and Medium Enterprises on Economic Development in Bosnia and Herzegovina, Master thesis, Faculty of Economics, University of Tuzla.

Šalaj, B. (2009). *Social Trust in Bosnia and Herzegovina.* Friedrich-Ebert-Stiftung, Sarajevo.

Sen, A. (1999). *Development as Freedom*. Oxford University Press.

Skidmore, D. (2001). Civil Society, Social Capital and Economic Development. *Global Society, 15*(1), 53-72. https://doi.org/10.1080/13600820125650

Stiglitz, J. (2006). A Progressive Response to Globalisation. *The Nation*, April, 18-20.

Stojiljković, Z. (2010). Contribution to Research of Social Capital. *Faculty of Political Science Science Index*, *4*(4), 77-95. http://scindeks.ceon.rs/article.aspx?artid=1820-67001004077S

Tanas, J. K., & Saee, J. (2007). Entrepreneurial Cognition and its Linkage to Social Capital. *Journal of American Academy of Business, 11*(1), 179.

Tanas, J., Dembek, K., Gillin, M., & Spring, S. F. (2007). Entrepreneurs and social capital: strategic leadership in the 21st-century firms. Swinburne University of Technology, Conference paper. https://researchbank.swinburne.edu.au/file/01ff1f0c-144a-41a6-bc6a-522a66479114/1/PDF%20%28Published%20version%29.pdf

Täube, F. A. (2005). Transnational Networks and The Evolution of Indian Software Industry: The Role of Culture and Ethnicity In The Role of Labour Mobility and Informal Networks for Knowledge Transfer. *Springer US*, 97-121, http://dx.doi.org 10.1007/0-387-23140-4_6

Temple, J., & Johnson, P. A. (1998). Social Capability and Economic Growth. *Quarterly Journal of Economics*, *113*(3), 965-990. https://doi.org/10.1162/003355398555711

Trigilia, C. (2001). Social Capital and Local Development. *European Journal of Social Theory, 4,* 427-442. https://doi.org/10.1177/13684310122225244

Westlund, H., & Bolton, R. (2003). Local Social Capital and Entrepreneurship. *Small Business Economics*, 21-77. http://dx.doi.org/10.1023/A:1025024009072

Woolcock, M. (1998). Social Capital and Economic Development: Towards a Theoretical Synthesis and Policy Framework. *Theory and Society, 27,* 151-208. https://doi.org/10.1023/A:1006884930135

World Bank. (2004). Measuring of Social Capital- An Integrated Questionnaire. *World Bank working paper, 18,* https://openknowledge.worldbank.org/bitstream/handle/10986/15033/281100PAPER0Measuring0social0capital.pdf;sequence=1

The Reality of Applying Human Resources Diversity Management and Its Impact on Workers'
(Performance, Cooperation, Commitment and Loyalty):
A Field Study on the Jordanian Food Industry Companies

Sahar Mohammad Abu Bakir[1]

[1]Associate Professor, Business Administration Department, Faculty of Business, Amman Arab University, Jordan

Correspondence: Sahar Mohammad Abu Bakir, Associate Professor, Business Administration Department, Faculty of Business, Amman Arab University, Jordan. E-mail: saharbisan@yahoo.com

Abstract

Globalization, political instability, poverty, forced immigration and many other factors created a state of diversity in the composition of the world population, and accordingly diversity transferred into organizations, causing a big and unavoidable challenge to business organizations. Diverse human resources can be a source of success if they are well managed strategically, and could be the opposite if they were ignored, and don't have the needed inclusiveness.

This study aimed first to find out the degree to which the Jordanian food industry companies are engaged in Human Resources Diversity Management (DM) in terms of (equity and justice in applying human resources strategies), empowerment and religious freedom. And second to examine the influence of (DM) strategies on workers (performance, cooperation, commitment and loyalty), 150 of non-Jordanian workers at 5 companies operating at King Abdulla the second industrial city were surveyed, depending on the workers responses it was found that the 5 companies do engage in (DM) strategies, except for staffing which is restricted by the Jordanian Labor Law, the results of multiple regression showed that all DM strategies have an influence on workers performance.

Empowerment has only an influence on workers cooperation, and religious freedom affects workers commitment and loyalty.

The researcher recommended that more involvement in organizational activities, equity, justice and good treatment, will enhance workers cooperation, commitment and loyalty.

Keywords: commitment, cooperation, diversity management, human resources diversity, performance

1. Introduction

The notion (diversity) was close fitting with dissimilarity, differences between people since the creation of human being existed; gender, age, race, and religion were the oldest, in addition to a group of differences (education, years of experience, and position…etc) are perceived extensively in business organizations recently (Shen, Chanda, D'netto & Monga, 2009; Richter, 2014).

Many researchers tried to justify this alteration in the work place, according to Dessler(2014) changes in demographic features, Immigration, and globalization, were the main reasons. (Kemper, Bader, & Froese 2016 ;Pant & Vijaya V. 2015) inferred that it is difficult to recruit one kind of human resources; lately employees are flooded to organizations from different backgrounds, motivated by different expectations, they have mixed perceptions of themselves and varied understanding of others. It is not expected that those will dismiss their type of life, values, attitudes when they come to work (Robbins & Coulter, 2012; Ilmakunnas & Ilmakunnas, 2011).

Jordan is not a way from diversity push and its consequences; in the last five years, as a result of migration from neighboring countries, Jordan has witnessed a marked increase in citizens' diversity in terms of number and quality, not just that, the workforce composition changed too; specifically in the manufacturing sector.

So this paper aims first to find out if Jordanian food Industry companies are involved in managing diversity in a strategic manner, and the second objective is to explore the impact of diversity management strategies on workers (performance, cooperation, commitment and loyalty.

2. Research Model and Variables

Relying on the previous literature the researcher selected the study's variables as follows**:** The independent variable: (diversity management strategies) which was measured through equity and justice in applying human resources strategies (staffing, development, compensation and performance appraisal), empowerment and religious freedom. While the dependent variable: was measured through workers' performance (productivity and products quality), workers cooperation with their colleagues and with management, and workers loyalty and their commitment.

Independent variable /s   **Dependent variable /s**

Diversity management strategies

Diversity management strategies
• Equity and Justice in HR strategies:(Staffing, Development, Compensation, Performance appraisal) • Empowerment • Religious Freedom

• Performance • Cooperation • Loyalty & Commitment
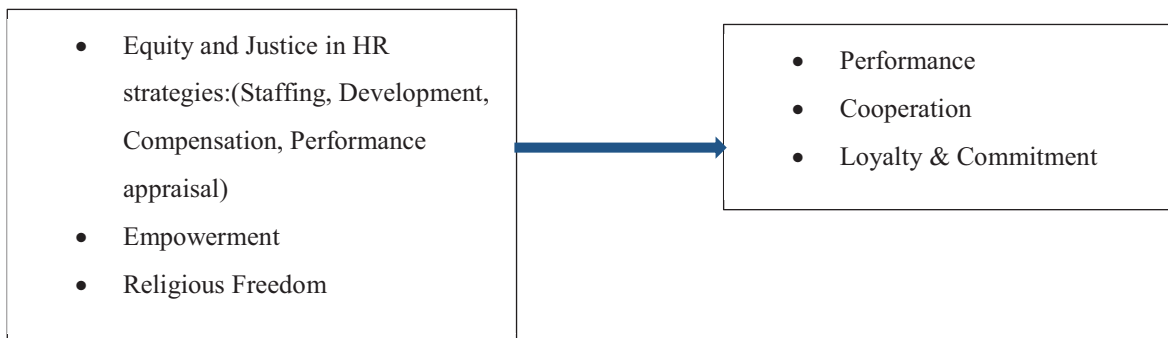
2.1 Research Hypotheses

Ho1: Jordanian food industry companies don't engage in diversity management strategies.

Ho2: Diversity management strategies (equity and Justice in HR strategies: staffing, development, compensation, performance appraisal), empowerment, and religious freedom have a positive influence on workers' (performance, cooperation, loyalty and commitment)

The following sub hypotheses derived from the main second hypothesis:

Ho2$_1$: Diversity management strategies have a positive influence on workers' performance.

Ho2$_2$ Diversity management strategies have a positive influence on workers' cooperation.

Ho2$_3$ Diversity management strategies have a positive influence on workers' loyalty& commitment.

3. Theoretical Background and Literature Review

3.1 Human Resources Diversity & Diversity Dimensions

There is no assent of what diversity encompasses; people can be categorized according to their noticeable features, or to their socio cognitive unnoticeable traits (Alca´zar, 2012). At the work place people can be assorted due their positions in the hierarchy, their seniority, or education.

However (Ferdman & Sagiv, 2012; Hellriege & Slocum, 2011; Robbins & Judge, 2013) believed that demographic features (gender, age, color, disability and finally race) were the principle of differentiation between humans even in workplace.

When it comes to Gender it was the oldest segregation. Women participation in the labor market began to increase after 1960s, but lower than males' in positions, salaries, development and promotion opportunities (Snell & Bohlander, 2013).

In the last decades an optimistic view began to show; women took up an appropriate place in top management and engaged in strategic management process (Opstrup & Villadsen, 2014). Even though in reality women representativeness didn't exceed third of males' numbers, participated just in specific domains (Dezso & Ross, 2012), furthermore some of the research results (Abdullah, Ismail, & Nachum, 2016) indicated that women strategic partnership didn't achieve considerable financial yield.

Another traditional dimension is Age. (Dessler, 2014) supposed that the increase in life expectations forced age diversity within organizations, different generations are to work beside each other. **(**Rabl & Triana, 2014; Boehm,

Kunze, & Bruch, 2014) pointed that age diversity in any organization is unavoidable and beneficial too; old workers with long experience are good investment as they are knowledgeable, hard workers and loyal.

Colorism was rooted in Europe and U.S.A, people were categorized according to their skin color, hair type, and their physical appearance, the distinction was made between darkness and lightness (Hunter, 2007). The darker the person is, the less are the privileges he / she will get in the work place (Wilton, Sanchez, & Chavez 2013; Hernandez, 2010).

In spite of the fact that discrimination is forbidden by law, it is sometimes manifested in countries where white are the majority (Block, Koch, Liberman, Merriweather, & Roberson, 2011)**.**

Disability had a special interest from regulators in the USA; the Americans with Disabilities Act of 1990 (ADA) was the foremost law aimed to dissolve any form of inequality and unfairness in hiring and compensating disable persons (Burkhauser, Schmeiser, & Weathers , 2012).

Thanem (2008) indicated that this type of diversity requires more attention to go beyond what medical reports considered as disability. Moreover (Houtenville & Kalargyrou 2012) referred to the cost and difficulties of preparing the appropriate physical and emotional work circumstances for this group without any harm. However organizations are likely to avail taxes credits and incentives, image and bright social responsibility record out of employing disable persons (Houtenville &Kalargyrou, 2012).

When it comes to Race: it is a social term attributed to the original country of the individual, or his/ her belonging to a specific group of people (Horsford, 2014).

In 1976 the Federal Government of USA issued RRA (Race Related Act) to forbid legally any form of discriminating people due to their race. According to Brown and Erskine (2009) only the documented discretionary actions are taken into consideration as law violation, this show that the indirect oral cues are out of accountability.

(Simon, Kinias, O'Brien, Major, & Bivolaru, 2013) admitted that race composed the largest percentage of discrimination; stereotyping made the issue wider and deeper.

3.2 Workforce Diversity in Jordan

The Jordanian law of labor No. 8 / 1996 organized the relationship between organizations' management and the employees, and guaranteed all the rights of them e.g., the article No. (13) explained in details the rights of disabled labors, while articles from (67) to (72) clarified the rights of working women.

Nationality is the major diversity in Jordanian workforce structure. Diversity was forced in its constituents by migrations. Since 1948 up to now Jordan was the shelter to the migrants from neighboring countries, (Al Musa & Yacoub, 2011). According to the formal statistics of 2015 the Jordanian government declared that there are more than one million and 300, 000 Syrian in Jordan; in addition to other nationalities, they are seeking to find any job under any conditions in the private sector.

To protect Jordanian workers, the labor law in article No. (12) prevent any organization from employing not Jordanians except for experts that are unique and their qualifications are not available nationally.

3.3 Benefits of Diversity

The theory of appraising the linkage between diversity and organizations' benefits is not an easy one; the effect is not direct and incremental over time (Svyantek & Bolt 2004).

It was assumed that diversity reinforces organization's productivity, social facilitating and synergy between analogous groups to obtain collective goals (Luthans & Doh, 2011; Robbins & Judge, 2013).

(Richard, Murthi, & Ismail, 2007) concluded that racial diversity has a positive effect on the performance of American service organizations.

(Rasul & Rogger, 2015) reached to the point that diverse human resources enabled Nigerian public projects to be accomplished within the required quality and on time .

While (Richter, 2014; Pitts, 2009; Konopaske & Ivancevish, 2004) found a direct linkage between diversity, innovation and creative problem solving; diverse people are mighty to generate unique ideas and proliferate alternatives.

(Parrotta, Pozzoli, & Pytlikova, 2014) discovered a positive linkage between ethnic diversity and patents' number in the Danish technological sector. McGuirk and Jordan (2011) revealed that diversity stimulate creativity of the Irish Industrial organizations. While Yang and Konrad (2011) implied that diversity assisted in

accelerating innovation in the Canadian large production organizations, Moreover Niebuhr (2010) found out that diversity resulted in increasing new products and the number of patents in German organizations. On the other hand (Roberson & Park 2007; Bear, Rahman, & Post, 2010) put insight on the role of employing minorities in promoting organizations' positive reputation, and in gaining stakeholders' satisfaction. In (Herring, 2009) findings there was a positive correlation between race diversity and customers' numbers and their purchasing volume.

3.4 Disadvantages of Diversity

From a pessimistic view many researchers proved that dissimilarity diminish group cohesion and minimize cooperation, and weaken organizations' performance. (Woehr, Arciniega, & Poling, 2013) confessed that diversity activated conflict, destruct cohesion and team performance.

Furthermore diversity triggered stereotyping; gathering individuals into groups according to their culture, age, gender, color, race.. etc and opens the way to build incorrect expectations and prejudice (Block et al., 2011; Dessler, 2014).

Otherwise diversity in any workplace increases the possibility of miscommunication, misunderstanding, perception problems and wrong interpretations, lack of trust, and different account of time urgency, particularly when making decisions (Luthans & Doh, 2011; Konopaske & Ivancevich, 2004).

(Cunningham 2009; Olsen & Martins, 2012) visualized Diversity Management (DM) as the mechanism to maximize usefulness of diversity and diminish its disadvantages.

4. Diversity Management

4.1 Diversity Management Objectives

In its beginnings Diversity Management (DM) initiated to match the requirements of human rights movements, with no legal obligations (Sayers, 2012).

In 1960s the United States started the journey of issuing regulations against discriminations to form the DM introduction in U.S organizations; the objective was avoiding legal violation (Mkono, 2010). After then the concept developed; to be connected with planned actions of fair human resources strategies that aim to reach the optimal synergy between diverse human resources (Henry & Evans 2007; Ravazzani, 2016) .

4.2 Managing Diversity Effectively

(Shen et al., 2009 ; believed that to maximize the benefits of having diverse human resources the attempts must go beyond the traditional approaches of celebrating differences; compliance to the state law, fair human resources strategies aren't any more enough.

DM should compromise set of strategies to embody minorities with the rest of the organization, embedded in all organization's activities (Kemper, et al., 2016).

(Minorities inclusion) is crucial in DM, as Sabharwal (2014) proposed, being a part in making serious decisions, participated in solving pivotal organizational problems.

4.3 Diversity Management (DM) Results

Wheeler (1998) noticed that it is not easy to measure DM results on productivity and monetary yield, (Ivancevich, & Gilbert, 2000) confirmed the measurement difficulty, and think that shortage of adequate information increased the complexity of measurement. (Pitts , 2009) assured that managing diversity will have positive impact on minorities' morale, increase job satisfaction and accordingly their productivity.

(Cunningham 2009; Singh, Winkel, & Selvarajan, 2013) confirmed the connection between DM and workers' performance.

(Yap, Holmes, Hannan, & Cukier, 2010; Reynolds, Rahman, & Bradetich, 2014) retrieved that DM energized employees to complete effectively and efficiently their tasks.

(Shen, D'Netto, & Tang, 2010; Jauhari & Singh 2013) assumed that DM activities foster workers' loyalty and commitment, inspire them for devoting extra efforts and time for the work benefit.

(Ashikali & Groeneveld 2014; Sabharwal 2014) compiled DM effect with the feeling of inclusiveness and value added teamwork, and cooperation between organization members.

El- Masarwah (2011) tried to find the connection between diversity management and Nurses commitment in public and private hospitals in Riyadh, Saudi Arabia. His results confirmed the positive influence of DM on employees' attitudes and behavior that are reflected in loyal, faithful human resources.

(Smith, Morgan, King, & Peddie, 2012) supported the indoor advantages of DM and asserted the expansion of benefits to external stakeholders' satisfaction, reputation and organization's image.

5. Research Methodology

5.1 Population and Sample

Since most of diverse Human resources in Jordan are employed in the industrial sector, the researcher chose one of the industries that have sufficient numbers of non-Jordanian workforce (food industrial companies), which are operating at King Abdulla the second industrial city, where five of them agreed to be involved in the study, the sampling unit was the non-Jordanian workers in the five companies, 150 questionnaires were distributed, 143 of them were analyzed.

5.2 The Study Tool

The researcher depend on a 5 points likert scale questionnaire, which was set in the Arabic and in a simple language suits the educational level of the respondents, the questionnaire comprised three groups of questions; the first express the sample demographic information, the second took in diversity management strategies and the last part concerned with the dependent variable elements .

Justice between Jordanian workers and non-Jordanians was the substance of the questionnaire questions,

The answers were measured from strongly disagreed (1 point) to strongly agreed (5 points).

5.2.1 Tool Validity

To evaluate the questionnaire's validity, it was reviewed by a group of academic specialists in Human Resources Management; their correction notes were taken into account in reformulating the tool's questions.

5.2.2 Tool Reliability

To assess the internal consistency of the study questions; Cronbach's Alpha was calculated, the findings for all the independent and dependent variables and sub variable were above 70% and according to (Sekaran, 2003) The results indicated that the study's tool is reliable.

6. Statistical Analysis Results

(SPSS) version 21was used for analyzing the collected data.

Frequencies, percentage, arithmetic mean, standard deviation, one sample t test, and multiple regression were calculated to obtain the study's results as follows:

6.1 Sampling Unit Characteristics

By using frequencies and percentage It was found that 95% of the respondents were males, all of them are Arabs, all of them are working in non-managerial positions. When it comes to education 8% of them have university degree but from universities in their home countries, not exceeding B.A. 6% of them are not Muslims.

6.2 The Results of Descriptive Analysis

Table (1) demonstrates the total arithmetic means and total standard deviations of the sampling unit responses on the study's questions. Based on the mean scale (3) as a basis for comparison, it appears that the mean of staffing was the lowest (2.78), it is known that staffing procedures, are monitored by the Jordanian ministry of labor; any breach is not allowed. The means of the other HR strategies were above (3) and so for empowerment. Religious freedom gain the highest mean (3.99) this result is consistent with the community view in Jordan, where all religions are living together away from any discrimination.

Table 1. Descriptive statistics results

Independent Variable/ s	Mean	S. D		Mean	S.D
HR strategies			Empowerment	3.53	.684
Staffing	2.78	0.746			
Development	3.10	0.656	Religious freedom	3.99	0.578
Compensation	3.14	0.643			
Performance appraisal	3.29	0.862			

6.3 Hypotheses Testing

6.3.1 The First Hypothesis

Ho1: Jordanian food industry companies don't engage in diversity management activities (Justice in HR strategies, empowerment, and religious freedom).

To test the first hypothesis, as clarified in table (2) One sample t test, with test value = 3 was calculated

The basis for accepting or rejecting the null hypothesis depends on (t) calculated values, and (t) significance level for each variable,

The results in the table exposed that the calculated (t) values of all the sub independent variables were larger than (t) tabulated value (1.97) at 0.05 sig level, adding to that (t) sig level for all the variables were less than 0.05. Which inferred that the surveyed organizations do engaged in diversity management strategies.

Table 2. One sample t test   test value = 3   95% Confidence Interval of the Difference

Variables	T value	df	Sig. (2-tailed)	Mean Differences	Lower	Upper
HR strategies	5.275	173	.000	.09457	.0592	.1300
Empowerment	13.067	173	.000	0.39511	0.3354	0.4548
Religious freedom	32.194	173	.000	.98563	.9252	1.0461

Tabulated t value= 1.97, p= 0.05

6.3.2 The Second Hypothesis

Ho2: Diversity management strategies Have a positive influence on workers' (performance, cooperation, loyalty and commitment) .

The second main hypothesis was divided into 3 sub hypotheses. Multiple linear regression was used for hypotheses testing, with 0.05 p value, and the hypothesis will be rejected if the calculated (t sig value) is less than 0.05.

$Ho2_1$: Diversity management strategies have a positive influence on workers' performance.

Table (3) outlined the results of multiple linear regression of the impact of DM strategies (HRM, empowerment and religious freedom) on workers performance. The table manifested also the value of Pearson correlation (R) (.363) which expounded a positive association between the independent variables and the dependent, the value of (R^2) (0.132) shows that 13.2% of the deviation in the dependent variable caused by the independents, for F sig (0.000) which was < 0.05 affirmed that the model is suitable to continue the regression calculations. Referring to coefficients it is found that the calculated t values were as follows: (3.923) for human resources strategies with 0.00 sig), (2.974) for empowerment with 0.003 sig , and (2.048) for religious freedom with 0.042 sig.

it is clear that the sig level for all the independent sub variables are less than .05, The results inferred that all the DM strategies have an influence on workers performance, with disparity in effect as the values of Beta labeled that the highest effect was for HR Strategies as Beta = (0.282), followed by empowerment as Beta = (0.213) and the lowest effect was for religious freedom with (0.146) Beta value.

Table 3. Results of testing $Ho2_1$

Model Summery & ANOVA results				
R	R2	Adjusted R2	F calculated	F sig
0.363	.132	0.117	8.623	.000b
Coefficient				
Sub-independent Variables	B	Beta	T - calculated	T sig
Constant	1.058		2.177	.031
Human resources strategies	.418	.282	3.923	.000
Empowerment	.188	.213	2.974	.003
Religious freedom	.127	.146	2.048	.042

Ho22: Diversity management strategies have a positive influence on workers' cooperation.

Table (4) summarized the multiple regression results of DM strategies on workers cooperation

The value of R was (0.210) articulated the positive weak nexus between DM strategies and workers cooperation, R^2 was (.04%) which set forth that independent variables don't explain more than this percentage of the deviation of workers cooperation. while the results of (t values) and their sig indicated that just (empowerment) had an influence on workers cooperation.

Whereas HR strategies neither religious freedom have an impact on workers cooperation, (t sig values) for both variables were > 0.05.

Table 4. Results of testing $Ho2_2$

Model Summery & ANOVA results				
R	R^2	Adjusted R2	F calculated	F sig
.210[a]	.044	.027	2.613	.05[b]
Coefficient				
Sub-independent Variables	B	Beta	T - calculated	T sig
Constant	2.980		5.001	.000
Human resources strategies	-.091	-.053	-.697	.487
Empowerment	.193	.188	2.493	.014
Religious freedom	.065	.064	.856	.393

$Ho2_3$: Diversity management strategies have a positive influence on workers' loyalty & commitment.

The visualized values in Table (5) indicated that there is a weak positive correlation between the tested variables, due to R= 0.294.

It is appeared that the value of F sig (.012) is less than 0.05 which means that the model is adequate for regression test, while the values of (t sig) proved that just religious freedom affects workers commitment and loyalty, t sig value was 0.03 less than 0.05.

The numbers in the table elucidated that the other two sub variables (HR strategies and empowerment) had no effect on workers commitment and loyalty.

Table 5. Results of testing $Ho2_3$

Model Summery & ANOVA results				
R	R^2	Adjusted R2	F calculated	F sig
.249[a]	.062	.045	3.745	.012[b]
Coefficient				
Sub-independent Variables	B	Beta	T - calculated	T sig
Constant	1.804		2.744	.007
Human resources strategies	.238	.123	1.651	.101
Empowerment	.027	.024	.315	.753
Religious freedom	.250	.221	2.970	.003

7. Discussion and Recommendations

The results of the arithmetic mean showed that the respondents were satisfied of DM strategies their organizations were engaged in, except for staffing. While the results of hypotheses testing exposed that all the DM strategies have an influence on workers performance, which go with the findings of Pitts (2009); Cunningham (2009) and Singh et al., (2013). Whereas simply empowerment has influenced workers cooperation, and just religious freedom has an impact on workers' loyalty and commitment.

These results didn't coincide with the results of (El- Masarwah 2011) Yap et al., (2010), Reynolds et al(Ashikali & Groeneveld 2014).

Since the surveyed organizations are restricted with the labor of law when it comes to workers staffing, compensation, benefits and promotion, the companies' management can give more attention to other aspects than those. Good communication, open door policy, keeping the workers fully informed with what is expected of them, team work will surely make a difference in strengthening workers relationship with each other, and with the management.

Citizenship behavior commitment and loyalty can be spurred through involvement, equity and justice good treatment, and more freedom to express their suggestions, recognition programs with financial and non-financial rewards especially that their salaries are predetermined and controlled by law. in addition to providing them with suitable place for living.

All the above mentioned methods and others will be able to energize non-Jordanian workers' loyalty, faithful and commitment.

The researcher recommended conducting other researches in some other industries, using some other variables.

Acknowledgement

References

Abdullah, S. N., Ismail, K. N., & Nachum, L. (2016). Does Having Women on Boards Create Value? The Impact of Societal Perceptions and Corporate Governance in Emerging Markets. *Strategic Management Journal*,

37(3), 466-476. https://doi.org/10.1002/smj.2352

Alcázar, M. F., Romero-Fernández, P. M., & Sánchez-Gardey, G. (2012). Transforming human resource management systems to cope with diversity. *Journal of Business Ethics*, *107*(4), 511-531. https://doi.org/10.1007/s10551-011-1061-0

Al-Musa, M., &Yacoub, M. (2011). *Breaking the Silence: Irregular Migrant Workers in Jordan: Between Marginalization and Integration.*

Ashikali, T., & Groeneveld, S. (2015). Diversity management for all? An empirical analysis of diversity management outcomes across groups. *Personnel Review*, *44*(5), 757-780. https://doi.org/10.1108/PR-10-2014-0216

Bear, S., Rahman, N., & Post, C. (2010). The impact of board diversity and gender composition on corporate social responsibility and firm reputation. *Journal of Business Ethics*, *97*(2), 207-221. https://doi.org/10.1007/s10551-010-0505-2

Block, C. J., Koch, S. M., Liberman, B. E., Merriweather, T. J., & Roberson, L. (2011). Contending with stereotype threat at work: A model of long-term responses. *The Counseling Psychologist*, *39*(4), 570-600. https://doi.org/10.1177/0011000010382459

Boehm, S. A., Kunze, F., & Bruch, H. (2014). Spotlight on age-diversity climate: The impact of age-inclusive HR practices on firm-level outcomes. *Personnel Psychology*, *67*(3), 667-704.

Brown, A., & Erskine, A. (2009). A Qualitative study of judgments in race discrimination employment cases, *Law & Policy*, *31*(1), 142-159. https://doi.org/10.1177/0011000010382459

Burkhauser, R. V., Schmeiser, M. D., & Weathers, R. R. (2012). The importance of anti-discrimination and workers' compensation laws on the provision of workplace accommodations following the onset of a disability. *ILR Review*, *65*(1), 161-180. https://doi.org/10.1177/001979391206500109

Cunningham, G. B. (2009). The moderating effect of diversity strategy on the relationship between racial diversity and organizational performance. *Journal of Applied Social Psychology*, *39*(6), 1445-1460. https://doi.org/10.1111/j.1559-1816.2009.00490.x

Dessler, G. (2014). *Fundamentals of human resource management*. (3rd ed.) Harlow, Pearson Education Limited.

Dezso, C. L., & Ross, D. G. (2012). Does female representation in top management improve firm performance? A panel data investigation. *Strategic Management Journal*, *33*(9), 1072-1089. https://doi.org/10.1002/smj.1955

El-Masarwa, A. (2011) *Impact of Managing Human Resources Diversity in the Nursing Sector on Organizational Commitment: A Comparative Study Between Public and Private Hospitals in Riyadh City*, (Unpublished Doctoral dissertation). Amman Arab University, Amman, Jordan.

Ferdman, B. M., & Sagiv, L. (2012). The Value of Connecting Diversity in Organizations and Cross-Cultural Work Psychology Through Dialogue and Multiplicity. *Industrial and Organizational Psychology*, *5*(3), 373-379. https://doi.org/10.1111/j.1754-9434.2012.01454.x

Hellriege, D., & Slocum, J. W. (2011). *Organizational behavior*, (13th ed.), Mason OH, South Western Cengage Learning.

Henry, O., & Evans, A. J. (2007). Critical review of literature on workforce diversity. *African Journal of Business Management*, *1*(4), 72-76. http://www.academicjournals.org/ajbm

Hernandez, T. K. (2010). Employment Discrimination in the Ethnically Diverse Workplace. *Judges J. 49*(33), 33-37. http://ir.lawnet.fordham.edu/faculty_scholarship/14

Herring, C. (2009). Does diversity pay? Race, gender, and the business case for diversity. *American Sociological Review*, *74*(2), 208-224. https://doi.org/10.1177/000312240907400203

Horsford, S. D. (2014). When race enters the room: Improving leadership and learning through racial literacy. *Theory Into Practice*, *53*(2), 123-130. https://doi.org/10.1080/00405841.2014.885812

Houtenville, A., & Kalargyrou, V. (2012). People with disabilities: Employers' perspectives on recruitment practices, strategies, and challenges in leisure and hospitality. *Cornell Hospitality Quarterly*, *53*(1), 40-52. https://doi.org/10.1177/1938965511424151

Hunter, M. (2007). The persistent problem of colorism: Skin tone, status, and inequality. *Sociology*

Compass, *1*(1), 237-254. https://doi.org/10.1111/j.1751-9020.2007.00006.x

Ilmakunnas, P., & Ilmakunnas, S. (2011). Diversity at the workplace: Whom does it benefit? *De Economist*, *159*(2), 223-255. https://doi.org/10.1007/s10645-011-9161-x

Ivancevich, J. M., & Gilbert, J. A. (2000). Diversity management: Time for a new approach. *Public personnel management*, *29*(1), 75-92. https://doi.org/10.1177/009102600002900106

Jauhari, H., & Singh, S. (2013). Perceived diversity climate and employees' organizational loyalty. *Equality, Diversity and Inclusion: An International Journal*, *32*(3), 262-276. https://doi.org/10.1108/EDI-12-2012-0119

Jordanian Labor Law. (1996). No. 8 of 1996. Retrieved from www.mol.gov.jo

Kemper, L. E., Bader, A. K., & Froese, F. J. (2016). Diversity management in ageing societies: A comparative study of Germany and Japan. *Management Revue*, *27*(1/2), 29.

Konopaske, R., & Ivancevich, J. M. (2004). *Global management and organizational behavior: Text, readings, cases, and exercises*.Boston, McGraw Hill.

Luthans, F., & Doh, J. P. (2012). *International management: Culture, strategy, and behavior*. (8th ed.). New York, NY: McGraw-Hill Irwin.

McGuirk, H., & Jordan, D. (2012). Local labour market diversity and business innovation: evidence from Irish manufacturing businesses. *European Planning Studies*, *20*(12), 1945-1960. https://doi.org/10.1080/09654313.2012.722918

Mkono, M. (2010). In defence of hospitality careers: Perspectives of Zimbabwean hotel managers. *International Journal of Contemporary Hospitality Management*, *22*(6), 858-870. https://doi.org/10.1108/09596111011063124

Niebuhr, A. (2010). Migration and innovation: Does cultural diversity matter for regional R&D activity?. *Papers in Regional Science*, *89*(3), 563-585. https://doi.org/10.1111/j.1435-5957.2009.00271.x

Olsen, J. E., & Martins, L. L. (2012). Understanding organizational diversity management programs: A theoretical framework and directions for future research. *Journal of Organizational Behavior*, *33*(8), 1168-1187. https://doi.org/10.1002/job.1792

Opstrup, N., & Villadsen, A. R. (2015). The right mix? Gender diversity in top management teams and financial performance. *Public Administration Review*, *75*(2), 291-301. https://doi.org/10.1111/puar.12310

Pant, J. J., & Vijaya, V. (2015). Challenges in Diversity Management: A Case Study of Medi Health Systems. *South Asian Journal of Management*, *22*(1), 159.

Parrotta, P., Pozzoli, D., & Pytlikova, M. (2014). The nexus between labor diversity and firm's innovation. *Journal of Population Economics*, *27*(2), 303-364. https://doi.org/10.1007/s00148-013-0491-7

Pitts, D. (2009). Diversity management, job satisfaction, and performance: Evidence from US federal agencies. *Public Administration Review*, *69*(2), 328-338. https://doi.org/10.1111/j.1540-6210.2008.01977.x

Rabl, T., & del Carmen, T. M. (2014). Organizational value for age diversity and potential applicants' organizational attraction: Individual attitudes matter. *Journal of Business Ethics*, *121*(3), 403-417. https://doi.org/10.1007/s10551-013-1729-8

Rasul, I., & Rogger, D. (2015). The impact of ethnic diversity in bureaucracies: Evidence from the Nigerian civil service. *American Economic Review*, *105*(5), 457-461. https://doi.org/10.1257/aer.p20151003

Ravazzani, S. (2016). Understanding approaches to managing diversity in the workplace: an empirical investigation in Italy. *Equality, Diversity and Inclusion: An International Journal*, *35*(2), 154-168. https://doi.org/10.1108/EDI-08-2014-0062

Reynolds, D., Rahman, I., & Bradetich, S. (2014). Hotel managers' perceptions of the value of diversity training: an empirical investigation. *International Journal of Contemporary Hospitality Management*, *26*(3), 426-446. https://doi.org/10.1108/IJCHM-02-2013-0079

Richard, O. C., Murthi, B. P., & Ismail, K. (2007). The impact of racial diversity on intermediate and long-term performance: The moderating role of environmental context. *Strategic Management Journal*, *28*(12), 1213-1233. https://doi.org/10.1002/smj.633

Richter, D. (2014). Demographic change and innovation: The ongoing challenge from the diversity of the labor

force. *Management Revue*, 166-184. http://dx.doi.org/10.1688/mrev-2014-03-Richter

Robbins , S. P., & Judge, T. A . (2013), *Organizational behavior* (15th ed.). Boston, Pearson Prentice-Hall.

Robbins , S. P., &Coulter, M. (2012), *Management* (11th ed.) . Boston, Pearson Prentice-Hall.

Roberson, Q. M., & Park, H. J. (2007). Examining the link between diversity and firm performance: The effects of diversity reputation and leader racial diversity. *Group & Organization Management*, *32*(5), 548-568. https://doi.org/10.1177/1059601106291124

Sabharwal, M. (2014). Is diversity management sufficient? Organizational inclusion to further performance. *Public Personnel Management*, *43*(2), 197-217. https://doi.org/10.1177/0091026014522202

Sayers, J., & Ang, E. K. (2012). Managing Diversity. http// bookboon.com.

Sekaran, U. (2003)*Research methods for business: A skill building approach* (4 th ed.). New York , NY. John Wiley & Sons.

Shen, J., Chanda, A., D'netto, B., & Monga, M. (2009). Managing diversity through human resource management: An international perspective and conceptual framework. *The International Journal of Human Resource Management*, *20*(2), 235-251. https://doi.org/10.1080/09585190802670516

Shen, J., D'Netto, B., & Tang, J. (2010). Effects of human resource diversity management on organizational citizen behaviour in the Chinese context. *The International Journal of Human Resource Management*, *21*(12), 2156-2172. https://doi.org/10.1080/09585192.2010.509622

Simon, S., Kinias, Z., O'Brien, L. T., Major, B., & Bivolaru, E. (2013). Prototypes of discrimination: How status asymmetry and stereotype asymmetry affect judgments of racial discrimination. *Basic and Applied Social Psychology*, *35*(6), 525-533. https://doi.org/10.1080/01973533.2013.823620

Singh, B., Winkel, D. E., & Selvarajan, T. T. (2013). Managing diversity at work: Does psychological safety hold the key to racial differences in employee performance?. *Journal of Occupational and Organizational Psychology*, *86*(2), 242-263. https://doi.org/10.1111/joop.12015

Smith, A. N., Morgan, W. B., King, E. B., Hebl, M. R., & Peddie, C. I. (2012). The ins and outs of diversity management: The effect of authenticity on outsider perceptions and insider behaviors. *Journal of Applied Social Psychology*, *42*(S1), E21-E55. https://doi.org/10.1111/j.1559-1816.2012.01021.x

Snell, S. A., & Bohlander, G. W. (2013). Managing human resources (16 th ed.). South Western, Cengage Learning.

Svyantek, D. J., & Bott, J. (2004). Received wisdom and the relationship between diversity and organizational performance. *International Journal of Organizational Analysis*, *12*(3), 295-317.

Thanem, T. (2008). Embodying disability in diversity management research. *Equal Opportunities International*, *27*(7), 581-595. https://doi.org/10.1108/02610150810904292

Wheeler, M. L. (1998). Measuring diversity: A strategy for organizational effectiveness. *Employment Relations Today*, *25*(1), 61-68. https://doi.org/10.1002/ert.3910250107

Wilton, L. S., Sanchez, D. T., & Chavez, G. F. (2013). Speaking the language of diversity: Spanish fluency, White ancestry, and skin color in the distribution of diversity awards to Latinos. *Basic and Applied Social Psychology*, *35*(4), 346-359. https://doi.org/10.1080/01973533.2013.803969

Woehr, D. J., Arciniega, L. M., & Poling, T. L. (2013). Exploring the effects of value diversity on team effectiveness. *Journal of Business and Psychology*, *28*(1), 107-121. https://doi.org/10.1007/s10869-012-9267-4

Yang, Y., & Konrad, A. M. (2011). Diversity and organizational innovation: The role of employee involvement. *Journal of Organizational Behavior*, *32*(8), 1062-1083. https://doi.org/10.1002/job.724

Yap, M., Holmes, M. R., Hannan, C. A., & Cukier, W. (2010). The relationship between diversity training, organizational commitment, and career satisfaction. *Journal of European industrial training*, *34*(6), 519-538. https://doi.org/10.1108/03090591011061202

An Empirical Study about Customer Preferences of Retail Sellers' Qualifications

Najah Hassan Salamah[1]

[1]Assistant Professor, Department of Marketing, Faculty of Economic and Administration, King Abdul-Aziz University, Saudi Arabia

Correspondence: Najah Hassan Salamah, Assistant Professor, Department of Marketing, Faculty of Economic and Administration, King Abdul-Aziz University, Saudi Arabia. E-mail: nsalamah@kau.edu.sa

Abstract

The purpose behind the study was to analyze the skills and behaviors required by Saudi retail sellers in developing interest of the consumers towards purchasing from retail stores. The sample size of 384 participants has been considered for data collection. Descriptive statistics and frequencies have been used to generate and analyze the data. Results have indicated that majority of respondents embarked on retail shops with Saudi sales men, because they were characterized by truthfulness, honesty, and patience. Moreover, approximately 96.10% of respondents gave preference to the retail shops, which were managed by properly trained Saudi seller. It has been observed that it is important to consider that Saudi seller should possess the qualities of patience, faithfulness, seriousness in work, while recruiting, and appointing them. The importance of qualities, which should be possessed by seller, has been highlighted through outcomes. Moreover, the emphasis is given to provide training to the seller for enhancing their selling skills and capabilities.

Keywords: customer preferences, personal selling, retail shops, seller

1. Introduction

Personal selling has become one of the most important trends in administrative thinking. These trends have been represented in most prominent challenges that confront the organizations today, specifically in retail selling domain. Retail selling concept has been presented in the framework, which helped to identify the concepts and intellectual philosophies. These concepts are derived by focusing on the individual shopping. Personal selling mechanism has been determined as beneficial for a salesperson, as it enables to customize marketing message to the customers (Kumanduri et al., 2014). The study of contemporary personal selling, especially in Saudi society, has become an urgent necessity. The human element is considered as one of the most vital resources that are possessed by an organization. The value of these resources can be increased by investing in the promotion of capabilities of personnel as well as securing due incentives for such personnel.

1.1 Problem

The principles, which are necessarily required by Saudi selling persons with respect to personal selling have not been focused by previous investigations, particularly in Saudi Arabia. Due to the lack of exploration concerning the experiences of consumers in their shopping and role of sales men on the consumer purchasing behaviour, present study has aimed to observe the seller competencies along with the trends of Saudi consumers. Within the framework of numerous cultural and social changes, the pressures on Saudi seller increase tremendously. This aspect gave rise to the following question:

1) How the behavior of Saudi seller influences the consumer's interest to purchase from retail shops?

2) How the consumer behaviour is attracted towards the seller competencies, which enables them to purchase from retail shops?

3) Does Saudi sales men possess the qualities of competent sales man?

1.2 Significance

The study has contributed in the domain of buying and selling, and recognized some specific results. The study significantly identified the consumer perceptions about sales men's sincerity and the behaviour of interaction.

The skills of Saudi sales men while dealing with the customers have been significantly observed and the requirement of providing further training to the sales men in Jeddah has been highlighted. The strengths and weaknesses regarding skills of sales men in attracting consumers to buy certain product or service have been examined to identify the qualifications or experiences of sales men, particularly in Jeddah, Saudi Arabia.

1.3 Objectives

The study has developed certain objectives, which are as follow:

- To study the strengths of Saudi seller in assisting the consumer's purchasing decision.
- To recognize the importance of practical qualities that Saudi seller should possess.
- To assure the extent to which the Saudi sellers possess required qualities and their impact on consumer's interests to purchase from retail shops.
- To submit a set of recommendations on personal selling in a manner that suits the nature of Saudi market.

2. Literature Review

In order to engage in selling a product efficiently; the sales man has to play different roles to involve in various activities, and to use distinctive set of knowledge, skills, and abilities. For practicing an efficient selling, a complex structure of knowledge and the ability to effectively utilize knowledge are necessarily required by a sales person. An efficient sales person should possess more knowledge about its customers as compared to any other professional. Moreover, a sales man should be comprised of interpersonal, mentalizing, and emotional intelligence qualities. In interpersonal metalizing, the sales man is required to consider the mental states and intentions of customers towards purchasing (Dietvorst et al., 2009). Emotional intelligence is an important aspect of psychology, which is related with personal selling. Hence, a salesman with high emotional intelligence can efficiently perceive and manage the emotions of its customers (Lilien and Grewal, 2012).

In respect of relationship significance among customers and personal selling, it has been examined that many companies have given this activity a great importance to reach the best level of performance. This significance not only leads to enhance the sales, but also reflects a positive image of companies in their respective communities. For a long-term success, companies generally consider customer satisfaction as a unique element. The long-term association between the company and consumers is important as it is beneficial for both parties (Pettijohn et al., 2002).

Culture also evaluates the way through which consumers respond to brand images, prices, and advertising components (Shavitt and Cho, 2016). The knowledge about consumers' behavior is of great importance, as it enables the salesperson to understand how consumers feel, think, and select from alternatives, while purchasing a product or brand. Taking into consideration the behavior of Saudi consumers, it has been proposed by Rahman (2012) that the retail market of Saudi Arabia is not an exception. Within the retail markets, changing scenario of consumer behavior in Saudi Arabia provides a proof to the availability of potential opportunities. In order to identify the consumer behavior regarding purchasing decision, companies usually conduct detailed surveys to evaluate the requirements of consumers. Some of the factors, which show an influence on consumer buying behavior include social, psychological, and personal factors (Kotler et al., 2015).

The roles of service quality satisfaction and perception in the origination of behavioural intentions have been recognized by the services marketing literature. The intervening role of satisfaction in regards with the relationship between behavioural intentions and service quality have been established. A study conducted by Bijmolt et al. (2014) on online purchasing behaviour explored that there are remarkable differences regarding intentions to repurchase a particular product among the consumers. Consumers, who complained because of negative experiences, expressed higher intentions to repurchase a particular product or service than the consumers with no negative experience. This study was one of the significant empirical studies concerning the situations of complaints and dissatisfaction related to online purchase behaviour.

Another study by Ozer & Gultekin, (2015) has intended to explore the influence of pre-purchase behaviour and desire to buy a certain product. The effect of impulse buying behaviour on post-mood has also been considered. The results examined the pre and post-purchase mood effects with consumer satisfaction as a mediating variable. The tendency of consumer's impulse pre-purchase mood encourage impulse buying positively. It has also been observed that impulse buying has no effects on the purchasing mood of the consumers, and consumer's satisfaction has a partial mediator role between the pre and post-purchasing mood.

The ethical behavior of sales men has also a significant influence on the commitment and relationship of

customers. This is because honest actions of salesman results in increasing the trust of customers on salesman, and also on the organization. In this way, customer loyalty towards the product also increases. It has been evaluated that a strong relationship exists among ethical sales behavior of salesman, customer satisfaction, and customer loyalty. Thus, the ethical behavior of salesman plays a fundamental role in retaining the customer loyalty (Lin, 2012). Moreover, it has been determined that seller plays an important role in maintaining the existence of the store via achieving the satisfaction, confidence and loyalty of customers. The findings of the study conducted by Tolba et al. (2015) have shown positive relationship between the store and consumer resulting from good interaction, which has been established by seller with its targeted customers.

The salesperson intelligence is often utilized by organizations in marketing strategies to enhance the sales performance. Although, this tactic is challenging if the knowledge is affirmed on unsatisfactory perceptions. Results from a study have shown that self-efficacious seller are biased upwardly and the customer-oriented salesmen are biased downwardly in their perspectives of consumer relationship quality. The influence of salesmen accuracy and inaccuracy are curvilinear and distinct, as illustrated by the response of surface analyses. The findings highlighted the benefits of evaluating the perceptions of sales men and the strategies to manage it (Mullins et al., 2014).

Two types of judgements are usually made by the sales men about consumers in face-to-face interactions, which includes the judgements that are more deliberative and intuitive. The study conducted by Hall et al. (2015) evaluated the influence of deliberative judgement and accurate intuitive on the sales men performance. A matched survey, objective, and observational survey have been obtained during, before, and after the interaction between sales man and consumer. The findings have indicated that there is an enhancement in selling performance due to the accurate intuitive judgements by enabling more suitable selling strategies. Furthermore, it has been observed that consumer orientation and listening skills influence deliberative accuracy; whereas, intuitive accuracy is influenced by empathy for the customer and domain-specific experience. Despite of the personal selling skills of sales men taught in training, effective selling requires sales men to make precise and accurate judgements about their consumers (Dixon & Adamson, 2011). Previous researches have related the intuitive judgements to task performance and highlighted that accurate intuition can result in greater raise in salaries, higher ranks in the corporation and assist to gain higher ratings from managers (Byron et al., 2007; Hall et al. 2014).

3. Methodology

A questionnaire has been structured to obtain the primary data from the participants. The competencies and skills of the Saudi sellers have been identified by incorporating the questions related to the qualities of the seller, which attract the consumers to buy product or services. The questionnaire has been designed on Likert Scale. The 384 residents of Jeddah have been considered as study participants, who have been selected through random sampling approach. However, the study was restricted to Jeddah as it was difficult conduct the study in all cities of the Kingdom of Saudi Arabia due to its quite known expanse the data collected through the questionnaire was then analysed using Statistical Package of Social Sciences (SPSS) version 19.0. The reliability of questionnaire has been tested through Cronbach's alpha to assure that the developed instrument is reliable enough to produce accurate results. The descriptive statistics and the frequencies of the responses obtained through the data collection were observed; the descriptive statistics assisted to show the behaviour and qualities of seller attracts the consumer to buy a particular product or service. The frequencies of the responses have been represented in the graphical manner. From the descriptive statistics, it has been determined that the sample comprised of 48% of married individuals; however, the remaining 52% were unmarried, as shown in Table 1.

The outcomes of Cronbach's alpha demonstrated a value of 0.873, which is greater than 60%. This has shown that the developed questionnaire is reliable to produce good results (Table 1). Moreover, table 1 has represented the mean and standard deviation of the data collected through the questionnaire.

Table 1. Descriptive Statistics

SN	Question	Average	Standard Deviation
1	Is the Saudi retail seller patient and work seriously and that this assists you in purchasing?	2.34	1.056
2	Is the Saudi retail seller characterized by truthfulness and sincerity and that this assists you in preferring to deal with him?	2.19	1.000
3	Is the male Saudi practical and less talkative characterized by honesty and sincerity and that this helps you in preferring to deal with him?	2.48	1.111
4	Is the Saudi retail seller characterized by honesty and that this assists you in preferring to deal with him?	2.17	0.962
5	Is the Saudi retail seller cordial, loved and less talkative and that this assists you in preferring to deal with him?	2.27	0.998
6	Do the qualities of truthfulness, honesty and patience which the Saudi retail seller possesses assist in the selling process?	1.59	0.826
7	Is the success of retailing shops associated to the skill of the Saudi seller working at such shops?	2.04	1.111
8	Does the Saudi retail seller give much attention to the time of the client?	2.37	1.134
9	Do you prefer retail shops with seller who perform their duty in a good manner?	1.37	0.616
10	Is supervision over the Saudi retail seller at the shops is done well?	2.33	1.055
11	Is it true that the better supervision you have over the Saudi seller, the better performance you obtain?	1.42	0.642
12	Do shops that have good internal arrangement are characterized by facilities that help seller to offer better service?	1.45	0.714
13	Does the good dealing of the Saudi retail seller with the consumers and meeting their demands indicate he was carefully selected for the post?	2.20	0.976
14	Does the Saudi retail seller understand the desires of the consumers because this reflects that he was properly trained?	2.28	1.070
15	Do successful shops are the ones that have trained manpower which understands the very nature and characteristics of the product?	1.31	0.569
Cronbach's alpha coefficient for the stability			0.873

4. Results

With respect to age group, it has been observed from Figure 1 that the sample size of 51.2% belongs to a group of 20-30 years. It is followed by the age group that is from 30 years to less than 40 and constituted 29% of the sample size, followed by the age group that is less than 20 years with a percentage of 9.4%. The age group of more than 50 years comprised only 2.6% of sample size.
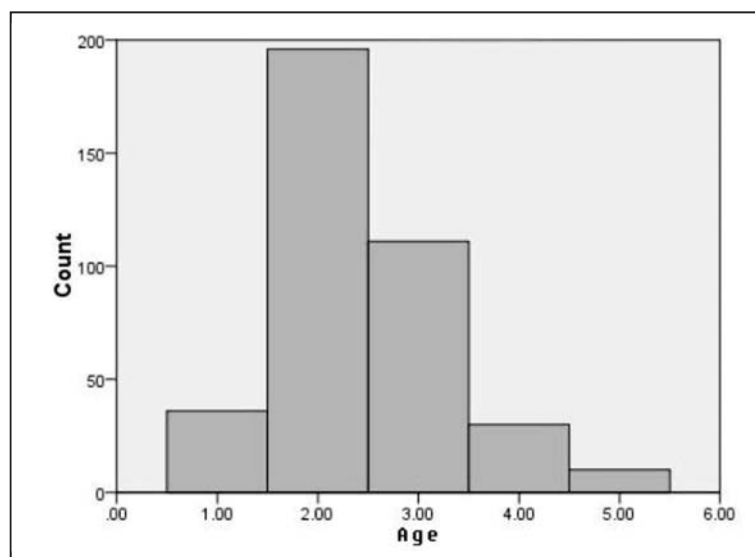
Figure 1. Age Groups

It can be observed from Figure 2 that the sample included all educational levels and qualifications. The sample size varies regarding education, in which few participants have an educational level less than university, and others are doctorates holders. The percentage of Bachelor's degree holders is 71.8% and that with an educational level less than a university one is 18.5%. The percentage of those holding Master Degrees is 7.6%, and those

holding Doctorate Degrees is 2.1%. This reflects the level of awareness among sample members regarding to deal with the questionnaire as virtual consumers.
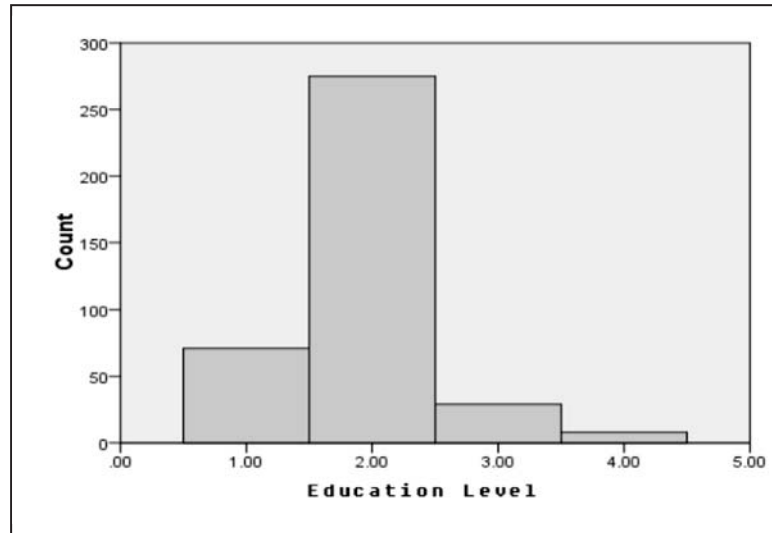
Figure 2. Educational Qualification

Taking into consideration the questions asked from respondents, it has been analyzed that the Saudi retail seller is patient and works seriously. Thus, 50.7% of respondents strongly agree that the patience level of Saudi salesman has a positive influence on their purchasing decisions. It has been observed from outcomes that 19.1% of respondents agree, 17.5% don't agree, and just 2.6% of participants don't strongly agree with the statement, as shown in Figure 3.
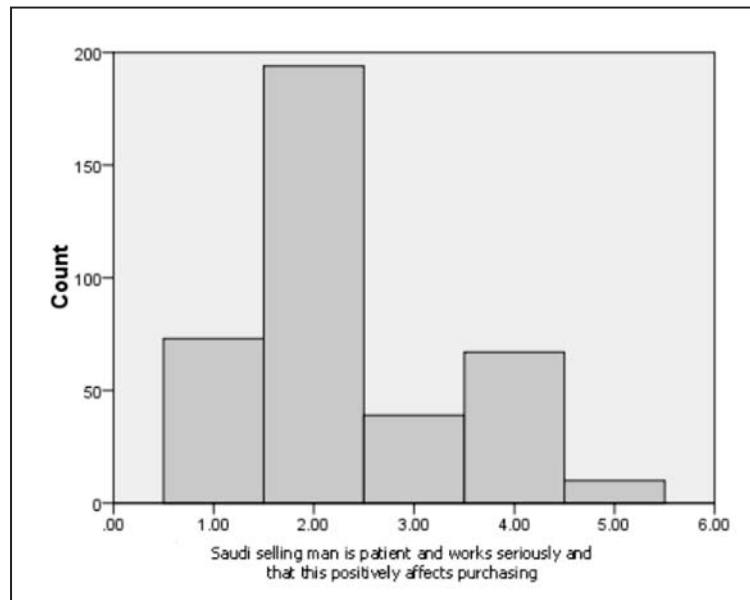
Figure 3. Patience Level of Saudi Salesman Positively affects Purchasing

When the respondents were asked about the impact of Saudi salesman characteristics to deal with customers, it has been evaluated that 45.7% of respondents agree and 25.1% strongly agree. Hence, it can be said that Saudi consumers usually prefer to deal with Saudi retail seller, because he is characterized by truthfulness and sincerity, as shown in Figure 4.
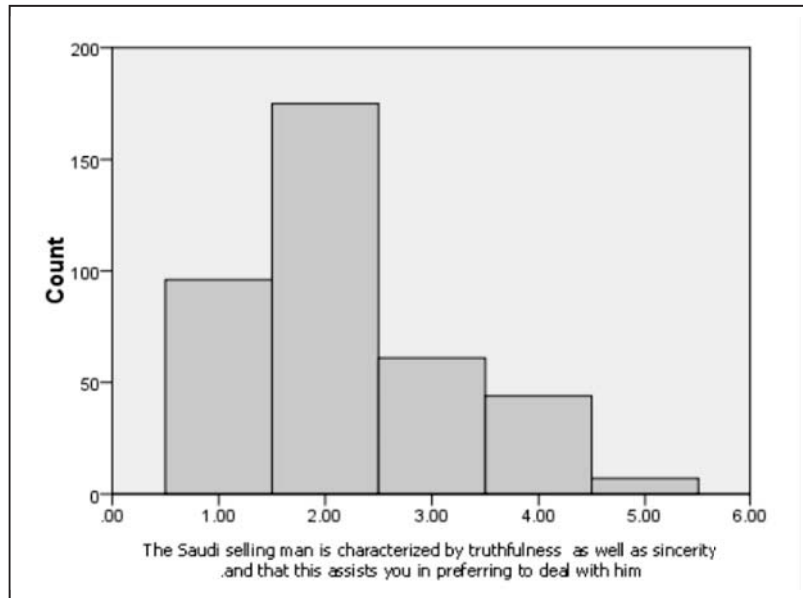
Figure 4. Characteristics of Saudi Retail seller allows Consumers to deal

With respect to less talkative nature of Saudi salesman, it has been evaluated that approximately 63% of participants respond positively. Hence, Figure 5 has shown that the consumers are likely to prefer dealing with practical and less talkative retail seller who concentrates on product rather than on mere talking.
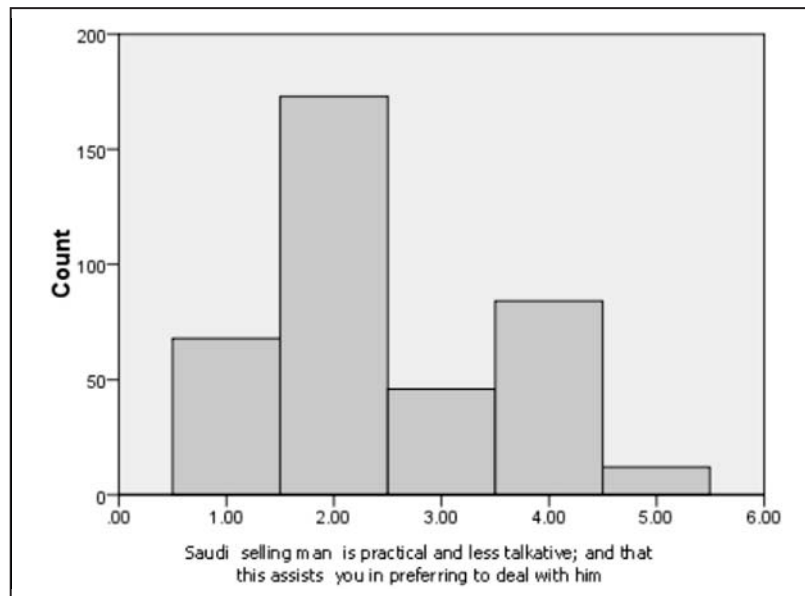
Figure 5. Consumers Prefer Dealing with Practical and Less Talkative Salesman

Taking into consideration the honesty factor of Saudi salesman, it has been observed that consumers prefer to deal with the Saudi retail seller, as shown in Figure 6. The great percentage indicates and confirms the quality of being honest from religious and cultural perspective. The Saudi society is generally characterized with honesty and this is a quality with which the Saudi retail seller is characterized over other male seller.
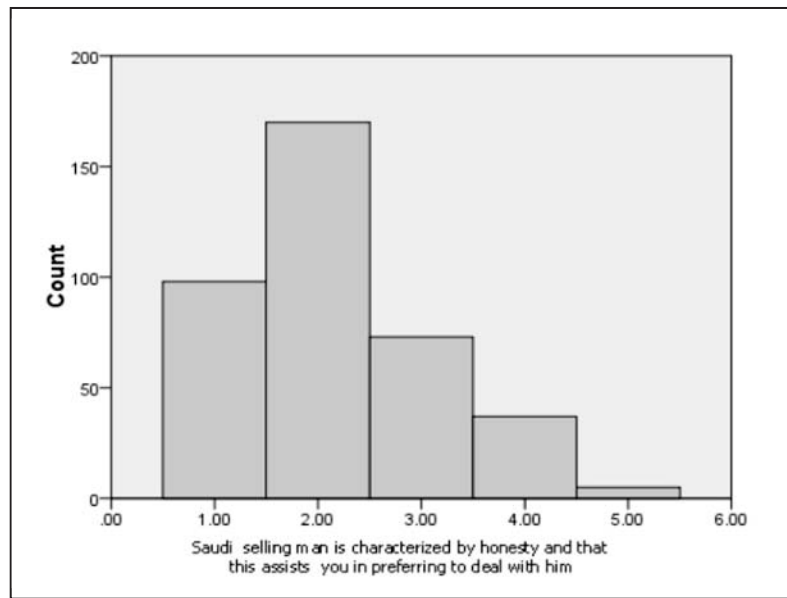
Figure 6. Honesty of Saudi Retail seller allows Consumers to Deal

Most of the respondents reported that the cordial, loving, and less talkative nature of Saudi selling males assist them to deal with him in purchasing decisions. It has been observed from Figure 7 that almost 67.1% of participants agreed with this statement. On the contrary, just 1.3% of respondents reported that they don't consider this component while making purchase decisions. With respect to the manners of Saudi retail seller, approximately 70.8% of participants respond positively that Saudi retail seller deals with them in good manner. It has been reported by participants that Saudi salesman are efficient in fulfilling the needs of customers (Figure 8). Therefore, it can be said that the selection of a suitable man leads to good results, particularly in commercial corporations or organizations that directly deals with customers.
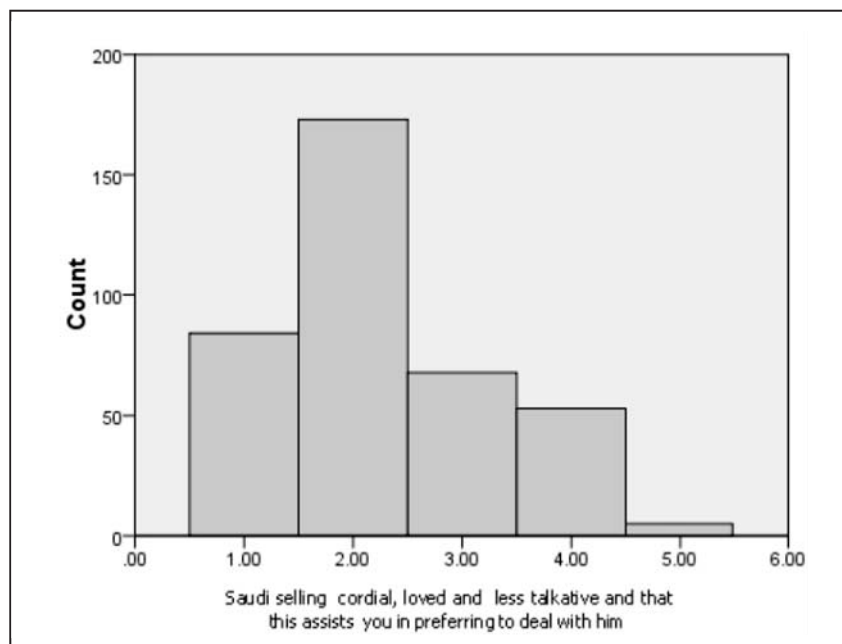
Figure 7. Consumers Prefer Dealing with Saudi Salesman due to their Cordial, Loving and Less Talkative Nature
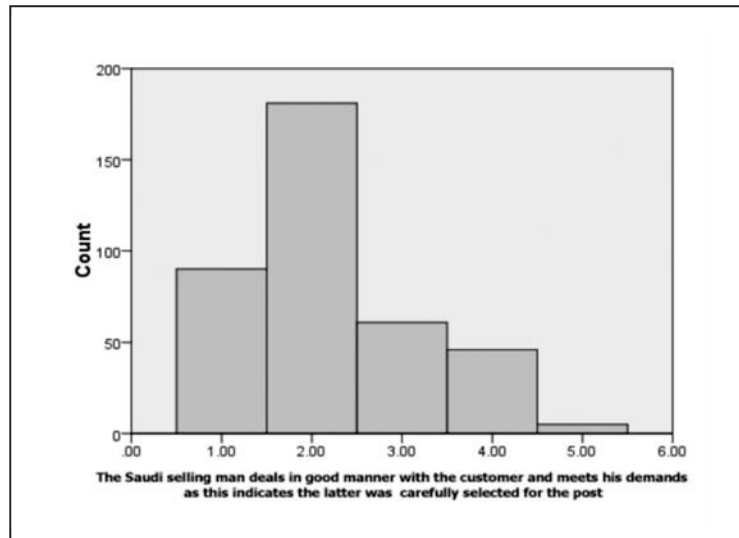
Figure 8. Saudi Retail seller Deal in Good Manner and Meet the Demands of Customers

The participants were asked about the extent to which Saudi retail seller understands their needs and desires. From the outcomes, it has been observed that 42.6% participants agreed, 24.5% strongly agree, as shown in Figure 9. Thus, it has been assessed that Saudi retailers understand the desires of its customers appropriately. This is due to a significant reason, i.e., good training provided to Saudi salesman. Undoubtedly, training is a crucial factor in success and promotion of the performance of seller at retail stores (retailers).
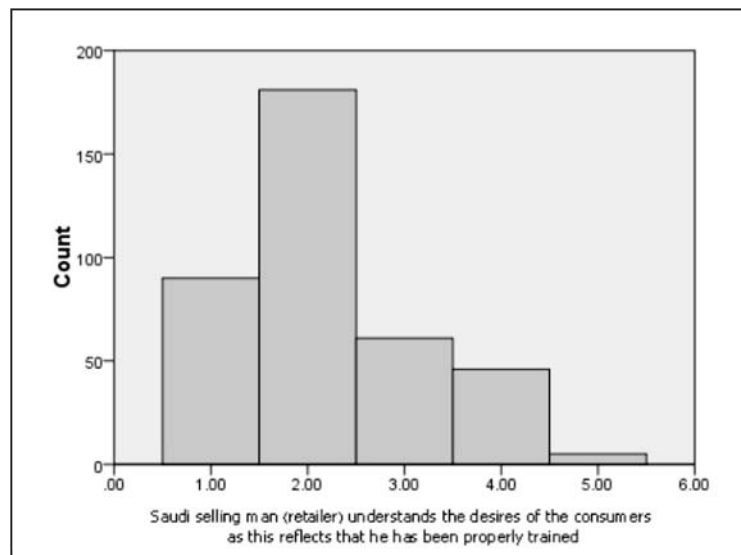
Figure 9. Proper Training enables Saudi Salesman to understand the Desires of Consumers

The collective outcomes demonstrate that the percentage of agreement is (38.33 + 37.93) = 76.26%, which exceeds three quarters of overall responses. On the contrary, a very minor percentage of respondents 11.85% (1.74 + 10.11) were observed to reject the statements of questionnaire. Hence, it has been determined that majority of study participants shown a positive attitude towards questionnaire. Figure 10 has demonstrated a summary of overall responses generated through research participants.

5. Discussion and Conclusion

To evaluate the competencies of Saudi sales man, the responses have been obtained through the analysis of data. The first priority has been given to "the successful retail shops are the ones that are manned by trained manpower that understands the nature and characteristics of the product". This reflected the training significance of manpower with respect to the product features and characteristics, because this training secures the capability of Saudi salesman to meet customers' requirements regarding a specific product. The preference of retail stores that are manned by Saudi seller, who perform their work properly, has been ranked on second number. From the

outcomes, it has been evaluated that the performance of seller plays a significant role to retain the clients. The performance of Saudi retail seller has been found to meet the expectations of clients regarding the rendered service. Moreover, their performance is also in compliance with the Hadith of Prophet Muhammad (PBUH), which says "Allah Almighty loves that anyone does a work, he should do it perfectly". At the third rank, comes the phrase "The more supervision you have over seller, the better performance they attain". It is known that good supervision and follow-up necessarily lead to a better performance.

On fourth number, "The retail shops that have good internal arrangement and organization, the seller attached to them are characterized by offering better service" has been ranked. The good organization leads to better performance of seller and they render better service to clients. The phrase "the qualities of truthfulness, honesty and patience possessed by a retail seller (retailer) assists in the purchasing process" has been ranked on fifth number. It is appropriate to note that retail seller should possess the qualities of truthfulness, honesty and patience, ranging over relative significance, from the most significant to less significant. Finally, at rank six, came the phrase "the Saudi retail seller is a practical and less talkative official and this makes you prefer to deal with him". It has been observed that the Saudi retail seller is characterized by the fact that he is not talkative; and this promotes the serious client to deal with him.

The respondents shown a positive attitude towards questionnaire components, which helped in generating significant outcomes. With respect to social status of study participants, a relatively balanced percentage has been observed. The positive attitudes have become dominant on participants' opinions towards all variables and assumptions pertaining to significance of personal selling on consumers' attitudes. It has been recommended through outcomes that more concentration should be given while appropriately selecting the retail seller. It has been confirmed by considering the significance of particular qualities of retail seller, which comprise patience, trustfulness, serious work, and honesty.

6. Research Limitations and Future Research

The current study has considered the sample size from Jeddah, city of Saudi Arabia. The future studies should consider the entire Saudi Arabia as a sample of study. Moreover, future researchers should also consider other Gulf countries besides Saudi Arabia to compare the consumer requirements among places. It is also suggested that future researches should be performed by conducting cross-cultural analysis regarding competence of retail seller and its impact on the purchasing decisions of consumers. Furthermore, continuous attention must be given to developments in the field of retail selling and also to encourage the development of companies that depends on the seller, who must follow the regulations and work for the development. Specialized training courses and seminars for retail seller on specific skills such as work ethics, competency and effectiveness in work, must be conducted to secure due enhancement in the field. The usage of both modern techniques in the internal arrangement and organization of the retail shop as well as advanced electronic methods in the selling processes should be encouraged. This facilitates the task and function of the Saudi seller and the necessity of developing periodical tests for measuring the competency, performance and behavior of the sales men.

Acknowledgement

References

Byron, K., Terranova, S., & Nowicki, S. (2007). Nonverbal emotion recognition and salespersons: Linking ability to perceived and actual success. *Journal of Applied Social Psychology*, *37*(11), 2600-2619. https://doi.org/10.1111/j.1559-1816.2007.00272.x

Dietvorst, R. C., Verbeke, W. J., & Bagozzi, R. P. (2009). Are Some Salespeople From Venus and Others From Mars? A Theory and Test of Interpersonal Mentalizing Using Functional Mri. *NA-Advances in Consumer Research, 36*.

Dixon, M., & Adamson, B. (2011). *The challenger sale: Taking control of the customer conversation*. Penguin.

HA Bijmolt, T., KRE Huizingh, E., & Krawczyk, A. (2014). Effects of complaint behaviour and service recovery satisfaction on consumer intentions to repurchase on the internet. *Internet Research*, *24*(5), 608-628. https://doi.org/10.1108/IntR-03-2012-0056

Hall, Z. R., Ahearne, M., & Sujan, H. (2015). The importance of starting right: the influence of accurate intuition on performance in salesperson–customer interactions. *Journal of Marketing*, *79*(3), 91-109. https://doi.org/10.1509/jm.13.0505

Kotler, P., Burton, S., Deans, K., Brown, L., & Armstrong, G. (2015). Marketing. Pearson Higher Education AU.

Kumanduri, A., Yglesias, C., Simpson, S. J., & Powell, J. M. (2014). Adaptive Selling.

Lilien, G. L., & Grewal, R. eds. (2012). Handbook on business to business marketing. Edward Elgar Publishing. https://doi.org/10.4337/9781781002445

Lin, S. H. (2012). Effects of ethical sales behavior considered through transaction cost theory: To whom is the customer loyal? *Journal of International Management Studies, 7*(1), 31. https://doi.org/10.12816/0002265

Mullins, R. R., Ahearne, M., Lam, S. K., Hall, Z. R., & Boichuk, J. P. (2014). Know your customer: How salesperson perceptions of customer relationship quality form and influence account profitability. *Journal of Marketing*, *78*(6), 38-58. https://doi.org/10.1509/jm.13.0300

Ozer, L., & Gultekin, B. (2015). Pre-and post-purchase stage in impulse buying: The role of mood and satisfaction. *Journal of retailing and consumer services*. https://doi.org/10.1016/j.jretconser.2014.10.004

Pettijohn, C. E., Pettijohn, L. S., & Taylor, A. J. (2002). The influence of salesperson skill, motivation, and training on the practice of customer-oriented selling. *Psychology & Marketing, 19*(9), 743-757. https://doi.org/10.1002/mar.10033

Rahman, M. N. (2012). Consumer Behavior and Retail Market Consumerism in KSA. *International Journal of Scientific & Engineering Research, 3*(11).

Shavitt, S., & Cho, H. (2016). Culture and consumer behavior: the role of horizontal and vertical cultural factors. *Current Opinion in Psychology, 8,* 149-154. https://doi.org/10.1016/j.copsyc.2015.11.007

Tolba, A., Seoudi, I., Meshriki, H., & AbdelShahid, M. (2015). Impact of Ethical Sales Behavior, Quality and Image on Customer Satisfaction and Loyalty: Evidence from Retail Banking in Egypt. *International Journal of Management and Marketing Research, 8*(2), 1-18.

Appendix

Question	I strongly agree 1	I agree 2	I don't know 3	I disagree 4	I strongly disagree 5
Is the Saudi seller patient and works seriously and that this helps you in purchasing?	73	194	39	67	10
Is the male Saudi seller characterized by truthfulness and sincerity and that this helps you in preferring to deal with him?	96	175	61	44	7
Is the Saudi seller practical and less talkative and that this helps you in preferring to deal with him?	68	173	46	84	12
Is the Saudi seller characterized by honesty and that this assists you in preferring to deal with him?	98	170	73	37	5
Is the male Saudi cordial, loved and less talkative and that this helps you in preferring to deal with him?	84	173	68	53	5
Do the qualities of truthfulness, honesty and patience which a seller possesses assist in the selling process?	221	118	27	15	2
Is the success of retailing shops associated to the skill of the Saudi seller working at such shops?	158	114	60	41	10
Does the Saudi seller give much attention to the time of client?	91	155	53	71	13
Do you prefer the retail shops manned by Saudi seller who perform their work properly	263	106		7	7
Does the Saudi seller working at retail shops receive proper supervision?	91	142	93	46	11
Does more supervision over seller lead to better performance?	244	124	8	6	1
Do retail shops characterized by good arrangement and organization assist seller to present better service	248	106	20	8	1
Does the better dealing of the Saudi seller with the customer and meeting his request indicate that he was properly selected?	90	181	61	46	5
Is does the understanding of the Saudi seller for the desire of the consumer reflect that he was properly trained?	94	163	62	53	11
Do the successful retail shops are the ones that that are provided with trained manpower that understand the nature and characteristics of the product?	283	85	12	3	
Of the product? Of the product?	2202 (38.33)	2179 (37.93)	683 (11.89)	581 (10.11)	100 (1.74)

Copyrights

The Internal Auditing Procedures Effectiveness in the Jordanian Commercial Banks

Arwa H. Amoush[1]

[1]Accounting Department, Al-Zaytoonah University of Jordan, Amman, Jordan

Correspondence: Arwa H. Amoush, Accounting Department, Al-Zaytoonah University of Jordan, Amman, Jordan. E-mail: Ar.amoush85@yahoo.com

Abstract

This study aims at evaluating and investigating the effectiveness of the internal auditing procedures in the Jordanian commercial banks through evaluating auditing procedures used in the commercial banks in Jordan and evaluating the role of the board of directors in achieving this effectiveness. Moreover, this study aims at investigating the internal auditing program used in the banks to check the availability of the risk –based auditing program and sufficient degree of independence for the internal auditor in these banks.

The study's main hypothesis was: "the internal auditing procedures in the Jordanian commercial banks do not include the effectiveness of the internal auditing profession" and there were other four sub-hypotheses. The descriptive approach was used. A questionnaire consisted of 48 items was prepared and distributed to 130 internal auditors in the commercial banks representing 248 internal auditors. Only 104 questionnaires were valid for analysis out of 120 questionnaires that were retrieved.

Data were collected and analyzed statistically. Results revealed that the internal auditing program used in the commercial banks included procedures that achieve internal auditing procedures and the role of the board of directors ensured the effectiveness of the internal auditing in the information technology. Additionally, results showed that the internal auditing program included risk based auditing program and the internal auditing procedures ensure the internal auditor's independence. The study recommended the necessity to enhance the current procedures followed in the internal auditing implementation for its effectiveness and the necessity to clarify the internal controls and its levels to ensure the success of the auditing program.

Keywords: audit, commercial banks, effectiveness, internal auditing procedures

1. Introduction

In view of the importance of the banking sector in the modern economy, the banks should be managed by specific system based on the bank's interest and other parties as well and to ensure this, laws that govern the structure of the board of directors were issued.. The guide of the institutional governance published by the Jordanian Central Bank includes six pillars related to the institutional governance commitment, board of directors' tasks, the board's committees, and control, relation between the shareholders, and transparency and disclosure.

The significance of the role of internal auditing and the auditing committee should be highlighted as one of the most important pillars of the institutional governance system in any bank. Auditing in the banks is an urgent need, because if any problem happens, a big number of people will be affected negatively as well as the national economy. The institutional governance concepts including guide of the Central Bank assured that the auditing committee should consist of independent and nonexecutive members of the board of directors who have scientific and practical experience. Furthermore, activating the role of the auditing committees has been ensured in addition to obtaining more authorities to get information from the executive management.

2. Significance of the Study

1- The focus on the effectiveness of the internal auditing procedures in the Jordanian commercial banks is one of the important issues that helps in facing challenges and risks encounter the commercial banks in terms of difficulties that cannot be controlled work organization, authorities distribution, responsibility accounting, bank assets protection, and providing reliable accounting data in decision making process.

2- Achievement of added value to the internal auditing activities as a result to its procedures' evaluation which affect positively the banks performance in addition to identifying risks facing the banks as a result of the bank's internal auditing procedures.

3- Highlighting the importance of the field study in the results, suggestions, and recommendations that represent the scientific framework which the banks can rely on for their planning and outlining the policies of the internal auditing procedures.

4- Raising the internal auditor's degree of awareness of independence that suits the requirements of the internal auditing procedures will enhance the concept of independence in the banks and consequently neutral auditing results will be achieved which in turn supports the reliability of the internal auditing.

3. Problem of the Study

Having an effective internal auditing program according to the international standards has become one of the most important factors in the banks' success and its effectiveness. Therefore, the internal auditing procedures should be implemented effectively to suit the necessary bases and requirements. And because there were many factors that are involved in implementing the internal auditing procedures as the auditing committee , using information technology, the independence of the internal auditor ,and nature of the auditing program, a necessity has shown to study and evaluate the auditing procedures and check their effectiveness.

 Accordingly, the following major question has been raised:

Do the internal auditing procedures applied in the Jordanian commercial banks ensure the effectiveness of the internal auditing?

This question has the following sub-questions:

- Does the internal auditing program include a set of executive procedures that achieve the internal auditing effectiveness?

- Does the board of directors check the procedures' implementation which is done by manager of the internal auditing, information technology auditors and operation management?

- Does the internal auditing program include the procedures of risks-based auditing including elements of the program, registration system, and guidance principles?

- Do the internal auditing procedures have independence in internal auditing implementation?

4. Objectives of the Study

1- To evaluate the internal auditing procedures applied in the commercial banks to ensure their commitment to the efficient procedures that achieve effectiveness in the internal auditing in the Jordanian commercial banks.

2- To evaluate the role of the board of directors to ensure of the effectiveness of the internal auditing in the Jordanian commercial banks.

3- To evaluate the internal auditing program to check the auditing based on risks that ensure achieving the effectiveness of the internal auditing in the Jordanian commercial banks.

4- To check the availability of the internal auditor's independence to achieve the effectiveness of the internal auditing in the Jordanian commercial banks.

5. Theoretical Framework

To be beneficial for the customers and users, the accounting information has to have some qualitative characteristics as suitability, reliability, appropriate timing and flexibility for comparison. The information showed direct and clear image about the status of the financial situation including the basic financial statements. Accordingly, there was a need for a third party with an independent opinion to confirm the validity of the operations done in the company and the fairness of presenting the financial statements. The third party works on the internal and external auditing with some differences in both concepts. Such auditing helps in narrowing the remoteness gap between the management, shareholders and other parties that rely on the financial statements prepared by the management (Thneibat, 2006).

Auditing provides a reasonable confirmation about the financial data in the financial statements and adds reliability to the financial data through reducing risks inherited in auditing profession which are resulted from the direct access to the financial data to check its validity.

5.1 Concept and Nature of Internal Auditing

Concepts and opinions about the nature of the internal auditing varied; some considered it a scientific technique or an organizational plan while others believe that it is an inevitable administrative profession and independent scientific activity. As internal auditing took place after the implementation process, finding out the mistakes and fraud in addition to controlling the accounting data become the main responsibilities of the internal auditor. In other words, the internal auditor has to verify the records' integrity and data and to maintain the company's assists'.

Definitions of internal auditing concept varied; the internal auditing committee in the American institute of banks management defines the internal auditing as: "it is a management profession based on independence evaluates the effectiveness, competency and accuracy of the control systems in the company and the quality of the current processes (Nono, 2009). While the French Institute of the internal auditors' definition is: "the internal auditing is a periodical test to the means and authorities which were put at the disposal of the management to control and guide the company independently.

It can be concluded that auditing in general is an organized process practiced by the internal and external auditors to collect appropriate evidences to ensure that data lack of any significant mistakes that affect the financial statements and the thus the external auditor expressed his neutral opinion independently about the reliability of at the financial statements.

5.2 Types of Internal Auditing

There are three types of internal auditing: (Abd-Samad, 2009).

5.2.1 Financial Internal Auditing

It is the auditing done by the external auditing or who expresses his opinion about the reliably of the financial data in the financial statements.

5.2.2 Operational Internal Auditing

The operational internal auditing which is the nontraditional field of the internal auditing appeared as a result for the development in the field of the internal auditing. The operational auditing is the comprehensive checking of the unit or the organization to evaluate its different systems, administrative control and operational performance according to specific method of measurement within the administrative goals so as to verify the operational processes' economy and effectiveness. This type of auditing examines and evaluates all the company's work to achieve the competency and the effectiveness in utilizing the available resources according to a plan prepared in advanced (Nono, 2009).

5.2.3 Special Assignments Auditing

In this type of auditing, the internal auditor does what the senior management asks him to do and this type of auditing agrees with the two previous types of auditing in terms of the style or the scope but differs in terms of timing because it happens suddenly. This type aims to reveal the fraud or corruption and carry out the investigations concerning this issue.

5.3 Internal Auditing Procedures

The standards of the internal auditing performance which were mentioned previously showed the internal auditor's responsibilities which indeed include a set of detailed procedures as it illustrated below (Abo-Sor`h,2010):

5.3.1 The Internal Auditor's Responsibilities

Preparation of the internal auditing task before starting the process of auditing, the internal auditor has to prepare in advance the tactical procedures so as to determine his priorities that are compatible with the company's goals and strategies. This step passes by two stages:

- The task: it is the authorization given by the higher management to the internal auditor to start auditing and this mission could be a written or a verbal document.

- Studying and planning the auditing mission: this stage is really important to have a successful auditing as the auditor needs to set a risks-based auditing plan to prioritize auditing and testing that suit the goals.

5.3.2 Internal Auditing Implementation

After auditing plan had been prepared taking into account the nature and the goals of the company and the

agreement on the tactical and strategic procedures of the internal auditing had been signed by the board of directors, higher management and the internal auditing department, the internal auditing passed by the following stages:

- First meeting: in this stage, a meeting is held between the team who is authorized to auditing and the principles in the department where auditing process will take place for the sake of field preparation.

- Auditing plan: auditing tasks were distributed to the members of the auditing team according to their qualifications and experience. The auditor can know more accurate details about his mission.

- Field work procedures: in this stage, the auditing process started after the auditing plan had been approved by the auditing manager. The auditing team applied the plan through conducting tests and comparisons in order to gather sufficient and appropriate evidences to achieve the auditing's goals, and to reveal any problems may happen . In this stage , the auditing team has to document his work by providing official documents that enhance and support the procedures , results and recommendations of auditing process . Additionally, these documents protected the auditor in cases he was accused of carelessness.

5.3.3 The Auditing Report

Announcing the auditing report is one of the significant aspects of auditing process. The report's function is to send the auditing results to the parties interested in the process of auditing. In fact, the report has the following important tasks :(Abd Rabo, 2010):

1) It summarizes auditing evidences.

2) It publishes and provides information: the report provides the company with a summary of the fields that need improvement. It is also used as a tool to evaluate performance.

5.4 Effectiveness of the Internal Auditing Procedures

The internal auditing profession is one of the services jobs that is organized and operated basically for managing or starting the auditing processes according to the professional standards of the internal auditing systems including the operational control and the applications of the automation data.

Factors that lead to the effectiveness of the internal auditing process are:

1- Identifying the internal auditing goals: the internal auditing effectiveness requires practical and clear goals that suit the company's goals in general. The internal auditor has to be aware of auditing assignment that he has to do and discuss them with the workers in different levels and the company' internal auditing management in the company. Therefore, there will be no contradiction in the responsibilities and auditing effectiveness will increase.

2- Auditing program: to have efficient internal auditing process, there should be an auditing program to ensure the competency and the effectiveness of the auditing process.

3- Implementation of auditing procedures by an efficient auditing team: the following procedures should be taken into account to implement the effective auditing procedures.

- Conducting a previous study before starting the auditing process. It is necessary to identify the factors that enhance the effectiveness of the auditing process. These factors include knowledge of the company's external environment, its nature of activity, organizational structure, jobs' description, budget examination, financial center and studying old internal auditing reports.

- Preparing a work program taking into account the ability to shed light on all the processes which provide the auditors with a frame work. Moreover, an investigation is done to evaluate the internal control system.

- Bookkeeping document: the file has to have permanent informative on for auditing process, statistics of the achieved work and a description of the internal auditing major points.

4- Preparing qualitative reports periodically to judge the workers in the company or the members of the auditing team and to follow the plans', recommendations' and suggestions' implementation.

5- Providing independence to the internal auditor based on the organizational situation and objectivity so as to do his work properly.

The goal of the auditing is to ensure the company's management's procedures and administrative control are insufficient and the internal auditors need to check if these procedures succeeded in achieving the company's goals (Rahahlah, 2005).

6. Previous Studies

The study of Najem(2013) aimed at identifying the significant role of the internal auditing and the institutional control's role in improving the performance. Additionally, the study aimed to describe comprehensively the role of the internal auditor in the institutional control structure. The sample of the study consisted of 33 accountants and auditors in the operating banks in the private sector in addition to the firms listed in the Iraqi stock market. Results showed that the internal auditor in the banks and the Iraqi financial institutions does not have an effective role in the institutional control. Results also revealed that the Iraq laws did not point to the institutional control especially in the laws of capital, investment and the Joint-stock companies as well as the criteria of accounting, auditing and others. The study recommended the necessity to have the laws and related regulations with the Iraqi companies to cope with internal systems and the institutional control practices and the necessity to have periodic evaluation of these companies to find out their commitment's degree of the governance principles.

Al-Abdali's study (2012) aimed at measuring the effect of applying the institutional governance in the internal auditing quality in the industrial companies listed in Kuwaiti stock market. The sample of the study which consisted of 114 financial managers, accounting department's heads, internal auditing managers and the workers in the internal auditing and accounting departments represented all the industrial companies listed in Kuwaiti Stock Exchange. Results showed that governance represented the appropriate procedures and practices which work according to strict rules and criterion that aims to ensure that there is no contradiction between the company's strategic goals and its management work in achieving these goals through motivating the management positively to act according to the acceptable ethics in the businesses field.

The study of Zreigat (2011) aimed to examine the effect of the institutional governance guide's regulations issued by the Jordanian Central Bank in improving the quality of the internal auditing in the Jordanian banks by relying on the influence of the components of this guide which are set by internal auditor's institute. Questionnaire was designed and distributed into the workers in the internal auditing management in the Jordanian banks regardless of their titles to reveal the effect of the governance guide in the internal auditing components. Results showed statistical significant role of the institutional governance guide in improving the internal auditing quality in the Jordanian banks represented by the increase of the commitment of the internal auditing ethics as well as the internal auditing criteria in addition to the development in the internal auditing professional performance and the improvement of the internal auditing methods and practices. Based on the results, the study recommended the necessity to adopt this guide.

The study of Fareda & Meftah (2010) aimed at illustrating the risks facing the banks in general and the credit risk in particular. The researchers reviewed related literature to the risk banking, internal auditing management's role in discovering these risks. Results showed that the auditor's awareness of the banking risks and their effect on the financial and management aspects helps in achieving the effectiveness in the auditing the banks accounts. Accordingly, the auditor can evaluate the levels of risks and indentify the extent to which the internal auditing systems are reliable in addition to the nature and the appropriate time of auditing.

Hildani &Algaban (2010) conducted a field study aimed to identify the internal auditing and its techniques to reveal its contribution in achieving the banking security in light of electronic accounting information system. A questionnaire was prepared and sent to ten banks. Data were collected and analyzed statistically. Results showed revealed the necessity to have an effective internal control keeps with the latest development in the field of information technology so at to facilitate its integration with management and financial information systems. Moreover, there is a need to keep updating and improving the internal control to achieve its goals within time, effort and cost standards and to achieve the maximum degree of competency, and effectiveness.

The study of Al-Sharairi (2009) aimed to identify the risks affecting the internal auditing in light of the information technology and define the international criteria of auditing. The researcher designed a questionnaire as a tool for collecting data and distributed it into 70 workers in the internal auditing units in the Jordanian banks. The descriptive and analytic approach and the correlation coefficient were used. Results showed that the internal auditors in the banks used the necessary policies and procedures in the internal auditing processes in light of information technology with a high degree in the stage before purchasing and the internal auditors are aware enough of the internal criteria of the internal and external auditing.

Al-momani's study (2009) aimed at identifying the role of the board of directors in the Jordanian companies in enhancing the effectiveness of auditing committees through investigating the extent to which the board of directors respond to the recommendations of the auditing committee in the following fields: external auditing, internal control system, and financial statements preparation. A questionnaire was prepared and sent to 65 companies' board of directors. Results showed that board of directors increase the effectiveness of the auditing

committees with moderate degree in all fields. Additionally, results revealed that 1% of the board directors lack experience in the financial and accounting affairs.

In his study (2005), Rahahla identified the degree of the internal auditing performance effectiveness in the public and private universities in Jordan through identifying to degree the internal auditing departments in the Jordanian universities are committed to the standards published by the internal auditors institute in its work. It also aimed to identify the effect of the employees' personality in their commitment to the implementation of these standards. Results concluded that the universities are committed to the internal auditing standards. Also the factors concerning the sample of the study have no effect in the performance effectiveness because of   homogeneity while the age of the university has an effect in the effectiveness of the internal auditing performance.

The study of KPMG (2014) aimed to explore the effect of the internal auditing job in the banks in UK. The analytic approach was adopted. The sample of the study consisted of a set of previous studies that addressed the issue of the internal auditing in the banks. Results showed the internal auditing positive effect in the commercial banks as it enhanced the Internal Control and therefore, it developed the activities. Furthermore, the internal auditing quality is improved as a result of its commitment to the international criteria. According to the study, it was clear that internal auditing suits the banks' performance.

The study of Badara &Saidin(2014) aimed at presenting previous empirical evidences concerning the internal auditing's risk management, internal control effectiveness, auditing experience and the internal and external auditors' corporation in Nigeria . A questionnaire was prepared and sent to a random sample consisted of 500 internal auditors, members of auditing committee and the local councils' representatives in Nigeria. Results showed that the previous evidences had positive and significant relationship with the internal auditing effectiveness. The study recommended that there is a need to conduct further studies about the effectiveness of the internal auditing.

The study of Al-Matari, Al-Swidi & Fadzil (2014) aimed at revealing the relationships between the internal auditing and the companies' performance through exploring the relationship between the internal auditing characteristics and the performance. The study adopted the analytic approach. Results revealed that the internal auditing department is considered a necessary element that helped in employing accounting systems in the companies for their significance at work evaluation. Additionally, results showed that the effectiveness of the internal auditing job developed the company's work regarding the preparation of financial reports with high quality because auditing is an important part in the institutional governance structure that supervised the control activities done by the board of directors and the auditing committees to ensure the reliability of the financial reports.

The study of Ondieki, Nancy M (2013) aimed at identifying the effect of the internal auditing in the commercial banks' financial performance from the perspective of the internal auditing standards, professional competency, internal control and independence of internal auditing in Kenya. The descriptive analytic approach was used. A questionnaire was developed and distributed to a sample consisted of the managers of the financial departments. Results showed positive relation between the commercial banks' financial performance and the internal auditing according to some dimensions. Moreover, results revealed that an increase in the use of the internal auditing standards and its independency in addition to existence of professional competency and internal auditing control cause a significant increase in the commercial banks' financial performance.

Kristo's study (2013) aimed to identify the effect of the internal auditing in protecting the banks' performance from complications and risks facing them. It also soak to find out if the auditors' perceptions towards the role of the internal auditing function add value to the banks and improve operations , thus help the organization to meet its goals. The study which was conducted in Albania used the descriptive analytic approach. A questionnaire was prepared and sent to the sample of the study. Results showed the necessity of the internal auditing in the Albanian banking.

The study of Owizy (2013) investigated the effect of the internal auditing activities in the Nigerian banks performance through identifying the effect of the internal auditing in the returns assets of banks. The study adopted the analytic approach. Results showed that internal auditing prevents any thefts and irregularities and it enhanced the commercial banks' internal auditing control in addition to evaluate the effectiveness of the banks' financial performance competency.

The study of the Shetwi; Ramadili; Chowdury & Sori (2011) explored the effect of the internal auditing function in the financial reports quality. The sample of the study compromised of all the Saudi companies listed in the Saudi stock market accepts the banks. The interview was used as an instrument for collecting data. Results showed that auditing function is a part of the institutional governance structure. Results also revealed lack of

statistical significant relation between the internal auditing function and the internal auditing and the quality of the financial reports attributed to some factors as insufficient procedures and legal practices of the institutional governance.

Salamh & authors' study (2011) aimed to highlight the importance of the internal auditing function in preventing fraud in the Jordanian banks and to propose some recommendations to facilitate the internal auditing function in preventing fraud. A questionnaire was developed and distributed to a sample consisted of executive and general managers from 15 Jordanian commercial banks. The descriptive approach was used. Results showed that the workers in the internal auditing departments in the Jordanian banks realized the efficient role of the internal auditing in preventing fraud. The study came with some recommendations as the necessity of training the internal auditors working in the banks about fraud and the internal auditing management should inform the senior management whenever if faces financial violations.

In their study (2011), Karagiorgos& Authors identified the factors that can improve the internal auditing performance in the Greek hotels and measured the internal auditing role in business success. Moreover, the study aimed to examine theoretically the importance of internal auditing. A questionnaire was distributed to a sample consisted of 85 hotels. Results revealed five standards that can improve the interaction between the internal auditing and the internal control; evaluation of internal auditing control, risk evaluation, control activities evaluation, assessing communication channels and control operations evaluation.

The study of Ntsiful (2011) analyzed the challenging facing the internal auditor in protecting his independence and objectivity through discussing the related challenges and the procedures to reduce these challenges. The study adopted the inductive, descriptive and analytic approaches. A questionnaire was prepared and sent to the workers at Malawi Bank. Results showed that independence and objectivity could be controlled to achieve real goals. Furthermore, results revealed the internal auditors' belief of the significance of the internal auditing standards in addition to their commitment to the local auditing standards. Also, results showed the auditors' perception of the challenges facing the auditors' objectivity and the independence.

In her study (2010), Rehana Fawazia compared the effect of different factors in the cooperation between the internal and external auditors in the foreign banks with the nationalized ones in Bangladesh. A questionnaire was prepared and sent to three foreign and nationalized banks each. The study adopted the descriptive approach. Results indicated that the co-operation between the internal and external auditors in the nationalized banks was better than that in the foreign banks.

The study of Koutoupis & Tsamis (2009) aimed to evaluate the effect of applying the internal auditing based risks in the internal auditing activities in the Greek banks in addition to the effect of the best practices in this field as Basel committee and COSO enterprise risk management (ERM). A questionnaire was prepared and distributed to a number of Greek banks. The study used the descriptive approach. Results showed that adopting risk based internal auditing improved and developed the internal auditing activities in the Greek banks.

In their study (2009), both C.Okafor & P.O Ibadin investigated the role of the internal auditing in evaluating the companies' performance in Nigeria. A questionnaire was distributed to 25 banks in Nigeria. Different statistical methods were used. Results showed that incentives given to the internal auditors increased the bank's performance effectiveness and the internal control system competency.

S.L Yee & Authors (2008) explored the managers' perceptions about the role and the effectiveness of the internal auditing in Singapore. Eighty three Singaporean managers who are internal auditing customers from 25 organizations (financial services, food services, oil companies, banks) were interviewed. Results revealed that most of the managers' attention was paid in the first degree to the financial and accounting issues followed by internal auditing profession.

6.1 Comment on the Previous Studies

The previous studies addressed the issue of the internal auditing, particularly, in the banks. Some the these studies discussed the role of the board of the directors in the effectiveness of the internal auditing while other studies discussed the role of the internal auditing committees in improving the competency of the internal auditing. The effectiveness of the internal auditing in the banks in the Jordanian universities was discussed as well.

It is worth mentioning here, that this study is different from those previous studies; it addressed the effectiveness of the internal auditing procedures in the Jordanian commercial banks through investigating different variables as the auditing program applied in the bank, the role of the board of the directors and the extent to which the banks adopted the program of auditing based risk.

7. Hypotheses of the Study

According to the content of theoretical framework and context of Jordanian commercial banks environment we developed one main hypothesis with four sub-hypothesis as follows:

Main hypothesis: the internal auditing procedures in the Jordanian commercial banks do not include the effectiveness of the internal auditing profession.

First sub-hypothesis: the auditing program does not include executive procedures achieve the effectiveness of the internal auditing in the Jordanian commercial banks.

Second sub-hypothesis: the board of directors' role does not include checking the effectiveness of the internal auditing procedures in information technology.

The following hypotheses were stemmed from the sub-hypotheses:

1) The role of the board of directors does not include checking the effectiveness of the procedures implemented by the manager of internal auditing.

2) The role of the board of directors does not include checking the effectiveness of the internal auditors' procedures of the information technology.

3) The role of the board of directors does not include checking the effectiveness of procedures concerning operation management.

Third sub-hypothesis: the internal auditing program does not include internal procedures based risks.

The following hypotheses were stemmed from the third sub-hypotheses:

1- The auditing program does not include factors that check the effectiveness of the auditing procedures in information technology.

2- The auditing program does not include risk registration system

3- The internal auditors do not prepare guidance principles for using evaluated tools of the risks.

Fourth sub-hypothesis: the internal auditing procedures do not include independence in implementing internal auditing tasks

8. Methodology

8.1 Approach of the Study

The study adopted the descriptive analytic approach to identify the effectiveness of the internal auditing procedures in the Jordanian commercial banks. The study adopted two resources for collecting data; secondary: the information that are available in the libraries and electronic databases and the primary resources as the questionnaire which was developed for the purpose of the study's goals.

8.2 Population & Sample of the Study

The population of the study consisted of 248 internal auditors in the commercial banks in Jordan while the sample of the study was 130 internal auditors. One hundred and twenty questionnaires which were retrieved out of 130 were valid for analysis. The study adopted the fifth Likert scale and the items were graded as follows: strongly agree (5) and strongly disagree (1). Additionally, the study adopted the following mean level for the respondents' answers: (Sekaran, 2003):

1-2.33	2.34-3.67	3.68-5
Low application degree	Moderate application degree	High application degree

8.3 Testing the Instrument's Reliability

The instrument's reliability was checked using Cronbach Alpha and because its value was higher than (-0.60) , it was considered statistically acceptable (Sekaran, 2003: 311) and the more the value is closer to 100% , the degree of the study's tool's reliability gets higher as it is illustrated in table 1.

Table 1. The tool's reliability coefficient and its dimensions

Study's tool and its dimensions	Reliability coefficient
Implementation procedures to ensure the internal auditing efficiency	75.87
Role of board of directors	70.56
Risk based auditing procedures	80.34
Independence of tasks implementation	68.09
Reliability	82.45

9. Analysis and Results

9.1 Demographic Data Analysis

Table 2. the demographic information of the sample summarized based on the valid responses

Variable	Statement	Number	Percentage%
First	Scientific Qualification		
	Diploma	1	.96
	Bachelor	95	91.34
	Master	6	5.77
	Doctorate	2	1.93
Second	Specialization		
	Accounting	98	94.22
	Finance and Bankin	3	2.9
	Business Administration	2	1.92
	Economy	1	.96
Third	Experience/ Years		
	Less than5 years	0	0
	5-10years	68	65.34
	10-15years	24	23.1
	More than 15 years	12	11.52
Fourth	Career Center		
	Prime audit team	74	71.15
	Senior Auditor	25	24.3
	auditor	3	2.9
	Auditor Assistant	2	1.92
Fifth	scientific certificates		
	ACPA	7	6.73
	JCPA	88	84.61
	CPA	8	7.7
	CFA	1	.96

9.2 Preliminary Results. Means, Standard Deviations, and Significance of All Items and Variables Are Presented in Table 3

Table 3. Means and standard deviations of the respondents' answers about the executive procedures that achieve the effectiveness of the internal auditing

N	Item	M	Std	Relevant significance	Level
1	Implementation procedures to ensure internal auditing efficiency	4.1827	.60763	1	High
2	Role of the board of directors	3.9087	.51087	3	High
3	Risk based auditing procedures	4.000	.60339	2	High
4	Implementation independency	4.000	.60339	2	High
	Total	4.0021			High

9.3 Testing the Study's Hypotheses

9.3.1 Testing the First Hypothesis

The first hypothesis: "The auditing program does not include a set of implementation procedures achieve the internal auditing effectiveness in the commercial banks was checked using T test. As it is illustrated in table (4), results showed that T value was higher than its tabulated value and therefore the second hypothesis and its sub-hypotheses were rejected.

Table 4. Results of T test of the first hypothesis and its sub-hypotheses from the respondents' perspective

Hypothesis	T	FD	Sig.	Result
The auditing program does not include a set of implementation procedures achieve the internal auditing effectiveness in the commercial banks	103	69.360	0.000	Rejection

The auditing program does not include a set of implementation procedures achieve the internal auditing effectiveness in the commercial banks

9.3.2 Testing the Second Hypothesis

The second hypothesis: "board of directors' role does not include checking the effectiveness of internal auditing procedures in the information technology", was checked using T test. As it is illustrated in table (5), results showed that T value was higher than its tabulated value and therefore the second hypothesis and its sub-hypotheses were rejected.

Table 5. Results of T test of the second hypothesis and its sub-hypotheses from the respondents' perspective

Hypothesis	T	Fd	Sig.	Result
The role of the board of directors does not include checking the effectiveness of the internal auditing manager's procedures	85.433	103	0.000	Rejection
The role of the board of directors does not include checking the effectiveness of procedures of the internal auditors.	67.986	103	0.000	Rejection
Role of the board of directors does not include checking the effectiveness of the operation management procedures	38.564	103	0.000	Rejection

9.3.3 Testing the Third Hypothesis

The second hypothesis: "internal auditing program does not include procedures of risk based auditing", was checked using T test. As it is illustrated in table (6), results showed that T value was higher than its tabulated value and therefore the second hypothesis and its sub-hypotheses were rejected.

Table 6. Results of T test of the third hypothesis and its sub-hypotheses from the respondents' perspective

Hypothesis	T	FD	Sig.	Result
The auditing program does not include the factors that achieve the effectiveness of the internal auditing procedures in the information technology.	62.993	103	0.000	Rejection
The auditing program does not include risk register system	62.693	103	0.000	Rejection
The internal auditors do not prepare guidance principles for using risk evaluation tools.	53.123	103	0.000	Rejection

9.3.4 Testing the Fourth Hypothesis

The fourth hypothesis: "internal auditing procedures do not have independency in internal auditing tasks implementation", was checked using T test. As it is illustrated in table (7), results showed that T value was higher than its tabulated value and therefore the second hypothesis and its sub-hypotheses were rejected.

Table 7. Results of T test of the fourth hypothesis and its sub-hypotheses from the respondents' perspective

Hypothesis	T	fD	Sig.	Result
In implementing the internal auditing, procedures of internal auditing do not have independency.	70.477	103	0.000	Rejection

10. Discussion & Recommendations

10.1 Discussion

The banks participated in the auditing program that includes a set of executive procedures achieved the internal auditing efficiently and this showed the banks' interest in providing such procedures; announcing them, clarifying them as well regardless the banks' possession of internal auditors who understand well these procedures and be commitment to them.

Although of the clarity and distinguished role which the board of directors practice in achieving the procedures' effectiveness implemented by the auditing managers and the effective procedures followed by the internal auditing employees, this role lacks shortage in checking procedures of operation management. This result may due to the board of directors' belief that the checking the managers' and employees' procedures affect positively operation management and its procedures.

Auditing programs in the banks include the factors that achieve the effectiveness of the auditing procedures as identifying the institution's data, application systems and the technology operation.

The banks' auditing programs include a risk register system that documents information security system and the possible financial impact of the activities and businesses but it cannot identify and document the competencies of the internal controls.

The auditors in the banks keen to provide guidance principles concerning using the risks evaluation tools that contribute to the effectiveness of the internal auditing process such as identifying the time span to the processes of risks processes in every department and for every activity in addition to providing guidance, instructions and requirements of supporting the reports.

The internal auditing procedures are characterized by independent implementation of the internal auditing tasks which indicated the banks' management belief in this dependency for its benefits as well as the legal and legislative aspects in the banks work that assured the internal auditing tasks implementation's independence.

10.2 Recommendations

Recommendations for Jordanian commercial banks management include Enhancing the current procedures followed in implementing the internal auditing for its effectiveness. The board of directors needs to pay much attention to the verification of the effectiveness of the procedures followed in operation management. Working on clarifying the internal controls and its required levels to ensure the success of the auditing program and accordingly to achieve the effectiveness of the internal auditing procedures. There is a necessity to provide guidance principles that cover other aspect rather than the use of the risks evaluation tools as identifying the maximum time span which is needed for the auditing based risks course. Encouraging the scholars to study other factors affect the effectiveness of the internal auditing. Regardless the auditors' interest in providing guidance Principles to use tools for evaluating the risks, there is still a necessity to provide other guidance principles covering other aspects as the determination of the time length needed for risk –based auditing course.

References

Abd-Rabo, R. (2010). Internal auditing, Dar Janadria for publishing and distribution, Amman.

Abdsamad, O. A. (2009). Role of internal auditing in the companies' governance application: field study, unpublished thesis, Media University, Algeria.

Abo-sora, A. A. (2010). Integration between internal auditing and external auditing, unpublished thesis, Algeria University, Algeria.

Alabdali, M. (2012). Effect of institutional governance application in the quality of internal auditing in the industrial companies listed in the stock market at Kuwait, Unpublished Thesis, and Middle East University, Jordan.

Al-Matari, E., Al-Swidi, A., & Fadzil, F. (2014). The Effect of the Internal Auditing and Firm Performance: A Proposed Research Framework. *Othman Yeop Abdullah Graduate School of Business, 4*(1), 34-40.

Al-Shetwi, M., Ramadili, S., Chowdury, T., & Sori, Z. (2011). Impact of internal auditing function (IAF) on financial reporting quality (FRQ): Evidence from Saudi Arabia. *African Journal of Business Management, 5*(27), 11189-11198.

Andreas, G. K., & Anastasios, T. (2009). Risk based internal auditing within Greek banks: a case study approach. *Journal of Management Gov, 13*, 101-130. https://doi.org/10.1007/s10997-008-9072-7

Asharari, J. (2009). Policies and procedures of internal auditing in light of the information technology in the Jordanian banks, Tishreen University. *Journal for Research and Scientific Studies, 31*(1).

Badara, M., & Saidin, S. (2014). Empirical Evidence of Antecedents of Internal Auditing Effectiveness from Nigerian Perspective. *Middle-East Journal of Scientific Research, 19*(4), 460-471.

C.Okafor, & Ibadin, P. O. (2009). The Imperatives of internal Auditing in Nigeria Banks. *Global Journal of science, 8*(2).

Casandra, S. L. Y. (2008). Perceptions of Singaporean Internal Auditing Customers Regarding the Role and Effectiveness of Internal Auditing. *Asian Journal of Business and Accounting, 1*(2), 147-174.

Hildani, A., &Algaban, T. (2010). Role of the internal auditing in light of the accounting information system: application study. *Journal of Human Sciences, 45*.

KPMG. (2014). The Internal Auditing Function in Banks: Comparison of the BIS, FRB and IIA (UK) papers.

Kristo, E. (2013). Survey on Bank Internal Auditing Function. *European Scientific Journal, 9*(13), 1857-7881.

Ma`rfi, F., & Salih, M. (2010). Role of the internal auditing in banking risk management, 8th national meeting about auditing profession in Algeria: status and Hopes, skikda University, Algeria.

Misleh, N. (2007). Effect of using the computer in the internal auditing systems in the banks operating in Gaza sector, unpublished thesis, Islamic University, Gaza.

Momani, A. (2009). Role of the boards of directors in the Jordanian companies in enhancing the effectiveness of the auditing committees: field study. *Damasucs University journal of legal and economic sciences, 25*(1), 455-484.

Njem, B. (2013). Integrated role of the internal auditing in the effectiveness of the institutional control (an exploration study). *Journal of Gulf Economist, 24,* 6-49.

Nono, K. M. (2009). Extent to which the common internal auditing standards in the Islamic banks are applied in Gaza sector, unpublished thesis, Islamic University.

Ondieki, N. M. (2013). Effect of Internal Auditing on Financial Performance of Commercial Banks in Kenya. College of Humanities and Social Sciences (CHSS). http://erepository.uonbi.ac.ke:8080/xmlui/handle/123456789/59308

Owizy, S. (2013). The impact of internal auditing activities on the performance of banks in Nigeria.

Rahahlah, M. (2005). Effectiveness of internal auditing departments in the Jordanian universities in light of the internal auditing standards. *Jordan Journal of Business Administration, 1*(1).

Rashedi, E. (2010). Evaluating effectiveness of internal auditing systems in the commercial banks in Kuwait, Unpublished thesis, Middle East University for higher studies, Amman.

Rehana, F. (2010). Co-operation between internal and external Auditors: A comparative study on nationalized and forging banks in Bangladesh. *World Journal of management, 2*(3), 22-35.

Salamh, (2011). Alternative Internal Auditing Structures and Perceived Effectiveness of Internal Auditing in Fraud Prevention: Evidence from Jordanian Banking Industry. *Canadian social science, 7*(3), 40-50.

Samue, N. (2011). The Independence and Objectivity of the internal Auditors in the of his/her Professional responsibilities: Evidence from the Reserve Bank of MALAWI. Unpublished Master Thesis, Karlstad University, Sweden.

Theofanis, K. (2011). Evaluation of the Effectiveness of Internal Auditing in Greek Hotel Business. *International journal of economic science and applied research, 4*(1), 19-34

Thneibat, A. (2006). Auditing in light of international auditing standards, systems and local laws: theory & application.

Uma, S. (2003). Research Methods for Business: A Skill Building Approach. 7th Edition, John Wiley and Sons, New York.

Zreigat, Q. (2011). Effect of institutional governance guide published by the Jordanian Central Bank to improve the internal auditing quality in the Jordanian banks. *The Jordan Journal of Business Administration, 7*(2), 209-227.

Profitability on Albanian Supplementary Social Insurance Scheme: "Academic Titles" Case

Gentiana Sharku

[1]Department of Finance, Faculty of Economy, University of Tirana, Albania

Correspondence: Gentiana Sharku, Department of Finance, Faculty of Economy, University of Tirana, Albania. E-mail: gentasharku@yahoo.com

Abstract

The social insurance system in Albania is composed of three basic schemes: (i) mandatory scheme functioning on the "pay as you go" basis, (ii) voluntary scheme, protecting individuals who for specific reasons are not involved in the mandatory plan, and (iii) supplementary scheme, covering a specific category of individuals, who perform certain state functions and/or have academic titles. Regardless the classification, the supplementary scheme is a mandatory one. During 2015, Albanian government has revised the contribution rates for the supplementary scheme, as the scheme is suffering a deficit. The aim of this paper is to calculate the average rate of return on the contributions invested in this scheme, referring to the category of individuals having the "Professor" title. The calculations will be based on some actuarial assumptions. The data used in this paper will be of secondary type, based on the official statistics published by respective institutions.

1. Introduction

The Supplementary state pension plan scheme has started to work since 1996. The Law no. 8097, dated 21.03.1996 "On supplementary state pension for the individuals with state and constitutional functions" ensured with special treatment a special category of individuals, who were performing certain state functions. The supplementary state pension for the professors and academics has been established by the Law no. 10 139, dated 15.05.2009, "On supplementary stated pension for the workers of universities, high schools, Albanology Studding Center, Science Academy and all other public researching Institutions in the Republic of Albania, holding science titles". The aim of this law was to provide the professor category with additional incomes during their retirement period. In 2015, the Albanian Parliament approved the Law no. 108/2015 with some additions and changes to the Law no. 10 139. One of the most important changes was the increase of the contribution rate from 3.5 % to 5 % for the Professors working in public institutions. As the contributions in the supplementary scheme have been considered as an investment for the retirement period, the aim of this paper is to calculate the rate of return earned in this retirement plan and to point out the impact of such changes in the law. The paper is focused only on the workers of public universities. The second section presents a short overview of the law regarding the supplementary insurance scheme and some statistics reported from respective official authorities. After a short literature review, methodology and the data set are described in the third section of the paper. The fourth section contains the results from the calculations based on four scenarios. Conclusions have been presented in the last section.

2. Supplementary Insurance Scheme in Albania

The supplementary state pensions plan is managed from the Social Insurance Institute, toward a fee paid from the Council of Ministers. The supplementary state benefits are financed from the state budget and the supplementary contributions.

In order to benefit the supplementary state pension, the professors have to fulfill the criteria for receiving the retirement pension based on the Law No. 7703 "On social insurance in the Republic of Albania". Therefore all the retired persons, who hold an academic title, have the right to require, under their own request, the supplementary benefits. They have to submit the required documents to the local agencies of the Social Insurance Institute.

According to the Law no. 10 139, the supplementary pension is calculated as 1.3 percent of the referring salary for each annual period of exercising the "Professor" title, and 1.1 percent of referring salary for each annual period of exercising the "Professor Assistant" title. The law has defined the maximum value and the minimum value of the retirement pension. The Law no. 10 139 has made a distinction between professor working in public institutions and the professors working in non-public institutions. The contribution rate for the workers of public institutions was 3.5 percent of the monthly gross salary. While the contribution rate for the workers in non-public institutions was 7 percent.

Actually the supplementary state pension scheme is running a deficit, as the overall social insurance scheme. At the end of 2015, the benefits paid to the individuals of "Professor" category were 109 million ALL, of which 73 million were financed from state budget. This means that only 30 percent of total benefits were financed from contributions. The number of beneficiaries has been continuously increased as the Table 1 shows.

Table 1. Beneficiaries number of the "Professor" category

Year	2012	2013	2014	2015
Beneficiaries number	29.448	31.175	31.478	31.867

Source: Social Insurance Institute

In the frame of the social insurance reforms undertaken by the government, the law no. 10139 has been changed by the Law no. 108/2015. There were several changes regarding the maximum and minimum values of benefits and the procedures to be executed. But the most important change has been the increase of the contribution rate from 3,5% to 5% for professors working in public sector, without changing the benefit rate. The aim of the reforms was to improve the financial state of the social insurance system, by reducing the budget financing and enforcing the contributive principle on which the social insurance scheme is based.

3. Literature Review

There are various supplementary social insurance schemes all over the world. As the economic development of the countries is different, their social insurance schemes are different. Although in the most part of the world, the social insurance system is based on the "pay as you go" model. Regarding the supplementary scheme, they vary across the countries. There are few studies that quantify the extent of redistribution in collective funded pension schemes and calculate the rate of return on these schemes. The most part of the studies are focused on the determinants of pension coverage and pension scheme participation. Holzmann et al. (1999) by using e regression analysis found that individuals with low incomes, low education levels and self-employed are less likely to contribute to pension plans. Barrientos (1998a) found that age, employment history, firm size, occupational indicators, income levels and location are all significant in determining the probability of an individual participating in a pension plan. Bonenkampa (2007) has investigated the distribution in the second pillar of the Dutch pension system were the collective pension schemes in the second pillar are supplementary to the basic first-pillar pension provision and are characterized by funding, mandatory participation, forced annuitization and uniform pricing. Regarding the profitability of supplementary retirement schemes there are very few studies. Lüthen (2014) has examined the evolution of the profitability of Dutch pension contributions against the background of the reform for cohorts 1935‑1945. He measured the profitability with the internal rate of return (IRR) and concluded that for men the IRR declines from 2.4% to 1.2% and for women from 5.2% to 3.7%. Internal rate of returns is used as an indicator of the profitability in this article.

There is no previous study regarding the profitability provided by the supplementary social insurance scheme in Albania. No rate of return has been calculated. Therefore, as the supplementary social contributions are considered as an investment for the future of a special category of people, the results from the calculations will be compared with the potential investment alternatives in Albania.

4. Research Methodology and Data Set

In order to measure the profitability of the supplementary social insurance plan, this paper uses one of the methods of capital budgeting, called the internal rate of return. It determines the rate of return which equates the present value of the cash inflows and the present value of the cash outflows of the investment. This particular rate of return is called the internal rate of return because it is a rate that is unique (internal) to that investment. In effect, the internal rate of return method sets up the following equation:

Present Cost = Present value of the Cash Inflows

In the contexts of the supplementary social insurance plan, the profitability of pension contributions may be measured with the internal rate of return - IRR. This method computes an interest rate paid on contributions, which is sufficient enough to pay out the stream of pensions received by an individual. The method assigns an

interest rate to contributions and pensions equating both sides of net present values. Here it yields an interest rate i, that equalizes the future value of contributions C and the present value of the excepted value of pensions P in the year of retirement R.

$$\sum_{t=0}^{R-1} C \times (1+i)^t = \sum_{t=R}^{L} P \times 1/(1+i)^t$$

The left hand of Equation contains the future value of contributions from the year (0) the individual starts the contributions (C) until the retirement year R. The right-hand side of equation depicts the present value of the pensions (P) from R until the year the individual is expecting to live (L).

The model assumes that the following factors affect the internal rate of return:

Life expectancy

Individuals today live longer that any time in history. The life expectancy has been continuously increased: in 2005 it has been 77,3 years (72,1) for women (men), while after ten years, in 2015, the life expectancy has been 79,7 years (76,1) for women (men). The calculations in the paper, consider on average a life expectancy of 80 years old, taking in consideration the life quality of the individuals of "Professor" category and making no sex distinction.

Retirement age

When Germany, under Chancellor Otto von Bismarck, established the first formal retirement plan in 1880, age 65 was set as the national retirement age. With a life expectancy of 45 years at that time, very few Germans actually lived long enough to collect anything. It is perhaps surprising that more than a century later, age 65 remains synonymous with retirement. At the beginning of the twentieth century in the United States, life expectancy was about 50 years, with people typically worked until they died, with few living long enough to retire. As a consequence, the notion of "retirement" was foreign to most citizens (Skipper, 2000).

During last years as part of the retirement reforms undertaken by the Albanian government, the retirement age is increased and it is going to increase in the future. The calculations in the paper consider a retirement age of 68 years old, according to the Law "On high education".

Contributions amount

The contributions in the supplementary social insurance plan depend on the contributor's salary and the contribution rate determined by the law.

Contribution timing

The model considers the beginning of contribution at age 38 years old - fifteen years after finishing the graduated studies. According to the law, the doctorial studies last five years and the "Professor Assistant" title can be provided at least after five years after receiving the "Doctor" grade. Also, after 15 years of work, there are no more salary supplements and the salary remains constant at any age in the future. The model assumes that the "Professor" title is received five years after receiving the "Professor Assistant" title - the minimum period of time required by the Law "On high education".

Benefits amount

The benefits amount from the supplementary social insurance plan depends on the salary received as "Professor Assistant" and "Professor", their respective years, and the benefit rate determined by the Law.

Benefits timing

Benefits timing is determined by two first assumptions. As the Professor is intended to retire at 68 years old, and it is foreseen to live on average until 80 years old, the benefits are calculated to be received for a time period of 12 years.

Accumulation period

Contributions amounts and benefits amounts are both monthly paid/received. For calculations purpose, they are converted in annual amounts and accumulation period is considered to be one year.

5. Results

Based on the assumptions made in Section 3, the internal rate of return on supplementary social insurance plan is calculated hypothesizing four scenarios, as follows:

5.1 First Scenario

The calculation of internal rate of return is based on the present provisions of the Law no. 10 139 taking into

consideration the new contribution rate of 5%. The calculations are performed based on the following assumptions:

The age of benefiting the "Professor Assistant" title is 38 years old, i.e. the individual will start the contributions in the supplementary plan at this age.

The age of benefiting the "Professor" title is 43 years old, i.e. the individual will start the contributions in the supplementary plan at this age.

The individual is retiring at 68 years old.

The individual is expected to live until 80 years old.

The actual gross salary of "Professor Assistant" is 101.050 ALL and is going to be constant. The annual contributions from 38 years old until 43 years old are calculated as follows:

$$101.050 \, ALL \times 0,05 \times 12 = 60.630 \, ALL$$

The actual gross salary of "Professor" is 116.050 ALL and is assumed to be constant in the future. The annual contributions from 43 years old until 68 years old are calculated as follows:

$$116.100 \, ALL \times 0,05 \times 12 = 69.660 \, ALL$$

The annual benefits from 68 years old to 80 years old are calculated as follows:

$$101.050 \, ALL \times 0,011 \times 5 \times 12 + 116.100 \, ALL \times 0,013 \times 25 = 519.483 \, ALL$$

The Figure 1 shows the estimated cash flow.

Figure 1. Estimated cash flow

The internal rate of return applied to the cash flow shown in the Figure 1 is calculated to be 5,14%. Today, it's seemed to be a good rate of return from an investment, taking into consideration that the interest rates of safe investments have been fallen down to 1,33% (Treasury bills), while the rate of return on risky investments, such as Investments Funds is around 5,5%.   .

5.2 Second Scenario

Analysis The calculation of internal rate of return is based on the provisions of the Law no. 10 139, before the changes of 2015, taking into consideration the contribution rate of 3.5%. The assumptions regarding the contributions timing, the benefits timing, the benefits amounts are the same, except the contribution amounts that are calculated as follows:

The annual contributions from 38 years old until 43 years old are calculated as follows:

$$101.050 \, ALL \times 0,035 \times 12 = 42.441 \, ALL$$

The annual contributions from 43 years old until 68 years old are calculated as follows:

$$116.100 \, ALL \times 0,035 \times 12 = 48.762 \, ALL$$

The Figure 2 shows the estimated cash flow.
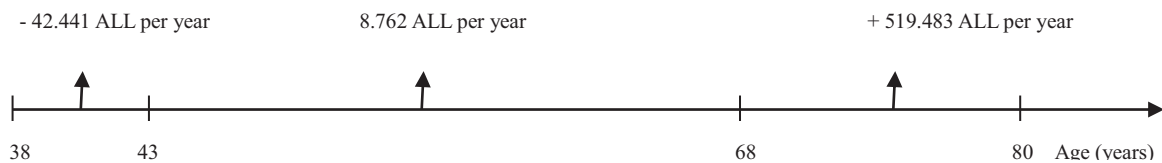
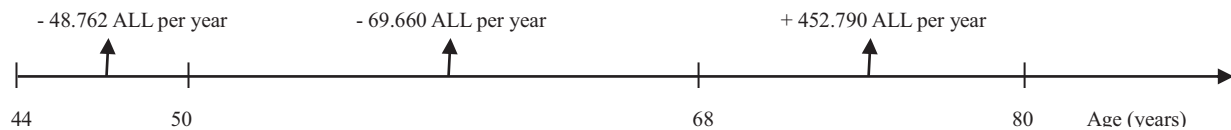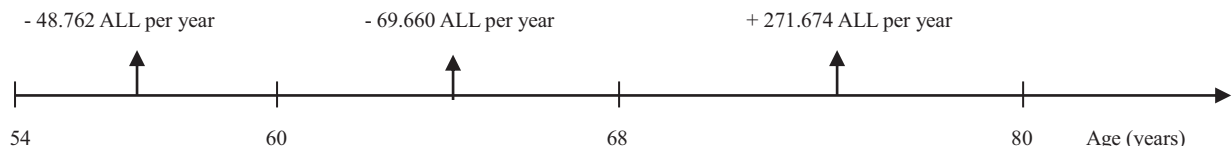

Figure 2. Estimated cash flow

The internal rate of return applied to the cash flow shown in the Figure 2 is calculated to be 6,71%. The increase of the contribution rate from 3,5% to 5% has decreased the internal rate from supplementary insurance plan from 6,71% to 5,12%.

5.3 Third Scenario

This scenario takes in consideration the possibility of indexing the salary with the inflation rate. As result, the contribution and the benefits amounts will be changed (increased) as result of indexing both of them with the actual salary. The calculations regarding the timing of benefits and contributions remain the same, but the amounts of contributions and benefits are going to change year by year. If we assume an inflation rate of 1%, the salary of "Professor Assistant" will increase from 101.050 ALL to 151.954 ALL after 42 years and the salary of "Professor" will increase from 116.100 ALL to 174.586 ALL after 42 years. The first annual contribution amount will be 60.630 ALL, but the last annual contribution amount will be 92.962 ALL. While the first annual benefit amount will be 700.185 ALL (at age 69) and the last benefit amount will be 781.174 ALL (at age 80).

The internal rate of return calculated according to the above mention assumptions, resulted to be 6.19%. If the inflation rate will be considered higher, the rate of return will be even higher.

5.4 Fourth Scenario

As mentioned in the Section 1, the Law no. 10 139, "On supplementary stated pension for the workers of universities, high schools, Albanology Studding Center, Science Academy and all other public researching Institutions in the Republic of Albania, holding science titles" has been approved in 2009 and the calculations of the contributions have started since 2010. Therefore the major part of the present professors in public universities have a shorter period of contributions. This scenario takes into consideration the professors with a present age of 50 years old and 60 years old. Considering the fact that the salary during last six years have been little changed or has not changed at all, the calculations assume a constant salary of 116.100 ALL. Regarding the contributions amount, for the first six years they are calculated based on a rate of 3,5% and for the remaining period they are calculated based on a rate of 5%. Also the calculations assume that the contributions are made under the status of "Professor" title.

Figure 3 shows the estimated contributions and benefits regarding the 50-years-old Professor in 2016.

Figure 3. Estimated cash flow for the 50-years-old professor

The internal rate of return applied to the cash flow shown in the Figure 3 is calculated to be 6,62%.

Figure 4 shows the estimated contributions and benefits regarding the 60-years-old Professor in 2016.

Figure 4. Estimated cash flow for the 60-years-old professor

The internal rate of return applied to the cash flow shown in the Figure 4 is calculated to be 10,08%. Due to the shorter period of contributions, the rate of return on the supplementary insurance plan is the highest among the assumed scenarios.

6. Discussion

The supplementary insurance scheme is running in deficit, as the other schemes of the social insurance system. The governments have undertaken several reforms to release the state bur-den. In the end of 2015, Law no. 10 139, "On supplementary stated pension for the workers of universities" was changed by increasing the contribution rate from 3,5% to 5%. With no doubt, due to the contributions' rate increase, the profitability on this plan has been de-creased. According to the calculations performed in this paper, the rate of return is supposed to be decreased from 6,71% to 5,14%. In nowadays, when the interest rates are continually falling down, 5,14% is still considered as a high rate. But there is a concern about the possible future interventions in the law. The aim of the Law no. 10139 is to reward the individuals of "Professor" category, with some additional incomes during

retirement. "Is it still the aim?" or "Is it going to be used as a mean to pay out the social insurance budget deficit?" If the second question is true, than firstly the purpose of the Law has to change.

References

Barrientos, A., (1998a). Pension Reform, Personal Pensions and Gender Differences in Pension Coverage. *World Development, 26*(1), 125-137. https://doi.org/10.1016/S0305-750X(97)10009-2

Black, K., & Skipper, H. (2000). *Life and health insurance*. Prentice Hall.

Bonenkamp, J. (2007). Measuring lifetime distribution in Ditch occupational pensions. *CPB Discission paper, 81.*

Boskin, M. J. (1977). *Social Security and Retirement Decisions*. *Economic Inquiry, 15*(1), 1-25. https://doi.org/10.1111/j.1465-7295.1977.tb00446.x

Boskin, M. J., & Hurd, M. D. (1978). The Effect of Social Security on Early Retirement. *Journal of Public Economics, 10*(3), 361-377. https://doi.org/10.1016/0047-2727(78)90052-X

Freiden, A., Dean, L., & Ronald, H. (1976). Internal Rates of Return to Retired Worker-Only Beneficiaries under Social Security, 1967-1970. *Studies in Income Distribution, 5,* U. S. Department of Health, Education, and Welfare.

Government of Republic of Albania. (2009). On supplementary stated pension for the workers of universities, high schools, Albania Studding Center, Science Academy and all other public researching Institutions in the Republic of Albania, holding science titles. Law No. 10 139.

Government of Republic of Albania. (2015). On some extensions and changes of the law no. 10139, Law no. 108/2015.

Government of Republic of Albania. (1993). On social insurance in Republic of Albania, Law No. 7703.

Government of Republic of Albania. (2015). On high education and science research in high education institutions in the Republic of Albania, Law No. 80/2015.

Government of Republic of Albania. (1996). On supplementary state pension for the individuals with state and constitutional functions, Law No. 8097.

Holzmann, J. (1999). Social protection as social risk management: conceptual underpinnings for the social protection sector strategy paper.

Leimer, D. R. (1978). Projected Rates of Return to Future Social Security Retirees Under Alternative Benefit Structures. In U. S. Department of Health, Education, and Welfare, Policy Analysis with Social Security Research Files, 235-268.

Luthen, H. (2014). Rates of return and early retirement disincentives: evidence from a German pension reform. Discussion paper. https://doi.org/10.2139/ssrn.2456128

Official webpage of National Statistical Institute of Albania: www.instat.gov.al

Official webpage of Social Insurance Institute of Albania: www.issh.gov.al

The Relationship between Pricing and Consumers Switching Costs: Comparisons between the Myopic and Perfect-foresight Equilibria

Omar A. Abdelrahman[1]

[1]Faculty of Administrative and Financial Sciences, Arab American University, West bank, Palestine

Correspondence: Omar A. Abdelrahman, Faculty of Administrative and Financial Sciences, Arab American University, Jenin, West bank, Palestine. E-mail: omar.rahman@aauj.edu

Abstract

In many markets, consumers face costs of switching to a competitor's brand that is ex ante undifferentiated even when the two firms' brands are functionally identical. This study examines the relationship between pricing and consumers witching costs or "brand loyalty". Moreover, it suggests that in the presence of switching costs, firms will charge lower prices in the first period to gain market share that will be valuable to them in the future and therefore charge higher prices later utilizing the market shares they have gained in the first period. This will give firms a degree of monopoly power over their existing customers, leading to higher prices and profits in the future. This will happen if firms have perfect foresight, and it may lead to either higher or lower equilibrium profits than if firms behave myopically.

Keywords: switching costs, duopoly, myopic, perfect-foresight

1. Introduction

Switching costs refer to the notion of the hidden costs a consumer is faced when switching from one product to another in the market place. Switching costs are present every time an economic agent change his supplier. As such ex-ante homogeneous products become ex-post heterogeneous. The theoretical assumption about switching costs is that once a consumer purchases a product he is locked-in it. Switching costs are developed by companies in order to establish consumer's lock in (Klemperer, 1987a). Klemperer (1987a) and Nilssen (1992) argued that there are two main types of switching costs: transactions costs, learning costs.

Transaction costs are costs associated with each switch a consumer makes between identical products or services. Learning costs are costs that are associated with how to use a new product or service incurred when a consumer switch to a new supplier. While Klemperer calls the above mentioned costs "real social costs", Nilssen (1992) argues that an increase in transaction costs increases the price offered to loyal customers.

Consumer's switching costs have important strategic implications for firms that compete aggressively to gain market share before consumers attach themselves to suppliers. Switching costs may influence consumers' behaviors by increasing loyalty and making it difficult for these customers to switch, on one hand. On the other hand, reducing switching costs for potential customers may make it easier to acquire new customers. Moreover, switching costs can create a barrier to entry for new supplying firms (Klemperer, 1987a).

The purpose of this paper is to use a simple version of two-period model of Bertrand–type price competition among firms in order to show that in the presence of switching costs (or "brand loyalty"), firms will charge lower prices in the first period to gain market share and higher prices in the future utilizing the market share gained in the first period. This will happen if firms have perfect foresight, and it may lead to either higher or lower equilibrium profits than if firms behave myopically. This paper is an attempt to visit the traditional theoretical literature that studied the impact of consumer switching costs on price competition.

This study examines the relationship between pricing and consumers switching costs or brand loyalty. Moreover, it suggests that in the presence of switching costs, firms will charge lower prices in the first period to gain market share that will be valuable to them in the future and therefore charge higher prices later utilizing the market shares they have gained in the first period.

2. Overview of Literature

The basic intuition of competition with switching costs was introduced by Klemperer (1987a) by employing a two-period Bertrand–type price competition model to show that firms compete aggressively in the early stages of the market development to gain market share that will be valuable to them in the second period (the mature market). Klemperer (1987b) examined a two – period differentiated product duopoly in which customers are locked in by switching costs they face in the second period which resulted in higher prices in both periods. Klemperer's (1978b) model showed that the existence of switching costs will lead to market segmentation resulting in an outcome similar to the collusive solution outcome; therefore, firms compete aggressively in the first period to attract buyers whom they can later exploit.

Klemperer (1987c) examined the influence of switching costs on existing firm's pricing behavior in the presence of high or low switching costs. Ferrell and Shapiro (1988) found that equilibrium prices tend to be higher in markets with switching costs than markets without them. They also argued that switching costs give some monopoly power to suppliers over their existing customers by charging price above competitors by an amount equal to the buyer's switching costs. Thus switching costs may weaken competition among existing firms and enhance monopoly power.

Beggs and Klemperer (1992) used an infinite –horizon model of two differentiated product firms facing existing and new customers. They found that even though prices are higher than in markets without switching costs which are large enough to prevent customers from switching among products. Padilla (1995) analyzed in an infinite-horizon model of duopolistic competition with switching costs and showed that the sustainability of collusion is more difficult to achieve in the presence of switching costs. To (1996) used an infinite horizon model of overlapping generation model in the presence of switching costs and argues that charging higher prices by firms with high locked- in customers will result in a lower market share in the future leading to lower prices. In summary, this theoretical work shows that switching costs may either raise or lower prices although the evidence leans toward less competition.

Because it is difficult in most contexts to measure switching costs, limited empirical results are available. There is a small amount of empirical research that that supports the positive correlation between pricing and switching costs. Sharp (1997) used data on bank retail deposit-interest rates and finds that switching costs have a large influence on the bank retail deposit- interest rates. Stango (2002) presented a dynamic model of price competition to explain the emphasis that credit card issuers place on building market shares. Credit card issuers charge lower rates in the first period and higher rates in the second period utilizing the market shares they have gained in the first period. Kim, Klinger and Vale (2003) used an empirical model in the banking industry in the presence of switching costs. They found that switching costs are substantial in the banking industry. They also found about one third of the average bank's market share come from bank-borrower's' relationship. Credit card issuing banks face a trade-off between offering low introductory rates in the first period (the primary market) to attract consumers and lock them in and charge high rates in the second period to extract extraordinary profits (rents) from its already locked–in customers.

More recent research on switching costs challenged Klemperer's conventional wisdom of positive correlation between equilibrium prices and switching costs. Rather than focusing on a two-period price competition model, new researchers employ an infinite-horizon model related to real-world markets in which trading does not end at some period of time. Dube, Hitsch and Rossi (2006) found that equilibrium prices are lower in markets with switching costs than without switching costs. . This is the case where credit card issuers are acting with perfect foresight. The most recent research work in switching costs was introduced by Viard, 2007.

He argued that switching costs make markets less competitive. In his empirical study, Viard found that firms have an incentive to utilize their market and charge higher prices rather than capturing more consumers to lock in. Doganoglu (2010) analyzed a dynamic duopoly with an infinite horizon and finds that in the presence of low switching costs, the prices in the steady state are lower than if these costs are absent.

In the presence of low switching costs, competition can be fiercer. Rhodes (2011) introduced a theoretical model of dynamic competition and showed that switching tended to increase prices in the short-run. However, switching costs long run effect on prices is ambiguous. Somaini and Einav (2012) found that switching costs could make markets either more or less competitive. They concluded that Markets with patient consumers and inpatient firms will produce anti-competitive effects.

Carbrel (2012) argued that switching costs make competitive markets where the sellers' discount factor is very high) even more competitive. However, if markets are not very competitive in the first place, then switching costs make them even less competitive. Pearcy (2015) showed that switching costs, and some other factors such

as the number of firms determine whether firms offer low or high prices. He also showed that number of firms in the industry determines whether switching costs are pro- or anti-competitive. Switching costs tend to facilitate lower (higher) equilibrium prices when switching costs are small (large).

3. The Model

This model consisted of a single industry within a country consisting of two duopolists selling to domestic consumers. Consider two firms "A and B" producing functionally identical products. They are competing in two different markets: a first-period "primary market", and a second-period "mature market". The primary market is the first level of competition between firms to capture market share that will be valuable to them in the second period (the mature market). Because market share is valuable to these firms in the future, they compete more aggressively than they otherwise would to capture the highest market share possible. The mature market (the second market) is the second level of competition where firms compete for each other's existing customers. Firms will choose their strategic variables (P_1, P_2) to maximize their total discounted future profits.

For example, they may choose to offer lower prices in the first period to attract consumers, on one hand. On the other hand, firms also recognize that their second-period profits depend on their first-period sales and therefore they have an incentive to invest in their market shares. Since demand is symmetric between the two banks, it is sufficient to analyze the model from the viewpoint of one of the firms. In the following, I analyze it from the viewpoint of firm A.

Firm A's first-period (primary market) and second-period (mature market) profits functions are

$$\pi_{1A}(P_{1A}, P_{1B}) = (P_{1A} - C)S_{1A}(P_{1A},P_{1B}) - F \tag{1}$$

$$\pi_{2A}(P_{2A},P_{2B},P_{1A},P_{1B}) = (P_{2A} - C) \, S_{2A} \, (P_{2A},P_{2B},S_{1A}(P_{1A},P_{1B})) - F \tag{2}$$

Where:

π_{1A} is firm A's first-period profits,

π_{2A} is firm A's second-period profits,

P_{1A} is firm A's first-period price,

P_{1B} is firm B's first-period price,

S_{1A} is the demand function for firm A's credit cards (Market Share) in the first period,

S_{1B} is the demand function for firm B's credit cards in the first period,

C is the (constant) marginal cost for each firm,

P_{2A} is firm A's second-period price,

P_{2B} is firm B's second-period price,

S_{2A} is firm A's second-period demand function,

S_{2B} is firm B's second-period demand function,

F is fixed cost.

Firm A's total discounted profits are given by

$$\pi_A = \pi_{1A} + \lambda\pi_{2A} \tag{3}$$

Where λ is a discount factor.

The symmetric direct demand functions for the two firms in the first period given prices (P_{1A},P_{1B}) are

$$S_{1A}(P_{1A}, P_{1B}) = \alpha - \beta P_{1A} + \gamma P_{1B} \tag{4}$$

$$S_{1B}(P_{1A}, P_{1B}) = \alpha - \beta P_{1B} + \gamma P_{1A} \tag{5}$$

Where:

α, β, and γ are the parameters of the demand function. The natural restrictions are that $\alpha > 0$ and $\beta \geq \gamma \geq 0$. Equation (4) states that market demand for firm A's product is downward sloping in its own price (law of demand) and increases with increases in its competitor's price (since the goods are substitutes). When $\gamma = 0$, the products are independent or unrelated and each firm has monopolistic market power. Whenever $\gamma = 0$, the products are substitutes. If $\gamma = \beta$, the total demand for the two goods is fixed (as seen by adding (4) and (5)). The economic meanings of the above demand functions parameters are as follows. α is a positive constant.

It measures quality in a vertical sense. Other things being equal, an increase in α increases the marginal utility of

consuming the good. β is the slope of the demand curve. It captures the degree of „own price sensitivity, indicating how quantity demanded is affected by a change in own price. γ measures the substitutability between the products, indicating how quantity demanded is affected by a change in the cross-price of related goods (bank B's price).

Each firm competes by setting its price (Bertrand competition) and letting the market clear. The oligopolistic structure is one of Bertrand price setters in a differentiated product market. In period 1, firm A chooses its first-period price to maximize its total discounted future profits, taking firm B's first-period price as given.

Substituting (4) in (1), firm A's first-period profit function becomes

$$\pi_{1A} = (P_{1A} - C)(\alpha - \beta P_{1A} + \gamma P_{1B}) - F \tag{6}$$

The second–period demand function faced by firm A's is assumed to be given by

$$S_{2A}(P_{2A}, P_{2B}, S_{1A}(P_{1A}, P_{1B})) = A - \beta P_{2A} + \gamma P_{2B} + \delta S_{1A}(P_{1A}, P_{1B})$$
$$= A - \beta P_{2A} + \gamma P_{2B} + \delta(\alpha - \beta P_{1A} + \gamma P_{1B}) \tag{7}$$

where the second equality follows from (4), A is a positive constant, and δ is a parameter that measures the extent to which consumers who previously used firm A's product in the first-period are locked into the firm's product in the second period.

Substituting (7) in (2), the second period (the mature market) profits become

$$\pi_{2A} = (P_{2A} - C)(A - \beta P_{2A} + \gamma P_{2B} + \delta(\alpha - \beta P_{1A} + \gamma P_{1B})) - F \tag{8}$$

Assume first that each firm acts myopically and ignores the effect that its first-period price has on its second-period profits. Differentiating (6) with respect to P_{1A} we obtain the first-period price setting equilibrium. The first order condition for firm A's profit maximizing problem is given by

$$\frac{\partial \pi_{1A}}{\partial P_{1A}} = \alpha - 2\beta P_{1A} + \gamma P_{1B} + C\beta = 0 \tag{9}$$

Setting $p_1 = p_{1A} = p_{1B}$ and solving, we have the first–period symmetric equilibrium price in the myopic case

$$P_1 = P_{1A} = P_{1B} = \frac{\alpha + C\beta}{2\beta - \gamma} \tag{10}$$

Differentiating (8) with respect to P_{2A}, we can derive the second-period non-cooperative price setting equilibrium. The first order condition for firm A's profit maximization problem in the myopic case is given by

$$\frac{\partial \pi_{2A}}{\partial P_{2A}} = A - 2\beta P_{2A} + \gamma P_{2B} + \delta\alpha - \beta P_{1A}\delta + \delta\gamma P_{1B} + C\beta = 0 \tag{11}$$

Setting $p_1 = p_{1A} = p_{1B}$, and $p_2 = p_{2A} = p_{2B}$ and then solving for p_2, we get the second-period symmetric equilibrium price

$$P_2 = P_{2A} = P_{2B} = \frac{A + \delta(\alpha - P_1(\beta - \gamma)) + C\beta}{2\beta - \gamma} \tag{12}$$

Substituting (10) in (12), we obtain the second-period symmetric equilibrium price in the myopic case

$$P_2 = P_{2A} = P_{2B} = \frac{A + \delta\left(\alpha - \left(\frac{\alpha + C\beta}{2\beta - \gamma}\right)(\beta - \gamma)\right) + C\beta}{2\beta - \gamma} \tag{13}$$

Consider now a perfect foresight case analysis where each firm sets its first-period price, taking into account not only the effect of doing so on its first-period profitability, but also the effect on its first-period market share, and hence the second-period profitability. Firm A chooses its prices to maximize its total future discounted profit. If firms care about the future, then they will compete more fiercely for new customers since these customers will become valuable repeat-purchasers in the second period. In the two-period model of Klemperer (1987a, b) this implies charging lower prices in the first period than in the absence of this effect. In period 1, firm A chooses its first-period price p_{1A} to maximize its total discounted future profits, taking firm B's first-period price as given.

Combining (6) and (8), firm A's total discounted future profits are given by

$$\pi_A = (P_{1A} - C)(\alpha - \beta P_{1A} + \gamma P_{1B}) - F + \lambda[(P_{2A} - C)((A - \beta P_{2A} + \gamma P_{2B}) + \delta (\alpha - \beta P_{1A} + \gamma P_{1B})) - F] \tag{14}$$

Differentiating (14) with respect to P_{1A}, *we get*

$$\frac{\partial \pi_A}{\partial P_{1A}} = \alpha - 2\beta P_{1A} + \gamma P_{1B} + C\beta - \lambda P_{2A}\delta\beta + C\delta\beta\lambda = 0 \tag{15}$$

In a symmetric equilibrium where $p_1 = p_{1A} = p_{1B}$ and $p_2 = p_{2A} = p_{2B}$

$$P_1 = P_{1A} = P_{1B} = \frac{\alpha + C\beta(1 + \lambda\delta) - \lambda\delta\beta P_2}{2\beta - \gamma} \tag{16}$$

Differentiating (14) with respect to P_{2A}, *we get*

$$\frac{\partial \pi_A}{\partial P_{2A}} = \lambda A - 2\lambda\beta P_{2A} + \lambda\gamma P_{2B} + \lambda\delta\alpha - \lambda\delta\beta P_1 + \lambda\delta\gamma P_1 + \lambda\beta C = 0 \tag{17}$$

and making the same symmetry assumptions stated before (16), we get

$$P_2 = P_{2A} = P_{2B} = \frac{A + \delta\alpha - \delta\beta P_1 + \delta\gamma P_1 + C\beta}{2\beta - \gamma} \tag{18}$$

Rearranging (16) and (18), yields

$$(2\beta - \gamma)P_1 + (\lambda\delta\beta)P_2 = \alpha + C\beta + C\beta\delta\lambda \tag{19}$$

$$(\delta\beta - \delta\gamma)P_1 + (2\beta - \gamma)P_2 = A + \delta\alpha + C \tag{20}$$

Using Cramer's rule, we can solve for p_1 and p_2 to derive the non-cooperative price-setting equilibrium in both periods in the perfect foresight case:

$$P_1 = \frac{\begin{vmatrix} \alpha + C\beta + C\beta\delta\lambda & \lambda\delta\beta \\ A + \delta\alpha + C\beta & 2\beta - \gamma \end{vmatrix}}{\begin{vmatrix} 2\beta - \gamma & \lambda\delta\beta \\ \delta(\beta - \gamma) & 2\beta - \gamma \end{vmatrix}}$$

$$= \frac{(\alpha + C\beta + C\beta\delta\lambda)(2\beta - \gamma) - (A + \delta\alpha + C\beta)(\lambda\delta\beta)}{(2\beta - \gamma)(2\beta - \gamma) - (\delta\beta - \delta\gamma)(\lambda\delta\beta)} \tag{21}$$

$$P_2 = \frac{\begin{vmatrix} 2\beta - \gamma & \alpha + C\beta + C\beta\delta\lambda \\ \delta\beta - \delta\gamma & A + \delta\alpha + C\beta \end{vmatrix}}{\begin{vmatrix} 2\beta - \gamma & \lambda\delta\beta \\ \delta(\beta - \gamma) & 2\beta - \gamma \end{vmatrix}}$$

$$= \frac{(2\beta - \gamma)(A + \delta\alpha + C\beta) - (\delta\beta - \delta\gamma)(\alpha + C\beta + C\beta\delta\lambda)}{(2\beta - \gamma)(2\beta - \gamma) - (\delta\beta - \delta\gamma)(\lambda\delta\beta)} \tag{22}$$

Comparisons between the Myopic and Perfect-Foresight Equilibria

3.1 The Case C = 0 and δ = 0

From (10) and (13) with $\boldsymbol{\delta} = 0$, it follows that the equilibrium prices in the first and second periods in the myopic case are

$$P_1 = P_{1A} = P_{1B} = \frac{\alpha + C\beta}{2\beta - \gamma} \tag{23}$$

$$P_2 = P_{2A} = P_{2A} = \frac{A + C\beta}{2\beta - \gamma} \tag{24}$$

Similarly, from (21) and (22) with $\boldsymbol{\delta} = 0$, it follows that the equilibrium prices in the first and second periods in the perfect foresight case are

$$P_1 = P_{1A} = P_{1B} = \frac{\alpha + C\beta}{2\beta - \gamma} \tag{25}$$

$$P_2 = P_{2A} = P_{2A} = \frac{A + C\beta}{2\beta - \gamma} \tag{26}$$

I will consider the following parameter values for numerical example 1

$$\alpha = 10, A = 10, \lambda = 0.7, \beta = 2, \delta = 0, \gamma = 1, C = 0, F = 0. \tag{27}$$

Inserting C = 0 and the values in (27) in equations (23) and (34), the Myopic prices are

$$P_1 = P_{1A} = P_{1B} \quad = \frac{\alpha}{2\beta - \gamma} = 3.333 \tag{28}$$

$$P_2 = P_{2A} = P_{2B} = \frac{A}{2\beta - \gamma} = 3.333 \tag{29}$$

Inserting C = 0 and the values in (27) in equations (25) and (26), the perfect-foresight prices are

$$P_1 = P_{1A} = P_{1B} \quad = \frac{\alpha}{2\beta - \gamma} = 3.333 \tag{30}$$

$$P_2 = P_{2A} = P_{2B} = \frac{A}{2\beta - \gamma} = 3.333 \tag{31}$$

We have, from (23)-(26), or from (28)-(31),

Proposition 1: *In the case, **δ** = 0, so there are no switching costs (or "brand loyalty") in the second period, then the first-period equilibrium price in the myopic case is equal to the first-period equilibrium price in the perfect foresight case, and the second-period equilibrium price in the myopic case is equal to the second-period equilibrium in the perfect foresight case.*

Using equations (6), (8), $P_1=P_{1A}=P_{1B}$, $P_2=P_{2A}=P_{2B}$ and (27), the equilibrium profits of each firm in the first and second periods are

$$\pi_1 = \pi_{1A} = \pi1B = P_1 (\alpha - \beta P_1 + \gamma P_1) \tag{32}$$

$$\pi_2 = \pi_{2A}\ \pi2B = P_2 (A - \beta P_2 + \gamma P_2) \tag{33}$$

From (3), (32) and (33), each firm's present value of profits is

$$\pi_A = \pi_B \quad = \pi_1 + \lambda \pi_2 \tag{34}$$

First consider profits in the myopic case. Using equations (27), (28), and (32), profits in the first period are

$$\pi_1 = \pi_{1A} = \pi_{1B} = P_1 (\alpha - \beta P_1 + \gamma P_1) = \frac{\alpha^2 \beta}{(2\beta - \gamma)^2} = 22.221 \tag{35}$$

Using equations (27), (29), and (33), profits in the second period are

$$\pi_{2A} = \pi_{2A} = \pi_{2B} = = P_2 (A - \beta P_2 + \gamma P_2) = \frac{A \beta^2}{(2\beta - \gamma)^2} = 22.221 \tag{36}$$

Using equations (27), (34), (35) and (36), it follows that the total discounted future profits are:

$$\pi_A = 22.222 + .7 (22.221) = 37.775 \tag{37}$$

Now consider the perfect-foresight case.

Using (27), (30), and (32), profits in the first period are

$$\pi_1 = \pi_{1A} = \pi_{1B} = P_1 (\alpha - \beta P_1 + \gamma P_1) = \frac{\alpha^2 \beta}{(2\beta - \gamma)^2} = 22.221 \tag{38}$$

Using equations (27), (31), and (33), profits in the second period are

$$\pi_{2A} = \pi_{2A} = \pi_{2B} = P_2 (A - \beta P_2 + \gamma P_2) = \frac{A \beta^2}{(2\beta - \gamma)^2} = 22.221 \tag{39}$$

From (27), (34),(38) and (39), A's total discounted profits are

$$\pi_A = \pi_{1A} + \lambda \pi_{2A} = 22.221 + .7 (22.221) = 37.775 \tag{40}$$

We therefore have:

Proposition 2: *It can be seen that when **δ** = 0, so there are no switching costs (or "brand loyalty") in the second market, then the profits of each firm (first period, second period, and total) are the same under myopic behavior as under perfect foresight.*

3.2 The Case C = 0 and δ > 0

From (10) and (13) with C = 0, it follows that equilibrium prices in both periods in the Myopic case are

$$P_1 = P_{1A} = P_{1B} = \frac{\alpha}{2\beta - \gamma} \qquad (41)$$

$$P_2 = P_{2A} = P_{2B} = \frac{A + \delta\left(\alpha - \left(\frac{\alpha}{2\beta - \gamma}\right)(\beta - \gamma)\right)}{2\beta - \gamma} \qquad (42)$$

Using (21) and (22) with C = 0, it follows that equilibrium prices in both periods in the perfect- foresight case are

$$P_1 = P_{1A} = P_{1B} = \frac{\alpha(2\beta - \gamma) - \lambda\delta\beta(A + \delta\alpha)}{(2\beta - \gamma)(2\beta - \gamma) - (\delta\beta - \delta\gamma)(\lambda\delta\beta)} \qquad (43)$$

$$P_2 = P_{2A} = P_{2B} = \frac{(2\beta - \gamma)(A + \delta) - \alpha\delta(\beta - \gamma)}{(2\beta - \gamma)(2\beta - \gamma) - (\delta\beta - \delta\gamma)(\lambda\delta\beta)} \qquad (44)$$

I will consider the following parameter values for numerical example 2

$$\alpha = 10, A = 10, \lambda = 0.7, \beta = 2, \delta = 0.2, \gamma = 1, C = 0, F = 0. \qquad (45)$$

Inserting the values in (45) in equations (41) and (42), prices in the myopic case are

$$P_1 = P_{1A} = P_{1B} = \frac{\alpha}{2\beta - \gamma} = 3.333 \qquad (46)$$

$$P_2 = P_{2A} = P_{2B} \qquad = \qquad \frac{A + \delta\left(\alpha - \left(\frac{\alpha}{2\beta - \gamma}\right)(\beta - \gamma)\right)}{2\beta - \gamma} \qquad = 3.77 \qquad (47)$$

Inserting the values in (45) in equations (43) and (44), prices under perfect foresight are

$$P_1 = P_{1A} = P_{1B} = \frac{\alpha(2\beta - \gamma) - (A + \delta\alpha)(\lambda\delta\beta)}{(2\beta - \gamma)(2\beta - \gamma) - (\delta\beta - \delta\gamma)(\lambda\delta\beta)} = 2.978 \qquad (48)$$

$$P_2 = P_{2A} = P_{2B} = \frac{(2\beta - \gamma)(A + \delta) - \alpha\delta(\beta - \gamma)}{(2\beta - \gamma)(2\beta - \gamma) - (\delta\beta - \delta\gamma)(\lambda\delta\beta)} = 3.197 \qquad (49)$$

Hence, we have:

Proposition 3: *From (46)–(49), it follows that in the presence of switching costs (or "brand loyalty"), since δ > 0, then firms will charge lower prices in the first period than if there were no switching costs, that is . δ = 0.*

Firms acting myopically set an equilibrium price in the first period regardless of how big δ is. Firms typically sets lower prices in the first period in order to capture the market share that will be valuable to them in the future and charge higher prices in the second period. A first-period price cut that increases a firm's first-period market share (demand) foretells a second-period price rise.

Using equations (6), (8), $P_1 = P_{1A} = P_{1B}$, $P_2 = P_{2A} = P_{2B}$ and (45), the equilibrium profits for each firm in the first and second periods are

$$\pi_1 = \pi_{1A} = \pi_{1B} = P_{1A}(\alpha - \beta P_{1A} + \gamma P_{1B}) \qquad (50)$$

$$\pi_2 = \pi_{2B} = \pi_{2A} = P_{2A}(A - \beta P_{2A} + \gamma P_{2B}) \qquad (51)$$

From (3), (50) and (51), each firm present profits are:

$$\pi_A = \pi_B = \pi_1 + \lambda\pi_2 \qquad (52)$$

First consider profits in the myopic case. Using equations (45), (46), and (50), profits in the first period are

$$\pi_{1A} = \pi_{1A} = \pi_{1B} = P_{1A}(\alpha - \beta P_{1A} + \gamma P_{1B}) = 22.222 \qquad (53)$$

Using equations (45), (47), and (51), profits in the first period are

$$\pi_1 = \pi_{1A} = \pi_{1B} = = P_{2A}(A - \beta P_{2A} + \gamma P_{2B}) = 28.542 \qquad (54)$$

Using equations (45), (52), (53) and (54), it follows that total discounted future profits are under myopic case are:

$$\pi_A = 22.222 + .7(28.544) = 42.200 \qquad (55)$$

Now consider the Perfect foresight Case. Using (45), (48), and (50), profits in the first period are

$$\pi_1 = \pi_{1A} = \pi_{1B} = P_{1A}(\alpha - \beta P_{1A} + \gamma P_{1B}) = 20.913 \tag{56}$$

Using (45), (48), and (51), profits in the second period are

$$\pi_2 = \pi_{2A} = \pi_{2B} = P_{2A}(A - \beta P_{2A} + \gamma P_{2B}) = 26.239 \tag{57}$$

From (45), (52),(56) and (57), each firm's present value of profits under perfect foresight are

$$\pi_A = \pi_{1A} + \lambda\pi_{2A} = 20.913 + .7(26.239) = 39.7278 \tag{58}$$

We therefore have:

Proposition 4: *From (53) through (58), we see that firm A's total discounted profits in the perfect foresight case is less than the total discounted profits in the myopic case.*

In the myopic case, firm A makes more profits in both periods than it makes in the perfect foresight case. Therefore, in the presence of switching costs, firms will have a degree of monopoly power over their customers, leading to higher prices and profits in the future.

3.3 The Case $\gamma = 0$

From (10) and (13) with $\gamma = 0$, it follows that prices in the first and second periods in the myopic case are

$$P_1 = P_{1A} = P_{1B} = \frac{\alpha + C\beta}{2\beta} \tag{59}$$

$$P_2 = P_{2A} = P_{2B} = \frac{A + \frac{\delta\alpha}{2} + C\beta\left(1 - \frac{\delta}{2}\right)}{2\beta} \tag{60}$$

Using (21) and (22) with $\gamma = 0$, we obtain prices in the first and second in the perfect-foresight case are

$$P_1 = P_{1A} = P_{1B} = \frac{2\alpha + 2C\beta + \lambda\delta C\beta - A\lambda\delta - \lambda\delta^2\alpha}{4\beta - \lambda\delta^2\beta} \tag{61}$$

$$P_2 = P_{2A} = P_{2B} = \frac{2A + \alpha\delta + 2C\beta - C\beta\delta - C\beta\delta^2\lambda}{4\beta - \lambda\delta^2\beta} \tag{62}$$

I will consider the following parameter values for numerical example 3

$\alpha = 10$, $A = 10$, $\lambda = 0.7$, $\delta = 0.2$, $\beta = 2$, $\gamma = 0$, $C = 0$, $F = 0$.   Inserting the values in (63) in equations (59) and (60)**,** prices in the myopic case are

$$P_1 = P_{1A} = P_{1B} = \frac{\alpha}{2\beta} = 2.500 \tag{64}$$

$$P_2 = P_{2A} = P_{2B} = \frac{A + \frac{\delta\alpha}{2}}{2\beta} = 2.750 \tag{65}$$

Inserting $C = 0$ and other values in (63) in (61) and (62)**,** prices in the perfect – foresight case in the first and second periods

$$P_1 = P_{1A} = P_{1B} = \frac{2\alpha - A\lambda\delta - \lambda\delta^2\alpha}{4\beta - \lambda\delta^2\beta} = 2.306 \tag{66}$$

$$P_2 = P_{2A} = P_{2B} = \frac{2A + \alpha\delta}{4\beta - \lambda\delta^2\beta} = 2.769 \tag{67}$$

Hence, we have:

Proposition 5: *Equations (64) through (67), state equilibrium prices under the assumption of no substitutability that is $\gamma = 0$ (a zero coefficient on the rival's price), then demands are unrelated or independent.   This implies that demand for firm A's product does not depend at all on firm B's product price.   Therefore, each firm is a monopoly in its market.*

Using equations (6), (8), $P_1 = P_{1A} = P_{1B}$, $P_2 = P_{2A} = P_{2B}$ and (63), the equilibrium profits for each firm in the first and second periods are:

$$\pi_1 = \pi_{1A} = \pi_{1B} = {}_{=}P_1(\alpha - \beta P_1) \tag{68}$$

$$\pi_2 = \pi_{2A} = \pi_{2B} = {}_{=}P_2(A - \alpha P_2 + \delta(\alpha - \beta P_1)) \tag{69}$$

From equation (3), each firm present value of profits are:

$$\pi_A = \pi_B = \pi_1 + \lambda\pi_2 \tag{70}$$

Using equations (63), (64), (68), profits in the myopic case in the first period are

$$\pi_{1A} = \pi_{1A} = \pi_{1B} = P_{1A}(\alpha - \beta P_{1A}) = \frac{\alpha^2}{4\beta} = 12.500 \tag{71}$$

Using equations (63), (65), (69), profits in the myopic case the second period are

$$\pi_{2A} = P_{2A}(A - \beta P_{2A} + \delta(\alpha - \beta P_{1A})) = \frac{A^2 + \delta\alpha A + \frac{1}{4}\delta^2\alpha^2}{4\beta} = 15.125 \tag{72}$$

Using equations (63), (70), (71) and (72), the total discounted profits in the myopic case are

$$\pi_A = \pi_B = 12.500 + 0.7(15.125) = 23.088 \tag{73}$$

Using (63), (66), and (68), profits in the perfect-foresight case are in the first period are

$$\pi_{1A} = \pi_{1B} = 12.425 \tag{74}$$

Using (63), (66), (67) and (69), profits in the perfect-foresight case are in the second period are

$$\pi_2 = \pi_{2A} = \pi_{2B} = 15.339 \tag{75}$$

Using equation (63), (70), (74) and (75), the perfect-foresight total discounted profits are

$$\pi_A = \pi_{1A} + \lambda\pi_2 = 12.425 + 0.7(15.339) = 23.162 \tag{76}$$

Hence we have the following proposition:

Proposition 6: *If firms ignore each other's pricing behavior, in this case γ = 0, we will have lower prices and profits in both periods in both the myopic case and the perfect foresight case than if goods were substitutes or related, that is γ > 0.*

In addition the result tells that both firms' equilibrium profits are lower when goods are independent and products are totally differentiated in both the primary market and the mature market. In addition, firm A makes more first-period profits in the myopic case than it does in the perfect foresight case. On the other hand, firm A's second period and total discounted future profits are higher in the perfect foresight case than they are in the myopic case.

3.4 The Case where β=γ and C = 0

From (10) and (13) with β=γ, and C = 0, it follows that prices in the myopic case in the first and second periods are

$$P_1 = P_{1A} = P_{1B} = \frac{\alpha}{\beta} \tag{77}$$

$$P_2 = P_{2A} = P_{2B} = \frac{A + \alpha\delta}{\beta} \tag{78}$$

From (21) and (22) with β= γ, and C = 0, it follows that prices in the first and second periods under perfect foresight are

$$P_1 = P_{1A} = P_{1B} = \frac{\alpha - \lambda\alpha\,\delta^2 - A\lambda\delta}{\beta} \tag{79}$$

$$P_2 = P_{2A} = P_{2B} = \frac{A + \alpha\delta}{\beta} \tag{80}$$

I will consider the following parameter values for numerical example 4

$$\alpha = 10, A = 10, \lambda = 0.7, \delta = 0.2, \beta = 2, \gamma = 2, C = 0, F = 0. \tag{81}$$

Inserting the values in (81) in equations (77) and (78), the myopic prices in the first and second periods are

$$P_1 = P_{1A} = P_{1B} = \frac{\alpha}{\beta} = 5.000 \tag{82}$$

$$P_2 = P_{2A} = P_{2B} = \frac{A + \alpha\delta}{\beta} = 6.000 \tag{83}$$

Inserting the values in (81) in equations (79) and (80), prices in the first and second periods are

$$P_1 = P_{1A} = P_{1B} = \frac{\alpha - \lambda\alpha\,\delta^2 - A\lambda\delta}{\beta} = 4.160 \qquad (84)$$

$$P_2 = P_{2A} = P_{2B} = \frac{A + \alpha\delta}{\beta} = 6.000 \qquad (85)$$

Therefore, we have the following proposition

Proposition 7: *Given that the total demand for the goods is fixed, that is $\beta = \gamma$, then we will have higher prices in both periods in both the perfect foresight and the myopic cases than in the case if the total demand for the goods is independent, that is $\gamma = 0$.*

Consider profits. Using equations (6), (8), and (81), $P_1 = P_{1A} = P_{1B}$, $P_2 = P_{2A} = P_{2B}$ and $\beta = \gamma$, profits in the first period
are $\qquad\qquad\qquad \pi_{1A} = \pi_{1A} = \pi_{1B} = P_{1A}\ (\alpha - \beta P_{1A} + \gamma P_{1B}) = P_1\alpha \qquad (86)$

Using equations (6), (8), (81), $P_1 = P_{1A} = P_{1B}$, $P_2 = P_{2A} = P_{2B}$ and $\beta = \gamma$, profits in the second period
are $\qquad\qquad\qquad \pi_{2A} = P_{2A}(A - \beta P_{2A} + \delta(A - \beta P_{2A} + \gamma P_{2B}) = P_2(A + \delta\alpha) \qquad (87)$

Using equations (3), the total discounted profits are

$$\pi_A = \pi_{B=}\ \pi_{1A} + \lambda\pi_2 \qquad (88)$$

Using (77),(81), and (86), profits in the myopic case in the first period are

$$\pi_{1A} = \pi_{1B} = 50.000 \qquad (89)$$

Using (78), (81), and (87), profits in the myopic case in the second period are

$$\pi_{2A} = \pi_{2B} = 72.000 \qquad (90)$$

Using (81), (88), (89), and (90), each firm's total discounted profits in the myopic case are

$$\pi_A = \pi_B = 50.000 + 0.7(72.000) = 100.400 \qquad (91)$$

Now consider the perfect-foresight case. Using (81), (84), and (86), profits in the perfect-foresight case in the first period are

$$\pi_{1A} = \pi_{1B} = 41.600 \qquad (92)$$

Using (81),(85), and (87), perfect foresight profits in the second period are

$$\pi_{2A} = \pi_{2B} = 72.000 \qquad (93)$$

Using (81), (88), (92), and (93), it follows that each firm's total discounted profits in the perfect-foresight case are

$$\pi_{1A} = 41.000 + 0.7(72.000) = 91.400 \qquad (94)$$

Proposition 8: *The total demand for the two goods is fixed, that is $\beta = \gamma$. The first period and total discounted profits are higher in the myopic case than they are in the perfect foresight case. However, the second-period profits are the same in both the myopic case and the perfect foresight case.*

4. Conclusion

This study showed that there is a relationship between pricing and consumers switching costs (or "brand loyalty"). Moreover, it suggested that in the presence of switching costs, firms will charge lower prices in the first period to gain market share that will be valuable to them in the future. Therefore, they charge higher prices in the future utilizing the market share they have gained in the first period. It has been shown that when $\delta = 0$, so there are no switching costs (or "brand loyalty") in the second period, then the first-period equilibrium price in the myopic case is equal to the first-period equilibrium price in the perfect foresight case, and the second-period equilibrium price in the myopic case is equal to the second-period equilibrium price in the perfect foresight case.

However, in the presence of switching costs (or "brand loyalty"), that is $\delta > 0$, then firms will charge lower prices in the first period than if there were no switching costs. Firms acting myopically set an equilibrium price in the first period regardless of how big δ is. Firms typically sets lower prices in the first period in order to capture the market share that will be valuable to them in the future and charge higher prices in the second period.

A first-period price cut that increases a firm's first-period market share (demand) foretells a second-period price rise. The author claims that firm's "A" total discounted profits in the perfect foresight case is less than the total discounted profits in the myopic case. In the myopic case, firm A makes more profits in both periods than it

makes in the perfect foresight case. Therefore, in the presence of switching costs, firms will have a degree of monopoly power over their customers, leading to higher prices and profits in the future.

This will give firms a degree of monopoly power over their existing customers, leading to higher prices and profits in the future. This is also the case under the assumption of no substitutability that is $\gamma = 0$ (a zero coefficient on the rival's price), when demands are unrelated or independent. This will happen if firms have perfect foresight, and it may lead to either higher or lower equilibrium profits than if firms behave myopically.

References

Beggs, A., & Klemperer, P. (1992). Multi-Period Competition With Switching Costs. *Econometrica, 60,* 651-666. https://doi.org/10.2307/2951587

Cabral, L. (2012). Switching Costs and Equilibrium Prices. Working Paper, New York University.

Doganoglu, T. (2010). Switching Costs, Experience Goods and Dynamic Price Competition. *Quantitative Marketing and Economics, 8*(2), 167-205. https://doi.org/10.1007/s11129-010-9083-y

Dube, J. P., Hitsch, G. H., &Rossi, P. E. (2006). Do Switching Costs make Markets Less Competitive. *Journal of Marketing Research, 46*(4), 435-445. http//dx.doi:10.1059/jmkr.45.4.435

Farrell, J., & Shapiro, C. (1988). Dynamic competition with switching costs. *Rand Journal of Economics, 19,* 123-137. https://doi.org/10.2307/2555402

Kim, M., Klinger, D., & Vale, B. (2003). Estimating Switching Costs: The Case of Banking. *Journal of Financial Intermediation, 12,* 25-56. http//dx.doi:10.1016/S1042-9573(02)00005-0

Klemperer, P. (1987a). Markets with Consumer Switching Costs. *Quarterly Journal of Economics, 102,* 375-394. https://doi.org/10.2307/1885068

Klemperer, P. (1987b). The competitiveness of Markets with Consumer Switching Costs. *Rand Journal of economics, 18,* 137-150. https://doi.org/10.2307/2555540

Klemperer, P. (1987c). Entry Deterrence in Markets with Consumer Switching Costs. *Economic Journal, Supplement, 97,* 99-117. https://doi.org/10.2307/3038233

Nilssen, T. (1992). Two Kinds of Consumer Switching Costs. *RAND Journal of Economics, 23,* 579-589. https://doi.org/10.2307/2555907

Padilla, A. J. (1995). Revisiting Dynamic Duopoly with Consumer Switching Costs. *Journal of Economic Theory, 67,* 520-530. https://doi.org/10.1006/jeth.1995.1083

Pearcy, J. (2015). Bargains Followed by Bargains: When Switching Costs Make Markets More Competitive. *Journal of Economics and Management Strategy, 25*(4), 826-851. https://doi.org/10.1111/jems.12158

Rhodes, A. (2011). Re-examining the Effects of switching costs. Oxford University.

Sharpe, S. A. (1997). The Effect of Consumer Switching Costs on Prices: A Theory and Its Application to the Bank Deposit Market. *Review of Industrial Organization, 12,* 79-94. https://doi.org/10.1023/A:1007748623012

Somaini, P., & Einav, L. (2012). A Model of Market Power in Customer Markets. Stanford University.

Stango, V. (2002). Pricing With Consumer Switching Costs: Evidence from the Credit Card Market. *The Journal of Industrial Economics, 50,* 475-492. https://doi.org/10.1111/1467-6451.00187

To, T. (1996). Multi-Period Competition with Switching Costs: An Overlapping Generations Formulation. *The Journal of Industrial Economics, 44,* 81-87. https://doi.org/10.2307/2950562

Viard, V. B. (2007). Do Switching Costs Make Markets More or Less Competitive? The Case of 800-Number Portability. *The RAND Journal of Economics, 38,* 146-163. https://doi.org/10.1111/j.1756-2171.2007.tb00049.x

The Effect of Population Socio-Economic Characteristics on Tourism Demand in Serbia: A Survey

Slavoljub Vujović[1], Nenad Vujić[2], Zoran Jovnovic[3], Petar Vuković[4]

[1]PhD, Senior Research Associate, BBS, Belgrade, Serbia

[2]PhD, Research Associate, Economics Institute, Belgrade, Serbia

[3]MA, Professor, Technical School, Novi Beograd, Serbia

[4]PhD Student, Assembly of Serbia, Belgrade, Serbia

Correspondence: Slavoljub Vujović, PhD, Senior Research Associate, BBS, Belgrade, Serbia. E-mail: kelovic1967@yahoo.com

Abstract

The synthesis of various theoretical concepts and empirical research confirms the significance of leisure time and leisure funds as fundamental factors of tourism demand. It also confirms the fact that the correlation between resources and needs shows that all the person's efforts are directed to coordination between their needs and means and that those tourist needs are manifested through the tourist consumption. Therefore, the study is based on the assumption that socio-economic characteristics of population have a great influence on the decision concerning where and how the vacation will be used.

Thus, the aim of the research was to determine whether there is and how important is the influence of socio-economic characteristics of the population as independent variables on the scope and direction of movement of tourist demand in the particular case in practice.

Based on the conducted research and analysed results, the authors strived to examine the initial hypotheses, that is to provide a statistical correlation between the dependent and independent variables.

The results of research confirm the hypothesis that the socio-economic characteristics of working and living conditions of the population have a great impact on the dynamics and scope of tourism demand.

According to the defined aim, the theoretical elaboration of the results dominates the study. During the research and results analysis, the following methods were used: T-test, One-Factor Analysis of Variance, Pearson Correlation Coefficient, Logistic Regression and Multiple Regression.

Keywords: tourism, development, socio-economic characteristics of population, tourist demand

JEL: A12, A13, Z32

1. Introduction

In this study, it has been examined if the attitudes of the Serbian respondents and their habits concerning their vacations can be connected to some of their socio-economic characteristics. Specifically, we were curious to know if these behavioural segments were connected with the number of the household members, the number of the members with income and the employment status of the respondents, their perception and habits as to how important certain elements of their vacation accommodation are, as well as their attitudes toward certain events and tourism in Serbia in general. Research is done with student of doctoral studies of state university in Kragujevac city, the time of school in 2015 and 2016 years.

Serbia as a country that has natural conditions for developing tourism in mountains and spas, for the development of congress tourism, and has seven million people with the prospect of imminent accession to the European Union, taken as an example, which should present the situation in other countries of the Balkan Peninsula and the entire South East Europe.

The hypothesis is that the socio-economic characteristics of the population over the impact on tourism demand determine the dynamics and scope of tourism development.

Namely, our assumption is that these everyday aspects of average citizens of Serbia, to a significant extent, influence their choices concerning their vacation; therefore, we believe that is necessary to examine the connection between these variables in order to better understand the citizens' habits and attitudes which are related to vacation trends and tourism in Serbia in general.

This study included 183 respondents, of whom 78 respondents (42.6 %) were male, and 105 respondents (57.4 %) were female. When it comes to their age, the respondents were divided into following categories: 6.6 % of the respondents were 20-30 years of age, 41 % were 31-40, the same percentage were 41- 50 years of age, 3.3 % were 51-65 and 8.2 % were above 65. Then, the employment status of the respondents was examined - 77% of the respondents were employed, 14.8 % were unemployed, 1.6 % were pupils or students and 6.6 % were retired.

When it comes to education, 41 % of the respondents had high school degrees, 44.3 % had college degrees, 14.8 % had master's degrees or doctorate degrees.

Furthermore, when it comes to their monthly incomes, the respondents were divided into following categories: 11.5 % of the respondents stated they did not have any personal income, 47.5 % had up to 500 euros of income, 27.9 % made 501-1000 euros on monthly basis, 9.8 % made 1001-1500 euros, no respondent made 1501-2000 euros and 3.3% of the respondents stated they made more than 2000 euros every month. In addition to their personal income, the respondents were divided into certain categories according to the monthly income of the household they live in. No respondent stated they were not familiar with the income of their household. 19.7 % of the respondents lived in households with monthly income up to 500 euros, 54.1 % lived in households with 501-1000 euros of monthly income, 9.8 % were in the category with 1001-1500 euros of monthly income, 4.9 % were in 1501-2000 euro category, the same percentage of the respondents were in the 2001-3000 euro category, 3.3 % lived in a household with more than 3000 euros of monthly income, and the same percentage of the respondents stated that they were not familiar with the information.

Furthermore, when it comes to the type of the household: 9.8 % of the respondents lived alone, 23 % lived in two-member households, 24.6 % in three-member households, 34.4 % in four-member households, 4.9 % in five-member households, 3.3 % in six-member households, and no one stated they lived in household of seven members or more. When it comes to the division of the respondents according to how many members of the household earned income, it is shown that 29.5 % of the respondents lived in households with only one income, 59 % lived in households with two incomes, 9.8 % lived in households with three incomes, 1.6 % in households with four incomes, and no one stated they lived in households with more than four incomes.

The main objective of this study is to examine to what extent and in which way the socioeconomics variables (i.e. the number of household members, the number of the members generating income, the respondents' age, their employment status, their habits and attitudes) reflect the tourist events and tourism in Serbia, i.e. how the respondents spend their vacation in one of the tourist destinations in Serbia.

2. Methodology

This study is quantitative in nature, it was conducted via on line survey, and the obtained data were analysed through Statistical Package for the Social Sciences (SPSS) 17.0 version. Besides the socio-demographic variables (Muratovic, 2013), the survey contained multiple choice questions about the habits concerning the way respondents spend their vacation (Bulent, & others 2015), so they chose the answer that best reflected their habits (Vujovic, 2008).

The second group of dependent variables (Petrovecki & Bili-Zule, 2015) was operationalized through five-degree Likert Scale (Butrovac, 2014), a type of assessment within which the respondent themselves assessed the importance of certain elements of their vacation accommodation to them.

The third and the fourth group of dependent variables were also operationalized through five-degree Likert Scale within which the respondents stated the degree of their interest in certain attractions/events in our country as well as their agreement with assertions about our country's tourism in general. The importance of socio-economic characteristics of the population for different cycles of the company researched and explained J. L. Moreno in the book "Who Shall Survive?"(Moreno, 1978).

There were three independent variables in this study: the respondents employment status, the size of the households the respondents live in and the number of the household members who earn income.

When it comes to the first independent variable, the respondents' employment status, 77 % respondents were employed, 14.8 were unemployed, 1.6 % were pupils or students and 6.6 % were retired. When it comes to the size of the households the respondents live in, 9.8 % of the respondents lived alone, 23 % lived in two-member households, 24.6 % in three-member households, 34.4 % in four-member households, 4.9 % in five-member

households, 3.3 % in six-member households.

The last independent variable in this study shows the number of the household members who earn income - 29.5 % of the respondents lived in households with only one income, 59 % lived in households with two incomes, 9.8 % lived in households with three incomes, 1.6 % in households with four incomes.

Dependent variables were used to examine the respondents' habits concerning their way of spending their vacation, then to assess how important certain elements of vacation accommodation are, as well as the degree of their interest in certain attractions/events in our country and tourism in general.

Thus, through the first dependent variable, the respondents were asked how much money they were willing to set aside for their vacation, and 39.3 % were ready to set aside one monthly income for it, 32.8 % two monthly incomes, 3.3 % were ready to spend three, nobody was ready to spend four monthly incomes, 8.2 % were ready to set aside more than 4 monthly incomes and 16.4 % of the respondents stated 'none of the above'.

The next dependent variable shows the way the respondents finance their vacation- 62.3 % of the respondents finance it on their own, 13.1 % finance it with the help of the parents, children, family or partner, 3.3 % finance it by getting a bank loan, 14.8 % of the respondents use deferred payment, as 6.6 % of the respondents finance their vacation in some other way.

Then, it was also examined in which way the respondents like to spend their vacation, so it was ascertained that the biggest number of respondents, 75.4 %, spend their vacation at the seaside, 6.6 % like the mountains, no one stated that they loved to spend their vacation at a lake, 1.6 % of the respondents like to spend their vacation at a spa resort, 3.3 % would choose farm tourism, 4.9 % would choose city tourism (in their country or in a foreign country), and 8.2 % stated they spend their vacation in other ways.

Further on, it was examined which country the respondents like to spend their vacation in, so 62.3 % stated that Greece was the country they would most likely to choose for their vacation, 8.2 % stated Montenegro as a country where they like to spend their vacation, 1.6 % stated that Turkey was their country of choice, 3.3 % of the respondents would rather choose Egypt, only 1.6 % chose Spain, as well as Croatia, 4.9 % chose our country, 16.4 % of the respondents stated that they would choose some other country (Grozeva, 2016).

The next variable was used to examine the respondents' preferences as to how long they like their vacation to be and in which periods they like to spend it - 1.6 % stated they liked 7-day periods, 42.6 % liked 10-day periods, 14.8 % chose 15-day periods, 41% stated they liked a period of their own choosing.

Table 1. Elements of accommodation facility in percentages

	1	2	3	4	5
Mini bar	62.3	18	3.3	14.8	1.6
Safe (in the room or at the Reception desk)	27.9	16.4	9.8	29.5	16.4
Car Park	11.5	4.9	4.9	32.8	45.9
Pool	26.2	21.3	13.1	27.9	11.5
Aqua Park	50.8	26.2	8.2	9.8	4.9
Sports Facilities	36.1	19.7	14.8	26.2	3.3
Medical Service	11.5	3.3	9.8	44.3	31.1
Spa	42.6	24.6	9.8	11.5	11.5
Playground	29.5	4.9	14.8	31.1	19.7
Kitchen/Kitchenette	11.5	9.8	9.8	42.6	26.2
Flat Screen TV	49.2	18	9.8	16.4	6.6
Jacuzzi	57.4	24.6	3.3	9.8	4.9
Air-Conditioning	9.8	/	8.2	42.6	39.3
View of Tourist Attractions (beach, ski slope...)	18	8.2	13.1	42.6	18,0
Terrace	3.3	1.6	4.9	37.7	52.5
Washing Machine	49.2	24.6	11.5	9.8	4.9
Sound Insulation	14.8	16.4	6.6	37.7	24.6
Wi-Fi	6.6	9.8	9.8	27.9	45.9
Fitness Centre	49.2	18	13.1	14.8	4.9
Non Smoking Rooms	42.6	6.6	11.5	21.3	18,0
Family Rooms	24.6	8.2	24.6	23,0	19.7
Pets Allowed	54.1	4.9	18,0	14.8	8.2
Adapted for Persons with Disabilities	32.8	3.3	27.9	16.4	19.7
Club/Disco for Children	42.6	11.5	18,0	21.3	6.6
Services (Hairdresser, Masseur...)	39.3	16.4	16.4	18,0	9.8
Distance from the Tourist Attractions (Beach, City Centre...)	1.6	3.3	6.6	37.7	50.8

Source: Research authors

Also, we examined which means of transportation our respondents use - 68.9 % stated they used their own transportation, 18 % stated they travelled by bus, 1.6 % chose train, none chose to travel by boat, and 11.5 % of the respondents said they travelled by plane.

When it comes to accommodation, 16.4 % of the respondents chose to stay in a hotel room, 11.5 % chose a studio apartment or hotel accommodation, 4.9 % chose a room in private accommodation, 41 % chose an apartment or a studio apartment in private accommodation. Furthermore, 13.1 % of the respondent chose the all inclusive option, 1.6 % chose the camp site option, and 11.5of the respondents stated they would choose some other means of accommodation.

Then, using the five degree Likert Scale, the respondents assessed to what extent they valued certain elements of accommodation when they plan their vacation. Table 1 shows the elements and frequencies of the respondents' responses, where 1 stood for 'irrelevant', and 5 stood for 'extremely relevant', other numbers represented nuances and 3 stood for 'not sure'.

In the next group of dependent variables, the respondents were required to give their assessments as to their interest in the domestic tourist attractions and events, using the five-degree Likert Scale, and the frequencies of the responses are shown in the Table 2.

Table 2. Commitment of tourist to domestic touristics facilities in percentages

	Not interested	Faintly interested	Not sure	Interested	Broadly interested
Mountains	36.1	21.3	9.8	21,3	11.5
Lakes	26.1	24.6	16.4	14.8	8.2
Spa Resorts	45.9	21.3	13.1	16.4	3.3
Congress Tourism	63.9	16.4	6.6	9.8	3.3
Farm Tourism	47.5	14.8	11.5	19.7	6.6
The Guča Trumpet Festival	80.3	9.8	3.3	4.9	1.6
Exit festival	63.9	8.2	4.9	16.4	6.6
Belgrade Beer Fest	44.3	9.8	14.8	26.2	4.9
Ethno Tourism Bacon Fest, Sausage Festival...	55.7	21.3	8.2	13.1	1.6
Religious Sites in Serbia	36.1	16.4	6.6	34.4	6.6
Motorcycle Events	57.4	11.5	4.9	13.1	13.1

Source: Research authors

Finally, we also examined the attitudes of the respondents to the tourism in our country according to the degree of their agreement to the statements offered in the survey. Again, the five-degree Linkert Scale was used, 1 meaning 'completely disagree' and 5 'completely agree' with the statements offered, 2 and 4 are nuances of agreeing and disagreeing, whereas 3 meant 'not sure'. The respondents' responses are shown in Table 3.

Table 3. Frequency answers of respondents on a commitment to local tourist attractions in percentages

	1	2	3	4	5
Serbia has unused tourist potential.	3.3	/	3.3	36.1	57.4
The future of Serbia lies in the development of tourism.	3.3	3.3	21.3	42.6	29.5
Due to the deficit of our own resources, we are forced to urbanise the tourist resources.	19.7	21.3	29.5	21.3	8.2
Concessions are the best way to accelerate the development of tourism.	18.0	16.4	47.5	13.1	4.9
The development of tourism in Serbia should be left to foreigners because we do not know how to deal with it.	42.6	23,0	16.4	9.8	8.2
The most important tourist objects should be government-owned.	19.7	19.7	18,0	29.5	13.1
Should there come to privatization, the buyers should be chosen from friendly countries.	29.5	16.4	23,0	23,0	8.2
The tourist system should fit into a system of standards, regulations, but also into the system of ownership of EU partners.	26.2	9.8	19.7	27.9	16.4
Russia is the best example of tourism development because it has both tourists and investors at its disposal.	37.7	9.8	29.5	9.8	13.1
All tourist resources should remain government-owned, even if the tourism does not develop.	45.9	24.6	19.7	4.9	4.9
Regardless of the political situation, the tourist offers of Serbia and Republika Srpska should be consolidated.	26.2	11.5	34.4	14.8	13.1

Source: Research authors

3. Research Results

3.1 Analysis of variance (ANOVA)

Through One-Factor Analysis of Variance (ANOVA) we examined the differences among the respondents when it

comes to their habits concerning their vacation and depending on their employment status (Kamenov and others 2006).

Thus, it is shown that the respondents differ from one another with respect to how much money they would be ready to spend on their vacation, $F(3, 182)=2.63$, $p<.05$; it is also shown that the pupils/students were ready to spend one monthly income on their vacation, the employed and the unemployed stated they would spend two or three monthly incomes on their vacation, whereas the pensioners stated they would be ready to spend three or four monthly incomes on their vacation.

Then, there were some statistically significant differences among the respondents concerning the country where they would like to spend their vacation, $F(3, 182)=6.49$, $p<.01$, and it is shown that the employed would usually choose to spend their vacation in Montenegro or Turkey, the unemployed stated they would choose Egypt, the pupils/students stated they would like to spend their vacation in some other country that was not offered as an option in the survey, whereas the pensioners would much rather choose Egypt or Tunisia.

Also, statistically significant differences among the respondents occur concerning the number of days spent on their vacation, $F(3, 182)=5.19$, $p<.01$ - the employed stated they would spend their vacation in 10-15-day periods, pupils/students stated they usually spent 15 days on their vacation, and pensioners stated that they decided about the number of days spent on vacation on their own.

Finally, the respondents also differ from one another significantly concerning the type of accommodation they choose on their vacation, $F(3, 182)=5.46$, $p<.01$, and therefore it is shown that the employed would choose an apartment or a room in private accommodation, the unemployed would choose an apartment in private accommodation or the all inclusive option, pupils/students would choose some other option that was not offered as an option in the survey, whereas the pensioners stated they would choose a studio apartment or an apartment in private accommodation.

According to the reviewed results, it can be concluded that the initial hypothesis is confirmed by this analysis, i.e, it is shown that the respondents' habits concerning spending their vacation, differ from each other on the basis of their employment status. The greatest statistically significant differences among respondents are found in the answers concerning the country where the respondents would like to spend their vacation, whereas the smallest ones are found in the answers concerning the amount of money the respondents were ready to set aside for their vacation; this shows that the employment status has the weakest influence on the amount of money the respondents would set aside for their vacation; therefore, in future studies, it should be ascertained which factors influence this variable. On the other hand, we think that those variables, according to which there are statistically significant differences among the respondents, should be included in the next research projects, together with other independent variables related to the respondents' habits concerning their vacation, because this aspect of life is connected with the employment status of the respondents (Hunziher and Krapf, 1942).

With the same type of analysis, we examined if the respondents could be differed from each other as to how interested they are in certain tourist events in our country, depending on the number of their household members.

Thus, it is shown that there are statistically significant differences among the respondents when it comes to their interest in mountain tourism in our country, $F(5, 182)=3.63$, $p<.01$; the respondent living alone stated they did not know or that they were pretty interested in mountain tourism, the respondents living in 2-4-member households stated they were not interested or they could not say how interested they were, whereas the respondents in remaining groups stated they were not certain in their level of interest in this form of tourism.

Furthermore, the respondents significantly differ from each other in the level of interest in lake tourism in our country, $F(5, 182)=6.63$, $p<.01$; the respondents living alone and the respondents living in 6-member households stated that they could not say how interested they were or that they were pretty interested, the respondents living in 4-member households stated they were completely or partially interested, whereas the respondents in remaining groups stated they were partially interested or completely uninterested in this form of tourism.

Also, statistically significant differences among respondents are found in the answers concerning their level of interest in spa tourism in our country, $F(5, 182)=10.37$, $p<.01$; the respondents living i one-member households and those living in six-member households stated they could not give their assessment concerning the level of their interest in spa tourism or that they were partially interested, the respondents living in two- or five- member households stated they were mostly uninterested or that they could not give their assessment, whereas the respondents in remaining groups stated they were completely uninterested, and some of them stated they were partially uninterested.

Statistically significant differences among respondents are also found in their answers concerning congress

tourism, depending on the number of household members F(5, 182)=17.60, p<.01. The results show that the respondents living alone stated they could not say how interested they were or that they were partially interested in this form of tourism, the respondents living in 2-4-member households mostly stated they were completely uninterested and a small number of them stated they were partially uninterested, whereas the respondents living in 5- and 6-member households stated they were partially uninterested.

When it comes to farm tourism, there are also statistically significant differences among respondents F(5, 182)=4.84, p<.01; the respondents living alone stated that they were not sure as well as they were partially interested in this form of tourism, the respondents living in two-member and six-member households stated they were mostly uninterested, the respondents living in three-member households mostly stated they were completely uninterested and a small number of them stated they were partially uninterested, whereas the other respondents stated they could not assess the level of their interest in this form of tourism.

Then, there are statistically significant differences among the respondents concerning the level of interest in Exit Festival F(5, 182)=4.78, p<.01; the respondents living in one- or six-member households stated they could not say how interested they were in Exit Festival, whereas the respondents in other categories stated they were completely or partially uninterested in this event.

Furthermore, there are statistically significant differences among the respondents concerning the religious tourism in Serbia 182)=3.61, p<.01; the respondents living alone mostly showed a neutral attitude toward this form of tourism, the respondents living in 2-5-member households stated either that they were not interested or that they could not say how interested they were, whereas the respondents living in six-member households stated they were mostly or completely interested in this form of tourism.

Finally, there are statistically significant differences among the respondents concerning their interest in motorcycle events F(5, 182)=7.63, p<.01; the respondents living alone stated they could not assess the level of their interest or they were partially interested in this form of tourism, the respondents living in three- and six-member households stated they were partially uninterested or they could not assess the level of their interest, whereas the respondents living in five-member households stated they were completely uninterested in this form of tourism.

Thus, using the above-mentioned variables, it is shown that the initial hypothesis of our study is confirmed, i.e, that they are statistically significant differences among the respondents concerning the level of their interest in certain forms of tourism in our country depending on the size of their households.

The greatest statistically significant differences among respondents are found in the answers concerning congress tourism within which we can see that the largest number of interested respondents are the ones living alone, whereas the smallest ones are found in the answers concerning mountain tourism and religious tourism in Serbia.

Furthermore, the respondents living alone mostly stated they were interested in various forms of tourism, whereas the respondents in other categories mostly stated they were uninterested or they could not assess the level of their interest in various forms of tourism. These results could be coming from the fact that the respondents living alone still have not formed a family, therefore they do not have that kind of responsibilities, thus, they have time to be interested in various forms of tourism, as opposed to the respondents in other categories.

In general, according to these results, we can say that the number of the household members has a significant influence on the respondents' interest in various forms of tourism; but, it would also be useful, for future studies, if additional variables are examined. For instance, who the household members are, since it is assumed they travel with the respondents'; thus, the connection between these variables would be identified better.

3.2 Chi-square Analysis

Through Chi-square analysis, we examined to what extent the respondents differ from each other with respect to their agreement with the statements concerning tourism in our country, depending on the number of household members who earn income. This analysis shows statistically significant differences among the respondents, and Table 1 shows the values of Chi-square for each statement. Then, the charts will show the frequencies of the respondents' responses concerning each statement depending on the respondents' level of education.

Thus, concerning the first statement, *'Serbia has unused tourist potential'* $x^2(9, 183) = 69.543$, *p*< 01, it is shown that the respondents living in household with one, two or three incomes stated they partially or completely agreed with the statement, whereas the respondents living in households with four incomes stated they completely agreed.

Table 4. Hi-sized squares for each and every allegation of respondents

	The number of household members who earn income	Statistical significance
Serbia has unused tourist potential	$x^2(9, 183) = 69.543$	$p< .01$
The future of Serbia lies in the development of tourism	$x^2(9, 183)= 27.632$	$p< .01$
Due to the deficit of our own resources, we are forced to privatize the tourist resources	$x^2(9, 183) = 55.089$	$p< .01$
Concessions are the best way to accelerate the development of tourism	$x^2(9, 183) = 24.579$	$p< .05$
The development of tourism in Serbia should be left to foreigners because we do not know how to deal with it.	$x^2(9, 183) = 25.662$	$p< .05$
The most important tourist objects should be government-owned.	$x^2(9, 183) = 39.277$	$p< .01.$
Should there come to privatization, the buyers should be chosen from friendly countries.	$x^2(9, 183) = 24.061$	$p< .05$
The tourist system should fit into a system of standards, regulations, but also into the system of ownership of EU partners.	$x^2(9, 183) = 24.210$	$p< .01.$
Russia is the best example of tourism development because it has both tourists and investors at its disposal.	$x^2(9, 183) = 37.560$	$p< .01.$
All tourist resources should remain government-owned, even if the tourism does not develop.	$x^2(9, 183) = 26.264$	$p< .05$
Regardless of the political situation, the tourist offers of Serbia and Republika Srpska should be consolidated.	$x^2(9, 183) = 48.271$	$p< .01.$

Source: Research authors
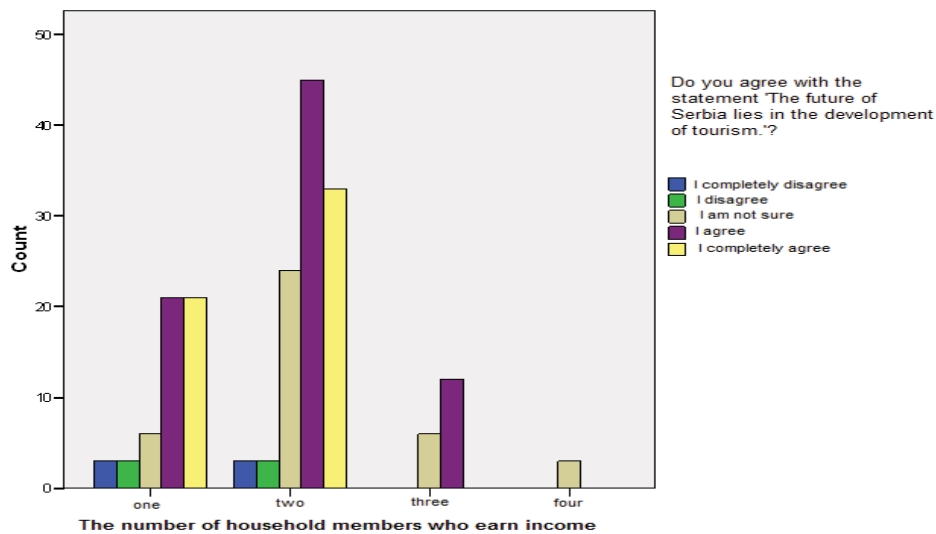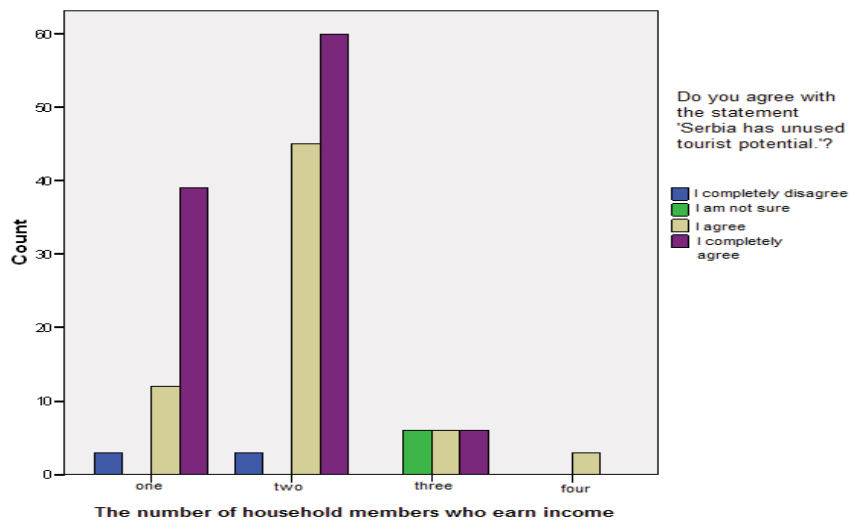
When it comes to the statement *'The future of Serbia lies in the development of tourism'*, it is shown that the respondents living in households with one or two incomes stated they partially and completely agreed with the statement, the respondents living in households with three incomes stated they either partially agreed or were not sure, whereas the respondents earning income stated that they were not sure of the level of their agreement with the statement.

Concerning the next statement, *'Due to the deficit of our own resources, we are forced to privatize the tourist resources'*, the results of Chi-square analysis show that the respondents living in households with one income almost equally agreed and disagreed with this statement; the respondents living in households with two incomes mostly stated they were not sure of the level of their agreement with the statement, with a small number of respondents that stated they did not agree with the statement; the respondents living in households with four incomes stated they were not sure of the level of their agreement with the statement.
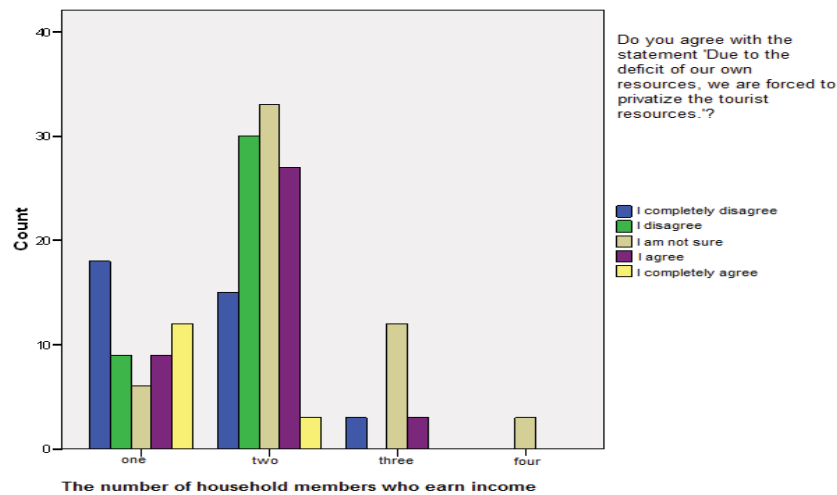
Furthermore, concerning the statement *'Concessions are the best way to accelerate the development of tourism'*, the results show that the respondents living in households with one, two or three incomes stated they did not have an opinion about it, and a small number of respondents stated they did not agree with the statement, whereas the respondents living in households with four incomes stated they did not have an opinion about the statement in question.
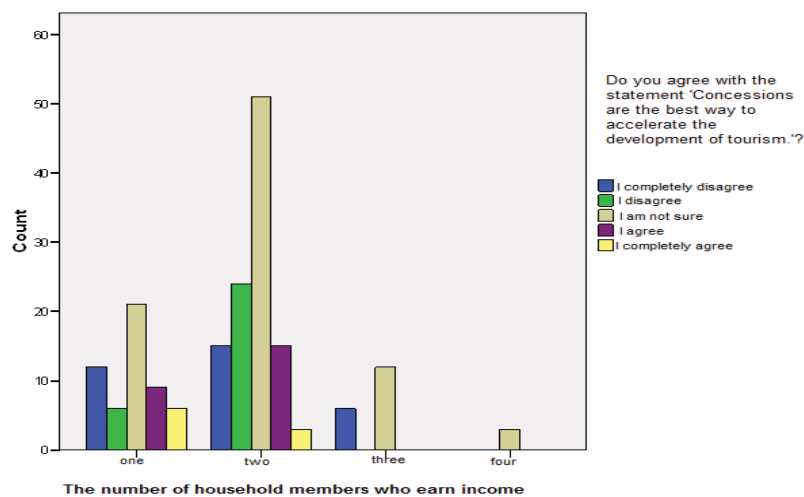
Then, when it comes to the statement *'The development of tourism in Serbia should be left to foreigners because we do not know how to deal with it.'*, it is shown that the respondents living in households with one or two incomes stated they mostly disagreed and a small number of them stated they did not have an opinion about it; the respondents living in households with three incomes stated they were not sure of the level of their agreement with

the statement, whereas the respondents living in households with four incomes stated they disagreed with the statement.
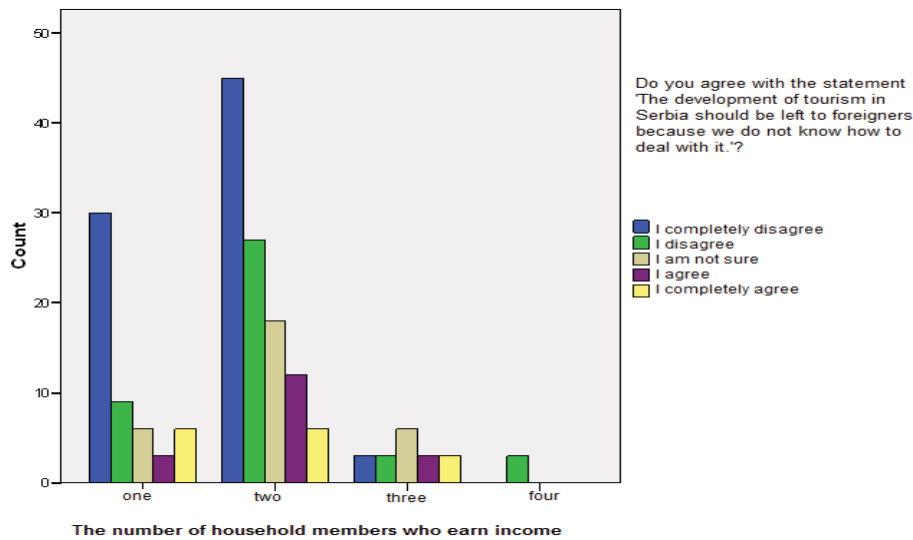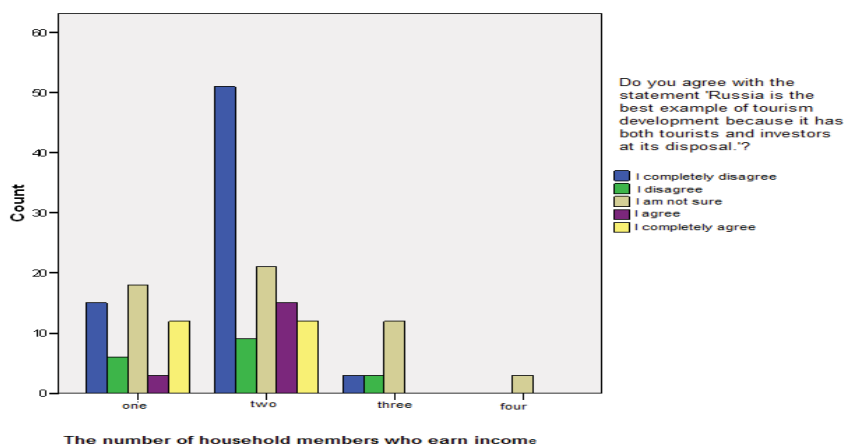

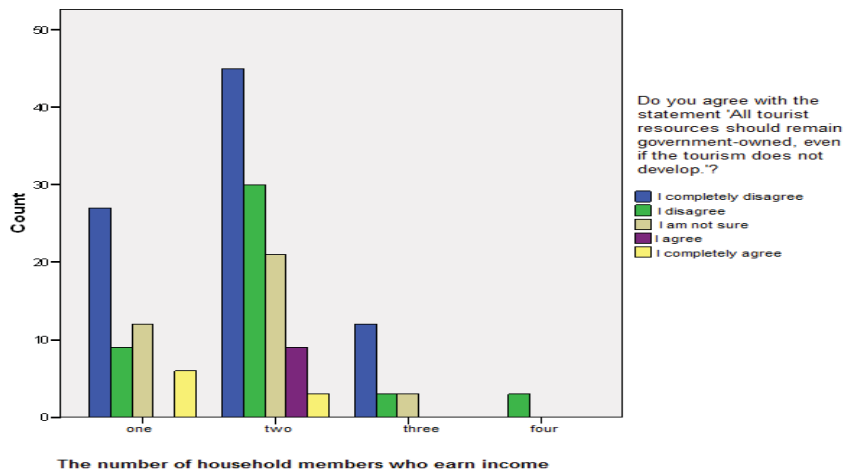Concerning the statement *'The most important tourist objects should be government-owned'*, there are also statistically significant differences among the respondents - the respondents living in households with one or two incomes showed almost equal level of agreement and disagreement with the statement; the respondents living in households with three incomes stated they were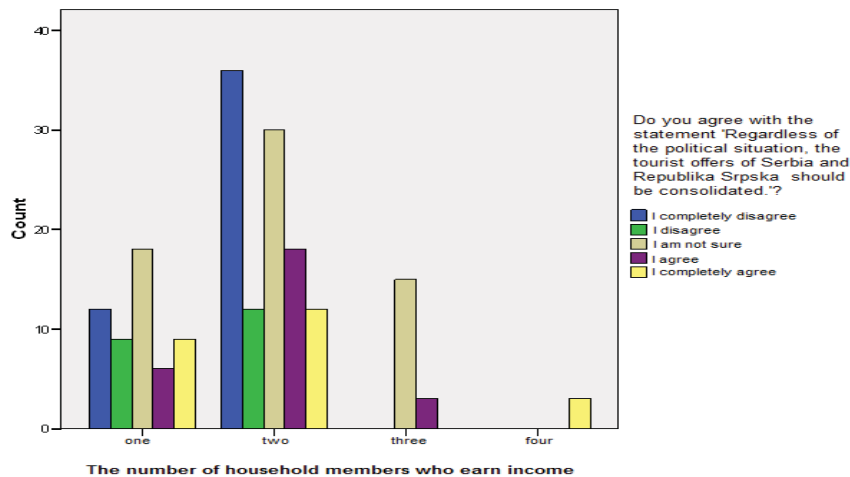 not sure of the level of their agreement with the statement, whereas the respondents living in households with four incomes stated they agreed with the statement.
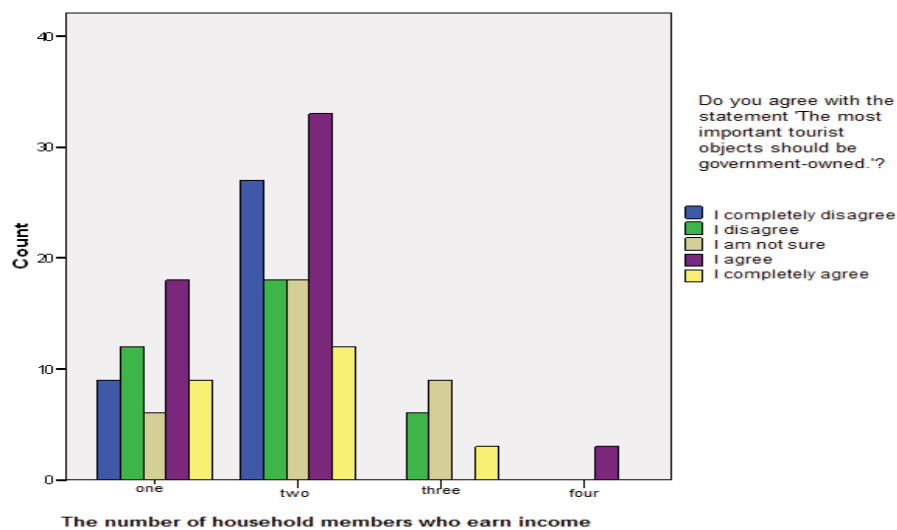
Then, when it comes to the statement *'Should there come to privatization, the buyers should be chosen from friendly countries'*, there are also statistically significant differences among the respondents - the highest level of agreement with the statement can be found with the respondents living in households with one or two incomes (they showed an equal level of agreement and disagreement with the statement); the respondents living in households with three incomes showed that they disagreed as well as they were not sure of the level of agreement with the statement, whereas the respondents living in households with four incomes stated they agreed with this statement.
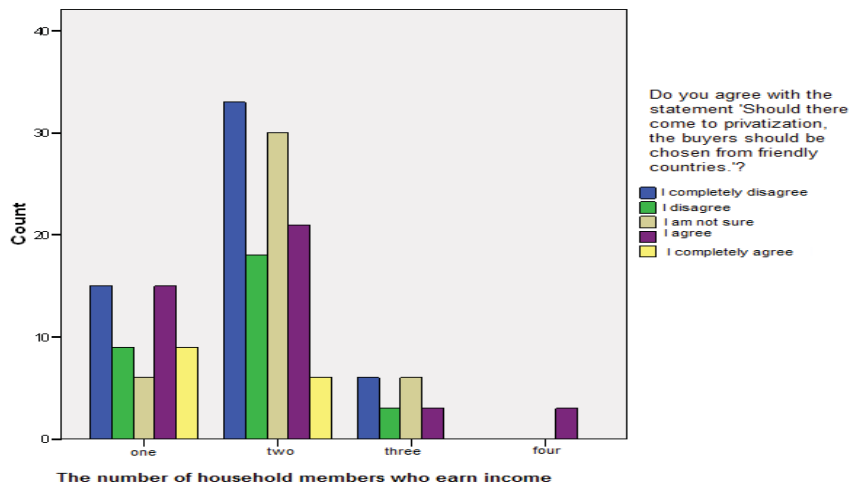
Furthermore, concerning the statement *'The tourist system should fit into a system of standards, regulations, but also into the system of ownership of EU partners'*, the analysis shows that the respondents living in households with one income stated they mostly agreed, and a small number of them stated they disagreed; the respondents living in households with two incomes gave the same answers, whereas the respondents living in households with three or four incomes stated they were not sure of the level of their agreement with the statement
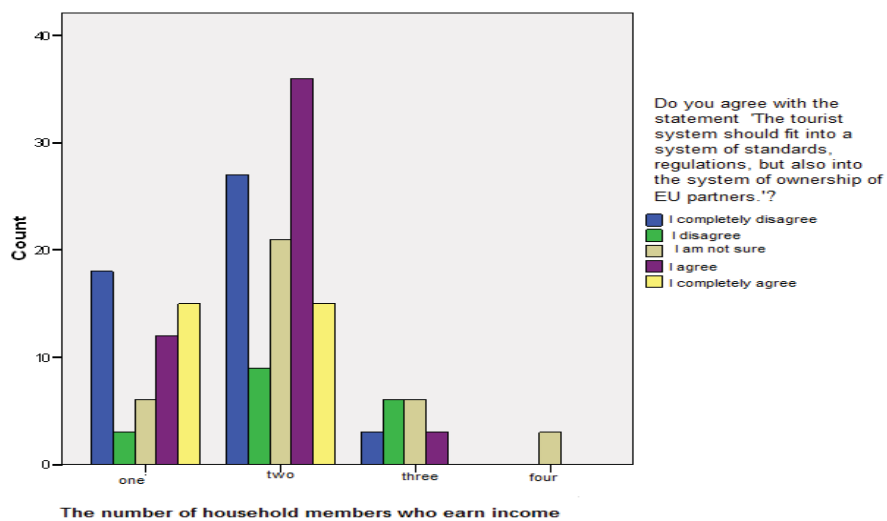
Furthermore, concerning the statement *'Russia is the best example of tourism development because it has both tourists and investors at its disposal'*, the analysis shows that the respondents living in households with one income stated they were not sure, and a small number of them stated they disagreed; the respondents living in households with two incomes mostly stated they disagreed with the statement, whereas the respondents in other categories mostly stated they were not sure of the level of their agreement with the statement.

Then, concerning the statement *'All tourist resources should remain government-owned, even if the tourism does not develop'*, there are also statistically significant differences among the respondents $x^2(9, 183) = 26.264$ $p < .05$ - the respondents living in households with one, two or three incomes stated they disagreed with this statement or they were not sure of the level of their agreement, whereas the respondents living in households with four incomes stated they disagreed.

Finally, when it comes to the statement regardless of the political situation, the tourist offers of Serbia and Serbian Republic (a separate entity within the state of Bosnia and Herzegovina), be brought together into a unique tourist offer, we also found statistically significant differences among the respondents. The respondents living in households with one or two incomes stated, in equal amount, that they disagreed and that they were not sure of the level of their agreement; the respondents living in households with three incomes stated they were not sure of the level of their agreement with the statement, whereas the respondents living in households with four incomes stated they agreed with the statement.

Based on the results of the analysis, it can be concluded that our initial hypothesis is confirmed, that is, there are statistically significant differences among the respondents with respect to the level of their agreement with the given statements depending on the number of household members who earn income. The greatest statistically significant differences among the respondents can be found in the statements: *'Serbia has unused tourist potential'*, *'Due to the deficit of our own resources, we are forced to privatize the tourist resources'*; the highest level of agreement with these statements is found with the respondents living in households with lower number of incomes.

If we observe the respondents' level of agreement with certain statements, we can conclude that the respondents mostly had neutral attitudes to them or they equally agreed and disagreed with them; this can indirectly show that the respondents' attitudes toward these statements probably depend on other variables. Also, the respondents all agree that the tourism in Serbia should be improved; to that end, they are more prone to the EU and its regulations, rather then Russia. Thus, other dependent variables should be included in the future studies - the variables related to those dependent variables which show the greatest differences among the respondents in order to ascertain the connection between these dependent variables and the independent variable used in this study.

3.3 Correlation Analysis

Through Correlation analysis we examined the connection between certain independent and dependent variables, i.e, the variables which were used for examining how important the respondents found certain elements and their habits concerning travel. The correlations are shown in the table.

Table 5. Correlation analysis

	Employment status	The number of household members	The number of members who earn income
The amount of money for vacation	.146*	/	-.195**
The way of vacation financing	/	/	/
The most preferable place for vacation	/	-.205**	/
The most preferable country for vacation	.240**	-.310**	/
The length of stay on vacation	.215**	/	/
The type of transportation	/	/	.327**
The type of accommodation	.171*	.237**	/
The importance of having a mini bar	/	/	/
The importance of having a safe	/	/	/
The importance of having a car park	/	.147*	/
The importance of having a pool	/	/	/
The importance of having an aqua park	.218**	/	/
The importance of having sport facilities	.149*	/	/
The importance of medical services	/	.268**	/
The importance of spa facilities	/	/	/
The importance of having a playground	/	.524**	-.245**
Th importance of having a kitchen / kitchenette	/	-.153*	.248**
The importance of having a flat screen TV	/	/	/
The importance of having a jacuzzi	/	/	
The importance of having air-conditioning	/	.151*	/
The importance of having a view of tourist attractions (beach...)	/	/	/
The importance of having a terrace	/	.190**	/
The importance of having a washing machine	/	/	/
The importance of sound insulation	/	/	/
The importance of having Wi-Fi	-.215**	/	/
The importance of fitness centre	/	/	/
The importance of having a non smoking room	-.164*	.198**	.226**
The importance of having a family room	/	.517**	/
The importance of allowing pets	-.172*	/	-.179*
The importance of having the premises adapted for persons with disabilities	/	/	/
The importance of having a disco / club for children	/	.438**	/
The importance of other services (hairdresser, masseur...)	.175*	/	/
The importance of the distance from the tourist attractions (beach, city centre...)	/	.264**	/

Based on the results of the analysis, it can be concluded that our initial hypothesis is confirmed, that is, it is established that there is a connection between independent and dependent variables. The highest degree of correlation between variables was found between the number of household members and the importance of having a playground, a family room and a disco/club for children on vacation, and, since all the correlations are connected, these results show that the higher number of household members is, the higher is the level of importance of the above mentioned elements (Sakotic-Kurbalia, 2013).

Furthermore, the only variable, statistically significant and connected with all three dependent variables, is the level of importance of having a non-smoking room, and according to the correlations obtained, it is concluded that the employed respondents, the respondents living in households with higher number of incomes and households with higher number of members in general, all stated higher level of importance of this element.

Then, if we only observe with which independent variables there is the highest number of correlations, we can see that the highest number of correlations can be found with the number of household members, then with the respondents' employment status, and finally with the number of household members who earn income. These results show that those dependent variables with the highest degree of correlation with, again, the independent variable with the most correlations with dependent variables, should be included in future studies; this tells us that the number household members probably significantly influences if the respondents would choose the offers that

do not have these elements. Naturally, the future studies should be directed to the inclusion of new dependent variables together with these independent variables in order to better ascertain with which elements of tourist offers there are statistically significant correlations.

3.4 Linear Regression

Multiple regression was used to examine if two groups of dependent variables could be predicted based on the respondents' employment status, on the number of the respondents' household members and on the number of members earning income in the respondents' households. First, we examined if the respondents' vacation habits could be predicted, and then if using this linear combination of predictor variables could predict the level of importance of certain elements of tourist accommodation (Krippendorf, 1986).

Firstly, it is shown that is possible to predict, with statistical significance, the amount of money/monthly incomes the respondents are ready to set aside for their vacation $R^2 = .05$, $F(3,182) = 3.604$ $p< .05$; and the number of members earning income stands out as the individually significant predictor variable - *.16, t*=- 2.092, *p*< .05, which means that the higher the number of household members is, the smaller number of incomes the respondents are ready to set aside.

Then, the place the respondent choose for their vacation can also be predicted using this linear combination of predictor variables R2 = .04, $F(3,182) = 2.664$, *p*< .05, and the number of household members stands out as the individually significant predictor variable -*.21, t*= -2.610, *p*< .01, which means that the respondents living in households with a smaller number of members spend their holiday at the seaside as opposed to other respondents.

When it comes to the respondents' choice of destination for their vacation, again, this combination of predictor variables showed itself as statistically significant $R^2 = .13$, $F(3,182) = 8.905$, *p*< .01. The respondents' employment status stands out as the significant predictor variable $= .17$, *t*= 2.436, *p*< .01, as well as the number of household members - *.29, t*= -3.849, *p*< .01, which means that the employed respondents and those living in households with a smaller number of members rather choose Greece as their vacation destination.

Furthermore, the length of stay on vacation can also be predicted using the same predictor variables, $R^2 = .05$ $F(3,182) = 3.304$ $p< .05$. The respondents' employment status stands out as as the only significant predictor variable $= .22$, *t*=3.010 *p*<.01, i.e, the unemployed respondents spend more time on vacation.

It is shown, with the same analysis, that it is possible to predict, with statistical significance, the way the respondents get to their vacation destination $R^2 = .16$, $F(3,182) = 11.911$, *p*< .01, whereas the number of household members -*.25, t*= - 3.432, *p*< .01 and the number of members earning income *.40, t*= 5.566, *p*< .01 stand out as the individually significant predictor variables. These results show that the smaller number of household members is and the larger number of household members earning income is, the less the respondents use their own transportation.

Then, concerning the type of accommodation, this combination of predictor variables also showed itself as significant, $R^2 = .11$, $F(3,182) = 7.731$, *p*< .01; the respondents' employment status $= .24$, *t*=-3.351 *p*< .01 and the number of household members $=.31$, *t*= 4.095. *p*< .01 stand out as the individually significant predictor variables, which means that mostly the unemployed respondents living in households with a larger number of members choose hotel accommodation or apartment accommodation.

Based on the results concerning the first group of dependent variables, we can say that almost all of them could be predicted using this combination of predictor variables. The highest degree of prediction occurred with respect to predicting the way the respondents get to their vacation destination/the type of transportation, and the number of household members stands out as the most frequent individually significant predictor variable (Armenian, 2014).

In the second part of the regression analysis, we examined if the level of importance the respondents give to certain elements of their vacation can be predicted depending on this linear combination of predictor variables.

The first element whose level of importance can be predicted with statistical significance is the importance of having a car park $R^2 = .05$ $F(3,182) = 5.186$, *p*< .01. Only the number of household members $= .22$, *t*= 2.872 *p*< .05 stands out as the individually significant predictor variable, which means that this element is more important to the respondents living in household with a larger number of members.

Furthermore, it is shown that, with this combination of predictor variables, it is possible to predict the level of importance the respondents give to having an aqua park $R^2 = .08$ $F(3,182) = 5.313$, *p*< .01 , and the respondents' employment status *.25 t*= 3.426, *p*< .01 and the number of household members *.19, t*= 2.449 *p*< .01 stand out as the individually significant predictor variables.

Also, it is shown that it is possible to predict the level of importance the respondents give to medical services on

their vacation $R^2 = .10$ $F(3,182) = 6.698$, $p< .01$; the respondents' employment status $.16$ $t= 2.256$, $p< .05$ as well as the number of household members $.33$ $t= 4,241$, $p< .01$ stand out as the individually significant predictor variables. The obtained values of beta weights tell us that the unemployed respondents and the respondents living in household with a larger number of members give higher level of importance to having medical services at disposal on their vacation.

Furthermore, the level of importance of having a playground is the next element which can be predicted using this combination of predictor variables $R^2 = .32$ $F(3,182) = 28.664$, $p< .01$. The number of household members in general $=.61$, $t= 9.116$, $p< .01$ and the number of household members earning income $=-.23$, $t= -3.620$ $p< .01$ stand out as the individually significant predictor variables; these values of beta weights show that the larger number of household members and the smaller number of household members earning income suggest the higher probability of the respondents deeming this element more important.

A statistically significant prediction is made concerning the level of importance of having a kitchen / kitchenette $R^2 = .08$ $F(3,182) = 8.742$, $p< .01$; the respondents' employment status $=-.14$, $t= -2.016$ $p< .05$ and the number of household members $=-.22$, $t= -2.923$ $p< .01$.are the individually significant predictor variables. Based on obtained values of beta weights we can conclude that this element is more important to the employed respondents and to the respondents living in households with a smaller number of members.

Then, statistically significant differences among the respondents occur when it comes to the level of importance of having a terrace $R^2 = .05$ $F(3,182) = 3.684$, $p< .05$, and the number of household members $=.21$, $t= 2.671$ $p< .01$ stand out as the individually significant predictor variable, which shows that the respondents living in households with a larger number of members give higher level of importance to this element.

Furthermore, the level of importance of Wi-Fi can also be predicted using this linear combination of predictor variables $R^2 = .05$ $F(3,182) = 3.209$, $p< .05$. The respondents' employment status $-.22$, $t= -2.975$ $p< .01$ stands out as the individually significant predictor variable, and this value of beta weights shows that the employed respondents deem this element important.

The level of importance of having a non-smoking room $R^2 = .06$ $F(3,182) = 5.229$, $p< .01$ is the next element to be predicted using with statistical significance - the number of household members earning income $.17$, $t= 2.295$ $p< .05$ stands out as the individually significant predictor variable, which means that the respondents living in households with a larger number of members deem this element more important.

The next element to be predicted using with statistical significance is the level of importance of having family rooms $R^2 = .29$ $F(3,182) = 25.037$, $p< .01$. The number of household members $.58$, $t= 8.422$ $p< .01$ and the number of household members earning income $-.18$, $t= -2.695$ $p< .01$ stand out as the individually significant predictor variables. These results show that this element is more important to the respondents living in households with a larger number of members

The level of importance of having pets allowed can be predicted using this combination of predictor variables $R^2 = .07$ $F(3,182) = 4.789$, $p< .01$ and the respondents' employment status $-.17$, $t= -2.352$ $p< .05$ as well as the number of household members earning income $-.22$, $t= -2.935$ $p< .01$, stand out as the individually significant predictor variables.

The level of importance of having a disco / club for children is the next element that can be predicted using with statistical significance $R^2 = .24$ $F(3,182) = 19.739$, $p< .01$. The number of household members $.54$, $t=7.670$ $p< .01$ and the number of household members earning income $-.22$, $t= -3.214$ $p< .01$ are the individually significant predictor variables; these results show that the bigger the number of household members and the smaller number of household members earning income mean that the respondents from these categories deem this element more important.

The level of importance of other accommodation services can also be predicted with statistical significance using these predictor variables $R^2 = .05$ $F(3,182) = 3.129$, $p< .05$, and the respondents' employment status $.19$, $t= 2.253$ $p< .01$ is the only individually significant predictor variable, which means that that the unemployed respondents deem these services more important.

Finally, the level of importance of the distance from the tourist attractions is also predicted with statistical significance using this combination of predictor variables $R^2 = .07$ $F(3,182) = 4.840$, $p< .01$, and the number of household members $.23$, $t= 2.980$, $p< .01$ is the only individually significant predictor variable; that means that the respondents living in households with a larger number of members deem this element more important.

And so, it is shown that the values of this group of dependent variables can also be predicted with statistical significance using this linear combination of predictor variables; this confirms the initial hypothesis of this study.

The elements that showed the highest degree of prediction are: the level of importance of having a playground, family rooms and disco / club for children; particularly interesting is the fact that these elements are more important to the respondents living in households with a larger number of members and with a smaller number of incomes, which suggests that they are family people and that they probably travel with their children. The number of household members does stand out as the most frequent individually significant predictor variable, whereas the other two variables stand out as the significant predictors almost as frequently. For both groups of variables, the number of predictor variables is actually the variable according to which is possible to predict the respondents' habits and how important certain elements are to them; this tells us that these forms of travel are very much connected with this independent variable.

The fact is known in theory and in practice, that the factors of demand driving factors of tourism development to generate a complete development of tourism with all its effects and impacts, on the other hand, the fact that some authors, all of the impacts of tourism can be sorted into seven general categories (Glenn, 2001, page 3): Economic, Environmental, Social and cultural, Crowding and congestion, Services, Taxes and Community attitude, confirm how important socio-economic characteristics of the population to the tourist demand and thus for overall development of tourism.

4. Conclusion

Based on the obtained data, it can be concluded that, through statistical analyses, the initial hypotheses of our study are confirmed, i.e, that there are statistical correlations between the dependent and independent variables.

Using One-Factor Analysis of Variance, it was initially shown that there were statistically significant differences among the respondents with respect to their vacation habits depending on their employment status. Namely, the primary finding of this study is that the greatest differences among the respondents, depending on this variable, occur with respect to the respondents' choice of destination, which is expected, since the way the respondents spend their vacation probably depends on their employment status, that is, whether they choose more or less exclusive destination. The same analysis shows that there are statistically significant differences among the respondents concerning their interests in various forms of tourism, depending on the number of their household members, and, as it has been said, the respondents living alone mostly stated they were interested in various forms of tourism, as opposed to the respondents from other categories who stated they were less interested in them. These results may come from the fact that the respondents living alone have more time and are more leisure to organise their vacation according to their needs, which allows them to explore various forms of tourism.

When it comes to Chi-square analysis, it has been shown that this segment of the respondents' behaviour can be better understood based on one socio-demographic variable. However, we think that the respondents' attitudes concerning this subject are very much influenced by other factors, such as the general political situation or the respondents' financial status; therefore, we believe that the correlations between these variables should be examined in future studies.

When it comes to Correlation and Regression analyses, they have shown how connected the respondents' habits and the level of importance they give to certain elements are with the independent variables in this study. It is specially emphasized that the respondents living in households with a larger number of members and with a smaller number of members earning income value the child-oriented elements on their vacation more compared to the respondents in other categories. These data could be of strategic importance for all those involved in the design and realization of tourist offer; therefore, if they want to attract people with children, they should definitely include these elements in their offer.

We also believe that the study has its practical and theoretical value because it shows how the respondents' habits, behaviour and perception concerning their vacation are influenced by the socio-demographic variables used in this study. Still, as a suggestion for future studies, we think that, besides the number of household members and the number of household members who earn income, it should be examined with whom the respondents live, who earns income and how big the income is and those values should be correlated with the above dependent variables. Furthermore, we believe that it is necessary to examine with whom the respondents usually spend their vacation, but also how they finance it, because all these results show that there is a significant correlation between the respondents' financial status and that of their household members with their decision about how they will spend their vacation.

However, the limitations of our study lie in the fact that we examined a small number of respondents; therefore, we believe that a larger number of respondents are necessary for additional verification.

References

Armenian, T. (2014). The effect of image and overall satisfaction in the consumer loyalty in tourism-primer-Serbia- doctoral thesis, University of Novi Sad, Faculty of Sciences, Novi Sad, Serbia.

Bulent, JSC., Ozer, O., & Çaliskan, U. (2015). The relationship between local residents' perceptions of tourism and their happiness: a case of Kusadasi, Turkey, (pp. 232-242), available http://www.emeraldinsight.com/toc/tr/70/3 (27.08. 2015), Turkey.

Butrovac, I. (2014). *Likert scale, available* http://www.scribd.com/doc/210936532/likertova-skalaLikertova-skala#scribd (25.08.2015). Croatia.

Glenn, K. (2001). The Impacts of Tourism. http://www.seagrant.umn.edu/tourism/pdfs/ImpactsTourism.pdf (14.01.2017), Minnesota, USA.

Grozeva, M. (2016). Some tendences of tourism development in the age of globalization. http://geoproblems.eu/wp-content/uploads/2016/10/2016_12/1_grozeva.pdf (14.01.2017), Bulgaria.

Hunziker, W., & Krapf, K. (1942). The floor plan of Allgemaine Tourist teaching. Zurich: Polygraphischer Publisher, Switzerland.

Kamenov, Z., Sladovic, B. F., & Ajdukovic, M. (2006). The development of scale in researching attitudes toward exclusion of children from families and foster care, available,

Krippendorf, J. (1986). Travelling humanity. In the new concept of leisure time and travel. Zagreb: Institute for Tourism Research- SNL. Croatia.

Moreno, L. J. (1978). Who shall survive-Foundations of Cosiometry, group psychoterapy and sociodrama, Beancon House, inc., USA.

Muratovic, L. (2013). Socio-demographic variables as predictors of academic achievement motivation, School vjesnik. *Journal of pedagogical and educational issues, 62*(2-3), July 2013. Croatia.

Petrovecki, M., & Bill-Zula, L. (2015). *Variables, measurement, data*, available, http://mi.medri.hr/assets/P3_Mjerenje%20i%20prikupljanje%20podataka.pdf (27.08.2015). Croatia.

Sakotic-Kurbalija, J. (2013). *The connection quality of the marital relationship with sociodemographic variables, Contemporary trends in psychology,* 181-182, Novi Sad Faculty of Philosophy, Srebia.

Vujovic, S. (2008). The material basis of tourism, Institute of Agricultural Economics, Belgrade, Serbia.

Reviewer Acknowledgements

International Business Research wishes to acknowledge the following individuals for their assistance with peer review of manuscripts for this issue. Their help and contributions in maintaining the quality of the journal are greatly appreciated.

International Business Research is recruiting reviewers for the journal. If you are interested in becoming a reviewer, we welcome you to join us. Please find the application form and details at http://recruitment.ccsenet.org and e-mail the completed application form to ibr@ccsenet.org.

Reviewers for Volume 10, Number 3

Ajit Kumar Kar, WOMS India, India

Alireza Athari, Eastern Mediterranean University, Iran

Amran Awang, Head of Entrepreneurship Center, Malaysia

Anca Gabriela Turtureanu, "DANUBIUS" University Galati, Romania

Antônio André Cunha Callado, Universidade Federal Rural de Pernmabuco, Brazil

Arash Riasi, University of Delaware, USA

Ashford C Chea, Benedict College, USA

Benjamin James Inyang, University of Calabar, Nigeria

Brian Sheehan, Thaksin University, Australia

Celina Maria Olszak, University of Economics in Katowice, Poland

Cheng Jing, eBay, Inc. / University of Rochester, USA

Emilio Congregado, University of Huelva, Spain

Fevzi Esen, Istanbul Medeniyet University, Turkey

Florin Ionita, The Bucharest Academy of Economic Studies, Romania,

Francesco Ciampi, Florence University, Italy

Giovanna Michelon, University of Padova, Italy

Grzegorz Strupczewski, Cracow University of Economics, Poland

Grzegorz Zasuwa, The John Paul II Catholic University of Lublin, Poland

Hanna Trojanowska, Warsaw University of Technology, Poland

Huijian Dong, Pacific University, USA

L. Leo Franklin, Bharathidasn University, India

M. Muzamil Naqshbandi, University of Dubai, UAE

Mansour Esmaeil Zaei, Panjab University, India/Iran

Manuela Rozalia Gabor, "Petru Maior" University of Tîrgu Mureş Romania, Romania

Maria João Guedes, University of Lisbon, Portugal

Maria-Madela Abrudan, University of Oradea, Romania

Miriam Jankalová, University of Zilina, Slovakia

Miroslav Iordanov Mateev, American University, Dubai, UAE

Modar Abdullatif, Middle East University, Jordan,

Mohsen Malekalketab Khiabani, University Technology Malaysia, Malaysia

Mongi Arfaoui, University of Monastir, Tunisia

Monika Wieczorek, University of Economics in Katowice, Poland

Muath Eleswed, American University of Kuwait, USA

Ozgur Demirtas, Turkish Air Force Academy, Turkey

Pascal Stiefenhofer, University of Brighton, UK

Radoslav Jankal, University of Zilina, Slovakia

Sumathisri Bhoopalan, Sastra University, India

Tamizhjyothi Kailasam, Annamalai University, India

Valerija Botric, The Institute of Economics, Zagreb, Croatia

Vassili JOANNIDES de LAUTOUR, Queensland University of Technology School of Accountancy, France

Wejdene Yangui, Institute of High Business Studies of Sfax _ Tunisia (IHEC), Tunisia

ACADEMIC AND OPEN ACCESS

Canadian Center of Science and Education

CCSENET.ORG

➤ CALL FOR MANUSCRIPTS

International Business Research (IBR) is a peer-reviewed, open access journal, published by Canadian Center of Science and Education. It publishes original research and applied articles in all areas of business, marketing, management, finance, economics, accounting. Authors are encouraged to submit complete unpublished and original works, which are not under review in any other journals. We are seeking submissions for forthcoming issues. All manuscripts should be written in English. Manuscripts from 3000–8000 words in length are preferred. All manuscripts should be prepared in MS-Word format, and submitted online, or sent to: ibr@ccsenet.org

Paper Selection and Publishing Process

a)   Submission acknowledgement. If you submit manuscript online, you will receive a submission acknowledgement letter sent by the online system automatically. For email submission, the editor or editorial assistant sends an e-mail of confirmation to the submission's author within one to three working days. If you fail to receive this confirmation, please check your bulk email box or contact the editorial assistant.

b)   Basic review. The editor or editorial assistant determines whether the manuscript fits the journal's focus and scope. And then check the similarity rate (CrossCheck, powered by iThenticate). Any manuscripts out of the journal's scope or containing plagiarism, including self-plagiarism are rejected.

c)   Peer Review. We use a double-blind system for peer review; both reviewers' and authors' identities remain anonymous. The submitted manuscript will be reviewed by at least two experts: one editorial staff member as well as one to three external reviewers. The review process may take two to four weeks.

d)   Make the decision. The decision to accept or reject an article is based on the suggestions of reviewers. If differences of opinion occur between reviewers, the editor-in-chief will weigh all comments and arrive at a balanced decision based on all comments, or a second round of peer review may be initiated.

e)   Notification of the result of review. The result of review will be sent to the corresponding author and forwarded to other authors and reviewers.

f)   Pay the publication fee. If the submission is accepted, the authors revise paper and pay the publication fee.

g)   Send printed journals by post. After publication, two hard copies of the journal will be sent to the corresponding author.

h)   Publication notice. The authors and readers will be notified and invited to visit our website for the newly published articles.

More Information

E-mail: ibr@ccsenet.org

Website: http://ibr.ccsenet.org

Paper Submission Guide: http://submission.ccsenet.org

Recruitment for Reviewers: http://recruitment.ccsenet.org

➤ JOURNAL STORE

To order back issues, please contact the editorial assistant and ask about the availability of journals. You may pay by credit card, PayPal, and bank transfer. If you have any questions regarding payment, please do not hesitate to contact the editorial assistant.

Price: $40.00 USD/copy   Shipping fee: $20.00 USD/copy

The journal is peer-reviewed
The journal is open-access to the full text
The journal is included in:

CrossRef	Google Scholar	RePEc
EBSCOhost	IDEAS	SHERPA/RoMEO
EconBiz	JEL	Ulrich's
EconLit	LOCKSS	Universe Digital Library
ECONIS	NewJour	ZBW
EconPapers	Open J-Gate	
ERA	PKP Open Archives Harvester	