Trust and the Disposition to Change in Cross-National Perspective: A Research Note

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Abstract

So far, comparative cross-national research on the consequences of trust has focused mostly on aggregate data and the link between trust and innovation has been limited greatly on the proneness to technological change. After a brief acknowledgment of the theoretical arguments and a short review of the literature on cross-national effects of trust on economic growth and technological change, we therefore explore whether trust is also a valid predictor of a more general disposition to change. Using a sample of 15 societies, which include more than 18,000 individuals, we are able to disentangle individual and context effects, and find evidence that the "culture of trust" is more conductive to the individual disposition to change than is individual trust.

Introduction

Trust, as one form of social capital, has been found in comparative cross-country studies to be a potent predictor of economic efficiency beside the conventional growth factors (Knack and Keefer 1997; Bornschier 2000; Kunz 2000; Leicht 2000; Whiteley 2000; Zak and Knack 2001). Others have explored the potentially fruitful link between trust and innovation. Larson (1992) in her study of high-growth entrepreneurial firms concludes that these corporate agents are governed by norms of fairness, reciprocity and trust (see also Lorenz 1999). The role of trust in processes of innovation and change is further explored by Yli-Renko, Autio and Sapienza (2001). They find substantial effects of social capital on knowledge acquisition, and mediated through knowledge, on the firms' capability to produce a greater number of new products, develop greater technological distinctiveness and

reduce overall sales cost. Finally, there seems to be cross-society evidence that trust facilitates the early diffusion of new technologies (Bornschier 2001; Volken 2002a,b; Huang, Keser, Leland and Shachat 2003).

Nevertheless, current research is plagued with three shortcomings. Firstly, empirical non-experimental research on the consequences of trust – as the studies mentioned above – has focused on case studies or aggregate data only. Besides the reduction of information inherent in the process of aggregation, there is always the potential risk of ecological fallacy. Secondly, research on the link between trust and change has been limited greatly on the openness to technological change (and the economic sphere), and thirdly, the relationship between individual trust and the encompassing "culture of trust", with regard to the payoffs of trust – e.g. innovation –, has been greatly neglected. In this research paper, we would like to address the above issues.

In section 2 of this paper we briefly outline the theoretical argument. We then overview the available empirical evidence from cross-national research in sections 3 and 4. After the brief review of earlier studies, section 5 addresses the question whether the novel proposition linking trust and change is tenable beyond the techological sphere.

Two functions of generalised trust

In this section, we are discussing the functions of generalised trust; that is, trust in strangers. The classic sociologists – Max Weber, Emile Durkheim, and Georg Simmel – have long ago described modernisation as a process of increasing rationalisation, accompanied by the erosion of traditional social ties and their replacement with more abstract social relations. In modernity, we know but a handful of people personally. At the same time, the daily routines of urban life require the interaction with many strangers: the cashier, the bus-driver, the man sitting next to me in the restaurant. In order to facilitate the implicit or explicit cooperation among all these strangers, trust is essential in modernity (Simmel [1908] 1992; Luhmann [1968] 1989; Misztal 1996; Seligman 1997).

The social functions of generalised trust are at least twofold. The first, and for the most part exclusively stressed, advantage has its roots in amply available social capital, which makes social cooperation easier and functions as a "lubricant" in transactions (proposition 1). The metaphor lubricant goes back already to Kenneth Arrow (1970) and has been often used since. The argument is that transaction costs (due to: supervision, control, gathering information, sanctions) are lower in a context where people trust. By

bringing down coordination costs in the economy (as Kunz 2000 puts it) the "lubricant" trust should add to economic efficiency and growth. This line of reasoning has become somewhat standard in the cross-national empirical work which we overview below.

What has been hitherto little addressed is the second function, i.e., the ability to make more and novel social actions possible, and to facilitate innovation and change (proposition 2).

On the one hand, Schumpeter, the doyen of innovation research, informs us that entrepreneurship essentially consists in doing things that are not generally done in the ordinary course of business routine (Schumpeter [1949] 1989). In his view the defining characteristic of the entrepreneur is therefore simply the doing of new things, i.e. the entrepreneur *induces* (social) change. On the other hand, Rogers [1965] 1995) informs us that the diffusion of innovation is not uniform. "Early adopters" and "innovators" play a crucial role in the diffusion process by serving as models for other potential adopters and by sharing their early field experience with the producers. Of course both, Schumpeter as well as Rogers, were primarily concerned with innovation and change in the economic sphere. However, it seems reasonable enough to propose that successful *voluntary* innovation in general – that is, beyond the economic sphere – follow a similar pattern of creation of change and adoption to change.

To innovate is to change. But, change can be risky because of three properties. Firstly, change is risky since it very often involves substantial resources – pecuniary, social, political, emotional et cetera. Secondly, change involves the doing of new things, and there is always a lack of information involved in this. Thirdly, change involves time in the sense that only the future will show whether the changes will pay off since their novelty precludes the exact evaluation of possible gains and losses.

Why is trust important to social change? In a very general but fundamental sense, trust is essential to change, because trust structures expectations and reduces potential risks and uncertainties (Simmel [1908] 1992; Luhmann [1968] 1989). That is, trust bridges Georg Simmel's ([1908] 1992:346 f.)[1] gap between knowledge and ignorance and prevents individuals as well as societies from social stasis. New actions become more likely and the scope of possible actions is increased, if prior experience can be projected into the future – and the latter function is provided by trust. To be sure, with more knowledge we can better take stock of possible gains and losses in evaluations involving trust (Coleman [1990] 2000:97ff.). Yet, trust beyond all considerations of trustworthiness in specific situations remains an advance that tends to make people more prone to take a chance – not at

least because social, political or economic change preclude the exact evaluation of payoffs.

Moreover, trust facilitates change by allowing actions on the part of the trustee which otherwise would not have been possible (Coleman [1990] 2000:98). Without trust in the integrity of the opposition, even the administration in a democracy could not allow the opposition to take over power[2].

Furthermore, trust is important to change since it enhances the flow and the credibility of information and knowledge (Lane/Lubatkin 1998; Yli-Renko et al. 2001), and trust makes the diffusion of innovation in weak but extending ties of social networks easier (Granovetter 1973:1366f). A better and more extensive flow of information reduces the level of uncertainty, which prevents agents to adopt new ideas and practices. Trust is crucial in the sharing of knowledge and information among social, political or economic entrepreneurs. Since information is only of value to the "buyer" if it is not already in his possession, s/he wants to evaluate it. For the "seller" the dilemma is, that once s/he has uncovered the information, the "buyer" may not be willing to pay for it although the information is of value to him/her.

Moreover, Uslaner (1998) argues that trust reflects a basic sense of optimism and control. Trust is most likely to emerge (and is most rational) when one is optimistic about the future. While Uslaner (1998) claims that optimism works its will through trust, one may alternatively suggest that trust works its will through optimism – either way, Uslaner's empirical evidence suggests that trust and optimism are tightly related. Both, optimistic trustors or trusting optimists are more likely to participate in social interactions which involve change since their expectations about the future payoffs are more likely to be positive.

Finally, theoretical work suggests that individual trust is shaped through learning and socialisation processes (Erikson [1950] 1999; Allport 1961; Cattell 1965; Uslaner 1998, 1999, 2000), and that the level of individual trust structures how agents perceive their environment. Since generalised trust, in the socialisation perspective, is build through interaction processes with one's social context, we can expect the social context to be crucial for the possibility of change.

If "most people" in a social context are trustworthy then most interactions with them will result in positive outcomes (or payoffs). Correspondingly, the individual will adopt a belief in the trustworthiness of others, and if most of the individuals make a similar experience, the social context will be

characterised by a widespread disposition to trust others. We shall use the term "culture of trust" to describe the average propensity of trusting others in a social context..

More specifically, Russel Hardin (1992:164f) argues in *The Street-Level Epistemology of Trust*, that individual trust favours agents' adaptation to the prevailing "culture of trust", that is the general or average level of trustworthiness of others in a society. Once individual trust matches the average level of trustworthiness, it is considered as an optimal level of trust, because it allows positive payoffs for most interactions. Equivalently one may say that the optimal level of trust is described as equilibrium between the subjective expectations (beliefs) of trustworthiness and objective trustworthy behavior[3]. Empirical evidence, so far, corroborates the claim that people living in a broad "culture of trust" become more trusting (Uslaner 1998; Alesina/La Ferrara 2000).

The "culture of trust" is important to change because it expands the potential range for change. In the "culture of trust" there are far more opportunities for change because most people expect positive payoffs, information and knowledge can generally be easily shared, and people have a tendency to cooperate. In such a social context, even pessimists may be able to cooperate more frequently because, given the overall climate of trust, the future does not look that dark as it could in a "culture of distrust".

In fact, the "culture of trust" could lead to a paradox: generalised trust seems to become less important with increasing levels of trustworthiness of others. In the best of all possible worlds – the all-embracing "culture of trust" –, where everybody is trustworthy, actual payoffs per average interaction are indifferent between agents, although their individual expectations may still be different. In such a world, the idiosyncrasies of socialisation are to some degree smoothened. On the one hand, high trustors would no longer suffer from their too optimistic views of their fellow citizens, since all interactions result in positive payoffs. On the other hand, low trustors or pessimists are completely robbed from behavioural or observational learning opportunities, which could potentially reinforce their pessimistic views of their fellow citizens. Under such conditions of an ideal "culture of trust", one could expect the differences in the frequencies of interactions to vanish as well, since the expectations of all agents will converge in the long run. Thus, the total payoffs between agents will also converge, as low and high trustors slowly approach the equilibrium between their subjective expectations of trustworthiness and objective trustworthy behaviour of others.

In the all-embracing "culture of trust", individual trust, paradoxically,

becomes superfluous. If everyone is completely trustworthy, then all obligations will be met at all times. That is, there are no uncertainties and no risk. However, this is exactly why trust would no longer be needed in such a social context, since trust is essentially a strategy to reduce uncertainties and to bridge the gap between knowledge and ignorance.

While the social context just described is no doubt beyond any real world, its discussion nevertheless points to relevant feature of the "culture of trust". The latter not only reduces the potential for actual losses but it is also likely to structure agents' expectations. Thus, what is perceived as a potential risk by an average individual – and therefore would require individual trust in order to allow cooperative actions – supposedly varies substantially between different social contexts. One may, for these reasons, expect to go the "culture of trust" together with fewer perceived risks.

More importantly, it is most likely, that the relation between the "culture of trust" and generalised trust, with regard to the individual payoffs of trust, is inverse. The more a social context approaches the ideal type of the all-embracing "culture of trust", the smaller the differential gains from generalised trust, and vice versa. Moreover, we expect that the effect of generalised trust relative to the effect of the "culture of trust" decreases as the average level of trust in the social context increases.

From the above discussion, and in accordance with proposition 2, the following three hypotheses seem plausible and will be empirically tested in section 5:

> *Hypothesis H_1*: Individuals who generally trust others have a higher disposition to change than individuals who don't trust.

> *Hypothesis H_2*: The broader the "culture of trust", the higher the individual's disposition to change.

> *Hypothesis H_3:* The effect of the "culture of trust" on the disposition to change is the same across the spectrum of trusting and non-trusting individuals.

Trust and growth – the findings from the literature

While the basic idea that trust should add to economic efficiency goes back at least to Kenneth Arrow (1970) it took quite a while before it was empirically tested. Robert Putnam (1993) was the first who offered positive evidence by comparing regions of northern and southern Italy. And Francis Fukuyama (1995) presented broad qualitative empirical evidence by contrasting several single societies. Cross-national tests with rigorous

econometric methods were still lacking at that time and in 1995 Robert Solow, the dean of neoclassical growth theory, albeit basically in favour of the role of this new soft variable for economic growth, demanded "but verify". The pioneering cross-national study of Stephen Knack and Philip Keefer (1997) did just that. They found for a sample of 29 market economies (high and medium level of development, only few LDCs) that trust was significantly related to per capita economic growth – average for 1970-1992. Their measure for trust in 1981 (supplemented in some cases by figures for 1990) was derived from the question of the World Values Survey (WVS): "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?". Their measure was the percentage of respondents in a society who answer that most people can be trusted. To consolidate their finding, Knack and Keefer performed an impressive series of robustness tests of advanced econometric standards. Therewith they could exclude the possibility that the trust-growth link from their cross-national study was spurious. In addition, several endogeneity tests have recently shown that trust favours economic growth, but growth does not lead to more trust (Zak and Knack 2001).

Following the pioneering work of Knack and Keefer five additional cross-national studies have by now become available (Bornschier 2000, Leicht 2000, Kunz 2000, Whiteley 2000, Zak and Knack 2001). All but the study of Kunz (2000) could corroborate the finding of the pioneers. However, Kunz´s positive but not significant effect is hardly a piece of robust counter-evidence since, firstly, he considered only 17 cases in his test, secondly, used only a relatively short growth period, thirdly, inadequately controlled for the initial material level of development, and, finally, used a very specific measure of trust (only in fellow nationals).

The five studies which find a significant positive trust-growth link cover various long growth periods between 1970 to 1998 (typically 12 to 22 years), they range from 24 (Bornschier 2000) to 41 cases (Zak and Knack 2001) which are included, control rigorously for the standard economic predictors of growth, and a few also use alternative measurements of trust. Most often the quoted World Values Survey question is used (Knack and Keefer 1997, Bornschier 2000, Leicht 2000, Zack und Knack 2001), and in some cases also factor scores from different items, including the standard trust-question (Whiteley 2000, Leicht 2000). In most cases, either average per capita economic growth over a longer period or total economic growth, controlling for labour force growth (Bornschier 2000), is used as dependent variable. While four out of the six studies estimate linear models, two specify non-linear models (Bornschier 2000, Whiteley 2000), i.e., regressions using all variables in logged form which follows from a Cobb-Douglas production

function.

Taking all together, there is by now ample and solid empirical evidence that generalised trust spurs economic growth.[4] And the contribution of this "soft variable" to economic growth is by no means marginal but quite substantial in size.

Trust and change – the evidence from early adoption of internet usage

So far the second proposition – claiming that trust facilitates change – has been tested but in three independent cross-national studies (Bornschier 2001; Volken 2002a,b; Huang et al. 2003). In all cases the early diffusion of Internet usage is taken as the indicator for the proneness to change. Bornschier (2001) suggests Internet hosts per 10.000 population as an indicator for the proneness to modern technological change. He validates this indicator by principal component analysis as well as by correlating the proliferation of Internet hosts with the share of the population being online. The latter data comes from national surveys and can be interpreted as the "client" side of the Internet (while the number of Internet hosts is more related to the "server" side). Since the two sides of the Internet, clients and servers, display an exceptionally high correlations (r = 0.96, N = 24), the Internet hosts data, which is available for many countries and various time points can be taken as an excellent proxy for the diffusion of Internet usage in the population.

According to proposition 2 Bornschier (2001) elaborates why generalised trust should foster the proneness to change in general and the early diffusion of Internet usage in particular. The measurement of trust is the percentage of people in a society who trust (on the basis of the same question in the WVS that was mentioned earlier). Furthermore, he considers several variables in his cross-national study which might arguably affect differences in Internet usage: the proliferation of technological expertise in the population, the level of average material wealth, the extent and quality of mass education, and, finally, the early proliferation of tertiary education (for the arguments in detail, see Bornschier 2001).

The test in a sample of 21 rich countries as well as in a larger sample of 34 rich and newly industrializing countries reveals that trust turns out to be a very significant predictor of Internet diffusion. Actually, it becomes the most important predictor for the sample of rich countries. Within the latter sample, only the early proliferation of tertiary education has a significant

effect, too, albeit a clearly smaller one (Bornschier 2001).

While Bornschier only analyzed established market economies (therefore excluding the numerous transformation societies of the 1990s) and used only the standard question for his trust measure, Volken (2002a,b) has extended the analysis in both respects to account for differences in Internet diffusion which he measures in the same way as introduced above.

Beside the sample of rich market societies which we have addressed already before, Volken focuses especially on a sample of 18 transformation societies. Furthermore, following arguments of Luhmann (1974) Volken suggests to distinguish between system trust and generalised personal trust. He obtains measures for both trust dimensions by running a principle component analysis. The factor "system trust" is represented by seven about equally high loading items, among them: civil rights, political rights, freedom of press. The factor "generalised personal trust" is again represented by four about equally high loading items: generalised trust according to the standard question (see above), liberal individualism (factor scores), amoral egoism (factor scores, with negative loading) and moral determination (all these items come from the World Values Survey, for details see Volken 2002a,b).

In his empirical analyses Volken finds that both components of trust, i.e., system trust and generalised personal trust, are highly significant predictors of Internet hosts in 2000, both in rich market societies and in transformation societies. While both components of trust have a similar effect in rich societies, the two different forms of trust display a different pattern in the context of transformation societies. In transformation societies, the relative weight of system trust in predicting Internet diffusion is more important than that of personal trust. This different pattern is explained by the specific cultural heritage and the current socio-economic situation which both contribute to a trust crisis in the transformation process (Volken 2002a:47-65). Volken´s analysis suggests that outside the world of rich democracies, it is useful to distinguish between both components of trust. In rich democracies, however, the items of the factor system trust correlate highly with generalised personal trust as measured with the WVS-question. The link between both these elements was already foreseen by Niklas Luhmann (1974:62) who expressed this by formulating, both concisely and poetically: "Die Hochbauten des Vertrauens müssen auf der Erde stehen." (The towers of trust have to be firmly planted on the ground.) This tight connex between system and personal trust, which is present in long established rich democracies, is not guaranteed in underdeveloped and transformation societies; thus both elements of trust

should be taken into account in future studies.

Finally, we like to mention that Volken (2002a,b) used the same control variables that were discussed above, and again he found for rich countries as well as for transformation societies that only the early proliferation of tertiary education had an additional albeit smaller predictive power than the trust effects. Furthermore he controlled for the costs of being online (relative to the total purchasing power) which had no significant effect, neither in the rich nor in the sample of transformation societies.

Last but not least, Huang et al. (2003) corroborate the findings from the two studies presented above: trust facilitates the diffusion of internet hosts in their sample of rich societies too.

Taking all empirical evidence from cross-national research together, we have considerable support for proposition 2. Trust not only helps to speed up economic growth, rather this cultural resource is also an asset for social change. But so far, this has only been demonstrated with regard to cross-national differences in Internet diffusion.

Are these empirical results trustworthy? Controls and tests on possible spurious effects suggest that they are. Bornschier (2001) controlled in separate analyses also for economic growth. That trust and economic growth are indeed related was discussed in the previous section. If economic growth were related to early Internet diffusion, then trust would at best be an indirect cause of Internet diffusion. But since economic growth between 1990 and 1998 was found uncorrelated with the level of Internet diffusion achieved in 1997 as well as in 1999, we have strong evidence that the relationship between trust and Internet diffusion is not spurious.

Fresh evidence for the trust-change relationship

In this section we present fresh empirical evidence for the relationship between trust and change. If proposition 2 is indeed tenable, then, the generalised trust of citizens should foster their proneness to change in general, that is beyond the limited sphere of the Internet. Furthermore, we want to investigate whether the trust-change relationship holds at the individual level and we want to explore the relation between the latter and the prevailing "culture of trust". Are citizens who trust more likely to be favourable toward change? And, if so, is their disposition to change independent of the prevailing level of trust in a society? In order to contrast the effect of the "culture of trust" prevailing in a society with the individually expressed inclination to trust we perform an analysis that enables us to

disentangle individual and context effects. In accordance with proposition 2 and the theoretical arguments discussed above, we shall empirically test the three hypotheses presented at the end of section 2.

Sample and Data

We consider more than 18,000 respondents from representative surveys in 15 different rich societies. This sample has been deliberately chosen since these 15 societies represent most of the 21 rich societies which were the topic of research already overviewed in the previous section and for which a remarkably strong trust-change link at the societal level was found when Internet usage was used as an indicator for change. The 15 of the 21 cases comprise those cases which were surveyed in the 1990 wave of the World Values Survey from which we take a question (that was included only in the 1990-wave) as the basis of additional measure for the disposition to change. These 15 societies are: Austria, Belgium, Canada, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, Norway, Spain, Sweden, United Kingdom, United States.

The 15 societies are rather homogeneous with regard to their level of wealth as well as their institutional characteristics. All of them are long established market societies and have been, with the exception of Spain, democracies for at least about half a century. Yet, they differ considerably with regard to the average level of trust among their citizens. The percentage of respondents in national surveys who believe that other people can generally be trusted ranges from 66.1% in Sweden to 22.8% in France.

The selection of representative material from 15 societies allows us to disentangle, less affected by other variables, the effects of (i) the considerably varying average scores for trust which we consider as the extent of a "culture of trust" as a societal characteristic and (ii) the individual readiness to trust other people as expressed in the interview. To make it clear to the reader, we now change to an individual-level analysis, but consider at the same time average scores characterizing the whole society – the latter being the standard approach of cross-national analyses which we addressed earlier. We will consider a new indicator for the attitude toward change and predict the individual values of about 18,000 respondents by: (i) individual readiness to trust other people, controlling for individual status characteristics (education, income, gender, age), and by (ii) contextual variables: average scores for trust in the respondents' society ("culture of trust"), controlling for the average level of per capita material wealth and income inequality within the respondents society. To make it

clear, we are interested in both trust effects and use the individual and societal controls only to obtain unbiased estimates, not intending to specify a complete model to account for change.

While all individual level data comes from the second wave of the World Values Survey (1990), the societal level data, with the exception of the aggregate level of trust (the "culture of trust"), stem from the World Development Indicators, which have been collected by the World Bank.

Dependent Variable

The dependent variable, disposition to change, is operationalised using the attitude toward change, for which four models are specified and estimated. We are aware that using attitudes instead of actual behavior may flaw our results (Ajzen/Fishbein 1970; 1977). However, the lack of cross-national data imposes this pragmatic choice.

We obtain our dependent variable, the disposition to change, from variable v323 of the World Values Surveys on the attitude toward "making major changes". Respondents were asked to position themselves on a scale from 1 to 10, i.e., from "One should be cautious about making major changes" to "You will never achieve much in life unless you act boldly". As in the case of the often-used question for trust, the question on the disposition to make changes is very general too.

We also would have liked to replicate the recent finding that trust strongly favours innovation (Bornschier 2001; Volken 2002a,b; Huang et al. 2003) with regard to the technological sphere at the individual level. However, the World Values Survey does not contain adequate questions to capture the proneness to technological change.

Independent Variables

Our key explanatory variable, trust, also comes from the World Values Survey. In its first form, as a measure of *individual or generalised trust*, trust is a dummy coded variable with values 0 and 1, where 1 indicates that the individual agrees with the statement that most people can be trusted[5]. In its second form, as a proxy for the "culture of trust" in a given society, we use the average level of trust in a society, which represents the percentage of people in a country who agreed with the statement that most people can be trusted. This variable seems to be an adequate proxy, since it may be understood as an average individual's estimate about the general trustworthiness of the entire context; that is the trustworthiness of an unknown generalised other within the context.

Control Variables

On the individual level, several characteristics and predispositions have been identified, which potentially influence trust. At the same time, these variables are likely to have an impact on the disposition to change as well; therefore, they need to be added as controls. Putnam (1995), for example, argues that older age cohorts tend to trust more because they spent less time in isolation, watching television. These older cohorts rather participated in social networks where reciprocity and trust could easily be learned. Alesina and La Ferrara (2000) find evidence that higher status groups, measured with income and education, tend to trust more and female tend to trust less than male. Correspondingly, one may argue, that the disposition to change declines with age, since the capacity and willingness to learn and to adapt to new situations decline.

Income and education are likely to increase one's disposition to change, because they represent important cognitive and financial resources, which may be needed in order to deal with change. With regard to gender, there seems to be no clear causal link. On the one hand, conventional (patriarchal) wisdom suggests that females are less prone to change since change is related to risk and females, in many situations, are more risk-averse. On the other hand, it seems quite plausible that potential gender differences have become obsolete in the modernization process. All four individual level control variables – age, income, education and gender come from the World Values Survey.

On the societal level, further controls need to be specified as well. Firstly, the average level of trust is substantially correlated with the level of inequality, and more affluent societies may better be able to fund trust-enhancing institutions (Knack and Keefer 1997, Zak and Knack 2001). Secondly, the lack of financial resources in a social context could substantially limit the average disposition to change, for similar reasons as outlined for individuals: wealth positively influences the average disposition to change by making resources available which are often a necessary precondition to innovate and change, and more importantly, help to reduce risk, because a failure of the innovative project does not threaten one's existence. Alternatively, one may expect average wealth to be negatively associated with the average disposition to change, since an affluent context may induce fewer incentives to change. Finally, a large literature on inequality proposes that inequality fuels conflict (Davies 1962, Feierabend/Feierabend 1966, Gurr 1968, Muller 1985, Muller/Seligson 1987, Alesina/Perotti 1996). Conflict, in turn, may inhibit the disposition to change if cooperative actions with others are needed to bring change about. While in the latter view, income inequalities may hinder change, if perceived

as rigid, they may also be seen as an engine of change, if people are inclined to take their fate into their own hands.

For the above rationale, two additional, contextual control variables, which both come from the World Development Indicators, need to be inserted in the respective models. The indicators are: firstly, the level of income inequality – measured as the country-specific Gini Coefficient collected between 1987 and 1992, depending on the country – and, secondly, the average wealth – measured by the gross domestic product per capita in US $ 1990, corrected for purchasing power parity. Table 1 gives a brief overview on the variables and the data.

Table 1: Descriptive statistics

Variable					
Individual Level (level 1)	**Obs.**	**Mean**	**Std. Dev.**	**Min.**	**Max.**
Disposition to change	18,006	5.65	2.65	1	10
Individual trust	18,006	.44	.50	0	1
Gender	18,006	1.49	.50	1	2
Age	18,006	43.36	16.25	18	85
Income	18,006	5.16	2.62	1	10
Education	18.006	6.10	3.02	1	10
Country Level (level 2)	**Obs.**	**Mean**	**Std. Dev.**	**Min.**	**Max.**
Culture of trust	15	42.98	11.50	22.79	66.10
Wealth	15	18,314	4,452	10,960	26,410
Inequality	15	30.45	4.98	23.1	40.8

The Models

In order to disentangle both potential sources of the proneness to change, individual trust and the "culture of trust" in the social context, we are specifying a two-level hierarchical linear model (Bryk/Raudenbush 1992; Longford 1993; Goldstein 1995). Since we are primarily interested in the effects of *trust* on different levels and its potential interaction, we are presenting a very sparse model, which on the individual level (level one) as well as on the societal level (level two) involves only trust as explanatory variable.

On level one, the control variables age, income and education are centred around their group mean values; on level two, all variables are centred around their grand mean.

Four models have been estimated. The results for the combined model estimates, including individual and contextual variables, are presented in table 2.

The first two models present an "intercept-as-outcome" (ANCOVA) model, which allows us to explore the effect of trust on the individual level, under the assumption, that these effects do not differ between societies. Model 1, which is the most basic model, comprises only individual trust as explanatory variable. Model 2 expands the previous model by including all control variables on the individual level.

The second set of models are specified as "intercept-and-slope-as-outcome" models, allowing us to disentangle individual, contextual and interaction effects of trust. While model 3 considers only trust on both levels, model 4 comprises, besides trust, all individual and contextual control variables. All models have been estimated using the iterative generalised least squares method. On the individual level, data has been weighted using the weights provided with the second wave of the World Values Survey (Inglehart 1990).

Results

First, consider the results depicted in table 2. For those individuals, who generally trust others – regardless of their societal context –, we estimate their disposition to change to be 0.356 points higher than those of individuals, who say, one cannot be too careful in dealing with people (model 1). Adding the individual level control variables – age, gender, income and education – does not alter this general pattern (model 2), although the effect of individual trust decreases somewhat to 0.272 points. Furthermore, the inspection of the control variables reveals, that the individual resources, education and income positively influence the disposition to change, whereas females as compared to males, and older people tend to be less prone to change. Although the individual effect of trust is statistically significant and stable, one has to admit, that the variance explained at the individual level, by either of the models (0.46% and 4.2%), is quite low.

Now, let's consider the "culture of trust" that is the average level of trust in a society. Model 3 enables us to disentangle three different effects of trust: individual, societal and the interaction between the two different levels. An individual living in an average "culture of trust" is expected to have a

disposition to change of 5.636 points. Individual trust, as in the previous two models, increases the disposition to change (0.339 points) and is statistically significant. The "culture of trust" also substantially and significantly affects attitudes towards "making major changes" (0.038 points), e.g. an individual living in a "culture of trust", which is one standard deviation above the average, is expected to gain 0.437 points on the disposition to change scale. It should be noted, that this effect applies to *all* individuals in the corresponding social context, no matter whether they trust individually. Finally, the results from model 3 show no significant interaction between individual trust and the "culture of trust". That is, the impact of individual trust on the disposition to change seems to be independent of the prevailing "culture of trust". While model 3 explains a substantial 26 percent of the variance between countries' mean disposition to change, it is much less effective in explaining the variation of the different slopes (0 percent).

However, it is not the lacking interaction between individual trust and the "culture of trust" per se, which is accountable for the zero variance; rather, it is the very low amount of variance (0.056) of individual trust effects between societies. Furthermore, individual trust, again, does not seem to explain much variation (0.69 percent) of the proneness to change within the societies under study.

Table 2: Disposition to change in 15 rich democracies 1990, hierarchical model (combined), iterative generalised least squares estimates

	Making Major Changes			
	Model 1	*Model 2*	*Model 3*	*Model 4*
Fixed Effects	b	b	b	b
Intercept	5.729** (.228)	6.75** (.235)	5.636** (.220)	5.962** (.210)
Individual trust	.356** (.039)	.272** (.038)	.339** (.077)	-.179 (.363)
Age		-.021** (.001)		-.022** (.001)
Gender		-.211** (.036)		-.213** (.036)
Income		.056** (.007)		.055** (.007)

|				
Education			.055** (.008)	.054** (.008)
Culture of trust			.038* (.017)	.040* (.017)
Wealth in social context				-.018 (.055)
Inequality in social context				-.084† (.043)
Individual trust * Culture of trust			-.002 (.006)	-.005 (.005)
Individual trust * Wealth in social context				.023 (.018)
Individual rust * Inequality in social context				.026* (.013)
Random Effects	τ, σ^2 (s.e.)	τ, σ^2 (s.e.)	τ, σ^2 (s.e.)	τ, σ^2 (s.e.)
Society mean (u_{0j})	.764** (.280)	.767** (.281)	.673** (.252)	.514** (.193)
Trust-innovation slope (u_{1j})			.056 (.030)	.029 (.019)
cov (u_{0j}, u_{1j})			-.129 (.073)	-.086 (.050)
Level-1 effect (e_{ij})	6.070** (.064)	5.842** (.062)	6.056** (.064)	5.831** (.062)
Model				
N (d.f.)	18,006 (4)	18,006 (8)	18,006 (8)	18,006 (16)
R-Square Maddala (total variance)	8.6	12.1	8.7	12.3
R-Square level-2: intercept and (slope)	- (-)	- (-)	26 (0)	44.0 (29.3)
R-Square level-1	.46	4.20	.69	4.4

* $p < 0.05$ ** $p < 0.01$ $\dagger$ $p = 0.0512$

These findings are illustrated by figure 3 and figure 4. While figure 3 reveals that much of the average disposition to change can be explained by the "culture of trust", the caterpillar plot of the residuals[6] and the confidence intervals around them (figure 4) clearly shows two things: firstly, nine of the fifteen societies differ significantly from the average disposition to change (cons) at the 5 percent level.

Secondly, the effects of individual trust between these 15 societies under study do not differ a great deal. Only three of the fifteen countries do not overlap zero, indicating that their specific effects of individual trust

significantly differ from the average effect of individual trust on the disposition to change on the five percent level.

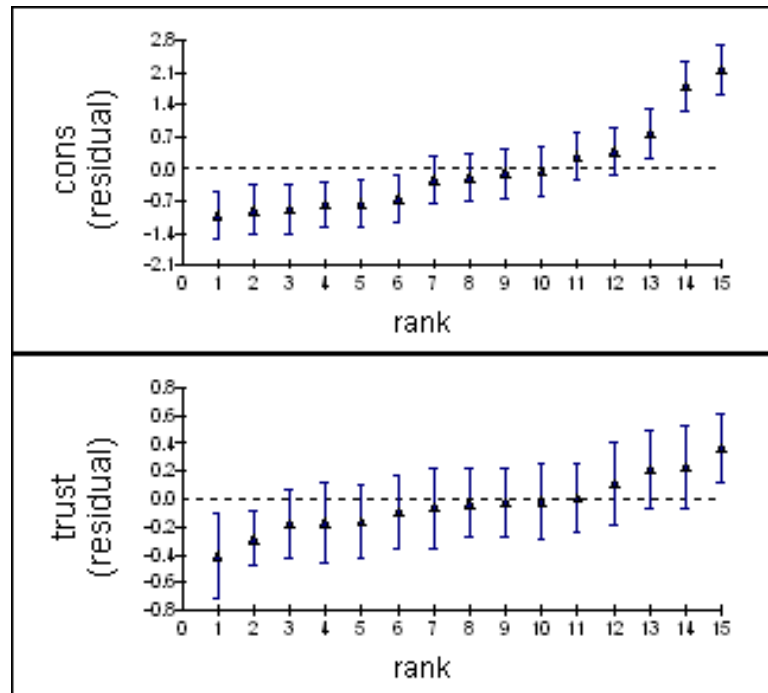## Figure 3: Disposition to change and the "culture of trust" in 15 advanced democracies, 1990
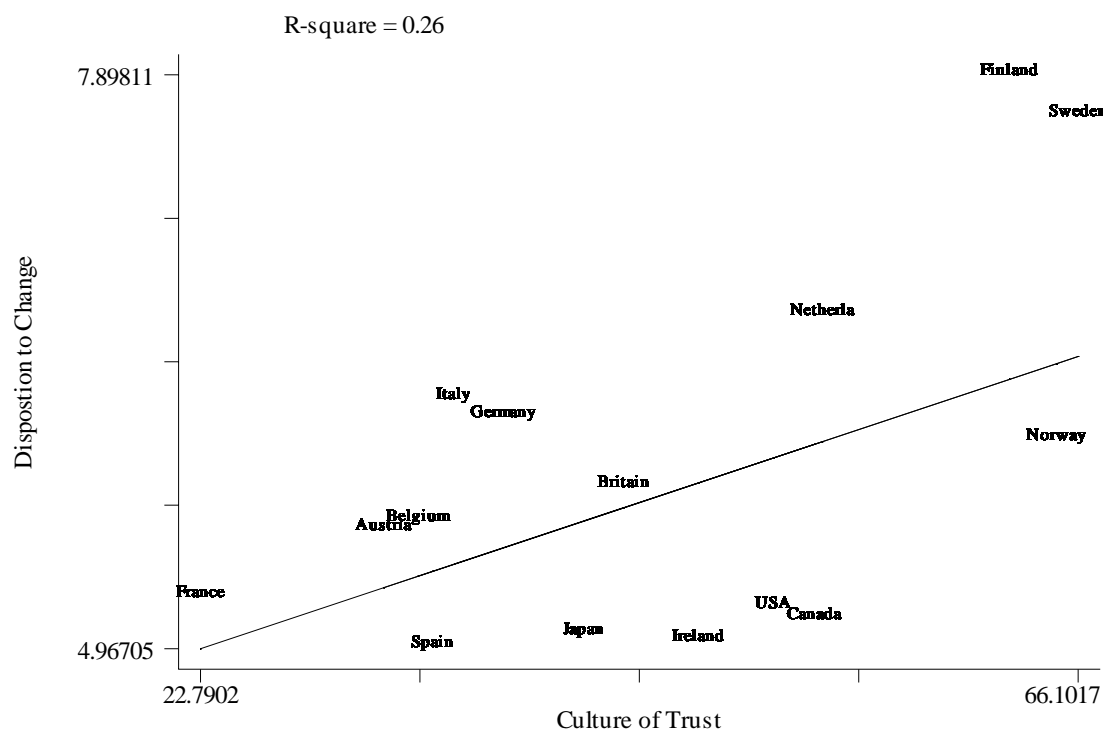
The introduction of the individual and societal control variables (model 4) slightly changes the overall picture. The "culture of trust" in a society still exhibits a substantial positive and significant effect on the average disposition to change of individuals in a given society; and its effect – with an additional gain of 0.040 points per percentage increase in aggregate level of trust – differs only marginally from model 3 (0.038). The variance in society mean disposition to change now amounts to 44.0 percent, which gives us quite a good fit of the model. As before, we do not succeed in finding a differential effect of the societal context on individual trust, and again the "culture of trust" does not significantly affect how individual trust pays in a given society.

In contrast to the previous models, the effect of individual trust is no longer statistically significant after controlling for age, gender, income, education, average wealth and income inequality. Tentatively, one may conclude from these findings, that model 3 and 4 are quite well suited to explain trust-related variations in the disposition to change between, but not within

countries or between individuals.

Figure 4: Proneness to general change and the residuals of trust in 15 advanced democracies, 1990

The "culture of trust" may therefore be understood as an emergent phenomenon, which facilitates the disposition to change beyond and independently of individual trust. Although individual and societal trust together account for only 8.7 percent (model 3) of the variance, these results should not be underestimated. The results point to the "right" direction, and given the rather broad meaning of the dependent variable, the results are promising (see Ajzen/Fishbein 1970; 1977).

Looking at the random effects covariance (table 2), an interesting finding is that high trust societies seem to have a tendency towards a much weaker association between individual trust and the disposition to change, although – as indicated above – the effect in our sample of 15 societies is not statistically significant. In other words: high mean disposition to change, as explained by a broad "culture of trust", goes together with weaker effects of individual trust, as indicated by the negative covariance. This finding seems to point to diminishing returns of individual trust when the "culture of trust" extends to ever increasing parts of the population in the social context. Although, this result, due to the lack of statistical significance, is highly tentative, it may prove to be extremely relevant for further research, which seeks to extend the sample to societies with comparatively low "culture of

trust".

With regard to trust, one must finally conclude, that differences in the disposition to change are due to differences in the "culture of trust" in the societal context, and not due to individual trust or the differential effects of the "culture of trust" on individual trust. Although one cannot be euphoric about these findings – the within-society variation of the individual disposition to change, which accounts for approximately 90 percent of the total variation, remains to be explained by factors other than trust –, one should neither dismiss these results since they are preliminary evidence for the tenability of proposition 2.

Discussion and Conclusion

This paper aimed at clarifying two at the first glance separate, but linked issues. On the one hand, we were probing into the generability of the proposition that trust facilitates innovation by looking at individuals' disposition to change. On the other hand, we intended to disentangle individual from societal effects of trust and clarify their specific relation. Our findings, however, are only partially consistent with previous studies.

Firstly, the above results suggest that individuals in different societies indeed vary considerably in their average disposition to change. And these variations can at least partially be explained by the different "culture of trust" (hypothesis H_2) in the 15 societies under study. This result is consistent with previous empirical findings from Uslaner (1997) and Alesina/La Ferrara (2000): the prevailing "culture of trust" structures individuals' expectations. Thus, people who live in societies with high levels of trust are more likely to take a chance and innovate.

Secondly, we find that the effect of living in a specific "culture of trust" on the disposition to change is the same for all individuals, no matter whether they personally are trusting or non-trusting (hypothesis H_3). That is, there is no extra payoff for trustors in a social context with either low or high average levels of trust, and in contexts where most people can be trusted individual trust relative to the "culture of trust" becomes less important as we shall discuss shortly. One may therefore begin to doubt Uslaner's (1997) claim that it is primarily trusting optimist (and not distrusting pessimists) who engage in cooperative behaviour. Of course, this presupposes that the "culture of trust" has already become a social reality. But once established, optimists' and pessimists' expectations converge towards the optimal level of trust (Hardin 1992), and there is little or no difference in their disposition to

engage in cooperative behaviour.

Thirdly, the importance of the social context is further exemplified by the relative importance of individual, generalised trust and the "culture of trust". In model 3, the effect of the "culture of trust" on the disposition to change of an individual living in France is 2.5 times higher than the effect of generalised trust. Yet, France is the society with the lowest average level of trust in the sample (23%). In the United Kingdom, which has an average "culture of trust" (43%), this factor amounts already to 4.8 and in Sweden, the society with the highest average level of trust (66%), the effect of the "culture of trust" on the individual disposition to change is 7.4 times higher than the effect of generalised trust. In model 4, where contextual control variables are introduced, generalised trust even loses its statistical significance. Thus, studies which include only individual level variables may find positive trust effects – as in our models 1 and 2. But these results may be severely biased because the social context and its "culture of trust" are not accounted for. The inclusion of the "culture of trust" also makes sense from a theoretical perspective since most sociologists would agree that trust constitutes a component of social structure or social relations, although trust may be seen as a resource for the individual (see for example Coleman [1990] 2000:300).

Finally, we must admit that the total variance explained is only moderate. Moreover, the maximum amount of variance which can be explained by contextual factors amounts to approximately 10 percent (intra-class correlation) – the remaining 90 percent are due to variations between individuals. Therefore, studies which only consider aggregate data may substantially overestimate the importance of the "culture of trust". Besides, in order to further explore the connex between trust, change and innovation – especial on the individual level – one should investigate more specific innovative behaviour.

To sum up: From our results, two specific lessons can be learned. Firstly, while those researchers primarily studying macro level phenomena of trust may find support for their thesis, that the "culture of trust" matters, they nevertheless may potentially overestimate its importance. On the other hand, research settings, which exclusively focus on individual trust – no matter how elaborated they are – may not adequately capture the phenomena of trust when ignoring the "culture of trust". Thus, future research should combine those two perspectives.

Secondly, more theoretical work is needed. While there exist a number of sophisticated theoretical models and propositions linking trust and positive payoffs on the individual level (e.g. Coleman [1990] 2000; Hardin 1992),

little theoretical effort has been made in exploring the nexus between individual trust and the "culture of trust" as well as its combined effects.

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Endnotes

[1] Georg Simmel ([1908] 1992:346) argues as following: "Vertrauen, als die Hypothese künftigen Verhaltens, die sicher genug ist, um praktisches Handeln darauf zu gründen, ist als Hypothese ein mittlerer Zustand zwischen Wissen und Nichtwissen um Menschen." (Our translation: "Trust as the hypothesis of future behavior, which is reliable enough to base practical action on, is as a hypothesis a middle condition between knowledge and ignorance about the human being.")

2 The opposition must be considered as fair, e.g. the opposition does not plan to execute the current regime after it has won the elections.

3 The average optimal trust would therefore simply reflect the average trustworthiness in a social context, and vice versa.

4 The only point of disagreement relates to whether trust is more important for growth in developed or developing countries. In contrast to Knack and Keefer (1997) and Zak and Knack (2001), Bornschier (published on Internet) finds a declining trust-effect when adding less developed countries to his 24 developed cases (Bornschier 2000). Thus, he concludes that generalised trust is especially relevant for modern economic growth. However, this disputed question can hardly be settled at the moment since the earlier waves of the World Values Survey underrepresented the less developed countries in numbers (less so in terms of world population).

5 The terms individual trust and generalised trust are used interchangeably.

6 The residuals in Figure 4 represent country departures from the overall average lines predicted by the fixed parameters and their respective confidence intervals. That is, cons-residuals represent the departure from the average constant u_{0j} and trust-residuals represent the departure from the average slope u_{1j}.