

A note on the theory and measurement of trust in explaining differences in economic growth

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This paper takes issue with the trend to attribute differences in economic growth rates to differences in interpersonal trust. I discuss the World Values Survey (WVS) measure that is used to operationalise trust at the macro level. I hypothesise that there is a mismatch between the theoretical argument and the empirical operationalisation of trust. Instead of measuring trust, the WVS measure may instead proxy the well-functioning of institutions. I provide circumstantial evidence for this thesis by a principal components analysis of trust and institutions and a robustness test of Zak and Knack's (2001. Trust and growth, *Economic Journal*, vol. 111, 295–321) seminal study on trust and economic growth.

Key words: Trust, Institutions, Economic growth
JEL classifications: B40, O11, Z13

1. Introduction

An increased interest in the role of culture and cultural differences in relation to economic growth can be observed (Putnam *et al.*, 1993; Granato *et al.* 1996; Swank, 1996; Inglehart, 1997; Landes, 1998; Temple and Johnson, 1998; Hall and Jones, 1999; Harrison, 2000; Temple, 1999, 2001). This discussion is crystallising in the concept of social capital, of which trust is seen as one of the most important dimensions (Fukuyama, 1995; Zak and Knack, 2001; Francois, 2002; Uslaner, 2002). The majority of the empirical contributions assess international differences in trust by means of the World Values Survey (WVS) question: 'Generally speaking, do you think that people can be trusted?' (Inglehart, 1997; Knack and Keefer, 1997; Whiteley, 2000; Zak and Knack, 2001; Uslaner, 2002) to which the answer is a binomial choice between 'most people can be trusted' and 'can't be too careful'. Trust is measured as the percentage of respondents in each country that replied 'most people can be trusted'. Of these studies, Knack and

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Keefe's 1997 contribution has been the most influential (Knack and Keefer, 1997). In this paper, they investigate whether social capital has an economic payoff by studying a cross-section of 29 market economies. In their empirical analysis, they focus primarily on the role of trust, as they feel it is the most important indicator of social capital. The empirical measure that they use to proxy for trust is based on the above-mentioned WVS question. The results of Knack and Keefer point to a statistically significant effect of trust on growth. They state that 'the coefficient for trust [...] indicates that a ten percentage point rise in that variable is associated with an increase in growth of four-fifths of a percentage point' (Knack and Keefer, 1997, p. 1260). In a follow-up analysis, Zak and Knack (2001) extend the analysis by adding 12 countries to the sample of Knack and Keefer. On the basis of their analysis for 41 countries, Zak and Knack also conclude that trust—again measured by the 'generally speaking' question—has a positive and significant impact on economic growth.

The basic theoretical logic in most of the empirical studies on trust and growth goes as follows: trust exists, and it reduces transaction costs thereby promoting growth. Hence, in a cross-section it can be expected that countries with a culture characterised by high levels of trust grow faster. However, both theoretically and empirically, these studies exhibit a number of problems (Jackman and Miller, 1996; Fedderke *et al.* 1999; Manski, 2000; Paldam and Svendsen, 2000; Boggs, 2001; Fine, 2001; Durlauf, 2002A, 2002B; Sobel, 2002; Beugelsdijk *et al.*, 2004). Most of these critical approaches concentrate on the lack of a well-developed theoretical framework or methodical problems such as the endogeneity of social capital. Regarding social capital, Manski (2000, p. 117) remarks that 'empirical analyses commonly fail to define these concepts with any precision [...], many studies maintain no or little connection to economic theory [...], and the findings of empirical studies are often open to an uncomfortably wide range of interpretations'. Despite these critical notions regarding social capital, there is one important aspect that has not been sufficiently addressed, which is the theorising and measurement of trust at this aggregate level. This is not surprising, given the fact that the study of trust and economic development is still in its infant stage or, according to others, underdeveloped. As Nooteboom writes, 'economics has begun to recognise the importance of trust but tends to underestimate its complexity and to misconstrue it' (Nooteboom, 2002, p. 2).

The literature on trust suggests there are basically two levels on which trust can be studied, i.e., the micro level and the macro level (Luhmann, 1979; Paxton, 1999; Nooteboom, 2002). Of these two, the latter level is closely related to the well-functioning of institutions. Macroeconomic reasoning regarding the transaction-cost-reducing effect of trust is based on the micro insights derived mainly from management and organisation studies. Given that trust is a multi-level phenomenon, the measurement of it becomes even more important. Implicitly, many economists assume that the measurement of trust by means of this WVS question captures the micro aspects. The multi-level nature of trust makes it important to question whether this is indeed the case. Based on a brief review of the trust literature and an empirical analysis of trust and institutions, I conclude that trust as it is measured in these macro studies is not a reflection of trust as it is theorised upon at the micro level, but that it is in fact a proxy for the well-functioning of institutions. Hence, there is a mismatch between the theoretical reasoning on trust and the operationalisation of trust at the macro level. This may have serious consequences. It suggests that the empirical studies using this trust question should not be interpreted as contributions to the recent trend that attributes differences in economic growth to cultural features, but as yet another wave of empirical proof in a long tradition arguing that institutions matter for economic development.

This conclusion may seem either obvious or even irrelevant at first sight, but I think it is an important conclusion for at least two reasons. First, theoretically it is important to distinguish between culture and institutions (Williamson, 1998). Second, empirically, the lack of internal validity implies that we do not measure what we think we measure. If the level on which the theoretical construct adheres and its measurement are not identical, one may draw erroneous conclusions (Klein *et al.*, 1999).

In this paper, I am not studying trust from a moral or philosophical perspective (Uslaner, 2002; Seligman, 1997), nor am I questioning whether trust is indeed a reflection of social capital (let alone what social capital constitutes). Instead, I take a down to earth economic approach, limiting myself to trust as it is perceived in the broad field of economics, including the field of management and organisation. This implies that the main message of this paper is constrained to the field of economics, and should by no means be interpreted as a general argument that the WVS trust question is a bad measure.

The paper is structured in the following way. First, I provide a concise overview of the existing literature on trust. Acknowledging the potential risk of not doing justice to the richness of the literature on trust, I shall make a basic distinction between macro and micro trust. Based on this literature overview, I hypothesise that the theoretical reasoning that lies behind the supposed effect of trust in these macro studies does not correspond with the way trust is operationalised in these studies. The next step consists of an empirical illustration of the above hypothesis. I provide this in two ways. First and most importantly, by means of principal components analysis, I show that the macro trust measure and existing measures of institutions are elements of one underlying dimension all measuring the well-functioning of institutions. Second, a robustness analysis of the trust-growth regression by Zak and Knack (2001) shows that the effect of trust on growth is different for low income and high income countries, suggesting that the effect of trust is dependent on the underlying sample. While acknowledging that the empirical material may be mere illustrations rather than hard empirical proof, I am convinced that it provides circumstantial evidence for the thesis that this trust measure may not be an aspect of culture but of the well-functioning of institutions.

2. Macro and micro trust

There is an extensive literature on trust. Numerous approaches to and definitions of trust corresponding to the associated underlying disciplines exist, i.e., economics, psychology and sociology, and even within disciplines there are different views (Rousseau *et al.* 1998). Generally speaking, the concept of trust may be framed as an expectation of a partner's reliability with regard to his/her obligations, predictability of behaviour and fairness in actions and negotiations while faced with the possibility of behaving opportunistically (Zaheer *et al.*, 1998). To put it simply, trust has to do with signalling that the actor will not play one-shot games (cf., the willingness to be vulnerable proposed by Mayer *et al.*, 1995).

Broadly speaking, there are two streams of research in economics that study the sources and consequences of trust. As already mentioned, there is a recent trend to study trust at the aggregate level in relation to economic success of nations or regions. Theories at this level are often based on (evolutionary) game theoretical approaches, such as the classic Prisoner's Dilemma (Axelrod, 1984; Gambetta, 1988; Glaeser *et al.*, 2000; Ostrom and Walker, 2003; Büchner *et al.*, 2004) and the economic-historical contribution of Greif (1994). A core element in these approaches is the concept of (generalised) reciprocity. Putnam *et al.* (1993, 2000) phrased this in a more popular way, by arguing that 'a society

that relies on generalised reciprocity is more efficient than a distrustful society, for the same reason that money is more efficient than barter. Honesty and trust lubricate the inevitable frictions of social life' (Putnam, 2000, p. 135). And 'when each of us can relax her guard a little', transaction costs are reduced (Fukuyama, 1995). Or as Arrow writes, 'It is useful for individuals to have some trust in each other's word. In the absence of trust, it would become very costly to arrange for *alternative sanctions* and *guarantees*, and many opportunities for mutually beneficial co-operation would have to be foregone' (Arrow, 1971, p. 22; emphasis added).

Parallel to this literature there is an even more extensive stream of research on the causes and consequences of trust at the individual (firm) level (Barney and Hansen, 1995; Lane and Bachmann, 1998; Mayer *et al.* 1995; McAllister, 1995; Wicks *et al.* 1999; Nooteboom, 2002).¹ At this individual level, trust is regarded as a property of individuals or a characteristic of interpersonal relationships. Through ongoing interactions, firms develop trust around norms of equity or knowledge-based trust (Gulati, 1998), which has also been labelled process-based trust (Zucker, 1986). Numerous studies have indicated the importance of trust in economic transactions and the promotion of adaptive organisational forms (Sako, 1992; Morgan and Hunt, 1994; Madhok, 1995; Uzzi, 1996; Gulati and Gargiulo, 1999).² These studies can also be seen as a critique or extension of the transaction cost theory (Chiles and McMackin, 1996), as originally developed by Coase (1937) and Williamson (1975, 1985).³ Ring and Van de Ven (1992) have shown that informal, personal connections between and across organisations play an important role in determining the governance structures used to organise transactions. Others have shown that both trust and traditional factors from transaction cost economics are relevant for governing inter-firm relationships (Nooteboom *et al.*, 1997; Gulati, 1995). Repeated ties between firms engender trust that is manifested in the form of the contracts used to organise subsequent alliances (Gulati, 1995). Trust and contractual safeguards are to some degree substitutes. Besides a transaction cost perspective, trust is an important component of the control mechanisms that are used within alliances. Regarding the transaction cost theory, Gulati remarks: 'if the theory's emphasis on the transaction as the appropriate level of analysis is to remain viable, the interdependencies that result from prior transaction should be included' (Gulati, 1995, p. 106).

In contrast with the literature at the macro level, numerous typologies of trust have been developed at the individual (micro) level, reflecting both the richness of the concept and the lack of convergence at this level (see e.g., McKnight *et al.* 1998, Rousseau *et al.*, 1998). Das and Teng (2001) discuss a large number of types of trust that can be found in this literature: deterrence-based, knowledge-based and identification-based, fragile trust versus resilient trust, cognition-based versus affect-based trust, goodwill trust and competence trust. The adjectives used often refer to the source of trust. For example, knowledge-based trust refers to the fact that the behaviour of the other is predictable because one knows the other, either from one's own experience or through reputation effects arising in networks. One of the most commonly accepted typologies of individual trust is calculus-based trust,

¹ Acknowledging that the individual level includes actors like person, firms and other organisational entities, I shall concentrate on firms.

² See, for example, the special issue on trust in the *Academy of Management Review* 1998, vol. 23, no. 3, and on trust and control in *Organization Studies* 2001, vol. 22, no. 2.

³ Williamson's position on trust is complex and has shifted over time. Although he does leave room for the concept of trust in his 1975 contribution ('To be sure, trust is important and businessmen rely on it much more extensively than is commonly realized' 1975, p. 108), in later work he suggests avoiding the use of a diffuse term such as trust (1993, 1996).

knowledge-based trust and identification-based trust (Lewicki and Bunker, 1996). Calculus-based trust has to do with fear of the consequences of not doing what one promised or agreed to do. Individuals make choices to trust or not, based on rationally derived costs and benefits (Coleman, 1990; McKnight *et al.*, 1998). Knowledge-based trust is grounded in the predictability of the other's behaviour. This may be experience based on or established through reputation. Identification-based trust, finally, is based on the perceived similarity between partners yielding empathy and trust.

Building on an extensive review of the literature on trust, Nooteboom (2002) distinguishes between macro sources, which apply quite apart from any specific exchange relation and micro sources arising from specific relations. Whereas the former arise from the institutional environment of laws, norms, and standards, the latter is personalised and therefore yields 'thick' trust. This corresponds with the classification proposed by Luhmann (1979): (a) there is the micro-level, based on the emotional bond between individuals, which is more characteristic of primary and small group relationships, and (b) the macro-level, more abstract relationships where trust is related to the functioning of bureaucratic systems (e.g., legal, political and economic). In a later work Luhmann (1988) used the term confidence to denote the macro level of trust. A similar micro-macro distinction has been made by Misztal (1996), Rousseau *et al.* (1998), Paxton (1999) and Putnam (2000).¹

The above discussion on micro and macro trust shows that the way trust is studied at the micro level is more elaborate and fine-grained than that done at the macro level. In most papers at the aggregate level, trust is thought of in a rather limited way, compared with the existing insights on the sources, functions and types of trust at the micro level. At the aggregate level, almost no attention is paid to the variety of meanings of trust, types of trust and the contextual content. At the same time, the (macro) argument that trust reduces transaction costs is taken from these micro level studies. The trust literature on the other hand suggests that macro trust is associated with institutions (Putnam *et al.*, 1993; Zucker, 1986; Shapiro, 1987).

This limited view on trust in most macro studies can be illustrated by the seminal paper by Knack and Keefer (1997). In this paper Knack and Keefer start with a section entitled 'how can trust affect economic performance?'. While acknowledging that they discuss trust more broadly, their core reasoning is summarised in the first paragraph of this section. 'Economic activities that require some agents to rely on the future actions of others are accomplished at lower cost in higher trust environments' (Knack and Keefer, 1997, p. 1252). They continue, quoting Arrow (1972, p. 357), 'virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence'.

Two remarks concerning Knack and Keefer's reasoning can be made. First, by quoting Arrow in this way, they explicitly use *trust* and *confidence* as if these two concepts are perfect substitutes. But as Luhmann (1979, 1988) argues, these two concepts are not substitutes. Confidence relates to bigger or wider systems or entities that we can hardly influence and that are more or less inevitable, such as God, the law, police, government and so on. In other words: institutions (Nooteboom, 2002, pp. 55–6). According to Luhmann, participation in functional systems such as the economy requires confidence, not trust

¹ I acknowledge that the micro and macro distinction is not as sharp as suggested in reality. Clearly, there are feedback relations between macro trust and micro trust (see e.g., Fukuyama, 1995; Misztal, 1996; Rousseau, 1998). In order not to make my argument needlessly complicated, I have refrained from this.

(Luhmann, 1988, p. 102). By relating *confidence* to economic backwardness, Arrow in fact refers to the positive role of well-functioning institutions in explaining growth differentials. But this we already knew from development economics. Hence, by referring to Arrow, Knack and Keefer do not propose a theoretical argument as to why trust may be related to economic performance. Second, in the first sentence, Knack and Keefer (1997) use the phrase *trust environment*. There are two problems with this phrase; (a) linking the term trust to agents suggests that they are thinking of micro trust. But their article is an analysis at the aggregate level; (b) by using the term *environment*, they suggest that trust between agents (e.g., firms) comes from the outside as some kind of manna from heaven. However, the literature discussed earlier on micro trust clearly showed that there are antecedents or sources of trust. In other words, the theoretical reasoning of Knack and Keefer does not sufficiently take the multi-level aspects of trust into consideration.

I conclude that the ‘trust’ that figures prominently in firm-level studies is not the trust of the mainstream macroeconomic literature. The reduction of transaction costs because of a trusting relationship cannot simply be translated to the statement that high interpersonal trust reduces overall transaction costs in an economy, which positively affects GDP-growth. Indeed, the distinction between micro and macro trust ‘gives an additional flavour to the notorious micro/macro distinction that is so difficult to handle in empirical research. We know perfectly well how to come down from the macro-level to the micro-level, considering the impact of societal structures and changes on individual attitudes. It is much more difficult to ascend again and to speculate about the effects of an aggregation of individual attitudes on macro phenomena’ (Luhmann, 1988, p. 105). In other words, the leap from micro- to macro-functioning may be illegitimate, because what may be true for individuals may not be true for the society as a whole (Fine, 2001). Measures of an individual-level construct cannot always simply be aggregated and assumed to be a true representation of its counterpart (Morgeson and Hofmann, 1999, p. 260).

The above suggests that the question ‘Generally speaking, would you say most people can be trusted, or that you cannot be too careful in dealing with people?’ used in macro studies like those of Knack and Keefer (1997) and Zak and Knack (2001) is not the proper way to measure the degree of trust. Apart from the question of what the responses actually mean¹ and the sensitivity of the outcome to survey-specific ordering of questions,² the theoretical reasoning that lies behind the supposed effect of trust in these aggregate studies does not correspond to the way trust is operationalised in these studies. The fact that this question results in lower scores on trust in poorer countries than in richer countries does not imply that high levels of trust are important for economic development. It does not, for the simple reason that it does not do justice to the important distinction between micro and macro trust. Of these two types of trust, the WVS ‘generally speaking’ question comes closest to the latter one, macro trust. But given the theoretical reasoning developed above, a low score on this variable does not imply a lack of interpersonal trust in poor countries, but only shows the lack of well-functioning institutions. As Uslaner writes, ‘the belief that the legal system is fair may be the most important guarantee that “most people can be

¹ Putnam (2000, pp. 137–8) discusses this ‘generally speaking’ question and argues that the meaning of the responses remain murky in one respect. ‘If fewer respondents nowadays say, “most people can be trusted” that might mean any of three things: (1) the respondents are actually reporting that honesty is rarer these days; or (2) other people’s behaviour has not really changed, but we have become more paranoid; or (3) neither our ethical demands nor other people’s behaviour has actually changed, but now we have more information about their treachery, perhaps because of more lurid media reports’.

² Uslaner (2002, ch. 3) extensively discusses these issues. Interestingly, Smith (1997) claims that responses to the survey question on trust depend on where in the survey the question is asked.

trusted” (Uslaner, 2002, p. 7). The WVS measure is not a good proxy for the theoretically assumed causal links. It does not measure trust. Instead, we may be measuring the well-functioning of institutions.

The hypothesis that there may be a mismatch between the theoretical argument and the empirical operationalisation of trust is difficult or even impossible to prove. In the next section, I shall nevertheless make an attempt to provide circumstantial evidence that economists relating growth to trust by means of this WVS question have not measured trust, but the well-functioning of institutions.

3. The empirics of macro trust and institutions

In this section, I try to substantiate the theoretical reasoning developed above by two types of empirical analysis. First, using the sample of Zak and Knack (2001), I use principal component analysis to show that the generally speaking question forms one aspect of a broader dimension reflecting the well-functioning of institutions. Second, I take a closer look at sample-specific effects. Acknowledging that this type of empirical analysis is only circumstantial evidence, the results obtained do, however, support the hypothesis that there is mismatch between the theoretical notion of trust and its empirical operationalisation.

3.1 *Principal components (PC) analysis*

Using the sample of Zak and Knack (2001), I have tested the correlational structure of the WVS trust variable with a number of other variables that proxy institutional strength. Similar to Zak and Knack’s analysis, the number of countries equals 41. I use measures of aspects of formal and informal institutions that were also used by Zak and Knack (2001). A number of PC methods exist (for an easy description see Hair *et al.*, 1995). I applied two methods to come to principal components: oblique and orthogonal rotations. These methods are similar, except that oblique rotations allow correlated factors instead of maintaining independence between rotated factors. In my analysis, I performed both. The KMO measure of sampling adequacy equals 0.69, which can be considered decent.¹ Table 1 shows the results of the two methods. The variables with the highest loadings are shown in bold.

Table 2 provides information on the eigenvalues and percentage of explained variance² for each component. Both analyses converge to five components.

As Table 1 shows, the differences between the orthogonal and oblique method are marginal. The results of both methods converge to a similar conclusion. For reasons of clarity I guide the discussion along the results of the orthogonal analysis. Trust has the highest factor loading in component three (0.586) where it clusters together with ‘gini-income’, and ‘economic discrimination’. The latter two are negatively related to trust. However, the second highest loading (0.531) in the first component is almost equal to the loading in component three. As can be seen in Table 2, the first component has the highest explained variance. This first component consists of several measures of institutional well-functioning, i.e., ‘contract enforceability’, the ‘Transparency International corruption index’ (measured inversely, which explains the positive sign), the ‘black market premium’,

¹ This measure ranges between 0 and 1, reaching 1 when each variable is perfectly predicted without error by the other variables. It is a test for the presence of correlations between the variables.

² When components are correlated as in oblique PC analysis, sums of squared loadings cannot be added to obtain a total variance. Therefore, only in case of the orthogonal analysis, I calculated the percentage of variance explained by each component.

Table 1. Results of the PC analysis: orthogonal and oblique (in brackets)

	Components				
	1	2	3	4	5
Trust	0.531 (0.550)	0.177 (-0.687)	0.586 (-0.341)	0.161 (0.422)	0.379 (0.525)
Gini_inc	-0.374 (-0.390)	-0.0046 (0.879)	-0.814 (0.153)	-0.228 (-0.406)	0.109 (-0.02)
Ethn hom	0.05 (0.086)	0.866 (-0.273)	0.210 (-0.879)	0.192 (0.344)	0.219 (0.268)
Contract enf	0.731 (0.750)	0.207 (-0.340)	0.183 (-0.412)	0.335 (0.599)	0.390 (0.596)
TI corr index	0.692 (0.714)	0.382 (-0.359)	0.207 (-0.565)	0.362 (0.535)	0.285 (0.483)
Inv rights	0.421 (0.434)	0.067 (-0.316)	0.225 (-0.198)	0.218 (0.413)	0.681 (0.786)
Econ discr.	-0.012 (-0.02)	-0.02 (0.793)	-0.815 (0.055)	0.106 (0.006)	0.104 (0.-09)
Black market pr	-0.842 (-0.837)	0.138 (0.173)	-0.043 (0.06)	0.012 (-0.209)	0.034 (-0.169)
Pol Assass	0.099 (0.096)	-0.081 (0.257)	-0.279 (0.067)	-0.023 (0.024)	0.744 (0.734)
Rev coups	-0.759 (-0.767)	-0.280 (-0.005)	0.153 (0.445)	-0.074 (-0.310)	-0.140 (-0.333)
Pol instab	-0.423 (-0.443)	-0.690 (-0.187)	0.300 (0.754)	-0.050 (-0.218)	-0.027 (-0.148)
Pol rights	-0.578 (-0.601)	-0.196 (0.337)	-0.189 (0.385)	-0.591 (-0.752)	0.147 (-0.065)
Ethn fract	-0.100 (-0.126)	-0.775 (0.115)	-0.061 (0.778)	-0.045 (-0.142)	0.377 (0.314)
Democracy	0.205 (0.228)	0.045 (0.04)	-0.151 (-0.162)	0.869 (0.867)	0.046 (0.177)
Rulelaw	0.749 (0.769)	0.463 (-0.359)	0.208 (-0.641)	0.095 (0.396)	0.190 (0.391)
Participation	0.24 (0.05)	0.246 (-0.509)	0.447 (-0.328)	0.659 (0.731)	0.257 (0.330)
Capitalism	0.604 (0.612)	-0.05 (-0.377)	0.264 (-0.127)	0.238 (0.435)	0.212 (0.378)
Socinf	0.744 (0.767)	0.396 (-0.551)	0.401 (-0.593)	0.196 (0.494)	0.079 (0.294)

‘revolutionary coups’, ‘rule of law’, ‘capitalism’ and ‘social infrastructure’. All these variables have the expected sign. Looking at these variables, this first component clearly measures institutional strength in general. As argued in the theoretical section above, this PC analysis confirms the idea that generalised trust is closely related to institutional well-functioning. Interestingly, the majority of the variables included in the components have been linked with trust by Zak and Knack (2001, Table 2). They explain differences in trust by a number of measures of formal and informal institutions, among which some have been used in the above PC analysis. They also find that Gini income and Economic Discrimination are significantly negatively related to trust. But variables included in the first component are also significantly related to trust in their analysis: contract enforceability (positively) and the Transparency International corruption index (positively). Hence, it can be argued that whereas Zak and Knack (2001) think of trust as an independent variable, our PC analysis suggests that this measure of trust is only an element in a broader measure of institutional strength. In order to test whether the variables depicted in bold in the first component of Table 1 indeed form one dimension, I have applied a PC analysis on these eight variables. The results are shown in Table 3. The KMO measure of sampling adequacy is 0.881, which can be considered very good. The procedure results in one eigenvalue larger than 1 (5.33) yielding a component explaining 66% of the variance of this component.

The resulting one component including trust, as well as these measures of institutional strength, does not contradict the earlier theoretical reasoning; the WVS trust question is strongly correlated with (the presence and) well-functioning of institutions. By using this trust variable, scholars may, in fact, measure institutional well-functioning. A closer analysis of samples may provide additional evidence.

Table 2. Results of the PC analyses: eigenvalues

Component	Orthogonal: Eigenvalues	% of variance	Oblique: Eigenvalues
1	4.953	27.519	5.205
2	2.631	14.614	3.387
3	2.569	14.273	3.886
4	2.008	11.156	3.926
5	1.807	10.037	2.888

Table 3. PC analysis on eight items

	Component 1
Trust	0.800
Contract enforceability	0.917
TI corruption index	0.925
Black market premium	-0.659
Revolutionary coups	-0.659
Rule of law	0.910
Capitalism	0.646
Social infrastructure	0.936

3.2 Sample-specific effects

The argument developed above can be further substantiated by taking a closer look at the composition of samples used to study the relationship between trust and growth. I shall again use the sample used by Zak and Knack (2001). However, before doing so, a simple scatter plot already reveals the basic argument I intend to make. Figure 1 is a scatter plot of trust (1999) and level of economic development (GDP 1998) in a number of European countries.

Data on GDP per capita (1998) are from Maddison (2001). Data on trust are from the WVS/EVS (1999). The upward slope suggests a positive relationship between trust and GDP per capita, which would be in line with the findings of the earlier discussed empirical studies. However, a closer look at the graph reveals that there are three ‘clouds’ of observations: one group of Scandinavian countries, including the Netherlands, one with the relatively advanced other European economies in the middle of Fig. 1 and one with the relatively less advanced eastern European countries in the lower left corner of the graph. It is well known that these former Soviet satellites have great difficulty in creating well-functioning institutions (European Bank for Reconstruction and Development, 1999). If these countries were left out, no relationship between trust and GDP per capita would be found. For similar levels of GDP per capita (approximately US\$20,000) the graph shows trust scores ranging between 20% (France) and just below 70% (Denmark). The graph suggests that it is important to include countries with relatively ill-functioning institutions to obtain a significant relationship between trust and level of economic development. In the following, I shall investigate the sample used by Zak and Knack (2001).

Beugelsdijk *et al.* (2004) have shown that, in contrast to the findings of Knack and Keefer (1997) the results on trust and growth obtained by Zak and Knack (2001) were robust. However, it was also found that this robust result on trust depends on the inclusion of a number of less developed countries with correspondingly malfunctioning institutions. In other words, the fact that Zak and Knack (2001) add 12 less developed countries to the sample of 29 countries used by Knack and Keefer results in increased variance on the lower side, i.e., low trust countries, resulting in increased robustness. This sample-specific effect

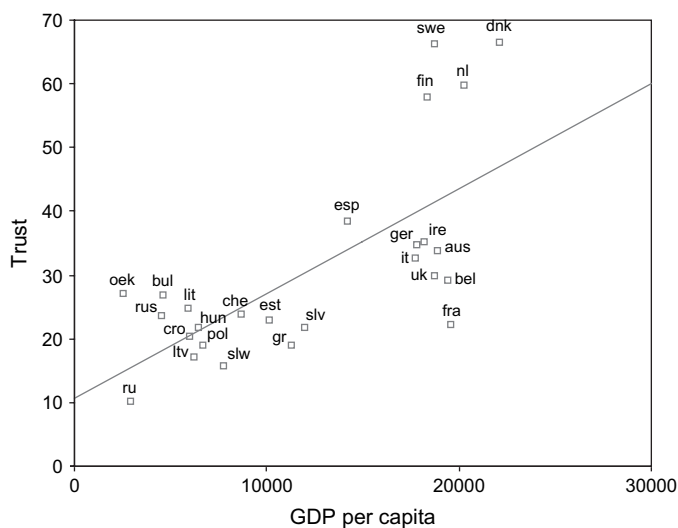


Fig. 1. Trust and GDP per capita in European countries.

Table 4. *Effects of the composition of the sample on trust using EBA analysis*

Step (N)	Sample (country added to previous sample)	Mean value of estimated coefficient of trust	Fraction of significant coefficients (%)
29	Knack and Keefer sample (29 countries)	0.030	4.5
30 (50)	Greece (GRC)	0.025	0.9
31 (42)	Oman (OAN)	0.036	11.2
32 (37)	New Zealand (NZL)	0.037	16.6
33 (32)	Luxembourg (LUX)	0.036	17.6
34 (26)	Dominican Republic (DOM)	0.038	22.7
35 (22)	Ghana (GHA)	0.040	28.1
36 (22)	Uruguay (URY)	0.042	49.2
37 (21)	Bangladesh (BGD)	0.042	42.7
38 (14)	Venezuela (VEN)	0.043	56.2
39 (10)	Colombia (COL)	0.044	67.2
40 (6)	Philippines (PHL)	0.051	91.6
41 (5)	Peru (PER)	0.061	99.9

Source: adapted from Beugelsdijk *et al.* (2004). The first column shows the WVS trust score in parentheses.

is shown in Table 4, which is taken from Beugelsdijk *et al.* (2004). It shows the effect of adding countries to the sample of Knack and Keefer (1997). Countries are added according to their trust score, from high to low. Using extreme bounds analysis and controlling for a large number of additional variables, the third and fourth columns show the effect on the mean effect size of the estimated coefficient of trust and the fraction of significant estimates of trust, respectively. The results of Table 4 reveal that the inclusion of low trust countries, i.e., less developed countries with ill-functioning institutions, is crucial for a robust significant relationship between the trust variable and economic growth.

Besides the *significance* of trust, Beugelsdijk *et al.* (2004) have also shown that the *effect* of the trust variable on growth is dependent on the underlying sample (see column 3 of Table 4). Knack and Keefer (1997) also acknowledged this and explicitly tested for an interaction effect between trust and level of economic development. In addition to this interaction approach, there is an alternative way of testing for differential effects. This method consists of splitting the sample into two (or more) parts by creating a spline. In addition to the more common interaction approach, this method is attractive, as it estimates the two coefficients for the predefined subsamples. Table 5 presents the results of the application of this method to the sample of Zak and Knack (2001). Next to the variables belonging to the standard growth model, it shows the results of the two trust variables reflecting the below-mean trust countries and the above-mean trust countries.

The mean value of trust in this sample is 32.35.¹ Table 5 shows that trust is only significant in the low trust part of the sample, coinciding with the relatively poor countries. In addition, it is shown that the effect size differs considerably between the two subsamples, 0.064 in the low trust part and 0.009 in the high trust part. This implies that, whereas Knack and Keefer have argued that their negative interaction effect suggests that the effect of trust on growth is larger for less developed countries with lower levels of

¹ Technically, the two trust variables are created by applying the following spline function: $\text{trust1} = \min(\text{trustinit}, 32.35)$ and $\text{trust2} = \max(\text{trustinit} - 32.35, 0)$.

Table 5. *Sub sample estimation of trust*

Dependent = growth 1970–1992	
Method = OLS	
Variables:	
Constant	–1.60 (0.77)*
Initial GDP per capita 1970	–0.274 (0.088)**
Price of investment	0.176 (0.035)**
Years of education	–0.084 (0.133)
Trust 1: low trust countries	0.064 (0.028)*
Trust 2: high trust countries	0.009 (0.028)
R-squared	0.54
N	41

The number between parentheses reflect the standard error; ** $p < 0.01$, * $p < 0.05$. Data are taken from Zak and Knack (2001).

economic development, the results of Table 5 suggest that the trust variable is significant in poor countries (with low scores on trust) and not significant in rich countries (with high scores on trust). Though this may seem an insignificant detail, it supports the claim that the inclusion of less developed countries is crucial for a significant effect of the trust variable on economic growth. In other words, both the closer analysis of the samples used to study the relationship between trust and growth as well as the principal components analysis indicate that trust measured by the ‘generally speaking’ question is closely related to the well-functioning of institutions.

4. Discussion

When levels of theory, measurement and statistical analysis are not identical, the results obtained may reflect the level of measurement or statistical analysis rather than the level of theory. In attributing the results of the analysis to the level of the theory, one may draw erroneous conclusions (Klein *et al.*, 1999).¹ In the introduction, I referred to Charles Manski’s (2000) critical comments on the way social interaction is studied. It can be concluded from this paper that his remarks also hold for trust. ‘Empirical analyses commonly fail to define these concepts with any precision.’ Correct. The example of Knack and Keefer’s discussion of trust indicated that the multi-level character of trust is not taken into consideration, and levels of analysis are mixed. ‘Many studies maintain no or little connection to economic theory.’ Correct. The insights on trust regarding the transaction cost reducing effect are derived from the micro level, but the aggregate analyses do not do justice to the richness of the concept at this micro level. Macro trust is something other than micro trust. And ‘the findings of empirical studies are often open to an uncomfortably wide range of interpretations’. Also correct. Instead of measuring trust, I have tried to build a plausible argument that instead we may have been measuring the well-functioning of institutions.

Evidently, almost by definition, aggregate empirical constructs lose the richness of micro phenomena. Nevertheless, I believe that the theoretical reasoning and the empirical

¹ This holds for both directions. Macro researchers dealing with global measures or data aggregates that are actual representations of lower level phenomena cannot generalise to those lower levels. This ‘ecological fallacy’ makes it difficult to draw individual level inferences from aggregate data (Hofstede, 2001). Conversely, micro researchers run the risk of ‘atomistic fallacies’, i.e., to suggest, for example, public policy interventions at the nation level based on firm-specific data.

illustrations provided in this paper suggest that the way trust is currently measured does not only do no justice to the insights of trust at the micro level but, more importantly, may also yield erroneous conclusions. I submit that, by using this trust question, we, in fact, do not measure (aspects of) culture or social capital of which many scholars assume they have economic effects,¹ but the well-functioning of institutions. If this is true, the empirical studies using this trust question should not be seen as contributions to the recent literature that attributes differences in economic growth to cultural features, but as yet another wave of empirical proof in a long tradition arguing that institutions matter for economic development.

Though I have *not* aimed to answer issues related to the theoretical direction of causality between trust and the well-functioning of institutions, I think that this may be a promising (though complex) route to follow in future research. Uslaner (2002, pp. 218–19) discusses this link extensively and suggests that trusting societies develop strong legal systems that gain the confidence of citizens. In contrast with the suggestions put forward and tested by Zak and Knack (2001), the argument that a strong institutional environment leads to greater trust is also not correct according to Uslaner. What I have attempted to do in this paper is to argue and illustrate empirically that the trust variable as it is used to measure trust actually does not measure trust. This does not mean, however, that I deny any *theoretical* link between trust and institutions.

In developing a thorough theory of trust, institutions and economic development, it may be fruitful to take a processual perspective. Though that has not been the main goal of this paper, this is a logical consequence of my argument. Several authors have suggested that the relationship between trust and institutions (e.g., the legal system) may depend on the actual stage of development of an economy (Zucker, 1986; Shapiro, 1987). In this context, Platteau (1994) emphasises the importance of a generalised morality, widely shared norms and conventions instead of shared norms in a small group, for the development of an efficient market system. Hence, the micro trust that is created in small networks needs to be institutionalised by, for example, a legal system, thereby allowing for economic transaction with anonymous third parties outside the existing network (Greif, 1994). A well-developed institutional framework creates confidence in the trustworthiness of the anonymous third party (cf., Zucker's (1986) concept of markets for trust production. Institutional forces should be seen as channelling contractual behaviour, in the sense of opening up options for cooperative behaviour which would not otherwise be feasible (Arrighetti *et al.* 1997, p. 192). The function of micro trust may shift from being a substitute for contracts in an economy where there is no well-functioning legal system, to trust being a complement in a highly advanced economy with a well-functioning legal system (cf., Lane, 1997). In the latter case, economic transactions are complex and incomplete contracts need to be supplemented with micro trust (Lorenz, 1999). It is the combination of both trust and contracts (Arrighetti *et al.* 1997; Bennet and Robson, 2004). However, the prevailing type of trust (micro or macro), and also the potential leeway for micro trust in contractual relations, are related not only to the degree of institutional development, but also to the type of institutional system within which these transactions take place (Burchell and Wilkinson, 1997). Depending on the complexity of the transaction and the actual development stage of the economy and its specific institutional

¹ It is important to stress that the WVS question does of course measure aspects of culture or reflect a characteristic of a society. However, my argument only applies to the field of economics in which it is argued that these certain aspects of culture (i.e., the presence of trust measured by this variable) influence economic growth.

system, the sources of trust may differ. As Bennet and Robson write, 'There is no reason to believe that a commercial relationship will always have a lower level of trust than a personal one, although the form of that trust will often be differently founded' (Bennet and Robson, 2004, p. 477).

To achieve progress in the field of trust and economic growth and culture and economic development in general, I feel it is of great importance that empirical researchers are much more specific about the questions they address (cf., Manski 2000) and on which level their causal theoretical links are effective. This should be possible. In an analysis of the role of trust in different institutional settings (Germany and the UK) Lane (1997) and Bachmann (2001) have implicitly studied trust from a multi-level perspective. They show that even in well-developed countries such as the UK and Germany, institutional differences result in differences in the process of trust-building and types of trust. 'While in both countries, trust is highly valued as an efficient means of coping with uncertainty, in the British socio-economic system, which is a prime example of extensive de-regulation, trust is a much more scarce resource than in the German business environment, which is still characterised by tight regulation and a strong institutional order. If/when trust occurs in the British system, it is likely to be *personal trust* constituted on the basis of individual experiences, rather than *system trust* produced by reference to the institutional framework' (Bachmann, 2001, p. 353). In other words, in the presence of a strong institutional framework, the associated generally acknowledged and formalised guidelines of behaviour yield a relatively low risk of betrayal and uncertainty. Macro trust is likely to be the prevailing social coordination mechanism. In case of less strict institutionally embedded rules and norms, it is micro trust rather than macro trust that is an important coordination mechanism. In this case, contracts may even be seen as a sign of distrust (Nooteboom, 2002). In sum, 'it is vitally important to gain a deeper understanding of how the specific socio-economic system under review works and how the relevant mechanisms [...] of co-ordination of interactions between firms are constituted' (Bachmann, 2001, p. 361). In this vein, Doney *et al.* (1998) have attempted to relate the development of trust to cultural differences. Studies in which trust is socially and institutionally contextualised are most promising and rewarding.

The micro-macro link between the institutional structure on the one hand and the way interpersonal interaction is organised on the other hand is crucial for future theorising on trust and the function it has on the micro and the macro level. In fact, what we need to do has already been pleaded for by Manski (2000): We need clear thinking and adequate data.

5. Conclusion

In this paper, I have taken issue with the recent trend among economists to explain differences in economic development by differences in culture, more specifically trust. The majority of the empirical analysis uses a single specific type of question (Generally speaking, do you think that people can be trusted or not?) to operationalise a complex concept such as trust. Based on a succinct overview of the trust literature, I distinguished between micro and macro trust. I argued that the way trust is currently theorised and operationalised in these macro studies does not do justice to the complexity and richness of the concept as described at the micro level. I have argued that (macro) economists studying trust should be aware of the pitfalls of using the question 'Generally speaking, would you say most people can be trusted, or that you cannot be too careful in dealing with people?' This question simply does not do justice to the insights on trust at the micro level. More important, it does not only do no justice to the insights, but leads economists to jump to

conclusions that are too simplistic, given the complex nature of the trust concept. Whereas trust is mostly used as a proxy for social capital to measure certain aspects of culture, the theoretical arguments and the empirical illustrations in this paper suggest this may not be entirely correct. The macro trust measure may in fact not measure culture, but reflect the well-functioning of institutions. From this perspective, it may perhaps be better to refrain from the use of 'trust' at the macro level and use the term confidence, as proposed by Luhmann (1979).

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