Trust and Economic Performance: A Panel Study

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Abstract

This paper critically reviews the current various measures of trust through surveys/questionnaires and trust experiments. The main shortcoming from such approaches is that the trust index produced from surveys and experiment are ambiguous. Given these arguments, I use Factor Analysis technique to construct a new trust index that account for indicators of degree of trust. Consequently, the rankings of countries in my index is more consistent compared to the rankings of existing trust indices. Using the above, I illustrate the panel analysis on the influence of trust on FDI inflows and income inequality. Trust turns out to play a significant role on FDI inflows. With regard to income inequality, trust is more pronounced among the OECD countries.

Keywords: Trust; Economic Performance; FDI inflow; Income Inequality

JEL Classification: C23; D63; O11; Z13

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1 Introduction

In general, trust can be defined as a person's belief in the integrity, reliability, and ability of others. "Others" refers to either different (groups of) people or, more broadly, the various institutional aspects of the society in which a person lives (e.g., leaders and the quality of governance; law and order, etc.).

With respect to economics, trust can be seen as facilitating various aspects of economic activity. In particular, researchers have argued that trust can reduce transaction costs, promote cooperation, and encourage business activities (Knack and Keefer 1997). Therefore, economists claim that a higher level of social trust is positively correlated with economic development (Moegan and Hunt 1994). Put differently, it has been widely accepted and demonstrated that social trust benefits the economy and that a low level of trust inhibits economic growth.

Historically, sociologists and economists have examined various forms of trust, each one associated with specific behavioural characteristics. Broadly speaking, some of the various forms of trust include generalised trust, particularised trust, strategic trust and moralistic trust (Uslaner 2003). Generalised trust facilitates interactions with people who are different from ourselves and is thus strikingly different from particularised trust in which people only have faith in cooperating with individuals or groups possessing similar characteristics, such as ethnicity religion, or social class. Whereas generalised trust is founded solidly upon the belief that individuals/groups from different backgrounds can indeed pursue common and mutually advantageous goals, particularised trust often occurs within a clan as each group attends to their own interests and rarely places any faith in the good intentions of others. For example, Evangelical Christians in the United States have very high in-group trust since they volunteer and donate to charities within their own faith communities. Nevertheless, it has been suggested that they rarely display a similar degree of trust towards other groups (Wuthnow 1999; Uslaner 2001). Moralistic trust refers to circumstances in which people place their faith in those who they believe share their common moral code. Strategic trust describes situations in which different parties understand (either through information or their own experience) that cooperation can lead to mutually

advantageous outcomes (Uslaner 2003).

The earliest related literature analyses social capital, including trust, and the impacts of social capital on government performance across regions in Italy (Banfield 1958; Coleman 1988; Gambetta 1988; Putnam *et al*. 1993). Since those studies, the importance of trust to economic performance has drawn substantial attention. Therefore, the impact of trust on economic outcomes has been empirically investigated across different countries by Knack and Keefer (1997) and La Porta *et al*. (1997). The evidence also suggests that trust can promote financial development, effectively facilitate economic outcomes such as entrepreneurship and influence economic exchanges between two countries (Guiso *et al*. 2004, 2006, and 2009). Moreover, Bloom *et al*. (2007), Algan and Cahuc (2009) and Aghion *et al*. (2010) examine the correlation between trust and institutions.

Furthermore, the theoretical foundations of the effect of trust on the economy have been provided by Zak and Knack (2001). They present a model in which the rate of investment is determined by the level of trust. In their model, trust is characterised as the time that agents allocate to production rather than verifying others' trustworthiness. Thus, this model effectively illustrates how different levels of trust determine economic performance. It also demonstrates the existence of a low-trust poverty trap. According to the model, trust depends on the institutional, economic and social environment. Specifically, trust is positively correlated with the institutional environment and economic conditions but negatively correlated with population heterogeneity.

The problem in this area is determining how trust should be measured. Existing research papers tend to employ measures of trust that are produced through surveys/questionnaires. Since the 1980s, surveys covering a large number of countries such as the General Social Survey (GSS) and the World Value Survey (WVS) have become available. The "standard" survey questions addressing trust are as follows: "Do you think most people would try to take advantage of you if they got a chance, or would they try to be fair?" from the GSS or "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" from the WVS. Measurements

of trust are conducted by assessing the average responses as "try to be fair" and "can be trusted" to the corresponding survey questions. The survey results are either used as the alternative measurement of trust or as the indicators of moral values (Tabellini 2010; Guiso *et al*., 2011).

However, the surveys can be interpreted differently due to the polysemy of the questions and responses (Algan and Cahuc 2013). Moreover, the respondents who claim to have high trust in others may behave differently in the reality (Algan and Cahuc 2013). In addition, there is always the risk that survey data contain systematic measurement errors, which can be either self-reported errors that are constant for each respondent over time or answers from a small group of people with particular personality traits that may not be informative about their corresponding behaviour (Zak 2005). Finally, the lack of WVS data on trust for less developed countries hinders the investigation into trust in these countries and often makes inter-temporal comparisons and cross-country studies infeasible.

To improve the measurement of trust, some researchers have conducted laboratory experiments that usually apply the "trust game" raised by Berg *et al*. (1995) or its variants.

Earlier studies demonstrate that the correlation between the answers to the trust survey and the behaviours in the experiment are mixed. For example, Glaeser *et al*. (2000) reveal that the answers to the trust survey are inconsistent with the behaviour in experiments. However, Holm and Danielson (2005) suggest that the answers to the trust survey and the behaviour in experiments are positively correlated in some countries, such as Sweden. Fehr *et al*. (2002) compare the results from the representative survey and representative behavioural data from a social dilemma experiment in Germany to illustrate that the trust question can measure the behaviour of trust but not trustworthiness. Meanwhile, Ermisch *et al*. (2009) show that the trust survey cannot predict behaviour in the trust experiment by conducting a real monetary rewards experiment on a sample of the British population.

Perez *et al*. (2006) suggest exploring the trust proxy in two directions: either by obtaining the data from one of the surveys or by proxying the variables that

indicate the degree of trust, particularly in reference to a financial or commercial relationship. Since the self-reported trust levels from the surveys and the actual behaviour in trust experiments are ambiguous, this paper follows the second approach to construct a new trust index by considering social and institutional characteristics as well as the educational and socioeconomic conditions that have been shown to affect trust levels.

This analysis is a systematic attempt to construct an alternative measure of trust. It also contributes to the literature by using a panel study to illustrate the effect of trust on economic performance variables. The three main objectives are to construct a new trust index by applying a factor analysis (FA) technique, to compare the new trust index to the previous measures of trust (trust survey), and to investigate the correlation between trust and foreign direct investment (FDI) inflows as well as income inequality.

The remainder of this paper is organised as follows. Section 2 illustrates the components of the trust index, the FA technique, and how FA can be used to construct the trust index. Section 3 compares the trust index to the trust survey measurement. Section 4 describes the application of the trust index by examining the correlation between the trust index and economic performance variables, such as FDI inflows and income inequality. Section 5 concludes this paper by discussing its main findings and limitations.

2 Trust index

This section explains the process of generating the trust index. The first subsection illustrates the components used to build the trust index. The theoretical foundations and empirical evidence for each component are discussed. In the second subsection, an FA technique is introduced and applied to assign weightings to all the components. Lastly, the third subsection presents the trust index built by the FA technique for 136 countries and reveals its validity.

2.1 Components of the trust index

Many authors emphasise the determining role of social or political institutions

and social relationships on trust (Arrow 1972; Putnam *et al*. 1993; Knack 2002; Uslaner 2002). Additionally, Glaeser *et al*. (2002) propose an economic approach to trust and demonstrate the correlation between trust and economic growth. I consider both economic and non-economic indicators in terms of degree of trust to generate a proxy. Therefore, my trust index would include three aspects: institutional environment; population heterogeneity; and educational and socioeconomic conditions, which are also consistent with the theoretical work of Zak and Knack (2001).

Most of the components I use to generate the trust index are drawn from the International Country Risk Guide (ICRG) dataset. The ICRG generates data concerning the ratings of political, economic and financial risks by using approximately 30 metrics based on original indicators. As a result, the generated data have different score points describing the scenarios for each country in each year. Here, I mainly employ the political rating data.

2.1.1 Institutional environment

For the institutional environment, I employ the *index of property rights* introduced by Knack and Keefer (1995). The *index of property rights* is produced by equally weighing four indicators from the ICRG: *quality of bureaucracy*, *law and order*, *corruption* and *investment profile*. *Quality of bureaucracy* mainly captures the degree of strength of institutions and the quality of their bureaucracy using scores that range from 0 to 4. For the countries with higher scores, government change would not cause a dramatic policy revision or interruption in government service. However, if a country lacks a cushioning effect when facing a change in the government, that country would receive lower ratings. *Law and order* assesses two parts: the "law" element and the "order" element. The "law" part reflects the strength and impartiality of the legal system, and the "order" part reviews the willingness of citizens to implement and comply with laws. *Law and order* scores range from 0 to 6. If a country suffers from a very high crime rate or a country's laws are always ignored without effective sanction, it would be given a low rating. Higher scores are allocated to countries with a greater respect for their judicial system. *Corruption* measures the corruption rating of a country's political

system. Specifically, corruption is assessed in terms of "excessive patronage, nepotism, job reservations, 'favour-for-favours', secret party funding, and suspiciously close ties between politics and business". Higher ratings are given to countries in which special payments make no difference to the government officials, while the lower ratings are given to the countries with serious corruption problems. *Investment profile* examines the possible risks to investments that are not caused by other political, economic or financial risk components. This indicator mainly consists of "contract viability/expropriation", "profits repatriation" and "payment delays". *Investment profile* is scored from 0 to 12 with higher scores implying a lower risk to investment. The scores of the index of property rights range from 0 to 28. Higher scores indicate a country's governmental institutions are more effective, guaranteeing property rights and contract enforcement.

Knack and Keefer (1997) suggest that trust can be created by formal institutions such as a strong rule of law. Essentially, citizens tend to rely on informal and local rules in a weak legal enforcement environment, which nourishes particularised trust within a close social circle while simultaneously weakening generalised trust. The Mafia in Sicily vividly demonstrates the evolution of particularised trust under weak legal enforcement. Gambetta (1993) states that legal enforcement was very weak in Sicily around 1812 since the abolition of feudalism took place much later there than in the rest of Europe. As the state was unable to protect private property rights there, the Mafia took advantage by providing informal local protection. This local protection through patronage clearly treats those under the protection differently from everyone else. Without legal institutions and civic-minded officials, generalised trust can be damaged (Rothstein 2011). In the same vein, Guiso *et al*. (2008) note that weak legal enforcement in the distant past in some regions of Italy is still associated with a lower level of trust today.

The empirical work of Rothstein and Uslaner (2005) also shows the positive correlation between trust and the institutional environment. This correlation is robust when using different measurements of institution quality which one commonly applied in the literature, such as government effectiveness,

accountability and corruption, as well as the effectiveness of property rights protection, rule of law and contract enforcement.

Moreover, Tabellini (2008) uses a novel way to verify the casual effect of institutional quality on trust. Specifically, he documents the correlation between the trust level of US immigrants and the institutional environment of their country of origin.

Recently, Algan and Cahuc (2013) illustrate the strong correlation between trust and institutional system by empirically investigating a sample of 100 countries. They also find a similar positive correlation between trust and governance quality in 163 European regions.

2.1.2 Population heterogeneity

In terms of population heterogeneity, I use measures of *ethnic tensions*, *religious tensions* and *internal conflict* from the ICRG. The scores of both *ethnic tensions* and *religious tensions* range from 0 to 6 with a low rating reflecting high tensions. *Ethnic tensions* may stem from a diverse racial, national or linguistic composition within a country. Higher scores are allocated to the countries with minimal tensions even if these types of differences exist among the people, while lower scores are allocated to countries with one intolerant group that is unwilling to compromise with the opposing group. In such countries, racial and national tensions are very high, preventing reconciliation. These tensions may even result in a civil war. *Religious tensions* might be caused by a single religious group's desire to express its own identity, dominate governance or even separate from the country. Countries with a single religious group that desires to dominate the government or even suppress religious freedom would eventually have a substantial social distance between that group and citizens with different religions. *Internal conflict* assesses the "political violence" in the country, which involves three subcomponents: "civil war/coup threat, terrorism/political violence and civil disorder". Countries with higher ratings would have no armed or civil unrest against the government. These countries would also have governments that prevent "arbitrary violence, direct or indirect, against its own people". Otherwise, the country would receive lower scores.

Ritzen and Woolcock (2000), Woolcock *et al*. (2006) and Baliamoune-Lutz (2009) emphasise that the essential element of trust is social cohesion. Social cohesion is defined by Ritzen and Woolcock (2000) as "a state of affairs in which a group of people have an aptitude for collaboration that produces a climate for change". This definition suggests that ethnic tensions can be a proxy for social cohesion because social cohesion not only reflects the popular observance of policy reforms but also affects the institutional implementation of those reforms. Additionally, ethnic fractionalisation might lead to the social exclusion of specific ethnic groups or even evoke a civil war (Woolcock *et al*. 2006; Baliamoune-Lutz 2009). In the same vein, Putnam (2007) reveals that trust tends to decline where ethnic fractionalisation or segregation exist. He illustrates that trust is relatively low in ethnically diverse residential areas based on cross-cities studies. By investigating across US states, Alesina and La Ferrara (2000, 2002) provide similar evidence. The findings may be because people naturally prefer to trust others with similar backgrounds and are therefore inclined to place less trust in those who are different from them. Moreover, high ethnic tensions result in lower cooperation, as represented by collective actions such as funding and public goods (Alesina *et al*. 1999; Miguel and Gugerty 2005). This decline in cooperation might be primarily due to weakened collective action resulting from distinct preferences and the free rider problem within ethnically diverse areas.

The influence of religious tensions on trust is similar to the influence of ethnic tensions. Levi (1996) and Uslaner (2002) reveal that some groups may inhibit instead of improving generalised trust in people who are outside the group. Groups that reinforce the in-group identity, such as religious fundamentalists and racists, can undermine generalised trust. Stolle (2000) suggests that if the group members have strong within-group trust, then those group members tend to have less trust in outsiders over time.

Jacob and Tyrell (2010) note that the inhabitants of regions undergoing civil war tend to have a relatively low probability of fulfilling their civic duties, resulting in problems such as low voter turnout, low rate of participation in voluntary associations and low rate of voluntary organ donation. Moreover, Rohner *et al*. (2013) propose a theory regarding how war and civic conflicts are

associated with distrust. They claim that a history of conflicts impacts the trust (beliefs) of the agent. The agent then redefines their trust (beliefs) and passes it to the next generation. Therefore, conflicts such as civil wars and civil disorder could even result in the permanent collapse of trust. Additionally, the empirical research of Rohner *et al*. (2013) illustrates that the measure of average trust is negatively associated with the frequency of civil war after controlling for democracy and other covariates based on country-level statistics during the period 1981-2008. Similarly, by exploring the violence surrounding the 2007 Kenyan election in Africa, Dercon and Gutierrez-Romero (2010) indicate that violence undermines generalised trust. In the same pattern, Rohner *et al*. (2013) uncover the causal effects of internal conflicts on trust by using individual- and country-level data in Uganda during the period 2002-2004. These scholars provide the robust results of intense fighting, which damages generalised trust by using a variety of identification methods.

2.1.3 Education and socioeconomic conditions

I adopt *socioeconomic conditions* from the ICRG and *secondary school enrolment* from the World Bank as proxies. *Socioeconomic conditions* measures factors including "unemployment rate, consumer confidence and poverty", which reflect the socioeconomic pressures at work and in society. The points range from 0 to 12. High ratings are given to countries in which the citizens live under good socioeconomic conditions. *Secondary school enrolment (% of gross)* measures the percent of students enrolled at the secondary school level regardless of age.

Hausman (1979) and Womeldorff (1991) note that education is positively related to trust because an individual who disutility the future is more likely to violate promises when they trade with others and presumably assume that promises made to them would also be violated. Indeed, Helliwell and Putnam (2007) argue that education can facilitate social trust. If individuals believe that people with higher education levels are trustworthy, then those individuals tend to trust others with higher education levels and might return to their trusting behaviour. Therefore, a higher average education level could promote a climate of trust. Presumably, people are more likely to trust others in the society with

higher average education level.

Earlier studies have revealed that individuals in high socioeconomic conditions tend to have higher levels of generalised trust than those in low socioeconomic conditions (Brehm and Rahn 1997; Putnam 2000; Alesina and La Ferrara 2002; Subramanian *et al.* 2003; Kaasa and Parts 2008). Furthermore, Rothstein and Uslaner (2005) note that poverty, which is also captured by socioeconomic condition, could damage the social fabric since the poor would feel isolated and disrespected by others.

To construct an index of country-level trust, set of weights must be selected for each component. Rather than imposing arbitrary or equal weights, I apply an FA technique to let the data determine the weights directly. The statistical summary of each component can be seen in Appendix 1.

2.2 Factor analysis technique

2.2.1 Factor analysis

FA is a statistical methodology that aims to use a smaller number of latent variables to represent a larger number of observed variables (Lewis-Beck 1994). For example, after using FA, the variation within five observed variables can be represented by one or two unobserved variables (latent factors). FA can also be used to predict latent variables by investigating the joint variation within the observed variables. Using this technique, each observed variable can be modelled as a linear combination of the latent factors with the term "error". Since the observed variables are interrelated, the set of variables can finally be reduced to a lower number of unobserved factors. FA was first used in psychometrics field, and it was later widely used in the social sciences, marketing and other applied economics research areas.

FA is similar to principal component analysis (PCA). However, these two techniques are not exactly identical. PCA is a data description technique, while FA can be used to verify hypotheses concerning the correlation between the original data. Moreover, according to the concepts of PCA and FA, although both will eventually maximise the total variance, they capture different types of

variance. Specifically, the components in PCA have orthogonal linear combinations, and they maximise the total variance. However, the factors in FA are linearly combined to maximise the shared fraction of the variance, namely, the latent construction. Thus, FA is suitable for testing a theoretical model of latent factors related to observed variables. With respect to simply reducing the number of current variables, PCA is more appropriate.

2.2.2 Statistical model

Suppose that in a dataset, we have a group of n observable random variables such as $x_1, x_2, \dots, x_n$ with means $\mu_1, \mu_2, \dots\ \mu_n$. According to the above definition of FA, after using this technique, we get some α_{ij} associated with k unobserved variables F_j. The mathematical equation can be expressed as follows:

$$x_i - \mu_i = \alpha_{i1}F_1 + \cdots + \alpha_{ik}F_k + \varepsilon_i \tag{1}$$

Here, $i \in 1, \dots, n, j \in 1, \dots, k$, and $k < n$. The error term is ε_i , which is independently distributed with a zero mean and finite variance. Here, Fs can be referred to as factors or latent unobserved variables. In addition, xs are observed variables. The equation simply conveys that we can use fewer factors to express the association among a higher number of observed variables by using FA techniques.

In particular, we have a common factor model or one factor model. In this case, it would be

$$\begin{aligned} x_1 - \mu_1 &= \alpha_{11}F + \varepsilon_1 \\ x_2 - \mu_2 &= \alpha_{21}F + \varepsilon_2 \\ &\dots \\ x_n - \mu_n &= \alpha_{n1}F + \varepsilon_n \end{aligned} \tag{2}$$

where xs are the observed variables, F is the common factor, αs are associated factor loadings and εs are error terms or uniqueness.

2.2.3 Types

There are generally two types of FA: exploratory FA and confirmatory FA. The exploratory FA technique helps researchers to identify the complicated interrelationship among variables and factors. Confirmatory FA is used to test

the hypothesis of the association between observed variables and unobserved variables. The most significant difference between these two techniques is whether a hypothesis concerning the association of the variables is introduced. Additionally, unlike exploratory FA, confirmatory FA is mainly used to predict latent factors and the associated structures in the original dataset.

2.2.4 Terminology

FA uses several specific terms. The first is *factor loadings*, which captures the correlation coefficients between the corresponding observed variables and latent factors. Additionally, the squared factor loading reveals the percentage of the variance that can be explained by the factor. The sum of the squared factor loadings for all factors for a given variable is called *communality*. *Communality* measures the percentage of variance of a given variable that is explained jointly by all the latent factors, which can be an indicator of whether the model is suitable. The variance that cannot be accounted for by the latent factor is *uniqueness*, which equals one minus *communality*. Additionally, the number of factors are decided by the *eigenvalue*. *Eigenvalue* describes the variance explained by the latent factor, which indicates the explanatory power of the latent factor based on the variables. Thus, a higher eigenvalue indicates a more powerful latent factor. Specifically, the latent factor and its structure can express the set of observed variables more accurately. The last related term is *factor scores*. *Factor scores* refers to the scores of each set of variables on each factor. By using FA techniques, each observation eventually receives its respective scores. In addition, by multiplying the score by the associated observation, the latent variable value of this observation can be obtained.

2.2.5 Criteria for determining the number of factors

There are several criteria for determining the number of factors, the most notable of which are the Kaiser criterion, the variance explained criterion, scree plot, Horn's parallel analysis and Velicer's MAP test. The Kaiser criterion is the one that is most commonly used and is the default for most statistical software, such

as Stata and SPSS. According to the Kaiser criterion, all the factors with eigenvalues below 1 will be dropped.

2.3 Construction of the Trust index using FA

I assume that one common factor can be used to explain the variance of trust. Each component is predicted to positively contribute to the "trust index". Thus, I apply the confirmatory common factor model.

First, I illustrate the correlation matrix of the components, and the results are shown in Table 1. Second, the FA is applied and the eigenvalues for each possible factor and the corresponding factor loadings are collected. The FA output can be found in Table 2.a. According to the Kaiser criteria, the number of retained factors should be one, which is consistent with the assumption of the common factor model. To further verify the number of factors, the scree plot is illustrated and shown in Figure 1, which also suggests the common factor model.

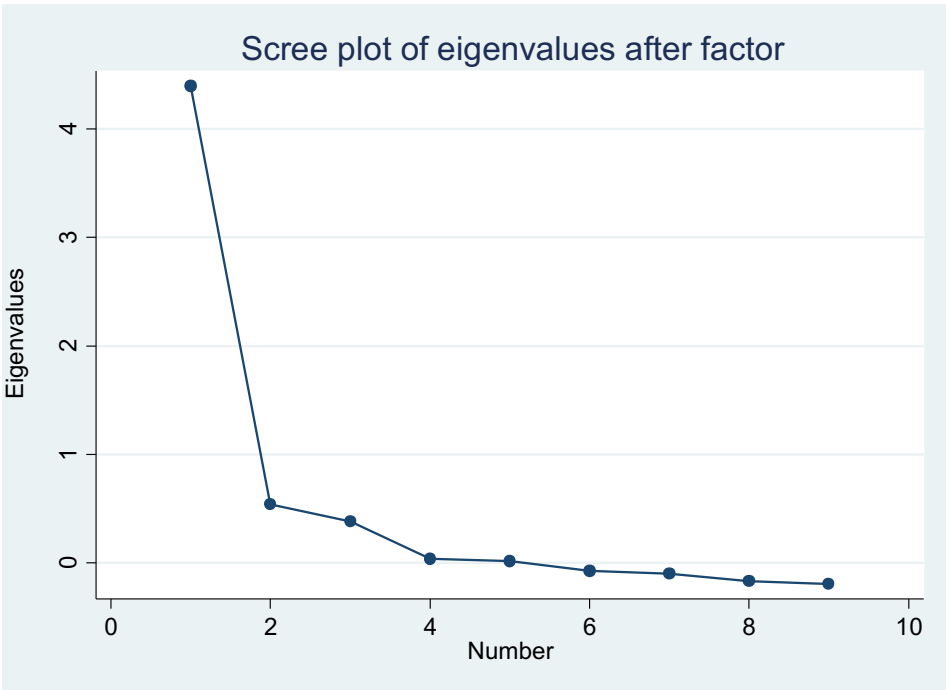


Figure 1. Scree plot of eigenvalues after factor analysis

The factor loadings and the unique variances between each component and the factors are shown in Table 2.b. Since the retained number of factors is one, only

Factor 1 would be applied. The first column in Table 2.b illustrates how the common factor (Factor 1) captures each component. Specifically, the common factor "trust index" is positively correlated to each observed component. Moreover, the high factor loadings suggest the stronger contribution of latent factors to the observed components. I follow the majority of studies and use 0.3 as the limit (Comrey and Lee 1992; Hair *et al.* 1998). In my case, all the factor loadings are above 0.3, which means that the latent "trust index" effectively captures all the characteristics of the observed components. Finally, the factor scores for each component with a standardised unit are predicted using the regression scores method[2]. The scores are shown in Table 3, and all the components positively contribute to the trust index, which is consistent with the previous assumption. Among the components, *law and order* has the highest factor score, which indicates that a standardised unit increase in the *law and order* component is associated with a 0.25 standardised unit increase in the latent "trust index".

[2] The maximum likelihood (ML) method is only one of several methods used for confirmatory factor analysis (CFA). When one or more of the components is categorical, the regression scores method is more appropriate.

Table 1. Correlation matrix of the components

`	Bureaucracy quality	Law and order	Corruption	Investment profile	Ethnic tensions	Religious tensions	Internal conflict	Socioeconomic conditions	School enrolment
Bureaucracy quality	1.0000								
Law and order	0.6804	1.0000							
Corruption	0.6739	0.6289	1.0000						
Investment profile	0.4814	0.4337	0.1961	1.0000					
Ethnic tensions	0.3528	0.5212	0.3668	0.2446	1.0000				
Religious tensions	0.2930	0.3831	0.3654	0.2077	0.3959	1.0000			
Internal conflict	0.5311	0.7499	0.4490	0.4581	0.6042	0.4520	1.0000		
Socioeconomic conditions	0.6295	0.5812	0.4829	0.5820	0.3058	0.2323	0.4670	1.0000	
School enrolment	0.6553	0.6218	0.4674	0.4876	0.4335	0.3184	0.5386	0.5212	1.0000

Table 2. a. Factor analysis

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor 1	4.3966	3.8591	0.9112	0.9112
Factor 2	0.5375	0.1572	0.1114	1.0226
Factor 3	0.3803	0.3445	0.0788	1.1014
Factor 4	0.0358	0.0205	0.0074	1.1088
Factor 5	0.0153	0.0896	0.0032	1.1120
Factor 6	-0.0743	0.0274	-0.0154	1.0966
Factor 7	-0.1016	0.0686	-0.0211	1.0755
Factor 8	-0.1702	0.0240	-0.0353	1.0402
Factor 9	-0.1942	-	-0.0402	1.0000

Table 2. b. Factor loadings (pattern matrix) and unique variances

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Uniqueness
Bureaucracy quality	0.8078	-0.2271	-0.2066	0.0238	-0.0264	0.2519
Law and order	0.8605	0.0990	-0.0439	-0.1190	-0.0234	0.2331
Corruption	0.6841	0.0468	-0.4110	0.0081	0.0338	0.3597
Investment profile	0.5751	-0.3135	0.3284	0.0197	0.0233	0.4623
Ethnic tensions	0.5813	0.3468	0.1123	0.0385	-0.0094	0.5276
Religious tensions	0.4639	0.2777	0.0165	0.0938	0.0549	0.6956
Internal conflict	0.7845	0.2647	0.2055	-0.0574	0.0025	0.2690
Socioeconomic conditions	0.7015	-0.3144	0.0456	-0.0210	0.0574	0.4032
School enrolment	0.7377	-0.0963	0.0418	0.0815	-0.0775	0.4321

Table 3. Scoring coefficients (method= regression)

Variable	Factor 1
Bureaucracy quality	0.2124
Law and order	0.2453
Corruption	0.1111
Investment profile	0.0892
Ethnic tensions	0.0823
Religious tensions	0.0590
Internal conflict	0.1944
Socioeconomic conditions	0.1240
School enrolment	0.1268

The acceptability of the common FA model has been confirmed based on three aspects. First, the overall goodness of fit is examined. The p-value of chi2 is close to zero, which indicates that the common FA model is meaningful. Second, the interpretability, strength, and statistical significance of the estimated parameters have been reviewed. In my case, the parameters are of a magnitude and direction consistent with expectations and the existing empirical evidence. Finally, the measures of sampling adequacy are checked by the Kaiser-Meyer-Olkin (KMO) test. Table 4 explains the KMO test results. Generally, the overall KMO test score must be above 0.5. The KMO value here is 0.867, which is considered a good indication of the usefulness and the adequate quality of the components and the FA model.

Finally, I obtain the trust index for 136 countries from 1984 to 2008. A high value on the trust index indicates a higher trust level. I also explore the average trust level rankings for the 136 countries over the period 1984-2008. Finland has the highest trust level, and the Republic of the Congo lies at the opposite end of the ranking. Generally, northern European countries rank in the top quarter, while African, Middle Eastern and South American countries tend to have low trust among their populations. The full ranking of the average trust index for the 136 countries are shown in Appendix 2.

Table 4. Kaiser-Meyer-Olkin measure of sampling adequacy

Variable	KMO
Bureaucracy quality	0.8667
Law and order	0.8771
Corruption	0.8206
Investment profile	0.8022
Ethnic tensions	0.8891
Religious tensions	0.8967
Internal conflict	0.8427
Socioeconomic conditions	0.8910
School enrolment	0.9234
Overall	0.8670

3 Comparison with trust survey results

As mentioned, generalised trust data are usually obtained from the WVS. The WVS is a worldwide longitudinal dataset managed by the University of Michigan. It has provided questionnaires about people's values and beliefs since 1981 (Abramson and Inglehart 1995). The measure of trust from the trust survey is generated with respect to the percentage of respondents who answer "Most people can be trusted" to the survey question "Generally speaking, would you say that most people can be trusted or that you need to be very careful when dealing with people?" Currently, the WVS provides data for 5 waves: wave I over the period 1981-1984, wave II over the period 1990-1994, wave III over the period 1995-1998, wave IV over the period 1999-2004 and wave V over the period 2005-2008. Initially, I took all the observations from wave I to wave V as the trust survey sample. In total, the trust survey sample contains 100 countries. Since the trust survey data are not continuous and most of the countries only joined one or two waves out of five, it is impossible to generate a trust value for each country in every wave. To illustrate the variation of trust values among 100 countries, I take the average over five waves to represent the trust level for each country. In the sample, Norway is the country with the highest level of trust at more than 66% of the population trusting others. By contrast, Trinidad and Tobago ranks

the lowest with only 3.8% of the population trusting others. The full ranking list of trust levels measured by the WVS trust question can be seen in Appendix 2.

To compare the ranking of my trust index and the trust survey, I find 85 common countries from the above two samples and reorganise the rankings for these countries. Appendix 3 illustrates the comparisons of the rankings for these countries in terms of the two measures of trust identified above. I should emphasise that the rationale behind this comparison is informational purposes rather than making statements about how well my index corresponds to the "correct" ordering of a country's trust level. I find some countries that illustrate very distinct rankings in the two indices (trust survey ranking and trust index ranking) and show them in Table 2.5. In the trust survey ranking, countries such as Luxembourg, France, Portugal, Slovenia, Cyprus and Malaysia surprisingly rank around and below the average level of trust, while relatively high trust levels have been found in China, Saudi Arabia, Vietnam, Indonesia, Iraq and India. In particular, Luxembourg ranks 40, placing it behind Vietnam (9) and India (22) in the trust survey ranking. However, in the trust index ranking, Luxembourg ranks 3, which is just behind Finland (1) and the Netherlands (2). Similarly, France ranks at 53, which is below the average trust level in the trust survey ranking; by contrast, it ranks 19 in the trust index, which places it in the top quarter. By contrast, China ranks 5 in the trust survey ranking, but it is just above the average trust level at 41 in the trust index ranking. Following the same pattern, Vietnam ranks 9 in the trust survey and 58 in the trust index ranking.

I further investigate the similarity between the trust index and the measurement of the trust survey. Initially, the scatter plot (Figure 2.2) between the measurement of the trust survey and trust index suggests an obvious positive correlation. This highly positive correlation has also been confirmed by Table 2.6. The value 3.456 reveals that the measurements of the trust survey are positively related to the trust index and are highly statistically significant. One additional standardised unit increase in the measure of the trust survey leads to an increase of 0.52 standardised units in the trust index.

Even though there are several differences between the measurements of the trust survey and the trust index in terms of ranking. The highly positive correlation between these two suggests that the trust index can then be used to calculate the trust

level when the trust value is not available in the WVS.

Table 5. Subsample of the Trust Index ranking and Trust Survey ranking

Country	Trust Index ranking	Survey ranking	Difference
Luxembourg	3	40	37
France	19	53	34
Portugal	20	67	47
Slovenia	24	63	39
Cyprus	29	77	48
Saudi Arabia	39	6	33
Malaysia	40	78	38
China	41	5	36
Brazil	49	84	35
Vietnam	58	9	49
Iran	60	24	36
Egypt	65	33	32
India	66	22	44
Indonesia	77	11	66
Ethiopia	81	46	35
Pakistan	82	34	48
Bangladesh	83	51	32
Nigeria	84	52	32
Iraq	85	13	72

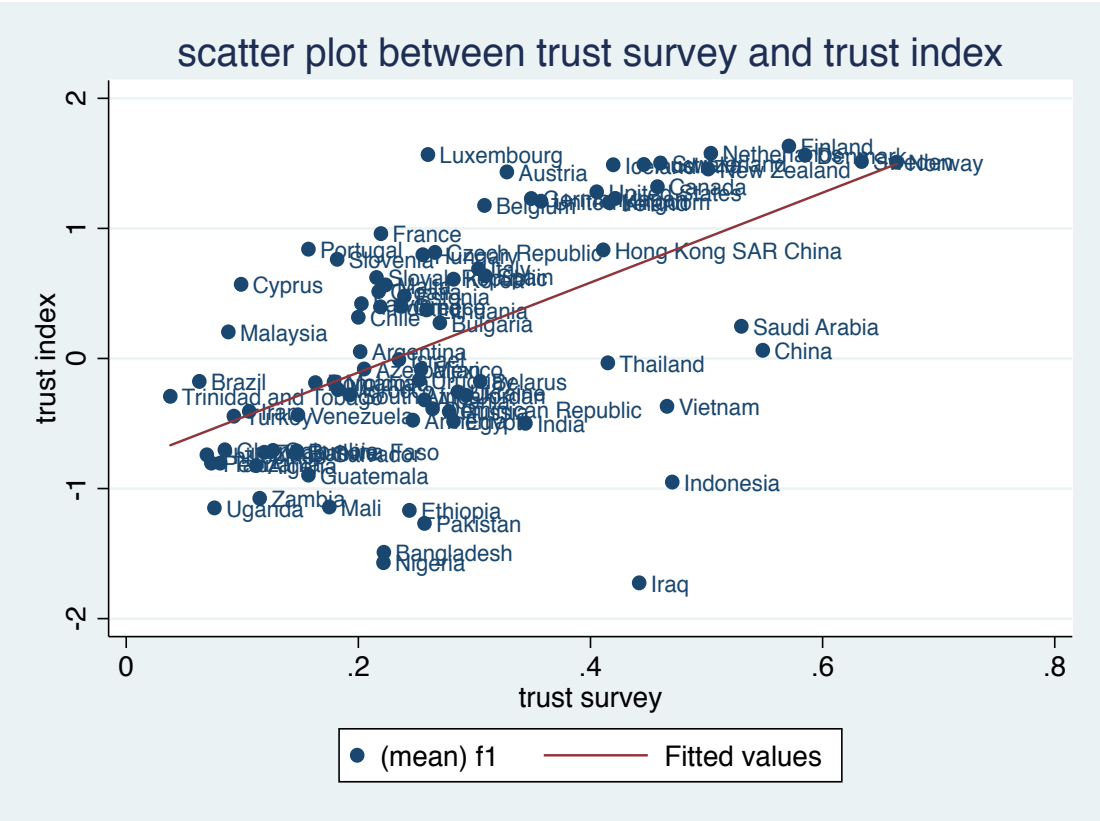


Figure 2. Scatter plot between measure of trust survey and trust index

Table 6. Pooled regression between trust survey and trust index

	Trust index
Trust survey	3.456***
	(0.556)
Constant	-0.799***
	(0.171)
Sample Size	85
R-square	0.3178

* p<0.10, ** p<0.05, *** p<0.01
Note: Trust index and trust survey are measured over the period 1984-2008.

4 The correlation between the trust index and economic performance

Earlier studies mainly explore the cross-sectional effect of trust measured by the trust survey variable obtained from the WVS regarding economic activity variables such as GDP per capita and investment rate. Knack and Keefer (1997) suggest that the average trust level is strongly associated with GDP per capita across countries. Putnam *et al.* (1993) also document the cross-region effect of trust on economic development in Italy.

Cross-country studies on the effect of trust have also been conducted by La Porta *et al.* (1997), Whiteley (2000), Zak and Knack (2001), Beugelsdijk *et al. (*2004), Bjørnskov (2006b), Knowles (2006), Berggren *et al. (*2008), Neira *et al.* (2009), Tabellini (2010), and Dincer and Uslaner (2010). There are fewer studies of panel data analysis on the correlation between trust and economic performance[3], which could be due to the severe issue of missing observations of the trust data from the WVS and the estimation results based on that data tending to be not robust in the panel fixed effect model (Hall and Ahmad 2013). Therefore, I explore the effect of trust (measured by the trust index) on FDI and income inequality using a panel data analysis.

4.1 Trust and foreign direct investment (FDI)

Trust has been routinely considered to be an essential element for most economic transactions (Blau 1964). The impact of trust on economic growth has been widely investigated (such as Putnam *et al.* 1993; Knack and Keefer 1997; Woolcock 1998; Knowles 2006; Tabellini 2010; Algan and Cahuc 2013). While FDI is one of the most significant contributors to economic growth (Borensztein *et al*. 1998), the influence of trust on FDI has rarely been examined[4].

Trust could promote FDI mainly through two channels. First, a high level of trust effectively cultivates a cooperative business environment, which facilitates FDI activities. Trust has been seen as the "expectation of regular, honest cooperative behaviour" (Bhardwaj *et al*. 2007), which could lessen the probability of opportunism and strengthen the transparency of economic exchange (Bradach and Eccles 1989; Hill 1990). Earlier studies suggest that people are more likely to trust others in a society with a high trust level, which results in a cooperative relationship that facilitates economic achievement (Miller 1992; Mcknight *et al.* 1998; Das and Teng 2000). From the multinational enterprises' perspective, a cooperative business environment in the host country is helpful to making FDI (Zhao and Kim 2011) profitable. Second, trust can enhance contract enforcement (Fukuyama 1995; Knack and Keefer 1997), which is mainly due to trust promoting compliance with property rights and business rules

[3] There is limited research using panel data analysis on the effect of trust on economic growth; see, for example, Perez *et al*. (2006), Baliamoune-Lutz (2011) and Hall and Ahmand (2013).
[4] Few studies have explored the role of trust on FDI. Those that have include the recent work of Bhardwaj *et al.* (2007) and Zhao and Kim (2011). They adopt the trust survey from the WVS as the measurement of trust.

and norms (Adler and Kwon 2002). Furthermore, trust could reduce transaction costs by mitigating conflicts and monitoring costs (Fukuyama 1995; Meyerson *et al*. 1996). In addition, positive FDI performances can signal a high trust level in the society and attract even more foreign investors.

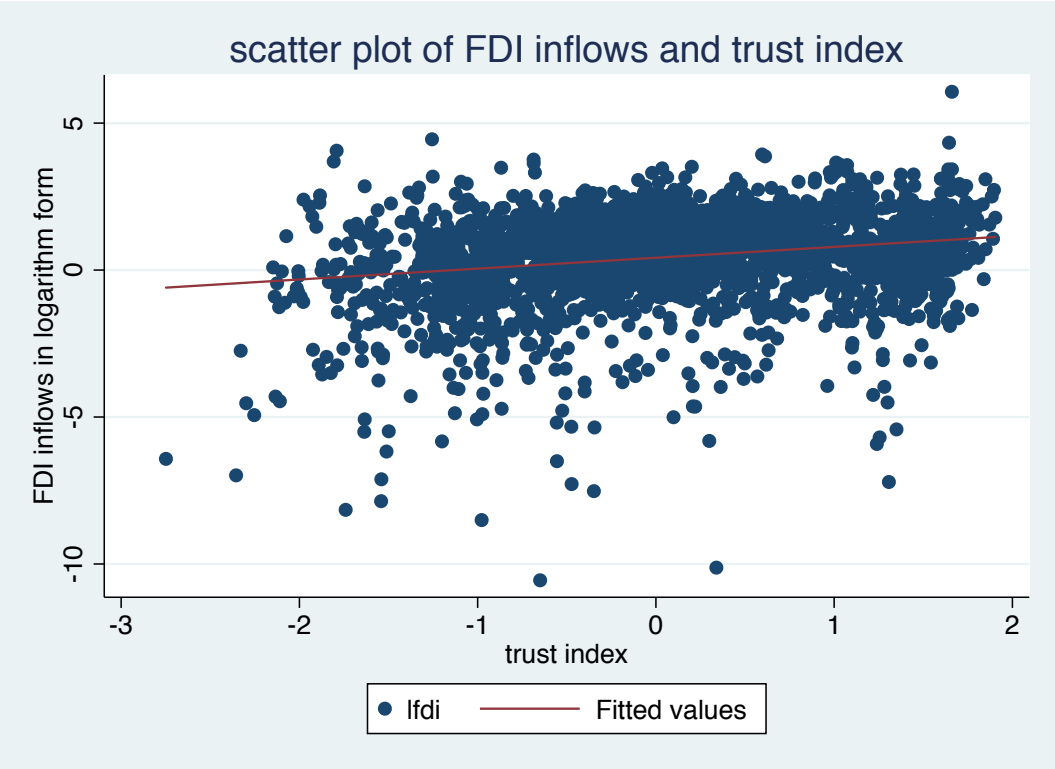


Figure 3. Scatter plot for FDI inflows (% GDP) in logarithm form and trust index

To investigate the effect of trust level on FDI inflows, I first build the trust index by using the method in section 2.3 for the period from 1984 to 2014. The upward line in Figure 3 illustrates the positive correlation between the trust index and FDI inflows (ln (FDI/GDP)) for 139 countries over the period 1984-2014. This correlation implies that a high level of trust in host country is more attractive for foreign investors. Additionally, the casual relationship between trust and FDI inflows is empirically tested by the following model:

$$\ln\left(\left(\frac{FDI}{GDP}\right)_{i,t}\right) = \beta_0 + \beta_1 T_{i,t-1} + \beta_2 X_{i,t} + \mathrm{a}_i + u_{it} \qquad (3)$$

where FDI is the FDI net inflows, and T represents trust level. In this model, the first lag of the trust index is applied. X captures a vector of control variables such as school enrolment, trade rate and growth rate. Item a_i captures the unobserved effects. The

idiosyncratic error term is u_{it}, and it should be uncorrelated with each explanatory variable across all time periods, namely, $\mathrm{E}(u_{it}|X_i, a_i) = 0$. Also u_{it} are homoscedastic and serially uncorrelated with $\mathrm{Var}(u_{it}|X_i, a_i) = Var(u_{it}) = \sigma_u^2$ and $\mathrm{Cov}\ (u_{it}, u_{is}|X_i, a_i) = 0$, for all t=1, …, T and t $\neq$ s. The FDI data and all the controls are collected from the World Bank's *World Development Indicators.*

Table 7 presents the estimation results between FDI and trust by applying the pooled OLS regression method. In model (1), the trust index is positively associated with FDI at 1% significant level. The coefficient of the trust index becomes insignificant but remains positive after controlling for education, trade rate and other determinants of FDI in model (2).

Table 7. Pooled OLS regression between trust and FDI inflows

	(1)	(2)
Trust index (t-1)	0.371***	0.063
	(0.033)	(0.048)
Education		0.006***
		(0.001)
Trade rate		0.012***
		(0.001)
Annual growth rate		0.047***
		(0.007)
Constant	0.449***	-1.137***
	(0.030)	(0.118)
Sample Size	2463	2127
No. of Countries	133	131
R-square	0.050	0.218

* p<0.10, ** p<0.05, *** p<0.01

Notes: All variables are measured over the period 1984-2014. The dependent variable is FDI inflows measured as FDI net inflows (% of GDP). The trust index is the one built using FA. Education is measured as secondary school enrolment (% gross); the trade rate is measured as trade (% of GDP); and the annual growth rate is measured as GDP growth (annual %).

Regarding the endogeneity problem, possible issues for the panel data analysis could include potential reverse causality and heterogeneity due to unobserved characteristics. This model is less likely to have any reverse causality issues for two reasons. First, I apply the lagged trust index to the regression model. Additionally, the previous literature suggests no causality from FDI to trust (Zhao and Kim 2011). Since the potential heteroscedasticity could result in a biased estimation in the pooled OLS model, I also employ the fixed effects and random effects models. The estimation

results are shown in Table 8; both random and fixed effects reveal that economies with high trust levels result in positive FDI inflows.

Table 8. Fixed effects and random effects model between trust and FDI inflow

	(1)	(2)	(3)	(4)
Trust index(t-1)	0.665***	0.369***		
	(0.070)	(0.063)		
Trust index(t-2)			0.556***	
			(0.069)	
Trust index(t-3)				0.510***
				(0.068)
Education	0.020***	0.011***	0.021***	0.020***
	(0.002)	(0.002)	(0.002)	(0.002)
Trade rate	0.023***	0.017***	0.021***	0.021***
	(0.002)	(0.001)	(0.002)	(0.002)
Annual growth rate	0.044***	0.045***	0.042***	0.040***
	(0.006)	(0.006)	(0.006)	(0.006)
Constant	-2.977***	-1.759***	-2.989***	-2.761***
	(0.188)	(0.173)	(0.194)	(0.201)
Methodology	fe	re	fe	fe
Sample Size	2127	2127	2002	1898
No. of Countries	131	131	128	128
R-square	0.251	0.269	0.256	0.257

* p<0.10, ** p<0.05, *** p<0.01

Notes: All variables are measured over the period 1984-2014. The dependent variable is FDI inflows measured as FDI net inflows (% of GDP). The trust index is the one built using FA. Education is measured as secondary school enrolment (% gross); the trade rate is measured as trade (% of GDP); and the annual growth rate is measured as GDP growth (annual %). The unobserved effect a_i is assumed to be uncorrelated with each control variable in all periods under the random regression model.

According to the Hausman test (see Appendix 5), the fixed effects model is more efficient. Based on the estimation results of fixed effects model (1), a one standard deviation increase in the trust index (t-1) would lead to a 63.8% increase in the rate of FDI inflows (%GDP). Model (1) in Table 8 also reveals that education level, trade rate and growth rate positively contribute to FDI inflows, which is consistent with the previous literature. In models (3) and (4), I further explore how historical trust levels influence current FDI inflows by using a fixed effects model. Both models uncover the important role played by the historical trust level.

Since there is a difference between OECD countries and non-OECD countries in terms of the level of development, I then examine the influence of trust index on FDI

for these two groups of countries. Table 9 illustrates the estimation results between FDI and different historical levels of the trust index by applying a fixed effects model. As shown in Table 9, the coefficients of trust are all positive and significant for OECD and non-OECD countries. Therefore, trust is an important determinant of FDI for both OECD and non-OECD countries.

Table 9. Fixed effects estimations between trust and FDI inflow for OECD and non-OECD countries

	(1)	(2)	(3)	(4)	(5)	(6)
Trust index (t-1)	0.569***			0.680***		
	(0.138)			(0.084)		
Trust index (t-2)		0.574***			0.540***	
		(0.135)			(0.082)	
Trust index (t-3)			0.627***			0.463***
			(0.132)			(0.082)
Education	0.015***	0.014***	0.013***	0.022***	0.025***	0.023***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)
Trade rate	0.023***	0.023***	0.021***	0.022***	0.020***	0.020***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Annual growth rate	0.019*	0.024**	0.023*	0.051***	0.047***	0.045***
	(0.011)	(0.011)	(0.012)	(0.007)	(0.007)	(0.007)
Constant	-3.338***	-3.207***	-2.976***	-2.568***	-2.653***	-2.506***
	(0.364)	(0.377)	(0.393)	(0.223)	(0.231)	(0.242)
Classification	OECD	OECD	OECD	non-OECD	non-OECD	non-OECD
Sample Size	741	710	680	1386	1292	1218
No. of Countries	34	34	34	97	94	94
R-square	0.442	0.479	0.477	0.226	0.232	0.229

* p<0.10, ** p<0.05, *** p<0.01

Notes: All variables are measured over the period 1984-2014. The dependent variable is FDI inflows measured as FDI net inflows (% of GDP). The trust index is the one built using FA. Education is measured as secondary school enrolment (% gross); the trade rate is measured as trade (% of GDP); and the annual growth rate is measured as GDP growth (annual %).

4.2 Trust and income inequality

The correlation between income inequality and trust has received considerable attention. A high level of trust has been linked to low income inequality. Individuals with high levels of trust tend to have a stronger sense of fairness and care more about others in society (Ram 2013). Therefore, citizens in a society with a high trust level are more willing to accept redistribution, which would mitigate income inequality (Algan and Cahuc 2013). By contrast, income inequality could be detrimental to the strength

of social trust. Since inequality might make people feel unfairly treated and exploited, social trust would decline as inequality increases.

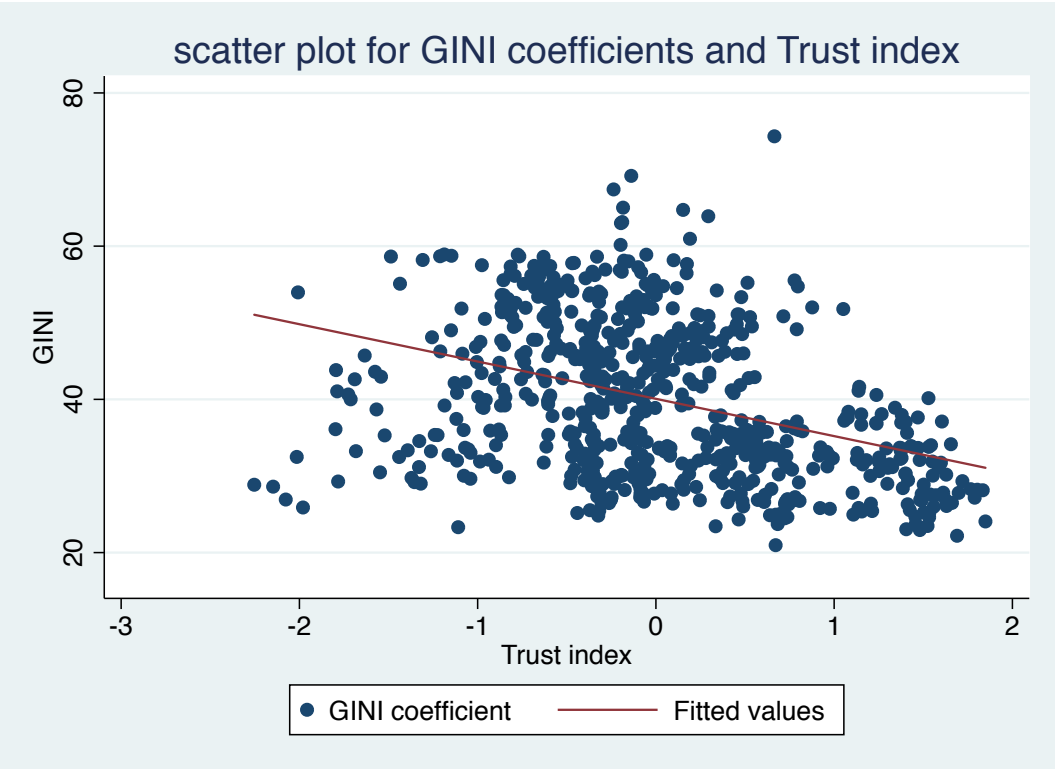


Figure 4. Scatter plot for Gini coefficient and trust index

As shown in Figure 4, income inequality (the Gini coefficient) and the trust index (built in section 4.1) are negatively correlated for 104 countries over the period from 1984 to 2014. High trust countries are associated with low income inequality (a lower Gini coefficient). However, countries with a low level of trust are generally related to high income inequality (a higher Gini coefficient). The effect of income inequality on generalised trust has been empirically studied by Rothstein and Uslaner (2005) and Jordahl (2007). However, the influence of generalised trust on income inequality is seldom investigated[5].

To examine the influence of trust on the Gini coefficient, I employ the following econometric model:

$$\ln\left(GINI_{i,t}\right) = \beta_0 + \beta_1 T_{i,t-1} + \beta_2 X_{i,t} + a_i + \vartheta_{i,t} \tag{4}$$

[5] Algan and Cahuc (2013) illustrate the only cross-country study addressing how trust influences income inequality by employing the pooled OLS regression model.

where $GINI_{i,t}$ represents the Gini coefficient for country i at time t. A high value for the Gini coefficient corresponds to a high level of income inequality in the country. Again, T refers to trust and is the same index developed in section 4.1. X captures a panel of explanatory variables including education level, income level, trade rate, inflation rate and government cost. The unobserved item is a_i. The idiosyncratic error term is ϑ_{it} and should be uncorrelated with each explanatory variable across all time periods, namely, $E(\vartheta_{it}|X_i, a_i) = 0$. Also ϑ_{it} is homoscedastic and serially uncorrelated with $Var(\vartheta_{it}|X_i, a_i) = Var(\vartheta_{it}) = \sigma_{\vartheta}^2$ and $Cov\ (\vartheta_{it}, \vartheta_{is}|X_i, a_i) = 0$ for all t=1, …, T and $t \neq s$. The Gini coefficient and all the control variable data are collected from the World Bank's *World Development Indicators.*

At first, I ignore all the endogeneity problems and adopt the pooled OLS regression method. Models (1) and (2) in Table 10 show the robust negative correlation between the trust index and the Gini coefficient. The Gini coefficient would decrease approximately 13.1% from a one standard deviation increase in one period lag of the trust index. By controlling other determinants of income inequality, the effect of the trust level decreases; a one standard deviation increase in the historical trust level leads to a 10% decrease in income inequality.

To eliminate unobserved heterogeneity, I also apply the fixed effects and random effects estimation models. The estimated coefficients of the trust index (Table 11) from these two models are all positive yet statistically insignificant, which could be due to the large amount of missing data regarding the Gini coefficient or the potential causal effect that income inequality should have on trust. Earlier studies show that income inequality can undermine generalised trust (Rothstein and Uslaner 2005; Jordahl 2007). Two methods are used to further explore the exact correlation between trust and income inequality. The first applies the between regression model to investigate cross-sectional information between income inequality and its determinants at a particular trust level. The other method uses the index of the historical trust level in the regression model to eliminate the reverse correlation between trust and income inequality.

Table 10. Pooled OLS regression between Gini and trust

	(1)	(2)
Trust index (t-1)	-0.137***	-0.105**
	(0.026)	(0.045)
Education		-0.002*
		(0.001)
Income		0.053
		(0.042)
Trade rate		-0.001
		(0.001)
Inflation rate		-0.0001
		(0.000)
Government cost		-0.010*
		(0.005)
Constant	3.665***	3.574***
	(0.026)	(0.345)
Sample Size	696	553
No. of Countries	103	95
R-square	0.187	0.292

* p<0.10, ** p<0.05, *** p<0.01

Notes: All variables are measured over the period 1984-2014. The dependent variable is GINI coefficients. The trust index is the one built using FA. Education measured as secondary school enrolment (% gross). Income is measured as the logarithm form of GDP per capita. The trade rate is measured as trade (% of GDP). The inflation rate is measured as the GDP deflator (annual %). Government cost is measured as the general government's final consumption expenditure (% of GDP).

The between regression estimator in Table 11 (model 3) shows that trust index (t-1) negatively contributes to income inequality with statistical significance at the 5% level. In particular, a one standard deviation increase in the trust index is associated with an average 11.8% decrease in the Gini coefficient across countries. This coefficient is smaller than the one from the OLS regression since this estimator is based on the regression of the mean values of the trust index of each country. These results, as well as the ones from OLS regression model, show the robust negative correlation between income inequality and trust level across countries. Compare the estimators from model (1) and (2) with (3) in Table 11; the positive coefficients of trust level in models (1) and (2) are presumably due to the lack of Gini coefficient data from each country. This can be verified by the fact that the available data for the Gini coefficient are only 938 observations among 139 countries with 31-year periods (see Appendix 4).

Table 11. Fixed effects, random effects and between regression of Gini and trust

	(1)	(2)	(3)
Trust index (t-1)	0.022	0.004	-0.123**
	(0.021)	(0.021)	(0.061)
Education	0.0003	8.27e-06	-0.003*
	(0.001)	(0.001)	(0.002)
Income	-0.048	-0.057	0.062
	(0.049)	(0.036)	(0.053)
Trade rate	0.0002	0.0001	-0.0003
	(0.0004)	(0.0004)	(0.001)
Inflation rate	-0.00004	-0.00004	-0.0002
	(0.0001)	(0.0002)	(0.001)
Government cost	0.001	0.0001	0.003
	(0.003)	(0.003)	(0.006)
Constant	4.032***	4.151***	3.268***
	(0.430)	(0.294)	(0.445)
Methodology	fe	re	be
Sample Size	553	553	553
No. of Countries	95	95	95
R-square	0.04	0.143	0.251

* p<0.10, ** p<0.05, *** p<0.01

Notes: All variables are measured over the period 1984-2014. The dependent variable is GINI coefficients. The trust index is the one built using FA. Education measured as secondary school enrolment (% gross). Income is measured as the logarithm form of GDP per capita. The trade rate is measured as trade (% of GDP). The inflation rate is measured as the GDP deflator (annual %). Government cost measured as the general government's final consumption expenditure (% of GDP). The unobserved effect a_i is assumed to be uncorrelated with each control variable in all periods under the random regression model.

To further explore the causality between trust and income inequality, I then employ the historical level of the trust index in the regression model even though the estimated coefficients of the historical trust index are still statistically insignificant. The estimated coefficient of second and third time lag of the trust index reveal a negative correlation between historical trust level and income inequality from the random effects model (models 5 and 6 from Table 12). The between regression estimations again confirm the negative relation between trust level and income inequality across countries by employing the earlier trust level in Table 12.

Table 12. Correlation between historical Gini and trust

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Trust index (t-1)	0.022			0.004			-0.123**		
	(0.021)			(0.021)			(0.061)		
Trust index (t-2)		0.006			-0.005			-0.129**	
		(0.017)			(0.016)			(0.055)	
Trust index (t-3)			0.003			-0.005			-0.085*
			(0.015)			(0.015)			(0.048)
education	0.0003	0.001	0.001	8.27e-06	0.0002	0.0004	-0.003*	-0.003**	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
income	-0.048	-0.055	-0.047	-0.057	-0.060*	-0.060*	0.062	0.074	0.016
	(0.049)	(0.049)	(0.047)	(0.036)	(0.034)	(0.032)	(0.053)	(0.049)	(0.048)
Trade rate	0.0002	0.0001	1.53e-06	0.0001	0.0001	-0.0001	-0.0003	-0.001	-0.0005
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Inflation rate	-0.00004	-0.0002***	-0.0002***	-0.00004	-0.0002***	-0.0003***	-0.0002	-0.0003	-0.003*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Government cost	0.001	-0.001	0.001	0.0001	-0.001	-0.001	0.003	0.005	-0.004
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.006)	(0.006)	(0.006)
Constant	4.032***	4.120***	4.028***	4.151***	4.187***	4.170***	3.268***	3.178***	3.714***
	(0.430)	(0.431)	(0.419)	(0.294)	(0.286)	(0.267)	(0.445)	(0.408)	(0.381)
Method	fe	fe	fe	re	re	re	be	be	be
N	553	541	511	553	541	511	553	541	511
No. of countries	95	96	93	95	96	93	95	96	93
R-square	0.040	0.075	0.103	0.143	0.142	0.158	0.251	0.290	0.240

* p<0.10, ** p<0.05, *** p<0.01

Notes: All variables are measured over the period 1984-2014. The dependent variable is Gini coefficients. The trust index is the one built using FA. Education measured as secondary school enrolment (% gross). Income is measured as the logarithm form of GDP per capita. The trade rate is measured as trade (% of GDP). The inflation rate is measured as the GDP deflator (annual %). Government cost measured as the general government's final consumption expenditure (% of GDP). The unobserved effect a_i is assumed to be uncorrelated with each control variable in all periods under the random regression model.

Considering the difference in terms of the original country characteristics and the availability of the Gini coefficient data, I again classified the whole dataset into two groups of OECD and non-OECD countries and investigated how trust influences the Gini coefficient for these two groups. Regarding the availability of Gini coefficient data, we have 252 and 686 separate observations for OECD and non-OECD countries, respectively. In other words, the Gini coefficient data for each OECD country are larger on average than each non-OECD country. The scatter plot between Gini coefficients and the trust index for OECD and non-OECD country groups are shown in Appendix 6. At first glance, this depicts an obvious negative relation between the Gini coefficient and the trust index for the OECD group but a vague correlation for

non-OECD countries. An econometric approach will be used to explain the correlation between trust and income inequality for OECD and non-OECD groups.

Table 13. Random effect of Gini and trust for OECD and non-OECD countries

	(1)	(2)	(3)	(4)	(5)	(6)
Trust index (t-1)	-0.065***			0.024		
	(0.022)			(0.024)		
Trust index (t-2)		-0.040*			0.003	
		(0.022)			(0.018)	
Trust index (t-3)			-0.040*			0.002
			(0.023)			(0.016)
Education	0.001	0.001	0.001	-0.001	-0.0004	-0.0002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Income	0.012	0.009	0.027	-0.024	-0.029	-0.031
	(0.052)	(0.053)	(0.051)	(0.048)	(0.045)	(0.043)
Trade rate	-0.001**	-0.001**	-0.001**	0.0001	0.0001	-0.0001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inflation rate	-0.0003	-0.0004	-0.001	-7.47e-06	-0.0002***	-0.0002***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Government cost	-0.019***	-0.019***	-0.019***	0.007**	0.006*	0.006*
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.004)
Constant	3.767***	3.791***	3.593***	3.860***	3.898***	3.908***
	(0.521)	(0.526)	(0.497)	(0.390)	(0.371)	(0.350)
Classification	OECD	OECD	OECD	non-OECD	non-OECD	non-OECD
Sample Size	196	192	186	357	349	325
No. of countries	30	30	30	65	66	63
R-square	0.667	0.651	0.620	0.071	0.078	0.027

* p<0.10, ** p<0.05, *** p<0.01

Notes: All variables are measured over the period 1984-2014. The dependent variable is Gini coefficients. The trust index is the one built using FA. Education measured as secondary school enrolment (% gross). Income is measured as the logarithm form of GDP per capita. The trade rate is measured as trade (% of GDP). The inflation rate is measured as the GDP deflator (annual %). Government cost measured as the general government's final consumption expenditure (% of GDP). The unobserved effect a_i is assumed to be uncorrelated with each control variable in all periods under the random regression model.

Based on the estimation results in Table 11, I applied the Hausman test for the fixed effects regression model and random effects regression model. According to the Hausman test (see Appendix B.7), the random effects regression model is more appropriate. Thus, the random effects model is applied for OECD and non-OECD groups, and the results are illustrated in Table 13. For the OECD countries, the different historical levels of the trust index are significantly negative when correlated

with income inequality according to models (1) - (3) in Table 13. However, there is no significant effect of trust on income inequality among non-OECD countries. These results suggest that trust can effectively mitigate the income inequality issue among the OECD group. Apparently, the initial trust level is relatively high among the OECD countries, and the income inequality issue can improve as the trust level becomes stronger. However, the income inequality problem cannot be alleviated in non-OECD countries, as the improvement of trust level could be due to idiosyncratic conditions among the non-OECD countries.

5 Conclusion

The primary goal of this paper is to explore a new measure of trust. My motivation is to determine whether there is a simpler and less demanding alternative trust index for the purpose of ranking countries and exploring the effects of trust on economic performance. The current measures of trust are mainly produced by trust survey questionnaires and experimental results from trust games. However, because of the aforementioned limitations arising from ambiguous trust results obtained from trust surveys and experiments, an inter-temporal and cross-country analysis on trust becomes extremely difficult.

The trust index is constructed using the FA technique in order to assign weights to all the various characteristics that are generally considered to be determinants of generalised trust, which include the following: (i) the level of corruption and bureaucratic quality, (ii) law and order, (iii) investment profile, (iv) religious and/or ethnic tensions, (v) socioeconomic conditions, (vi) internal conflict, and (vii) secondary school enrolment. Compared to the trust survey measure, the ranking of countries in the trust index is more consistent with people's perception.

This paper also contributes to the literature by adding the panel data study of the effects of trust on both FDI and income inequality. As a result, trust is revealed to play a significantly positive role in FDI for both OECD and non-OECD countries by employing the fixed effects model. With regard to income inequality, the random regression models show that trust is more pronounced among the OECD countries.

Generally, this paper draws on the apparent inconsistencies between self-reported

trust levels and actual behaviour in trust games and constructs an alternative index composed of characteristics that have been shown to determine trust levels. Of course, this is a first attempt in this direction. As a result, further empirical testing may be required to settle the unavoidable debate over the most appropriate and relevant components of this index. By no means do I believe that the results from trust surveys should be disregarded. However, given the inconsistencies between self-reported and actual behaviour, as well as the significant differences in the rankings reproduced from the survey results and the index of components that affect generalised trust, further research on the (perhaps) most appropriate measures of trust to be used in empirical analysis is certainly still needed.

Appendix

Appendix 1. Summary of the components for trust index

Variable	Obs	Mean	Std. Dev	Min	Max
Bureaucracy quality	3226	2.1322	1.2015	0	4
Law and order	3226	3.6556	1.5052	0	6
Corruption	3226	3.0498	1.3788	0	6
Investment profile	3226	7.0856	2.5294	0	12
Ethnic tensions	3226	3.9411	1.4719	0	6
Religious tensions	3226	4.5717	1.3630	0	6
Internal conflict	3226	8.7349	2.6904	0	12
Socioeconomic conditions	3226	5.6786	2.2441	0	11
School enrolment	2538	71.1580	31.7898	0	160.619

Appendix 2. List of average Trust Index ranking and Trust Survey ranking

Country	Trust Index ranking	Country	Trust Survey ranking
Finland	1	Norway	1
Netherlands	2	Sweden	2
Luxembourg	3	Denmark	3
Denmark	4	Finland	4
Sweden	5	China	5
Norway	6	Saudi Arabia	6
Switzerland	7	Netherlands	7
Australia	8	New Zealand	8
Iceland	9	Viet Nam	9
New Zealand	10	Switzerland	10
Austria	11	Indonesia	11
Canada	12	Canada	12
United States	13	Iraq	13
Japan	14	Australia	14
Germany	15	Japan	15
United Kingdom	16	Iceland	16
Ireland	17	Ireland	17
Belgium	18	Thailand	18
Brunei	19	Northern Ireland	19
France	20	United States	20
Portugal	21	Hong Kong	21

Hong Kong SAR China	22	Great Britain	22
Czech Republic	23	India	23
Hungary	24	Germany	24
Slovenia	25	Iran	25
Italy	26	Austria	26
Spain	27	Spain	27
Slovak Republic	28	Republic of Korea	28
Korea	29	Belgium	29
Cyprus	30	Italy	30
Malta	31	Germany West	31
Croatia	32	Taiwan	32
The Bahamas	33	Ukraine	33
Estonia	34	Jordan	34
Latvia	35	Belarus	35
Greece	36	South Korea	36
Poland	37	Egypt	37
Lithuania	38	Pakistan	38
Chile	39	Serbia and Montenegro	39
Namibia	40	Russian Federation	40
Botswana	41	Bulgaria	41
Bulgaria	42	Hungary	42
Saudi Arabia	43	Czech Republic	43
Oman	44	Dominican Republic	44
Kazakhstan	45	Luxembourg	45
Malaysia	46	Lithuania	46
Costa Rica	47	Mexico	47
Bahrain	48	Albania	48
Qatar	49	Uruguay	49
Kuwait	50	Armenia	50
China	51	Ethiopia	51
Argentina	52	Estonia	52
Cuba	53	Greece	53
Israel	54	Israel	54
Thailand	55	Poland	55
Tunisia	56	Bangladesh	56
Mongolia	57	Nigeria	57
Azerbaijan	58	France	58
Mexico	59	Bosnia and Herzegovina	59
Uruguay	60	Croatia	60
Belarus	61	Malta	61
Brazil	62	Slovakia	62
Moldova	63	Latvia	63
Romania	64	Azerbaijan	64
Côte d'ivoire	65	Chile	65
Morocco	66	Andorra	66
Ukraine	67	Morocco	67

South Africa	68
Jordan	69
Trinidad and Tobago	70
Bolivia	71
Albania	72
Libya	73
United Arab Emirates	74
Syrian Arab Republic	75
Jamaica	76
Vietnam	77
Ecuador	78
Dominican Republic	79
Iran	80
Gabon	81
Russia	82
Lebanon	83
Venezuela	84
The Gambia	85
Turkey	86
Armenia	87
Egypt	88
Papua New Guinea	89
India	90
Panama	91
Madagascar	92
Paraguay	93
Ghana	94
Colombia	95
Burkina Faso	96
Zimbabwe	97
El Salvador	98
Philippines	99
Nicaragua	100
Kenya	101
Malawi	102
Senegal	103
Peru	104
Tanzania	105
Guyana	106
Algeria	107
Suriname	108
Sierra Leone	109

Argentina	68
South Africa	69
Georgia	70
Republic of Moldova	71
Slovenia	72
Moldova	73
Mali	74
Singapore	75
Romania	76
Kyrgyzstan	77
Portugal	78
Guatemala	79
Serbia	80
Venezuela	81
Burkina Faso	82
El Salvador	83
Puerto Rico	84
Colombia	85
Zimbabwe	86
Zambia	87
Turkey	88
Algeria	89
Macedonia, Republic of	90
Cyprus	91
Malaysia	92
Ghana	93
Tanzania, United Republic Of	94
Uganda	95
Peru	96
Philippines	97
Brazil	98
Rwanda	99
Trinidad and Tobago	100

Congo	110	
Guatemala	111	
Cameroon	112	
Yemen	113	
Indonesia	114	
Mozambique	115	
Guinea	116	
Honduras	117	
Zambia	118	
Togo	119	
Mali	120	
Uganda	121	
Ethiopia	122	
Niger	123	
Guinea-Bissau	124	
Pakistan	125	
Angola	126	
Myanmar	127	
Sri Lanka	128	
Sudan	129	
Bangladesh	130	
Nigeria	131	
Somalia	132	
Liberia	133	
Iraq	134	
Haiti	135	
Dem. Rep. Congo	136	

Appendix 3. Comparison of average Trust Index ranking and Trust Survey ranking

Country	Trust index ranking	Trust survey ranking
Finland	1	4
Netherlands	2	7
Luxembourg	3	40
Denmark	4	3
Sweden	5	2
Norway	6	1
Switzerland	7	10
Australia	8	14
Iceland	9	16
New Zealand	10	8
Austria	11	25
Canada	12	12
United States	13	19
Japan	14	15
Germany	15	23
United Kingdom	16	21
Ireland	17	17
Belgium	18	27
France	19	53
Portugal	20	67
Hong Kong SAR China	21	20
Czech Republic	22	38
Hungary	23	37
Slovenia	24	63
Italy	25	28
Spain	26	26
Slovak Republic	27	56
Korea	28	32
Cyprus	29	77
Malta	30	55
Croatia	31	54
Estonia	32	47
Latvia	33	57
Greece	34	48
Poland	35	50
Lithuania	36	41
Chile	37	59
Bulgaria	38	36
Saudi Arabia	39	6
Malaysia	40	78
China	41	5

Argentina	42	61
Israel	43	49
Thailand	44	18
Azerbaijan	45	58
Mexico	46	42
Uruguay	47	44
Belarus	48	31
Brazil	49	84
Moldova	50	64
Romania	51	66
Morocco	52	60
Ukraine	53	29
South Africa	54	62
Jordan	55	30
Trinidad and Tobago	56	85
Albania	57	43
Vietnam	58	9
Dominican Republic	59	39
Iran	60	24
Russia	61	35
Venezuela	62	69
Turkey	63	75
Armenia	64	45
Egypt	65	33
India	66	22
Ghana	67	79
Colombia	68	72
Burkina Faso	69	70
Zimbabwe	70	73
El Salvador	71	71
Philippines	72	83
Peru	73	82
Tanzania	74	80
Algeria	75	76
Guatemala	76	68
Indonesia	77	11
Zambia	78	74
Mali	79	65
Uganda	80	81
Ethiopia	81	46
Pakistan	82	34
Bangladesh	83	51
Nigeria	84	52
Iraq	85	13

Appendix 4. Sample statistic

	Full sample (139)			OECD Countries (31)			Non-OECD Countries (108)		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
trust index(a)	2,383	1.18E-09	0.9582 0.8822(be) 0.3709(wi)	-	-	-	-	-	-
trust index(b)	2,823	-6.50E-10	0.9569 0.8873(be) 0.3593(wi)	877	0.9765	0.6015 0.5499(be) 0.2496(wi)	1,946	-0.4401	0.736 0.6477 0.3990
L1.trust index(b)	2,820	0.0006	0.9570 0.8879(be) 0.3593(wi)	877	0.9765	0.6015 0.5499(be) 0.2496(wi)	1,943	-0.4398	0.7362 0.6482(be) 0.3992(wi)
L2.trust index(b)	2,787	0.0064	0.9591 0.8875(be) 0.3598(wi)	877	0.9765	0.6015 0.5499(be) 0.2496(wi)	1,910	-0.439	0.7386 0.6491(be) 0.4005(wi)
L3.trust index(b)	2,692	0.0049	0.9625 0.8894(be) 0.3636(wi)	844	0.9807	0.6035 0.5511(be) 0.2513(wi)	1,848	-0.4408	0.7413 0.6505(be) 0.4048(wi)
lfdi	3,436	0.4566	1.5986	869	0.525	1.3519	2,567	0.4334	1.6734
lgini	938	3.6677	0.2664	252	3.4872	0.2204	686	3.734	0.2507
income	3,133	9.0981	1.265	803	10.2643	0.4569	2,330	8.6962	1.2039
education	2,978	72.9668	31.3267	927	99.0027	15.4272	2,051	61.1992	29.5389
trade rate	3,778	79.1374	51.801	965	79.9813	46.8815	2,813	78.8479	53.3891
inflation rate	3,893	53.5259	587.2015	965	8.2336	36.0034	2,928	68.4532	676.1347
government cost	3,881	15.9548	6.2429	996	18.74	4.3814	2,885	14.9932	6.4967
growth rate	3,900	3.5149	6.1937	965	2.7697	3.5027	2,935	3.7599	6.8341

Notes: Trust index(a) is the one used in section 2.2.3 and section 2.3. It captures the trust level of each country by considering the dataset of time period from 1984 to 2008. Trust index(b) is the one used in section 2.4 which is built by using the dataset with time period from 1984 to 2014. Income reported as logarithm of GDP per capita. Education reported as school enrolment, secondary (% gross); Trade rate reported as trade (% of GDP); Inflation rate reported as GDP deflator (annual %); Government cost reported as the general government final consumption expenditure (% of GDP); Growth rate reported as GDP growth (annual %).

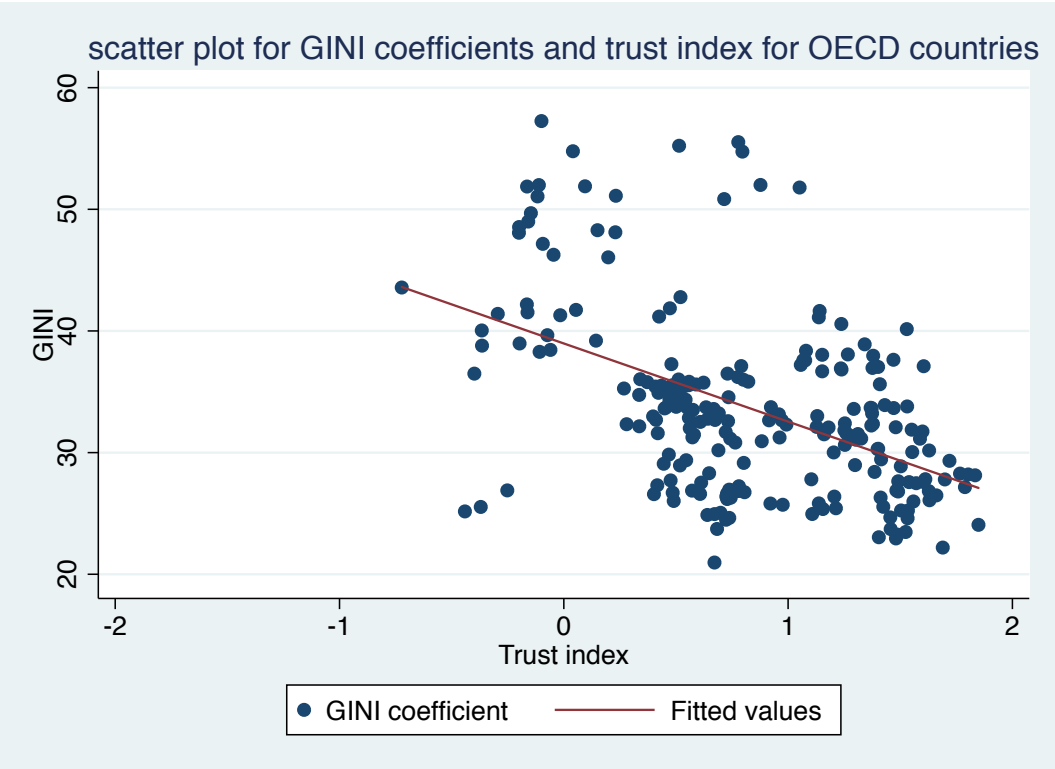
Appendix 5. Hausman test

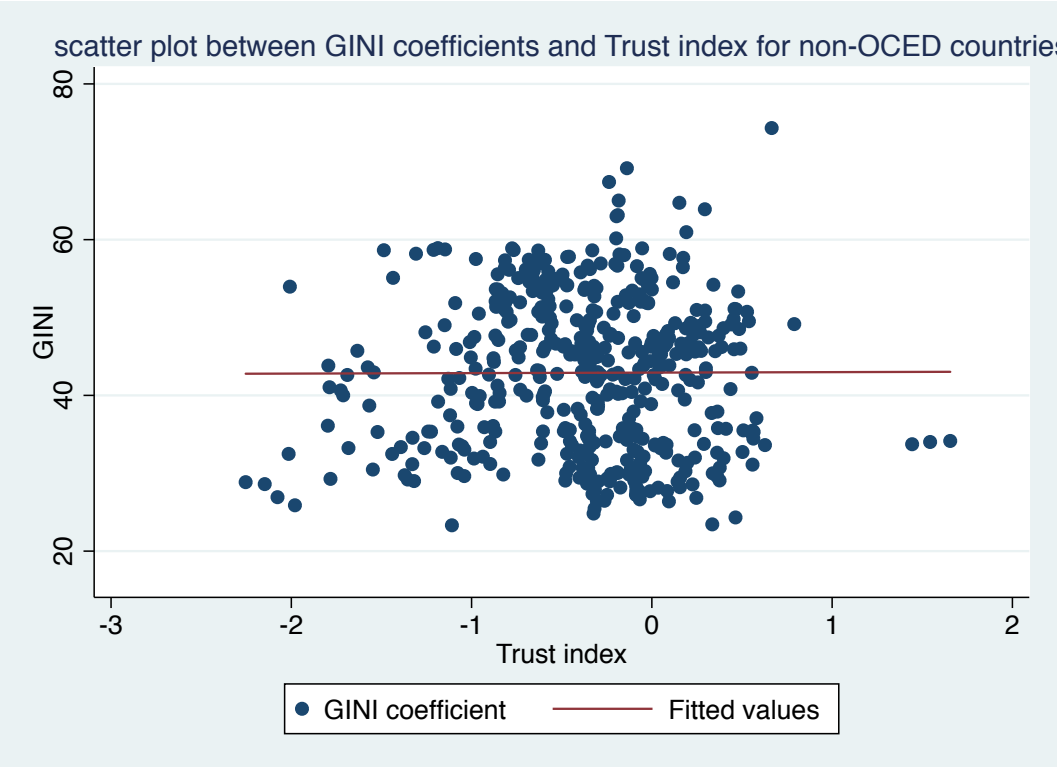
	---- Coefficients ----			
	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
Trust index(t-1)	0.6650	0.3693	0.2957	0.0313
Education	0.0197	0.0111	0.0086	0.0014
Trade rate	0.0227	0.0168	0.0059	0.0011
Annual growth rate	0.0445	0.0449	-0.0004	0.0008

b= consistent under H_0 and H_a; obtained from xtreg
B= inconsistent under H_a, efficient under H_0; obtained from xtreg
Test: H_0: difference in coefficients not systematic

Chi2(4) = (b-B)′[(V_b-V_B)^(-1)](b-B)
= 197.54
Prob>chi2 = 0.0000

Appendix 6.


scatter plot for GINI coefficients and trust index for OECD countries
GINI
60
50
40
30
20
-2
-1
0
1
2
Trust index
GINI coefficient
Fitted values


scatter plot between GINI coefficients and Trust index for non-OCED countrie
GINI
80
60
40
20
-3
-2
-1
0
1
2
Trust index
GINI coefficient
Fitted values

Appendix 7. Hausman test

	---- Coefficients ----			
	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
Trust index(t-1)	0.0217	0.0042	0.0175	0.0049
Education	0.0003	8.27e-06	0.0002	0.0001
Income	-0.0476	-0.0572	0.0096	0.0135
Trade rate	0.0002	0.0001	0.0001	0.0001
Inflation rate	-0.00003	-0.00004	-4.54e-07	0.00001
Government consumption	0.0014	0.0001	0.0013	0.0011

b= consistent under H_0 and H_a; obtained from xtreg
B= inconsistent under H_a, efficient under H_0; obtained from xtreg
Test: H_0: difference in coefficients not systematic

Chi2(6) = (b-B)′[(V_b-V_B)^(-1)](b-B)
= 18.81
Prob>chi2 = 0.0045

Reference

1. Abramson, P. R., and Inglehart, R. 1995. Value change in global perspective. Ann Arbor: University of Michigan Press.
2. Aghion, P., Algan, Y., Cahuc, P., and Shleifer, A. 2010. Regulation and distrust. *The Quarterly Journal of Economics*, 125, 1015-1049.
3. Alesina A., Baqir, R., and Easterley, W. 1999. Public goods and ethnic divisions. *The Quarterly Journal of Economics*, 114 (4), 1243-1284.
4. Alesina, A., and La Ferrara, E. 2000. Participation in heterogeneous communities. *The Quarterly Journal of Economics*, 115 (3), 847-904.
5. Alesina, A., and La Ferrara, E. 2002. Who trust others? *Journal of Public Economics*, 85 (2), 207-234.
6. Algan, Y., and Cahuc, P. 2009. Civic virtue and labor market institutions. *American Economic Journal: Macroeconomics*, 1(1), 111-145.
7. Algan, Y., and Cahuc, P. 2013. Trust, growth and well-being: new evidence and policy implications. IZA Discussion Papers 7464, Institute for the Study of Labor (IZA).
8. Arrow, Kenneth J. 1972. Gifts and Exchanges. *Philosophy and Public Affairs,* 1, 343-367.
9. Baliamoune-Lutz, M. 2009. Human well-being effects of institutions and social capital. *Contemporary Economic Policy*, 27 (1), 54-66.
10. Baliamoune-Lutz, M. 2011. Do institutions and social cohesion enhance the effectiveness of aid? New Evidence from Africa. ICER Working Papers 13-2011.
11. Banfield, E. 1958. The Moral Basis of a Backward Society. New York: Free Press.
12. Bhardwaj, A., Dietz, J., and Beamish, P.W. 2007. Host country cultural influences on foreign direct investment. *Management International Review*, 47 (1), 29–50.
13. Berg, J., Dickhaut, J., and McCabe, K. 1995. Trust, reciprocity and social history. *Games and Economic Behavior*, 10, 122-42.
14. Berggren, N., Elinder, M. and Jordahl, H. 2008. Trust and growth: A shaky relationship. *Empirical Economics*, 35 (2), 251-274.
15. Beugelsdijk, S., De Groot, H.L. F., and Van Schaik, A.B.T.M. 2004. Trust and economic growth: a robustness test. *Oxford Economic Papers*, 56, 118-134.

16. Bjørnskov, C. 2006. How does social trust affect economic growth? Working Papers 06-2, University of Aarhus, Aarhus School of Business, Department of Economics.
17. Blau, P. M. 1964. Exchange and power in social life. New York: John Wiley.
18. Bloom, N., Sadun, R., and Reenen, J. H. 2007. The organization of firms across countries. *The Quarterly Journal of Economics*, 127 (4), 1663-1705.
19. Borensztein, E., De Gregorio, J., and Lee, J. W. 1998. How does foreign direct investment affect economic growth? *Journal of International Economics*, 45 (1), 115-135.
20. Bradach, J., and Eccles, R. 1989. Rice, authority, and trust: From ideal types to plural forms. *Annual Review of Sociology*, 15, 97–118.
21. Child, J., and Mollering, G. 2003. Contextual confidence and active trust development in the Chinese business environment. *Organization Science,* 14, 69–80.
22. Coleman, J. S. 1988. Social capital in the creation of human capital. *The American Journal of Sociology*, 94, 95-120.
23. Das, T. K., and Teng B-S. 2000. A Resource-based theory of strategic alliances. *Journal of Management*, 26 (1), 31-61.
24. Dercon, S., and Gutierrez-Romero, R. 2010. Triggers and characteristics of the 2007 Kenyan electoral violence. CSAE Working Paper Series 2010-12, University of Oxford.
25. Dincer, O., and Uslaner, E. 2010. Trust and growth. *Public Choice*, 142 (1), 59-67.
26. Easterly, W., Ritzen, J., and Woolcock, M. 2006. Social cohesion, institutions, and growth. *Economics and Politics*, 18 (2), 103-120.
27. Ermisch, J., Gambetta, D., Heather, L., Siedler, T., and Uhrig, N. 2009. Measuring people's trust. *Journal of the Royal Statistical Society Series A*, 172 (4), 749-769.
28. Fehr, E., Fischbacher, U., Schupp, B., Von Rosenbladt, J., and Wagner, G. 2002. A Nation-Wide Laboratory: Examining trust and trustworthiness by integrating behavioral experiments into representative surveys. *Schmollers Jahrbuch,* 122, 519-542.
29. Fukuyama, F. 1992. Trust: The Social Virtues and the Creation of Prosperity. New York: Free Press.
30. Gambetta, D. 1993, The Sicilian Mafia. The Business of Private Protection. Harvard University Press.
31. Gambetta, D. 1988. Trust: Making and Breaking Cooperative Relations. Oxford, Blackwell.
32. Glaeser, E.L., Laibson, D., and Sacerdote B. 2002. An economic approach to social capital. *The Economic Journal*, 112, 437-458.
33. Glaeser, E., Laibson, D., Scheinkman, J., and Soutter, C. 2000. Measuring trust. *The Quarterly Journal of Economics,* 115, 811–846.

34. Guiso, L., Sapienza, P., and Zingales, L. 2004. Does local financial development matter? *The Quarterly Journal of Economics*, 119 (3), 929-969.
35. Guiso, L., Sapienza, P., and Zingales, L. 2006. Does culture affect economic outcomes? *Journal of Economic Perspectives*, 20 (2), 23-48.
36. Guiso L., Sapienza, P., and Zingales, L. 2008. Long Term Persistence. NBER Working Paper 14278.
37. Guiso, L., Sapienza, P., and Zingales, L. 2009. Moral and social constraints to strategic default on mortgages. NBER Working Papers 15145.
38. Guiso, L., Sapienza, P., and Zingales, L. 2011. Civic Capital as the Missing Link. In Benhabib, J., Bisin, A., and Jackson, M.O. (Eds.), Handbook of Social Economics, Volume 1A.
39. Hall, S.G., and Ahmad, M. 2013. Can trust explain social capital effect on property rights and growth? *Procedia Economics and Finance*, 7, 55-64.
40. Hausman, J.A. 1979. Individual discount rates and the purchase and utilization of energy-using durables. *The Bell Journal of Economics*, 10 (1), 33-54.
41. Helliwell, J., and Putnam, R. 2007. Education and Social Capital. *Eastern Economics Journal*, 33 (1), 1-19.
42. Hill, C. W. L. 1990. Cooperation, opportunism, and the invisible hand: Implications for transaction cost theory. *The Academy of Management Review*, 15 (3), 500–513.
43. Holm, H., and Danielson, A. 2005. Tropic trust versus Nordic trust: Experimental evidence from Tanzania and Sweden. *The Economic Journal,* 115, 505-532.
44. Jacob, M., and Tyrell., M. 2010. The Legacy of Surveillance: An Explanation for Social Capital Erosion and the Persistence of Economic Disparity Between East and West Germany. Working Paper (SSRN), European Business School Oestrich-Winkel.
45. Jordahl, H. 2007. Inequality and trust. IFN Working Paper No. 715.
46. Knack, S. 2001. Trust, associational life, and economic performance. In *the contribution of human and social capital to sustained economic growth and well-being* (ed. J.F.Helliwell), 172-202. Ottawa:HDRC
47. Knack, S. 2002. Social capital and the quality of government: evidence from Athe US states. *American Journal of Political Science*, 46, 772-785.
48. Knowles, S. 2006. Is social capital part of the institutions continuum and is it a deep determinant of development? Working Papers RP2006/25, World Institute for Development Economic Research (UNU-WIDER).

49. Knack, S., and Keefer, P. 1995. Institutions and economic performance: institutional measures cross-country tests using alternative institutional measures. *Economics and Politics*, 7 (3), 207-227.
50. Knack, S., and Keefer, P. 1997. Does social capital have an economic payoff? a cross-country investigation. *The Quarterly Journal of Economics*, 112 (4), 1252–88.
51. Meyerson, D., Weick, K. E., and Kramer, R. M. 1996. Swift trust and temporary groups. In Kramer, R. M., and Tyler, T. R. (Eds), Trust in organizations: Frontiers of theory and research. Thousand Oaks, Sage Publications, Inc.
52. La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, W. R. 1997. Trust in large organizations. *American Economic Review*, 87 (2), 333-338.
53. Levi, M. 1996. Social and unsocial capital: A review essay of Robert Putnam's Making Democracy Work. *Politics and Society*, 24, 46-55.
54. Lewis-Beck, M. S. 1994. International handbooks of quantitative applications in the social sciences. 5. Factor analysis and related techniques. SAGE Publications Inc.
55. Mary L. Rigdon, Kevin A. McCabe and Vernon L. Smith, 2007. Sustaining Cooperation in Trust Games. *Economic Journal*, Royal Economic Society, 117(522), 991-1007.
56. McKnight, H., Cummings, L.L., and Chervany, N.L. 1998. Initial trust formation in new organizational relationships. *Academy of Management Review*, 23, 473-490.
57. Miguel, E., and Gugerty, M. K. 2005. Ethnic diversity, social sanctions, and public goods in Kenya. *Journal of Public Economics*, 89 (11), 2325-2368.
58. Miller, G.J. 1992. Managerial Dilemmas: The Political Economy of Hierarchy. Cambridge: Cambridge University Press.
59. Morgan, R.M., and Hunt, S.D. 1994. The commitment-trust theory of relationship marketing. *Journal of Marketing*, 58 (3), 20-38.
60. Neira, I., Vászquez, E., and Portela, M. 2009. An empirical analysis of social capital and economic growth in Europe (1980-2000). *Social Indicators Research*, 92 (1), 111-129.
61. Perez, F., Fernandez de Guevara, J., Serrano, L., and Montesinos, V. 2006. Measurement of social capital and growth: an economic methodology. MPRA Paper No. 16006.
62. Putnam, R. 2007. E pluribus unum: Diversity and community in the twenty-first century: The 2006 Johan Skytte Prize Lecture. *Scandinavian Political Studies*, 30 (2), 137–174.
63. Putnam, R. D., Leonardi, R., and Nanetti, R. Y. 1993. Making democracy work: civic traditions in modern Italy. Princeton: Princeton University Press.

64. Ram, R. 2013. Social capital and income inequality in the United States. *Atlantic Economic Journal*, 41 (1), 89–91.
65. Ritzen, J., Easterly, W., and Woolcock, M. 2000. On "good" politicians and "bad" policies - social cohesion, institutions, and growth. Policy Research Working Paper Series 2448, The World Bank.
66. Ritzen, J., and Woolcock, M. 2000. Social cohesion, public policy, and economic growth: implications for countries in transition. *Address prepared for the Annual Bank Conference on Development Economics (Europe).*
67. Rohner D., Thoenig M., and Zilibotti F. 2013. War signals: a theory of trade, trust and conflict. *Review of Economic Studies*, 80 (3), 1114-1147.
68. Rothstein, B. 2011. The Quality of Government, Social Trust and Inequality in International Perspective. University of Chicago Press.
69. Rothstein, B., and Uslaner, E. M. 2005. All for One: Equality, Corruption, and Social Trust. *World Politics,* 58 (1), 41-72.
70. Stolle, D. 2000. Clubs and congregations: the benefits of joining an association. In Karen S. Cook (Eds.), Trust in Society. New York: Russell Sage Foundation.
71. Tabellini, G. 2008. The scope of cooperation: values and incentives. *The Quarterly Journal of Economics*, 123 (3), 905-950.
72. Tabellini, G. 2010. Culture and institutions: economic development in the regions of Europe. *Journal of the European Economic Association*, 8 (4), 677–716.
73. Uslaner, E. M. 2001. Volunteering and Social Capital: How Trust and Religion Shape Civic Participation in the United States. In Dekker, P., and Uslaner, E. M. (Eds.), Social Capital and Participation in Everyday Life. London: Routledge.
74. Uslaner, E. M. 2002. The Moral Foundations of Trust. Cambridge University Press.
75. Uslaner, E. M. 2003. Trust and Civic Engagement in East and West. In Badescu, G., and Uslaner, E. M. (Eds.), Social Capital and the Transition to Democracy. London: Routledge.
76. Whiteley, P.F. 2000. Economic growth and social capital. *Political Studies*, 48, 443-466.
77. Womeldorff, T. 1991. Estimating the social rate of time preference for changes in mortality. Unpublished dissertation, American University.
78. Woolcock, M. 1998. Social capital and economic development: toward a theoretical framework. *Theory and Society*, 27, 151-208.
79. Wothke, W. 1993. Nonpositive definite matrices in structural modeling. In K. A. Bollen & J. S. Long (Eds.), Testing structural equation models. Newbury Park, CA: Sage.

80. Wuthnow, R. 1999. Mobilizing civic engagement: The changing impact of religious involvement. In Skocpol, T., and Fiorina, M. (Eds.), Civic engagement in American democracy. Washington, DC: Brookings Institution.
81. Zak, P. J. 2005. Trust: a temporary human attachment facilitated by oxytocin. *Behavioral and Brain Sciences*, 28 (3), 368-369.
82. Zak, P.J., and Knack, S. 2001. Trust and growth. *The Economic Journal*, 111 (470), 295–321.
83. Zhao, H., and Kim, S.H. 2011. An exploratory examination of the social capital and FDI linkage and the moderating role of regulatory quality: A cross-country study. *Thunderbird International Business Review*, 53 (5), 629-646.