# Can We Trust the Measurement of Trust?

Investigating the Validity of the Standard Trust Question.

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# ABSTRACT

This study investigates the concept of 'trust' through exploring the relationship between answers to a standard survey question and behaviour observed in an economical experiment. The survey question has been used in a wide range of reports and studies related to economic development. Therefore, it is of utmost importance to ensure that the survey question has high validity and that it accurately captures the level of trust in the population. Students at the University of Dar es-Salaam were asked to participate in a trust game and answer survey questions relating to trust. By comparing their behaviour in the trust game with their survey answers, the predictive power of the survey questions was investigated. Apart from the standard survey question, an additional set of questions was included in the survey to investigate if these questions could better predict the behaviour in the experiment. It was found that the standard survey question could not predict behaviour in the trust game. Based on the results obtained from the analysis, the use of the standard survey question for measuring trust is questioned, and the use of organisational membership as an indicator of trust is proposed instead.

Key Words: *trust game, social capital, economical experiment, World Value Survey, Tanzania.*

# ACKNOWLEDGMENTS

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# 1. INTRODUCTION

When studying economic development in less developed countries, considerable attention is given to improving the business climate, increasing tax revenues and limiting corruption. These factors are believed to improve economic growth as well as economic stability.

To understand these economical mechanisms, we also need to investigate their interplay with social behaviour. One fundamental aspect of social behaviour is the trust between individuals in a society. According to the American scholar, Francis Fukuyama (1999), trust within a society improves the speed of making and implementing decisions, and reduces transaction and control costs when doing business. Empirical research has also found correlations between trust and macroeconomic factors such as economic growth and GDP per capita (Knack & Keefer, 1997). The relationship between GDP per capita and trust in a number of countries is illustrated in Figure 1.

Figure 1.

*The Correlation between GDP per Capita (USD) and Level of Trust*
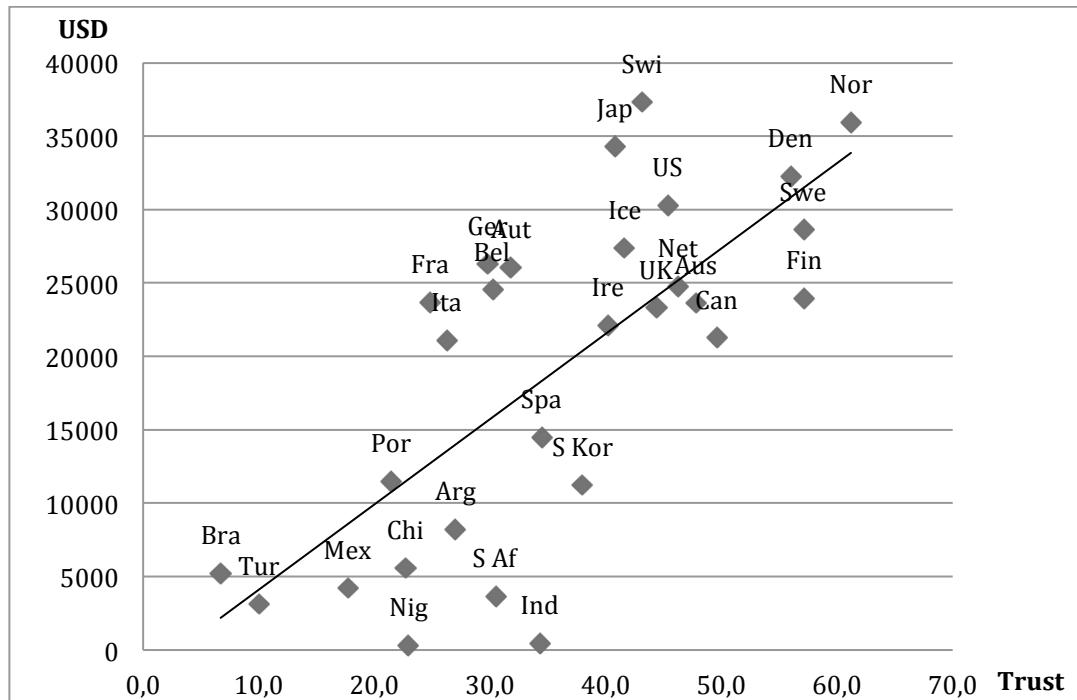


*Source: World Bank (2012a) and Knack and Keefer (1997)*

Different levels of trust also form an important explanation when it comes to understanding why imposing taxes is very difficult in some countries, while not in others or when explaining discrepancies in corruption levels between countries (Rothstein, 2003, ch. 2). Taking this into

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consideration, trust can be seen as essential to the functioning of modern societies.

According to the World Bank, trust plays a key role in the effectiveness and sustainability of their development operations (World Bank, 2012b). In such projects, increased trust can improve the effectiveness of government services, leading to a reduction of poverty (World Bank, 2012c). Thus, knowing what creates, maintains and reduces social capital is vital for the understanding of institutional and economic development.

Due to its believed correlation with the effective functioning of the economy, the World Bank and the World Value Survey measure the level of trust in countries around the world regularly (World Bank, 2012 & World Value Survey, 2012). The standard trust question used by the World Bank, and the World Value Survey, as well as many scholars, is:

*"Generally speaking, would you say that most people can be trusted or that you can't be too careful dealing with people?"*

The results of surveys using this question have been used in a wide range of reports and studies related to development, and have been the basis for our understanding of differences in trust levels between countries. Therefore, it is of utmost importance to ensure that the surveys provided by the World Bank and World Values Survey have high validity and that the standard trust question accurately captures the level of trust in the population.

## 1.1 Tanzania and Trust

With a GDP per capita of 529 USD, Tanzania is one of the world's poorest countries (World Bank 2012a). According to Transparency International, the country also suffers from high levels of corruption and tax evasion (Transparency International, 2011). In line with the theories of Fukuyama and Rothstein, it is therefore not surprising that the population of Tanzania exhibits low levels of trust between individuals. In a study made by the World Values Survey, only 8.1 per cent of respondents answered that they thought most people can be trusted, in comparison with a country such as Sweden where 66.3 per cent answered the same (World Values Survey, 2012a). A low level of trust could be one explanation for many of the economic difficulties facing Tanzania today.

## 1.2 Previous Research

The standard trust question has been used in a large variety of reports and scholarly research for many years. It gained widespread recognition in 1972 when the National Opinion Research

Center incorporated it in their General Social Survey (Glaeser, Laibson, Sheinkman & Soutter 2000). Since then, it has become the standard question for measuring trust. Throughout the years, several scholars have found a link between economic success and a country's measured level of trust, underlining the importance of studying the subject.[1]

However, the link between answers in the standard trust question and actual behaviour has also been questioned by empirical research. Glaeser et al. (2000) suggest that the relationship between individuals' behaviour and survey answers might not be as correlated as initially thought. By conducting an economical experiment and a survey, they show that the answers to the standard trust question do not predict which individuals will act more trustingly in the experiment. Their results also indicate that the standard survey question predicts trustworthiness rather than trust. Trustworthiness is a different trait compared to trust, indicating the reliability of an individual being entrusted. Independently of Glaeser et al, Ostrom, Schmidt and Walker (2002, ch. 12) also came to a similar conclusion using a different type of trust game.

On the other hand, Danielson and Holm (2005) find that the survey can to some extent predict the behaviour of Swedish undergraduates, but not the behaviour of their Tanzanian counterparts. If these findings are representative for other sub-Saharan developing countries, or even sub-Saharan countries in general, it would have major consequences for the interpretation of previous research. The study by Danielson and Holm illustrates the need for further investigations of the connection between survey answers and behaviour in developing countries.

## 1.3 Purpose

Should the standard trust question prove to be inaccurate in its measurement of trust, the consequences would be widespread for both research and policy. It is therefore necessary to explore this link more thoroughly. Previous research indicates a weak link between survey answers and observed behaviour in developing countries. Thus, the main goal of this study is to further investigate the relationship between answers to the standard trust question and actual behaviour, especially in developing countries.

Building on previous research by Glaeser et al, Ostrom et al. and Danielsson and Holm, an economical experiment and trust survey are conducted. The results obtained from the experiment, combined with a survey including the standard trust question, will serve as the data in this study. With the goal of further investigating the links between observed behaviour and

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[1] For further details, see: Kenneth Arrow, 1972 "Gifts and Exchanges" as well as Stephen Knack & Philip Keefer, 1997 "Does Social Capital have an Economic Payoff?"

survey answers in developing countries, and to build upon the research by Danielsson and Holm, this study is performed in Tanzania on a group of students attending classes at the University of Dar es Salaam.

Furthermore, an additional set of questions is asked in the survey to investigate if these questions can help predict the behaviour observed in the experiment. The purpose is to study whether these questions are better indicators of trust than the standard trust question. Two of the survey questions regard helpfulness and fairness. These two questions have been used in previous research as indicators of trust.

Twelve questions regard the membership in different organisations. The inclusion of these questions is based on theories concerning the relationship between civic engagement and trust. Civic engagement is believed to increase trust and the use of membership in civic organisations as an indicator of trust has been proposed by scholars such as Robert Putnam (1993).

## 1.4 Research Question

In order to investigate the relationship between the answers to the standard trust question and actual behaviour measured through an experiment, the main research question of this study is:

1. Does a person's response to the standard trust question predict his/her behaviour in a two-person trust game?

The study also examines whether the results of the two-person trust game can also be predicted by other survey questions.

2. Are the responses given to any of the supplementary survey questions regarding fairness and helpfulness able to predict behaviour in a two-person trust game?

3. Are traits such as age, gender, region of origin or activity in civic society able to predict behaviour in a two-person trust game?

## 2. THEORY

### 2.1 Game Theory

The behaviour and interactions among individuals as well as organisations are often complex in nature. The ways in which economic agents interact strategically have been studied using game theory. In game theory, agents' pay-offs are usually shown in payoff-matrixes with columns and rows denoting different choices. Through game theory, scholars can model and investigate agents' behaviour and interactions in a simple way.

One of the more famous game theoretical settings is known as the prisoner's dilemma. In the prisoner's dilemma, two actors have the choice to (simultaneously) either cooperate or defect. If both agents choose to cooperate they receive the maximal combined gain. However, if one of the agents defects when the other cooperates, the defecting agent gains more than he/she would with both cooperating. If both agents choose to defect, they get the least combined gain possible in the setting. The options and utilities are illustrated in Table 1 below:

Table 1.

*Prisoner's Dilemma Setting*

|  |  | Actor B | |
|---|---|---|---|
|  |  | Cooperate | Defect |
| Actor A | Cooperate | 3, 3 | 0, 4 |
|  | Defect | 4, 0 | 1, 1 |

In Table 1, the number on the left in each square denotes actor A's gain, whereas the number on the right denotes actor B's gain.

Assuming that players are rational actors, it is possible to investigate their strategies. If the actors are well informed and rational, they will make their decision based on trying to maximise their own gain. This means, not only making the choice that maximises their profit, but also making the choice of what maximises their profit depending on what they believe will be their counterparts' choice. This type of strategy is called a *Nash equilibrium*. In the prisoner's dilemma setting, a Nash equilibrium is reached when both players choose to defect. To see why, the situation of player A is described. If player B chooses to cooperate, player A is better off defecting than cooperating (4 instead of 3). If player B chooses to defect, player A is also better off defecting than cooperating (1 instead of 0). (Varian, 2006 pp. 504-518).

Another useful concept is *Pareto efficiency*. In its simplest form, Pareto efficiency defines a state where no one can be made better off without making someone else worse off. If there is a possibility of making someone better off without making someone else worse off, the allocation is Pareto inefficient and a Pareto improvement is possible. In the prisoner's dilemma setting above, there is a Pareto efficient allocation when both actors choose to cooperate. If both players cooperate, no player can be made better off without making the other actor worse off (Varian, 2006 p. 15).

Hence, even though both players would be better off cooperating, as rational actors they would instead choose to defect; thus ending up in a Pareto inefficient allocation. Despite the possibility of making both actors better off, they will not do it for fear of being cheated. To reach a Pareto efficient allocation, the presence of another factor is needed: *trust*. When actors exhibit trust, they do not fear being cheated. They can thereby break the vicious cycle and end up at a Pareto efficient point, which leaves both actors better off. (Varian, 2006 pp. 504-518)


## 2.2 Trust

As shown, trust is a powerful tool in an economy. Trust is a widely known social and economic mechanism that enables people to engage in economic interactions. Although several different definitions of trust exist, there is no widely accepted definition of the term. Most definitions are based upon one actor's understanding of a counterpart. In an attempt to summarise the different definitions in the field, Rousseau, Sitkin, Burt and Camerer (1998) propose the following definition:

*"Trust is a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another"*

Rousseau et al, 1998 p. 395


As such, trust is not a quality that an individual possesses, but rather, individuals' relations to one another. An individual's trust can be different towards different people and in different groups. For trust to exist, there needs to be at least two actors but the actors do not need to know each other or even have met to display trust towards each other. It is this quality that makes trust so useful in daily life. Through trust between business actors, the transaction costs of making arrangements are lowered and trust is often said to promote cooperation between actors (Fukuyama, 1999).

It is possible to separate different sources of trusting behaviour. Firstly, trust could occur

due to mutual affection between the parties. Trust would then stem from care and affection, such as within a family. Secondly, certain social and cultural norms within society promote trusting behaviour. These norms are honoured since individuals may feel shame and guilt when violating them. Furthermore, when two parties predict they will have a long-term relationship, the incentive for trusting behaviour is different to short-term relations. In a long-term relationship where there are future benefits for exhibiting trusting behaviour today, a higher level of trust is often observed (Dasgupta, 2005).

This study focuses on short-term trust based on norms. This form of trust is believed to be the most relevant in situations involving individuals or groups of individuals previously unknown to each other, such as in new business transactions, corruption and tax avoidance. In this study, basing the definition of trust on the analytical framework of game theory, trust will be defined as the norm making individuals choose a Pareto efficient point instead of a Nash equilibrium in a Prisoner's dilemma setting.

## 2.3 Indicators of Trust

The lack of a universal definition of trust creates difficulties when it comes to conducting research. Depending on the researcher's theoretical background, the chosen methods for measuring trust may vary significantly.

As mentioned, one of the most commonly used methods for measuring trust is to use the standard trust question. The researcher asks the respondent "Generally speaking, would you say that most people can be trusted or that you can't be too careful dealing with people?" The alternatives from which the respondent has to choose are "Most people can be trusted", "Can't be too careful" and "Don't know".

Other survey questions have also been proposed as good indicators of trust. Two of the more common ones regard fairness and helpfulness: ''Do you think most people would try to take advantage of you if they got a chance, or would they try to be fair?'' and ''Would you say that most of the time people try to be helpful, or that they are mostly just looking out for themselves?'' These questions have been used by Glaeser et al (2000) as well as Danielson and Holm (2005). The question regarding fairness is also included in the World Values Survey.

Another method of measuring trust, proposed by Robert Putnam (1993), is to measure the activity in civic society. The theoretical foundation behind the measurement is based on the idea that greater civic engagement in society leads to a higher level of trust within the society. Hence, membership and activity in organisations should be a good indicator of trust.

# 3. METHODOLOGY

This study incorporates the results from two different experiments, performed on the same sample of individuals. Firstly, a two-person decision game is completed in order to measure trust levels between participants. Afterwards, the subjects fill out a survey including the standard trust question. The results of the experiment and the survey are then compared on an individual level in order to investigate if and how answers from the survey can be used as an indicator of results in the decision game.

## 3.1 Methodology of Trust Games

The basic trust game rests on theoretical assumptions about rationality and trust. In its simplest form, subjects are put in situations where they can gain financially by acting in a trusting manner towards an anonymous counterpart. Their financial payoff depends on their own decisions and on the decisions of the opposing participant in the trust game. It is then possible for researchers to measure the extent to which subjects dare to trust their unknown counterpart. Trust games have been performed in the field of behavioral economics in a variety of ways and research has shown that the structure of the trust game and decision situation has great effects on an individual's decision in the game.

## 3.2 Experimental Design

The game design used in this study is a two-person trust game. The design has previously been used by many scholars and is named by Nobel laureate Elinor Ostrom as a "One-shot Prisoner's Dilemma Game" (Ostrom et al, 2002 p. 331). As implied by its name, the decision game rests upon a Prisoner's dilemma setting. In the game, two anonymous actors are given an initial sum of money. They are then given the opportunity to simultaneously send some or all of their money to their counterpart. The amount sent would then be tripled by the researcher. In a Nash equilibrium, both players would choose to not send any money, whereas a Pareto efficient allocation would lead to both players sending all their money. Thereby, the researcher can measure trusting behaviour through the amount of money sent in the decision game.

Since trust is defined as the norm making subjects actively choose a Pareto efficient point in a Prisoner's dilemma setting, a correctly designed experimental setting will measure trust accurately per definition. It is thus important to construct a game setting that correctly resembles the theoretical structure of the Prisoner's dilemma. Factors such as monetary incentives,

anonymity of the players and isolation of disturbing elements are of importance when designing the experiment.

The size of the monetary incentives is important for the outcome of the game; it must be of significant value to the players. Too low incentives could lead to players making irrational choices. The initial sum in this study was 6000 Tanzanian Shilling (TZS), enabling the players to earn up to 24000 TZS. At the time of the experiment, 6000 TZS corresponded to about 3.8 USD and 24000 TZS corresponded to about 15.2 USD. Considering that the GDP per capita in Tanzania is 529 USD (World Bank, 2012a), earning the maximum amount of 24000 TZS would be similar to earning 1350 USD in the United States.

## 3.3 Sample

The subjects of the study were undergraduate Economics students at the University of Dar es-Salaam. All students except one came from mainland Tanzania and no students came from Zanzibar. Out of the 96 subjects the average subject was 22 years old and 37.5 per cent were women.

The composition of the sample differs from that of the general society in certain aspects. Since the subjects were enrolled in higher education, they would be expected to have a higher future income level than the average citizen in Tanzania. Knowing this, the value of the money in the survey could be lower to them today than to others. Potentially, this could have affected their incentive to earn money in the experiment. However, due to the relatively large monetary incentive used in the trust game, this is not believed to have affected the result of the study. Furthermore, since the sample is drawn from a relatively small group it is possible that trust within the group of subjects was larger than trust of others due to mutual affection and understanding.

There is always a question regarding the extent to which results can be generalised. The factors mentioned above could limit the possibility of generalising the results to a broader context. However, using a type of subject similar to that used in preceding studies, i.e. undergraduate students, brings the benefit of enhancing the comparability with previous research.

## 3.4 Procedure

All participants that took part in the game and filled out the survey received 3000 TZS as a

participation stipend. Subjects were then given instructions[2] and told that, depending on their actions, they could earn between 0 and 24000 TZS. The subjects were informed that they would be given 6000 TZS and that they could send all, some or none of the money to an anonymous counterpart. If the participant decided to send money, the amount would be tripled so that the money that reached the counterpart would be three times as much as the participant sent. The subjects were also informed that their counterpart had an equal opportunity to send money to them. On the following page, subjects had a form on which they had the possibility of choosing if they wanted to send 0, 1000, 2000, 3000, 4000, 5000 or 6000 TZS.

To achieve anonymity, subjects were never required to write their names or other identification. They were also informed that they never would be told who their counterpart was and vice versa. However, an identification number was used in order to connect the decision in the experiment to the survey answers made by the same individual. This identification number was also given to the subject to use when collecting the money. Having read the instructions, the subjects filled out the form with their decision and identification number. When all subjects had made their decisions, the forms were collected and the game was completed. Thereafter the forms were randomly paired.

## 3.5 Survey

When conducting a combination of tests, there is always the risk of one test affecting the other. For this reason, respondents did not get to know how much they had earned or any other results from the decision game before answering the survey.

The questionnaire[3] contained questions regarding basic information such as age, gender, whether they had siblings or not and their region of origin. Building on previous research, the questionnaire contained the standard trust question as well as questions on fairness and helpfulness. Questions about organisational membership and activity taken from the World Value Survey were added with the intention of investigating Putnam's theory of increased trust from subjects active in civic society.

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[2] See Appendix 1
[3] See Appendix 2

## 3.6 Analysis of Data

The results of the trust game and the response to the survey were combined on an individual level. This allows for many different comparisons and data analyses to be made. To answer the main research question, the following equation is specified, relating game behaviour to survey answers:

$$trust_i = \alpha + \beta_1 X_i + \beta_2 Y_i + \beta_3 Z_{1i} + \beta_4 Z_{2i} + \varepsilon_i$$

The dependent variable $trust$ is the percentage of the initial amount that the subject chose to send. The independent variables are answers to survey questions. $X$ is a variable indicating the subject's age. $Y$ is a binary variable for gender where one denotes female and zero denotes male. The variables age and gender are always included in the regressions to isolate these variations. These variables are then combined with other independent variables ($Z_1, Z_2, Z_3$, etc.) such as answers to the standard trust question or organisational membership. $\varepsilon$ is an error term.

The parameters of the model are estimated through ordinary least squares (OLS) regression analysis. OLS assumes that the error terms $\varepsilon_i$ have a normal distribution and that variances are homogenous. The assumption of normal distribution is tested through a Jarque-Bera normality test. The assumption regarding homogenous variances is tested through a Breusch-Pagan heteroskedasticity test. The chi-square distributions of the two tests are shown at the bottom of each table.

## 4.  RESULTS

The study included 96 undergraduate students from the Department of Economics, University of Dar es-Salaam. The students were in their first, second or third year at the university.   All students except one came from mainland Tanzania and no students came from Zanzibar.   The students' ages ranged between 20 and 30, mean age being 22. Of the participants 37.5 per cent were females.

On average the students sent 2344 TZS of a maximum of 6000 TZS to individual B. As shown in Figure 2, there was a large spread in the amount sent ranging from the minimum amount (0 TZS) to the maximum amount (6000 TZS).

Figure 2.

*Frequency of Chosen Sending Alternatives*
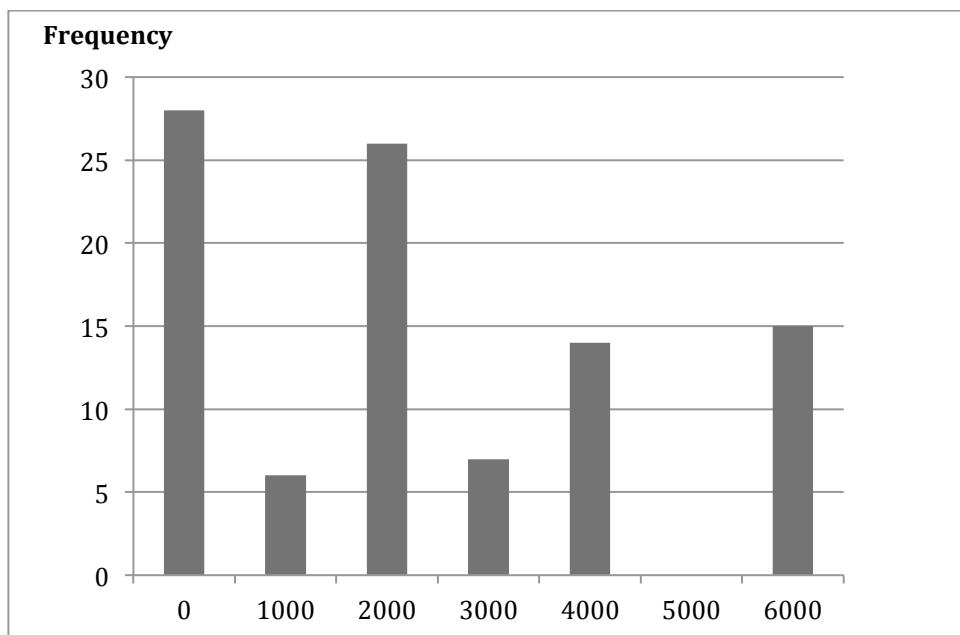


The most frequently chosen alternative was to not to send any money, chosen by 29.2 per cent of the participants. At the same time, 15.5 per cent of the participants chose to send the maximum amount. Of the alternatives, 1000, 3000 and 5000 were chosen less or not chosen at all. It can be noted that these three alternatives were not exemplified in the instruction, whereas the other alternatives were.


4.1 Background Characteristics

Some background information was asked for in the survey to enable isolation of those specific variables. The background questions regarded age, gender, whether they had siblings or not and

region of origin. The questionnaires were also marked differently depending on whether the respondent was in the first, second or third year at the University of Dar es-Salaam.

The predictability of the standard trust question on trust behaviour was analysed through an OLS regression with the amount given (calculated into a percentage of the highest sending possibility) in the trust game as the dependent variable and background characteristics as independent variables. Neither age nor gender was found to have any large or statistically significant impact on trust behaviour but was still included in later regressions for isolation purposes. Both second and third year students sent about 12 per cent less than first year students. However, these results were not statistically significant ($p = 0.163$ and $0.248$).

In the questionnaire, 54.7 per cent of the respondents answered that they had siblings. Subjects who responded that they had siblings would presumably send 19 percentage points less than if they did not have siblings. This result was statistically significant with a one per cent level of significance. However, there is reason to question the result since only about half of the respondents answered that they had siblings. Furthermore, this result is highly unlikely in a country such as Tanzania where the average woman is expected to give birth to more than five children (UNICEF, 2012), implying that most citizens would have siblings. Due to this reason, the variable was excluded from any further regressions.

Respondents were also asked about their region of origin. The regions were later grouped into different zones according to the Tanzanian National Bureau of Statistics (National Bureau of Statistics, 2011).

Figure 3.

*Participants' Zones of Origin*
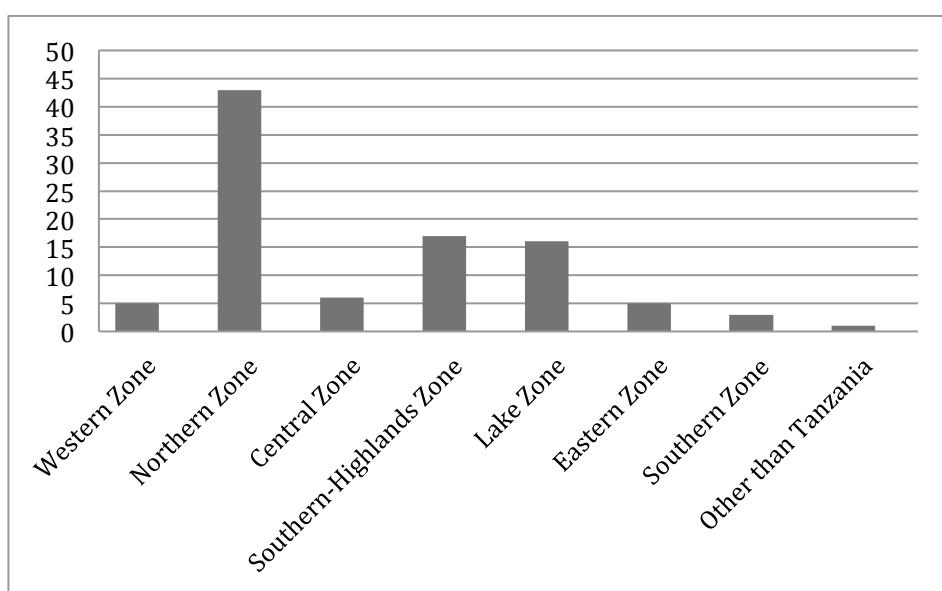
The most frequent zone of origin was the northern zone, which included the regions Arusha, Kilimanjaro, Manyara and Tanga. This zone was therefore used as the reference variable in regressions with zones of origin as independent variables. Some differences between regions were found, the largest being the difference between the Northern (reference) zone and the Southern zone. In the regression, originating from the Southern zone had a negative effect of 36 percentage points on sending behaviour compared to that of the Northern zone. This was the most statistically significant result of the differences between zones ($p = 10.1$). Thus, no regional differences were statistically significant at a 10 per cent significance level.

## 4.2 Standard Trust Questions

The main research question of this study is to investigate whether the response to the standard trust question predicts behaviour in a two-person trust game. The question asked was "Generally speaking, would you say that most people can be trusted or that you can't be too careful dealing with other people?" Of the 96 students that participated 43.8 per cent answered "Can't be too careful", 40.6 per cent answered "Most people can be trusted" and 15.6 per cent answered, "Don't know". When excluding "Don't know" answers, the rate answering, "Can't be too careful" was 51.9 per cent. The high number of participants that answered "Don't know" made it the most unanswered question in the survey.

Table 2

*Answers to Standard Trust Questions (Percentage)*

| Trust | Can be trusted | Can't be too careful | Don't know |
|---|---|---|---|
| | 40.6 | 43.8 | 15.6 |
| Helpful | Try to be helpful | Looking out for themselves | Don't know |
| | 20.8 | 71.8 | 1.0 |
| Fair | Would take advantage | Try to be fair | Don't know |
| | 66.6 | 28.1 | 5.2 |

The predictability of the survey question on trust behaviour in the decision game was investigated through an Ordinary Least Squares regression. The amount given in the trust game was used as the dependent variable and survey answers to the standard trust question as independent variables. Assuming that the standard trust question can predict trust behaviour, the expected outcome would be a positive coefficient that is significant at 10 per cent significance

level.

The findings indicated a very low predictability. The small coefficient that was found was also not statistically significant (p = 0.819). When isolating for regional differences the result was even less statistically significant.

Two supplementary questions were also included in the survey to investigate their ability to predict trust behaviour. The first question regarded helpfulness and read "Would you say that most of the time people try to be helpful or that they are mostly just looking out for themselves?". Of the participants 78.1 per cent answered "Mostly are looking out for themselves", 20.8 per cent answered "Try to be helpful" and 1.0 per cent answered "Don't know". Another regression was conducted with the variable helpful replacing that of trust, other variables being the same. If the question on helpfulness could predict trust, the expected result would be a positive coefficient significant at 10 per cent significance level.

The result indicated a minor negative link between answers to the helpful survey question and trust behaviour. However, this result was not found to be statistically significant (p = 0.663).

Table 3

*Percentage sent in Trust Game as a Function of Survey Answers*

| Variable | (1) | (2) | (3) |
|---|---|---|---|
| Age | 0.61 | 0.29 | 0.38 |
|  | (0.24) | (0.12) | (0.15) |
| Female | 1.14 | -5.67 | -2.01 |
|  | (0.13) | (-0.74) | (-0.25) |
| Trust | 1.81 |  |  |
|  | (0.23) |  |  |
| Helpful |  | -3.91 |  |
|  |  | (-0.44) |  |
| Fair |  |  | 11.29 |
|  |  |  | (1.38) |
| JB-test | 10.1 | 11.0 | 9.2 |
| BP-test | 0.08 | 2.92 | 0.00 |
| No. of observations | 82 | 96 | 92 |

*Significant at 10 %, ** Significant at 5 %, *** Significant at 1 %.*

The same procedure was conducted with the following question. Participants were asked "Do you think that most people would take advantage of you if they got a chance or would they try

to be fair?" 66.6 per cent of the participants answered "Most people would take advantage", 28.1 per cent that "They would try to be fair" and 5.2 per cent answered "Don't know". A third regression was conducted with the fairness questions as an independent variable. As with previous questions, a positive coefficient significant at 10 per cent significance level is expected if the question can predict trust. The coefficient found was larger than those of the trust and helpfulness questions but the result was not statistically significant (p = 0.171).

Whether the helpful and fairness questions could predict answers in the trust question was also investigated. It was found that there is a positive link between answering that most people would "Try to be helpful" or "Would try to be fair" and answering, "Most people can be trusted". This impact is statistically significant (p = 0.00).

## 4.3 Activity in Organisations

Respondents were also asked about their activity in different organisations. All students responded that they were members of at least one organisation and most were active in several. Figure 4 shows the percentage of the population that are active and inactive members of different organisations. What is notable is the high percentage who answered that they were members of a church or religious organisation (97.9 per cent) and the student union (95.8 per cent).

Figure 4.

*Participants' Membership and Activity in Different Organisations*
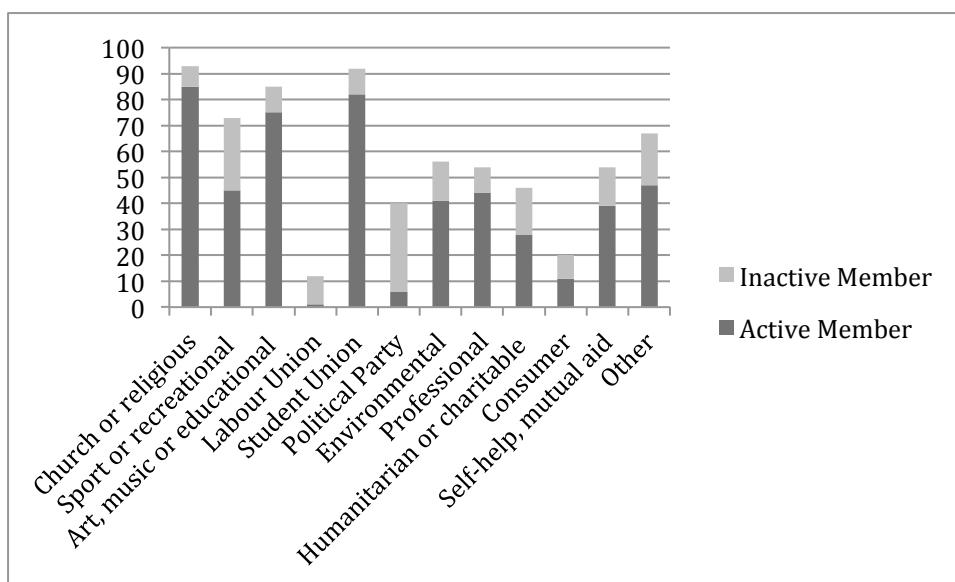


The relationships between experimental trust behaviour and active as well as inactive

membership in different organisations were also investigated. Following the theories of Putnam a positive correlation between activity in civic organisations and trust behaviour would be expected.

Active members of environmental organisations were found to send 26.6 percentage points more and this result was statistically significant at a level of 1 per cent (p = 0.003). Active members of professional organisations were found to send 14.4 percentage points less, a result that was statistically significant at 10 per cent (p = 0.068). Active and inactive members of political organisations were found to send 20.9 percentage points more and this result was statistically significant at a level of 5 per cent (p = 0.018). Other organisational memberships and activities were not found to have any impact on a 10 per cent significance level.

Table 4

*Percentage sent in Trust Game as a Function of Membership in Organisations*

| Variable | Active membership | Active and inactive membership |
|---|---|---|
| Age | 0.16 | -1.131 |
| | (0.06) | (0.46) |
| Female | -7.23 | 0.03 |
| | (0.90) | (0.00) |
| Church or religious | 15.21 | 18.07 |
| | (1.33) | (0.69) |
| Sport or recreational | -9.82 | 0.69 |
| | (-1.18) | (0.88) |
| Art, music or educational | 5.63 | -1.16 |
| | (0.63) | (0.09) |
| Labour Union | 50.99 | 0.92 |
| | (1.46) | (0.07) |
| Student Union | -0.23 | -0.83 |
| | (0.02) | (0.05) |
| Political Party | 23.06 | 20.9** |
| | (1.33) | (2.42) |
| Environmental | 26.62*** | 12.9 |
| | (3.09) | (1.45) |
| Professional | -14.41* | -3.23 |
| | (1.85) | (0.37) |
| Humanitarian or charitable | -6.60 | -7.33 |
| | (0.65) | (0.37) |
| Consumer | 5.77 | -13.1 |
| | 0.44 | (1.16) |
| Self-help, mutual aid | 9.61 | 9.62 |
| | (1.22) | (1.13) |
| Other | 10.70 | 11.11 |
| | (1.45) | (1.23) |
| JB-test | 0.7 | 3.7 |
| BP-test | 1.14 | 1.79 |
| No. of observations | 91 | 91 |

*Significant at 10 %, ** Significant at 5 %, *** Significant at 1 %.*

# 5. DISCUSSION

## 5.1 Background Characteristics

An interesting question is whether there are age or gender differences in trust behaviour. In this study no such differences were found.

In the survey many students answered that they came from the Northern parts of Tanzania especially from the region of Kilimanjaro (35.4 per cent). This figure seems disproportionate, but a possible explanation could be the historical emphasis on education in the region as well as the high number of secondary schools in the area (Aikaeli, 2012).

As mentioned, 55 per cent of the students answered that they had siblings, which seems very low and unlikely in a country such as Tanzania, with its high fertility rate. Possibly, the question or the use of the word *siblings* was difficult to understand or the students may have thought that the word had a different connotation. This implies that the use of the question as it was asked in this study might have to be reconsidered in future research.

## 5.2 Standard Trust Questions

The students' answers to the standard trust question in this study were similar to those in previous surveys with undergraduate students. In studies conducted by Glaeser et al (2000 p. 816) and Danielson and Holm (2005 p. 517) between 40 and 45 per cent of the students answered that "Most people can be trusted". A similar and slightly higher result was found in this study where 48.1 per cent of the students answered that most people could be trusted.

However, the results from the study showed no link or a very weak link between survey answers and trust behaviour. This indicates that the standard trust question has a low validity and is not an accurate measurement of trust. Furthermore, the standard trust question was the question that was most often unanswered in the questionnaire. This may suggest that the question was difficult for respondents to understand or answer, adding to the critique of the question as an appropriate measurement.

The first complementary question regarding helpfulness had a slightly higher predictability of trust than the standard trust question, but was still not statistically significant. The second complementary question on fairness had a much better predictability than both the standard trust question and the helpfulness question, but was not statistically significant either. Hence, both questions must be said to be misleading indicators of behaviour in trust games.

As expected, a positive correlation was found between answers to the helpful and fairness questions and answers to the standard trust question. However, this correlation is expected to be

stronger if the three questions were to measure the same qualities. The questions therefore seem to measure similar qualities but cannot be used as substitutes for each other.

## 5.3 Activity in Organisations

In the study, all participants were members of at least one organisation, active or inactive. This circumstance made it impossible to investigate any differences between members of civic organisations and non-members. Hence, this study does not draw any conclusions on whether membership in civic organisations is an indicator of trust.

Instead of making an overall conclusion regarding membership in civic organisations, different organisational types were separated to see if there were any differences in trusting behaviour between members of different organisations. It was found that membership in certain types of organisations could be used as an indicator of trust behaviour in the decision game. Active members of environmental organisations were found to send 26.6 percentage points more and the result was statistically significant at a level of 1 per cent. At the same time, active members of professional organisations were found to send 14.4 percentage points less, a result that was statistically significant at 10 per cent. Also, active and inactive members in political organisations were found to send 20.9 percentage points more and this result was statistically significant at a level of 5 per cent.

Interestingly, of all questions in the survey, these questions were the best indicators of trust. They predicted trust behaviour in the decision game far better than the standard trust question and the questions regarding fairness and helpfulness. Even though membership in civic organisations as a whole could not be investigated as an indicator of trust, some memberships in organisations can be seen separately as indicators of trust. This provides support for Putnam's theory that civic engagement in society can lead to higher levels of trust. Organisational membership could therefore be an indicator of trust behaviour.

## 6. CONCLUSION

The standard trust question has been used in a wide range of studies and reports and is generally considered to be an adequate measurement of trust within societies. Since it is often used in reports by large institutions such as the World Bank, the results have a large impact on policy-making. It is therefore of utmost importance that the standard trust question has a high validity and we need to ask ourselves: *Can we trust in the measurements of trust?*

The main focus of this study is to investigate the relationship between the answers to the standard trust question and actual behaviour measured through an experiment. The main research question in the study is "Does a person's response to the standard trust question predict his/her behaviour in a two-person trust game?" As shown in the study, the standard trust question cannot be said to be a good indicator of trust behaviour in a decision game.

Three different conclusions could be drawn from this result. Trust games can be seen as good predictors of trust, whereas answers to the standard survey question cannot. It could also be the other way round; that trust games are not good predictors of trust whereas the standard survey question is. Finally, both trust games and the survey question could be inadequate methods of measuring trust.

In this study, trust is defined as the norm making subjects actively choose a Pareto efficient point in a Prisoner's dilemma setting. Using this definition of trust a correctly designed experimental setting will measure trust accurately per definition. It is the researcher's challenge to construct a game setting that correctly resembles the theoretical structure of the Prisoner's dilemma. It is our belief that the game setting in this study is a good indicator of trust and that we have taken adequate measures to minimise external effects. The validity of the standard trust question could therefore be said to be low and the use of the standard trust question as a measurement of trust levels could be questioned.

The immediate implication of our result is that we cannot trust in the standard measurement of trust. Thus, due to the widespread use of the standard trust question in previous research there is a need for reviewing some of the central conclusions regarding trust levels in different countries. Furthermore, we question the use of the standard trust question in surveys by the World Value Survey, the World Bank as well as others. Instead we propose the use of other methods.

In this study we also examine whether the result from the two-person trust game can be predicted by alternative survey questions. The second research question in the study is: "Are the responses given to any of the supplementary survey questions regarding fairness and helpfulness able to predict behaviour in a two-person trust game?" It was found that the

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complementary questions regarding fairness and helpfulness could not predict trust behaviour in the decision game. Even though they predicted trust behaviour better than the standard trust question, they still cannot be said to be good indicators of trust. The use of these survey questions for measuring trust is thus not recommended.

The third research question is "Do traits such as age, gender, region of origin or activity in civic society predict behaviour in a two-person trust game?" Our findings suggest that the best predictors of trust behaviour were three survey questions regarding specific organisational memberships. The three questions regarded membership and activity in Environmental, Professional and Political organisations. This supports the ideas put forward by Putnam that civic engagement in society leads to higher trust. However, since this study did not investigate potential differences between non-members and members of any civic organisation, any broader conclusions cannot be made.

Due to the inability of the standard trust question and the questions regarding fairness and helpfulness to predict trust behaviour, we do not recommend the use of these questions. Instead we argue that focus should be shifted towards the use of organisational membership as an indicator of trust. It would be interesting to continue researching this field with an intent focus on the impact that engagement in civic organisations has on perceivable trust levels.

## INTERVIEWS

Aikaeli, Jehovaness; Professor at the University of Dar es Salaam. 2012. Interview 2012-06-04.

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## APPENDIX 1: TRUST GAME
**General Information**

Dear Participant,

You have been given the opportunity to participate in a study. The study consists of a decision game and a survey and will take approximately 1 hour. The purpose of the study is to gain additional knowledge about economic decision-making and to compare different methods. The participation in the study is voluntary. All participants that take part in the game and fill out the survey will receive 3000 TZS as compensation.

To make the study more realistic you have the opportunity to earn additional money in the decision game. You will be able to earn between 0 TZS and 24000 TZS in the decision game. The sum you earn in the decision game depends partly on your own choices and partly on the choices of the person with whom you are randomly paired. You will not know whom you are paired with and the other person will not know that you are paired with him/her.

Your choices in the decision game and the answers in the survey will be strictly confidential. Furthermore, you will not be asked to write your name anywhere, which means that you will be fully anonymous to us. To be able to identify yourself without using your name we enclose an ID-note that you should keep as a receipt.

**You will need this receipt when you collect your money so be careful with it and do not enclose the ID-note when you hand in the forms and the questionnaire**.

Sincerely Yours,

Tove Jarl & Erik Eldblom

# Instructions: Decision Game

Now that the experiment has begun, we ask you not to talk to anyone during the experiment.

In this experiment you will be randomly paired with another person, who is also participating in the experiment. From now on you will be called individual *A* and your counterpart will be named individual *B*. You will not be told who B is either during or after the experiment. B will not be told your identity either during or after the experiment.

You have been given 6000 TZS and the same amount has been given to B. You have the opportunity to send some, all, or none of the money to B. The amount you send will be tripled by us, so if you send 1000 TZS, the sum of money that reaches B will be 3000 TZS; if you send 2000 TSZ the sum that reaches B will be 6000 TZS. B will at the same time have the equal opportunity to send money to you.

The total amount earned by you will be 6000 TZS minus the amount sent to B plus the amount returned from B. The total amount earned by B will be 6000 TZS plus the amount received from you (i.e., the amount you have sent multiplied by three) minus the amount returned.

The table below shows your possible earnings and those of your counterpart. Columns represent your donation and rows represent that of your counterpart. Your possible earnings are shown in red and those of your counterpart in black.

<center>You give:</center>

| Your counterpart gives: | 0 | 2000 | 4000 | 6000 |
|---|---|---|---|---|
| 0 | 6000 6000 | 4000 12000 | 2000 18000 | 0 24000 |
| 2000 | 12000 4000 | 10000 10000 | 8000 16000 | 6000 22000 |
| 4000 | 18000 2000 | 16000 8000 | 14000 14000 | 12000 20000 |
| 6000 | 24000 0 | 22000 6000 | 20000 12000 | 18000 18000 |

You are now kindly asked to fill in point 1 and 2 in the form below

**1**. Please write the number on your ID-note. _____

**2**. Please write down the amount you want to send to B:

**Note that only one answer is possible.**

I want to send:  ☐  0 TZS    ☐  1000 TZS    ☐  2000 TZS    ☐  3000 TZS
☐  4000 TZS    ☐  5000 TZS    ☐  6000 TZS

## APPENDIX 2: SURVEY

Now we ask you to fill out the survey. It is very important that you answer every question (1-20) and write your ID number correctly. **Note that an incomplete survey may result in you not receiving any money.** Only one answer is possible per question.

1. Please write the number on your ID-note. _____

2. What is your age? _____

3. What is your sex?
☐ Female ☐ Male

4. Do you have any siblings?

☐ Yes ☐ No

5. What is your region of origin?

| ☐ Arusha | ☐ Dar es Salaam | ☐ Dodoma | ☐ Geita | ☐ Iringa |
| ☐ Kagera | ☐ Katavi | ☐ Kigoma | ☐ Kilimanjaro | ☐ Lindi |
| ☐ Manyara | ☐ Mara | ☐ Mbeya | ☐ Morogoro | ☐ Mtwara |
| ☐ Mwanza | ☐ Njombe | ☐ Pemba North | ☐ Pemba South | ☐ Pwani |
| ☐ Rukwa | ☐ Ruvuma | ☐ Shinyanga | ☐ Simiyu | ☐ Singida |
| ☐ Tabora | ☐ Tanga | ☐ Zanzibar Central/South | | |

☐ Zanzibar North   ☐ Zanzibar Urban/West   ☐ Other than Tanzania

*For each organization below, could you tell me whether you are an active member, an inactive member or not a member of that type of organization?*

| | Active member | Inactive member | Don't belong |
|---|---|---|---|
| 6. Church or religious organization | ☐ | ☐ | ☐ |
| 7. Sport or recreational organization | ☐ | ☐ | ☐ |
| 8. Art, music or educational organization | ☐ | ☐ | ☐ |
| 9. Labor Union | ☐ | ☐ | ☐ |
| 10. Student Union or organization | ☐ | ☐ | ☐ |
| 11. Political party | ☐ | ☐ | ☐ |
| 12. Environmental organization | ☐ | ☐ | ☐ |
| 13. Professional association | ☐ | ☐ | ☐ |
| 14. Humanitarian or charitable organization | ☐ | ☐ | ☐ |
| 15. Consumer organization | ☐ | ☐ | ☐ |
| 16. Self-help group, mutual aid group | ☐ | ☐ | ☐ |
| 17. Other organization | ☐ | ☐ | ☐ |

18. Generally speaking, would you say that most people can be trusted or that you can't be too careful dealing with people?

☐ Most people can be trusted ☐ Can't be too careful ☐ Don't know

19. Would you say that most of the time people try to be helpful or that they are mostly just looking out for themselves?

☐ Try to be helpful ☐ Mostly are just looking out for themselves ☐ Don't know

20. Do you think that most people would take advantage of you if they got a chance or would they try to be fair?

☐ Most people would take advantage ☐ They would try to be fair ☐ Don't know

## APPENDIX 3: ZONE OF ORIGIN

*Percentage sent in Trust Game as a Function of Zone of Origin*

| Variable | (1) |
|---|---|
| Age | 0.31 |
| | (0.13) |
| Female | -2.81 |
| | (0.33) |
| Lake | 2.17 |
| | (0.20) |
| Western | 14.5 |
| | (0.88) |
| Southern-Highlands | 10.2 |
| | (0.99) |
| Central | -7.16 |
| | (0.46) |
| Southern | -36.2 |
| | (1.66) |
| Eastern | -11.6 |
| | (0.70) |
| Other than Tanzania | 13.4 |
| | (0.37) |
| JB-test | 7.1 |
| BP-test | 2.32 |
| No. of observations | 91 |

*Significant at 10 %, ** Significant at 5 %, *** Significant at 1 %.*

## APPENDIX 4: COUNTRY DATA

| Country | Code | $y_{97}$ | $trust_{97}$ |
|---|---|---|---|
| Argentina | Arg | 8200 | 27.0 |
| Australia | Aus | 23634 | 47.8 |
| Austria | Aut | 26082 | 31.8 |
| Belgium | Bel | 24532 | 30.2 |
| Brazil | Bra | 5221 | 6.7 |
| Canada | Can | 21260 | 49.6 |
| Chile | Chi | 5580 | 22.7 |
| Denmark | Den | 32249 | 56.0 |
| Finland | Fin | 23928 | 57.2 |
| France | Fra | 23675 | 24.8 |
| Germany | Ger | 26297 | 29.8 |
| Iceland | Ice | 27378 | 41.6 |
| India | Ind | 423 | 34.3 |
| Ireland | Ire | 22087 | 40.2 |
| Italy | Ita | 21070 | 26.3 |
| Japan | Jap | 34295 | 40.8 |
| Mexico | Mex | 4207 | 17.7 |
| Netherlands | Net | 24761 | 46.2 |
| Nigeria | Nig | 314 | 22.9 |
| Norway | Nor | 35918 | 61.2 |
| Portugal | Por | 11462 | 21.4 |
| South Africa | S Af | 3636 | 30.5 |
| South Korea | S Kor | 11235 | 38.0 |
| Spain | Spa | 14467 | 34.5 |
| Sweden | Swe | 28620 | 57.1 |
| Switzerland | Swi | 37324 | 43.2 |
| Turkey | Tur | 3123 | 10.0 |
| United Kingdom | UK | 23302 | 44.4 |
| United States | US | 30282 | 45.4 |

*$y_{97}$ is GDP per capita in 1997 (World Bank, 2012)*
*$trust_{97}$ is measured trust in 1997 (Knack & Keefer, 1997)*