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Government size and trust

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3 September 2010

Online at <https://mpra.ub.uni-muenchen.de/24985/>
MPRA Paper No. 24985, posted 15 Sep 2010 01:20 UTC

GOVERNMENT SIZE AND TRUST

Abstract. This paper uses individual level data (the Japanese General Social Survey) to examine how government size influences generalized trust. After controlling for the endogeneity of government size using instrumental variables, I found: (1) Using all samples, government size is not associated with generalized trust, and (2) After splitting the sample into workers and non-workers, government size does not influence generalized trust for non-workers whereas it significantly reduces generalized trust for workers. This suggests that workers, through their work experience, might have to face greater bureaucratic red tape coming from “larger government”, leading to negative externality effects on relationships of trust in the labor market.

Keywords: Government size; Generalized trust; Employment.

JEL classification: D30, Z13

1. Introduction

A growing number of researchers have drawn attention to the influence social capital has on various facets of human life (e.g., Putnam 1993, 2001; Fukuyama, 1995; Uslaner, 2002). It is has been argued that interpersonal trust, considered as a kind of social capital, has an important role in the enhancement of collective action and therefore deviation from the ‘prisoner’s dilemma’ (e.g., Putnam 1993; Hayami, 1995; Sønderskov 2009; Yamamura 2008b). Transaction costs are anticipated to be saved when people trust each other. Accordingly, economic efficiency is improved, resulting in economic growth (e.g., Knack, 1997; Knack & Keefer 1997; Whiteley 2000; Zak & Knack, 2002; Beugelsdijk et al, 2004)¹. Trust is thus regarded as a crucial element in economic development. How and why trust is formed in society is a critical question when considering the foundation of economic development. A growing number of reports have tackled this question (Glaeser et al., 2000; Alesina and La Ferrara 2002; Berggren and Jordahl, 2006; Bjørnskov 2006; Leigh, 2006 a, 2006b; Chan 2007).

Previous work has mostly shed light on the effect of socio-economic heterogeneity on trust, finding that people are less likely to trust others in more heterogeneous societies (e.g., Alesina & La Ferrara, 2002; Bjørnskov 2006; Leigh, 2006b; Gustavsson & Jordahl 2008) ². Besides heterogeneities concerning race, language, and economic inequality, other important factors influence trust from the view point of political economy. Trust can be regarded as a function of institutions and policies. As noted by Putnam, “(t)he myriad ways in which the state encourages and discourages

¹ Trust is associated with various economic outcomes such as tax compliance (Lassen, 2007) and loan repayment (Cassar, 2007).

² As for economic inequality, in contrast to the United States, Leigh (2006b) found no apparent association between trust and inequality across Australia.

social-capital formation have been under-researched [...] Such questions represent of the many unexplored frontiers in social-capital research.” (Putnam & Goss 2001, p.17). Government decision-making impedes individual decision making in the market when government spending increases relative to voluntary spending; the government is thus thought to interrupt market activity³. As found by Goel & Nelson (1998), government size is positively associated with the prevalence of corruption, since a larger government leads to greater bureaucratic red tape⁴. The perception of corruption seems to hamper economic activities such as investment (Mauro 1995). Government size is thus negatively associated with economic growth⁵. Various institutional conditions are important to enhance market transactions and the formation of trust (Berggren & Jordahl, 2006)⁶. Corrupt activity by public officials erodes the institutional conditions required to vitalize economic transactions along with fostering trust.

Wolfe (1989) raised the hypothesis that civil society and the norm of reciprocity are “crowded out” if people are protected “from-the-cradle-to-the-grave” by large government. The welfare state is thus thought to squeeze communities and social networks. The argument leads me to conjecture that larger government results in lower trust⁷. However, if one considers previous reports, there seems little agreement as to

³ A market oriented economy leads to the formation of trust, stimulating further exchanges (Berggren & Jordahl, 2006).

⁴ In transition countries, a larger government size reduces corruption (Goel and Budak 2006). Using various measures of government size, the relationship between government size and corruption is not stable (Glaeser & Saks 2006).

⁵ The conjecture that resources are allocated less efficiently by larger governments, leading to lower economic growth is well supported (e.g., Landau, 1985; Peden & Bradley, 1989; Dar & AmirKhalkhalim 2002; Fölster & Herekson, 2002). On the other hand, some researchers find no discernable relationship between government size and economic growth (e.g., Ram, 1986; Bairam, 1990; Easterly and Rebelo, 1993; Mendoza et al., 1997).

⁶ The conditions are the security of property rights, access to sound money, and freedom to exchange with foreigners.

⁷ Analyzing the influence of government size on economic outcome is a major issue in

how government size affects trust. Berggren & Jordahl (2006) used cross country data to investigate the effect of government size on trust, but found no stable relationship between government size and trust. Kumlin and Rothstein (2005) used survey data from Sweden to show that a large welfare state possibly increases social capital when universal welfare programs are provided. According to Bergh and Bjørnskov (2009), there is the reverse causality that social trust facilitates the sustainability of a welfare state characterized by government expenditure. Closer examination is needed to explore the impact of government size on social trust because this effect varies according to the particular situations confronted by an individual.

Kumlin and Rothstein (2005) argued that people infer other's trustworthiness from how they perceive public service bureaucrats. Government size is thought to have a greater effect on workers than non-workers, since workers more frequently participate in market transactions. Furthermore, the perception of workers depends on whether they work in the public or private sector. This paper, therefore, attempts to investigate the effect of government size on trust for both workers and non-workers. To this end, I collated suitable data by combining prefecture and individual level data (the Japanese General Social Survey, hereafter JGSS), and used this data for statistical analyses⁸. The relationship between government size and trust has been examined mainly using individual level data from Western countries or cross country data. This paper is the

the field of political economics. There are many reports concerning the relationship between government size and economic growth (e.g., Peden & Bradley, 1989; Dar & Amirkhalkhali 2002; Angelopoulos et al., 2008). Recently, government size has been investigated in terms of individual perception. For instance, researchers have attempted to tackle the question of how and the extent to which the degree of life satisfaction is affected by government size (e.g., Bjørnskov et al., 2007; 2008a; 2008b, Yamamura 2009a).

⁸ A Japanese prefecture is roughly equivalent to a state in the United States or a province in Canada.

first to examine how trust is influenced by government in Japan, a country in which the political and socio-cultural situation is distinctly different from that in Western countries. The major finding of this paper is that government size reduces the generalized trust of workers, but does not affect that of non-workers.

The remainder of this paper is organized as follows: Features of Japanese society and the relationship between government size and generalized trust are briefly reviewed in Section 2. The next section explains the data and methods used. Section 4 provides the results of the estimations and discussion. The final section offers concluding observations.

2. Overview of Features of Japanese Society

2.1. Homogeneity and community mechanism

Japan is a racially homogeneous society (Index Corporation, 2006)⁹, and in a group of countries with the lowest inequalities (Tachibanaki, 2005: Chapter 1). Assuming that people have a greater tendency to trust each other in a more homogeneous society (e.g., Alesina and La Ferrara, 2002; Uslander 2002; Bjørnskov 2006), this characteristic of Japan leads me to conjecture that the degree of trust in Japanese society is high. “The psychological basis of mutual trust could further be strengthened by incorporating personal elements in business transactions, such as the exchange of gifts and attendances at weddings and funerals” (Hayami 2001, 290). Accordingly, Japanese society is characterized not only by racial and economic homogeneity, but also by tightly-knit communities, resulting in interdependent trust being generated. Trust formed through long-term transactions made a great contribution to Japan’s industrial

⁹ The component ratio of Japanese in the 1996 population was 99 % and suggests that Japan can be considered as a racially homogeneous society (Index Corporation, 2006).

development in the post-war period (Asanuma, 1989; Yamamura 2009b). Hence, when it comes to Japanese society, a high degree of trust appears in interpersonal relationships within tightly-knit communities or business groups.

Reports (Uslaner 2002; Bjørnskov 2006) have categorized trust into generalized and particularized kinds¹⁰. “The central idea distinguishing generalized from particularized trust is how inclusive your moral community is.” (Uslaner, 2002: 26-27). People with generalized trust have positive views toward both their own in-group and out-groups, whereas those with particularized trust have positive views of their own in-group but a negative attitude toward groups to which they do not belong¹¹. Generalized trust can be extended to strangers while particularized trust might be restricted to within a well-established personal network. Global economic integration appears to lead to national social disintegration and therefore the collapse tightly-knitted communities (Rodrik 1997). Hence, changes of economic circumstance would weaken the competitiveness of firms that have relied on particularized trust in the world market. In this situation, generalized trust becomes more important than particularized to retain competitiveness.

2.2. Prefecture government

About one-third of local government revenues consist of local transfer and allocation taxes and national government disbursements (Doi & Ihori 2009, p.162). About 5 % of GDP is allocated to financial support for local governments. According to

¹⁰ Banfield (1958) provided a similar argument based on the case of a Southern Italian Village.

¹¹ Yamagishi & Yamagishi (1994) defined what I called particularized trust as “mutual assistance”. Japanese society characterized by preferential treatments given to in-group members provides mutual assurance in closed and tightly-knit relationships (Yamagishi & Yamagishi, 1994).

Doi & Ihori (2002), people and firms in urban regions, which hold about 60 % of the population of Japan, pay about 75 % of the annual national taxes. However, they receive fewer grants than do those in rural regions. This tells us that income is distributed from high income urban regions to low income rural regions. As shown in Figure 1, the per capita income of a prefecture is negatively related to prefecture government size, suggesting that the revenue coming from the central government is redistributed to low income prefectures and hence a low income prefecture's government size is relatively large. That is, heavy financial support provided by the central to local government seems to be the main reason why there are variations in local government size.

The degree of justice depends on whether local citizens can discourage local interest groups and politicians from diverting local government away from just serving themselves at the expense of the rest of society. Lobbying activities organized by local interest groups are especially observed in rural and agricultural areas (Doi & Ihori 2002; Doi & Ihori 2009, Ch.7) ¹². Variations in government inefficiencies among prefectures are in part considered to be the result of differences in rent-seeking activities. Such activities by local interest groups are not easily observed by people, deteriorating relationships of the trust among people.

The main areas of government expenditure at the prefectural level are education, public works and public welfare. According to Doi & Ihori (2009, Ch.7), after the mid-1970s, education showed a decreasing trend. This was because of the smaller numbers of students compared with earlier years; the result of a declining birth rate. In stark contrast to this, public welfare showed an increasing trend, reflecting a larger

¹² 'Agricultural-related public capital, fishing ports, flood control, and forest conservation have been over funded as a result of the lobbying activities of local-interest groups' (Doi & Ihori 2009, p.181).

number of older residents. A beneficiary is thus more likely to a specified group such as older generations. The public service is considered to be accompanied with a selective and needs-tested feature. In this situation, as argued by Kumlin and Rothstein (2005), interpersonal trust decreases.

2.3. Generalized trust

I now focus on how prefecture government size is related to the degree of average generalized trust in each prefecture. Relationships between average trust and government size is shown in Figure 2 (1), calculated using all samples. For closer examination, I divide the sample into workers and non-workers. The relationships are shown in Figure 2 (2) and (3) and are calculated from worker and non-worker samples, respectively.

A cursory examination of Figure 2(1) illustrating the relationship between government size and average trust shows a slightly negative slope. This slope is unchanged in Figure 2 (2), while a slightly positive slope is observed in Figure 2 (3). However, it is not obvious from these that government size is correlated with the degree that people generally trust others because there are very small and almost surely insignificant correlations in all three cases. In section 4, more precise estimations are conducted by controlling for various factors and paying close attention to causality.

The supply of public goods is determined through political processes, leading supply to be different from the optimum level in terms of economics. It is widely acknowledged that bureaucrats in the government sector have incentives to maximize their budgets (Niskanen 1971). The absence of a profit incentive induces government organizations to be less efficient (Buchanan & Wagner, 1977). As a consequence, a government tends to

become oversized and produce an oversupply of unnecessary public goods. As the cost for the supply of public goods is financed through taxation, citizens are likely to criticize government policy when the cost of public goods outweighs their benefit. However, a government has abundant information, which is difficult for ordinary people to access. As a result of this information asymmetry, “government can easily manipulate information to inflate the value of the public goods they want to supply” (Hayami 2001, p.227). Such manipulation is thought to be easier in the economic developing stage, since the average education level of the population is lower and the mass media is not sufficiently developed.

Kumlin and Rothstein (2005) stress the design of public institutions, rather than the size of public institutions when relationships between public institutions and social trust are investigated. Their assertion is solidly based on the notion of “Procedural Justice”. People are likely to think that not only the results caused by public sector are important, but also the process to reach the result are as well (e.g., Lind and Tyler 1988; Thibaut and Walker 1975; Tyler 1998). People are usually interested in the extent to which they can enjoy public services; whereas they are also interested in whether the way public services are supplied is fair. For political legitimacy, it is critical that people are treated with equally by government institutions (Dworkin, 1977). Kumlin and Rothstein (2005) argue that a selective public service, which is provided to individuals only after an individual needs test, is problematic from the view point of procedural justice. This is because that the process of the test is not sufficiently open and so there is information asymmetry between government and individuals, leading programs based on the test to be at bureaucratic discretion. As a consequence, the selection process tends to be subject to suspicions of cheating, arbitrariness, favoritism and

discrimination. Accordingly, interpersonal trust is undermined by this public institution.

When individuals are divided into workers and non-workers, the influence from the public sector is thought to differ. Workers more frequently participate in market transactions and so seem to be more aware of the government. An increase in government size reduces private consumption or investment, having a detrimental effect on the private sector. People working in the private sector are more likely to suffer from crowding out when government size is large. Workers in the private sector are more likely to face difficulties as a result of large government. This situation makes workers in the private sector more aware of procedural justice. Consequently, workers in the private sector are less likely to trust others. By contrast, workers in the public sector enjoy large government. For instance, workers in the public sector seem to benefit from government size because larger labor is demanded by larger government, and this is one of the reasons that these workers have a job. There are also industries that can be protected by the government and so get finance (Doi and Ihuri 2009). Workers in the public sector and protected industries are not disturbed by government when they work. However, there is conflict between people in the private and those in the public sector. Workers in protected industries are opposed to workers in other industries. The more serious this conflict becomes, the larger the public sector is. As a result, workers in the public sector or in protected industries are also less inclined to trust others.

3. Data and Method

3.1. Data

This paper uses JGSS data, which are at an individual level. The JGSS surveys adopted a two-step stratified sampling method and were conducted throughout Japan in 2001. JGSS was designed to be the Japanese counterpart of the General Social Survey in the United States. This survey asked standard questions about an individual's and his/her family characteristics through face-to-face interviews. This data covers information related to marital and demographic (age and gender) status, level of income, years of schooling, age, number of children, job category¹³, size of residential area, prefecture of residence, and opinion about generalized trust¹⁴. According to the population size of the geographical area, sample points were divided into three groups; (1) large cities, (2) other cities, and (3) villages and towns.

The survey collected data from 2790 adults, aged between 20 and 89 years. This paper deals with the various individual characteristics noted above. Some respondents did not correspond to all questions and so the observations used for the estimations were reduced. Hence, as shown in Table 2, the sample size of non-workers and workers used for the estimations was 1619. When I restricted the respondents to between 25 and 60, the size of sample was reduced to 1048. The non-workers sample size 642 becomes 240 when respondents were restricted to ages between 25 and 60. This implied that many respondents did not have work, mainly because they were retired. The variables used for regression estimations are shown in Table 1, which indicates mean values.

¹³ Jobs are divided into 21 groups ; (1)agriculture, (2)forestry, (3) fisheries, (4) mining, (5) building, (6) manufacture, (7) electricity, gas, water supply, (8) transportation, (9) wholesale, (10) retail sale, (11) restaurant, (12) finance, insurance, (13) real estate business, (14) Mass media, (15) information industry, (16) Medical industry, (17) education, (18) law and account, (19) other service industries, (20) public sector, and (21) others. Job category dummies were constructed based on these groups.

¹⁴ Data for this secondary analysis, "Japanese General Social Surveys (JGSS), Ichiro Tanioka," was provided by the Social Science Japan Data Archive, Information Center for Social Science Research on Japan, Institute of Social Science, University of Tokyo.

Years of schooling of the workers was 12.6, that it was larger than that of non-workers indicates that higher educated people are more likely to work. The age of workers is 46.4, about 15 years less than that of non-workers. This partly reflects the fact that non-workers include retired people. It is interesting that marital status is almost the same between workers and non-workers, whereas the experience of divorce is distinctly larger for workers than for non-workers.

With respect to generalized trust, considered as a crucial independent variable, respondents were all asked: "Generally speaking, would you say that most people can be trusted?". The possible responses to this question were "no", "depends", and "yes". Figure 3 presents the distribution of generalized trust and shows that most male responses were 'depends'. Numbers responding 'Yes' are slightly larger than the 'No' responders.

As for the prefecture level data, Gini, immigration rate, and government size are used. As referred to later, to alleviate any endogenous bias, these variables are lagged by five years. That is, I use these variables in 1996. The Gini coefficients of income in 1994 are from the Statistics Bureau of the Ministry of Internal Affairs and Communications¹⁵. Immigrants and prefecture populations are from the Asahi Shimbun (2004). The immigration rate is measured by (number of immigrants from another prefecture / Population). Using government expenditure and income obtained from the Index Corporation (2006), government size is measured by (Government expenditure/ Total household Income).

3.2. Methods

In line with the discussion above, the estimated function of trust then takes the

¹⁵ Gini data at the prefecture level are obtained every five years; as 1996 data is not available, I used 1994 data.

following form:

$$\begin{aligned}
 TRUST_{ipv} = & \alpha_0 + \alpha_1 GOVSIZE_p + \alpha_2 IMIGRA_p + \alpha_3 GINI_p + \alpha_4 EDU_{ipv} + \alpha_5 AGE_{ipv} + \\
 & \alpha_6 MALE_{ipv} + \alpha_7 INCOM_{ipv} + \alpha_8 MARRY_{ipv} + \alpha_9 CHILD_{ipv} + \alpha_{10} DIV_{ipv} \\
 & + \alpha_{11} MCITY_{ipv} + \alpha_{12} TOWN_{ipv} + \lambda_v + \omega_{ipv},
 \end{aligned}$$

where TRUST represents the degree of generalized trust ranging from 1 to 3 in individual i , prefecture p , and individual's job category v . α 's represents the regression parameters. λ_v represents the unobservable specific effects of v 's job categories, which is captured by job category dummies ; ω_{ipv} represents the error term.

The model is estimated using the Ordered Probit method because the dependent variable is ordered. When the coefficient takes the positive sign, a positive change in the independent variable decreases the probability of a lower ranked outcome and increases the probability of the highest ranked outcome. However, "The marginal effects of the regressors on probability are not equal to the coefficients" (Greene 1997, p.927). Therefore, I encounter difficulty in the interpretation of the coefficients. Instead of a coefficient, marginal effects can be calculated in each category of dependent variable (Greene 1997, pp.927-931). Following Fischer and Torgler (2005), I also compute the marginal effects for the highest level of generalized trust. The marginal effect indicates the probability that a respondent chooses "yes" for responding to the question about generalized trust.

As explained in the data section, the possible responses to the question about the generalized trust were "no", "depends", and "yes". Among these responses, "depends" calls for careful interpretation. It is unclear that "depends" can be considered as an intermediate category, or it may include a number of respondents who could have

answered in other categories if other possible responses were included in the questionnaire. For alleviating any bias arising from this, I also use a dummy, excluding “depends” from the sample, as a dependent variable. That is, in addition to Ordered Probit model, to check the robustness of the estimation results, using a sample where responses to the question about generalized trust were “yes”, or “no”, I attempt to apply the Probit method.

The effects of each variable on trust are now discussed. The key variable is government size, represented as GOVSIZE. From the discussion above, GOVSIZE is expected to take a negative sign. Heterogeneous society discourages people from trusting others (Alesina & La Ferrara, 2002). For the purpose of capturing socio-economic heterogeneity, IMIGRA and GINI are incorporated as independent variables¹⁶. Immigrants coming from another prefecture leads to a more culturally heterogeneous society, resulting in the decline of interpersonal trust. This conjecture is in line with the finding that the number of immigrants from other prefectures decreases interpersonal trust, although Japanese society is a racially heterogeneous society (Yamamura, 2008a)¹⁷. With the aim of capturing this effect, the rate of immigrants, IMIGRA, is incorporated as a dependent variable. The anticipated sign of IMIGRA is negative. With respect to economic inequality considered as economic heterogeneity, GINI (Gini coefficients) has been found to be negatively associated with trust (e.g.,

¹⁶ Gini coefficient of each prefecture ranges from 2.66 (Shiga prefecture) to 3.80 (Okinawa prefecture). It is found that Gini coefficient has a negative impact on the rate of respondents trusting neighbors in Japan (Yamamura 2008b). To put in another way, income inequality leads to a decrease in particularized trust in Japan. From the standpoint of comparative study, it is important to investigate the effect of income inequality on generalized trust in this study.

¹⁷ Contrarily, there is an optimistic view that the openness of a society leads to the formation of generalized trust (Chan, 2007). Chan (2007) examined the impact of global integration on generalized trust and found the positive openness-trust relationship.

Alesina & La Ferrara, 2002; Bjørnskov 2006; Chan2007; Yamamura 2008a). It is necessary to deal with the endogenous problem, which has recently been stressed in some reports (e.g., Leigh 2006a; Bjørnskov 2006; Gustavsson & Jordahl, 2008). With the aim of alleviating potential endogenous problems with Government size, rates of immigrants and the Gini coefficient, these prefecture level variables are lagged five years.

From previous reports (Zak & Knack 2001; Alesina & La Ferrara, 2002), EDU will be positively correlated with trust and take a positive sign. The more educated people are, the more they are inclined to work and trust each other than to spend time verifying each others' actions, this is because the opportunity cost of this for them is high (Zak and Knack, 2001). As a consequence, the sign of EDU is predicted to become positive. Existing reports note that generalized trust increases with the level of income (Alesina & La Ferrara 2000). Hence, the anticipated sign of INCOM becomes positive. It is reasonably assumed that a larger population is more diverse, which controls for the heterogeneity that cannot be captured by heterogeneity variables as above (Bjørnskov 2006). Hence, MCITY (medium size city) and TOWN (towns and village) dummies are predicted to take positive signs and the value of TOWN becomes larger than that of MCITY.

Turning to family structure and marital status, people who trust more also tend to marry more easily. Furthermore, married people are more likely to meet and be acquainted with people through their spouse's personal network. Because of their frequent contact with unknown people, married people become more sociable than singles. Accordingly, married people are more inclined to trust others. People with children are likely to have opportunities to interact with other parents through PTA

meetings and various events for children held by community associations, leading parents to be integrated into interpersonal networks. These activities lead parents to be more likely to trust others through their interpersonal interactions. As a consequence, the sign for MARRY and CHILD are anticipated to become positive. Experience of divorce, DIV, is considered as a kind of trauma. DIV is included as a dependent variable to examine how trauma influences people's trust (Alesina & La Ferrara 2002). Several control variables are also included to capture individual characteristics: age (AGE) and male's dummy (*MALE*).

3.3. Instrumental Variables.

As argued by Bergh and Bjørnskov (2009), there is a possibly opposite causality between the government size and social trust. With low trust, welfare states would suffer from free riding and so eventually suffer financial distress. Trust is considered to lower costs for realizing the large government regarded as a "welfare state"¹⁸. If this holds true, endogenous bias arises when I conduct regression estimation to examine how the government size influences social trust. To control for this bias, I use instrumental variables such as political determinants of government size to conduct the two step estimation. In this study, government size is measured at the prefecture level and so instrumental variables are at the prefecture level.

Budget allocations among various public goods are likely to be based on a calculation of the strength of enhancing political support (Downs 1957; Buchanan and Tullock 1962). This leads a government to oversupply public goods and so become larger than the optimum size. Local-interest groups such as a political group are thought to increase

¹⁸ From another point of view, relatively lower trust can be appropriately reflect higher crime rate, and so in turn may necessitate larger government.

the group benefit through various lobbying activities. As a consequence, government size is more likely to be large as political pressure increases. The number of political groups per capita is thus anticipated to be positively associated with government size. Hence, the number of political groups per capita is used as an instrumental variable. Consistent with the anticipation, a cursory examination of Figure 4 (1) reveals that the number of political groups per capita is positively related to government size.

As discussed in sub-section 2.2, information asymmetry about activity between local government and citizens leads to large government. The disclosure of official information ordinance was enacted to ensure government accountability in some municipalities (Jiyukokuminsha 2009). This ordinance guarantees the right to know information that the municipality has. Under this ordinance, a municipality is obliged to disclose information if a citizen requests for it to be disclosed. In 2001, there were 3241 municipalities in Japan's 47 prefectures; an average of about 69 per prefecture. The rate of municipalities instituting a disclosure of official information ordinance increased and was approximately 75% in 2001, but 99% in 2009¹⁹. Disclosure of official information ordinances seem to have alleviated the information asymmetry between government and citizens, leading to budget allocations becoming more efficient and so bringing about a reduction in government size. Hence, the rate of municipalities enacting the ordinance is predicted to be negatively associated with government size. In line with the prediction, looking at Figure 4(2) tells us that the rate of municipalities enacting such ordinances is negatively associated with government size.

Using these instrumental variables to control for endogenous bias, I obtain the

¹⁹ See http://www.soumu.go.jp/menu_news/s-news/2008/080801_1.html. (Accessed at August 10, 2010).

predicted value of *GOVSIZE* in the first stage OLS estimation. Then, in the second stage, I conduct the Ordered Probit and Probit estimations.

4. Results

4.1. *Ordered Probit Model and Two-stage Estimation.*

Table 2 reports the results of the Ordered Probit estimations. As a baseline estimation, I conducted the estimation based on the sample using all observations; this is presented in column (1). After splitting the total sample into workers and non-workers, estimations were conducted to compare the two groups in respect to the effects of government size on trust. The results for non-workers are shown in column (2) and those of workers in columns (3) and (4). As pointed out in the previous section, the age of workers is 46.4, which is about 15 years less than that of non-workers. Hence, the difference of regression results between workers and non-workers might be in part a generation effect if I conducted regression estimations separately for workers and non-workers. To alleviate this effect, I restrict the sample to those ages between 25 and 60 and conduct an additional estimation using this sample. The result for this non-workers and workers sample aged between 25 and 60 years is reported in column (5). Results for non-workers between 25 and 60 years appear in column (6), and for workers in columns (7) and (8)²⁰. Samples in columns (1)-(8) in Table 3 (1) and (2), and Table 4 correspond to those in Table 2.

Table 3 (1) shows the results of the second stage of the 2SLS model and Table 3(2)

²⁰ As argued in the Section 2, government size is not thought to have the same effect on different types of work. It is thus necessary to control for the difference in the relationship with government among industries. To control for the features of work respondents, job category dummies are added as independent variables when estimations using the worker sample are applied. These results are presented in columns (4) and (8).

reports the first stage. Table 4 shows those using Two-stage Ordered Probit estimation where the predicted value of *GOVSIZE* is obtained from the OLS estimation in the first stage.

Following Fisher and Torgler (2006), because the estimated coefficients do not indicate the magnitude of the effect, I compute the marginal effects for the highest level of social capital. These marginal effects are shown in Tables 2 and 4. As previously noted, the question related to generalized trust is: "Generally speaking, would you say that most people can be trusted?". Of the three possible responses, respondents who chose "depends" are thought to have a neutral and ambiguous standpoint. I thus conduct an estimation excluding them to restrict the sample to distinct positions; these results are shown in Table 6.

I see from Table 2 that *GOVSIZE* is not statistically significant despite showing negative signs in columns (1) and (5). Hence, *GOVSIZE* does not generally influence the magnitude of trust. Furthermore, after splitting the sample into non-workers and workers, *GOVSIZE* shows positive signs for non-workers. The reason why *GOVSIZE* does not take the expected sign might be that bureaucratic red tape stemming from government is less apt to be associated with daily life such as community association activities, and so is less likely to be perceived by non-workers. Non-workers are less inclined to suffer from the negative externality caused by government. On the other hand, *GOVSIZE* indicates negative signs for the workers sample. Results for the workers sample show statistical significance with the exception of column (3); consistent with the anticipation. This implies that government size does not appear to generally influence the degree of trust for non-workers, while government size has a detrimental effect on trust for workers. For the sample for ages between 25 and 60,

z-statistics of workers without job categories is 1.81, while z-statistics of workers with job categories becomes 2.37. I now turn to the marginal effect of GOVSIZE reported in the angle bracket. I can interpret -0.54 as it appears in column (4) as suggesting that a 1 % increase in government size leads to a 0.54 % decrease in the likelihood that a worker's response is "Yes" for the question about generalized trust. For ages between 25 and 60, the marginal effect of workers without job category dummies is -0.53, whereas the marginal effect with job category dummies increases to -0.71. This implies that the effect of government size on trust is affected by job category. As discussed in Sub-section 2.2, the effect of government size possibly reflects the per capita income of the prefecture. Table A1 in the Appendix presents the results when per capita income is included as an independent variable to identify the effect of government size. I see from Table A1 that the result of GOVSIZE is unchanged while per capita income does not influence trust. Other specifications exhibited in Tables 3, 4, 5, and 6 are also not changed when per capita income is included but not reported to save space²¹.

Now I turn to the results for the control variables shown in Table 2. Contrary to the prediction, IMIGRA has a positive sign, despite being statistically insignificant when all generations are included. On the other hand, in line with the anticipation, IMIGRA has a negative sign, despite being statistically insignificant when respondents are restricted to ages 25-60. The signs of GINI are positive for non-workers and negative for workers; however, they are not statistically significant with the exception of column (7). These results indicate that variables to capture socio-economic heterogeneity do not influence trust. EDU and INCOM yield positive significant signs in all estimations for workers, as anticipated. On the other hand, EDU and INCOM are not statistically significant for

²¹ These results can be available upon request.

non-workers, with the exception of column (2). Education is thus important for forming trustful relationships through working activities, but not in non-market ones. I interpret the results of EDU for non-workers as suggesting that the opportunity cost of verifying each others' actions are not high for non-workers, even if they are highly educated. As a consequence, the level of education does not lead non-workers to trust. This is consistent with the argument of Zak and Knack (2001). The significant positive sign of CHILD for workers supports previous arguments that having a child leads parents to become involved in interpersonal networks and to trust others. On the other hand, CHILD for non-workers does not show statistical significance. As a whole, results of EDU, INCOM, and CHILD influences workers but do not affect non-workers. In my interpretation, this suggests that non-workers are less likely to be involved in social relationships than are workers.

Consistent with the prediction, both TOWN and MCITY show positive signs with the exception of column (6). Furthermore, in most cases, the z-statistics for TOWN are larger than those for MCITY. As mentioned earlier, the homogeneity of non-urban areas is a reason why TOWN and MCITY take positive signs. In other interpretations, the results of TOWN and MCITY are thought to reflect the situation that residents in non-urban areas are less likely to meet strangers and so are more inclined to maintain stable relationships with colleagues within a closed community. That is, long-term interpersonal relationships lead people to trust "community members". This kind of trust is considered particularized rather than generalized trust. Results of control variables shown in Tables 3, 4, 5 and 6 are similar to those in Table 2. Hence, I focus on the results of GOVSIZE hereafter because GOVSIZE is the crucial variable for exploring the relationship between government size and trust.

With respect to the second stage result of the 2SLS estimation shown in Table 3 (1), before discussing result of GOVSIZE, I check specification error. The over identification restrictions are not rejected in all estimations. This suggests that instrumental variables such as PGROUP and FACINF can be considered exogenous and the equation is well specified. Hence, the 2SLS estimation results do not suffer from bias. The positive sign of GOVSIZE presented in columns (2) and (6) shows that government size does not reduce the degree of non-worker's trust. On the other hand, as suggested in columns (3), (4), (7), and (8), GOVSIZE takes significant positive signs for the workers sample. Furthermore, absolute values of t-statistics and coefficients are larger for the results with job category dummies than those without. As whole, these results are similar to those shown in Table 2. In Table 3(2) presenting the first stage estimation, PGROUP yields a positive sign and FACINF produces a negative one. Further PGROUP and FACINF are statistically significant at the 1 % level in all estimations; consistent with the prediction and so the choice of instrumental variables is supported.

Concerning Table 4 which shows the result of two stage Ordered Probit estimation, the first stage results are the same as for Table 3(2) and so I do not report it. With respect to the signs of GOVSIZE and statistical significance, the results of GOVSIZE in Table 4 are similar to those reported in Table 2 and Table 3(1). It is interesting to observe that the marginal effects of GOVSIZE are -0.60 and -0.81 in columns (3) and (4), approximately 1.5 times larger than the -0.38 and -0.54 shown in columns (3) and (4) of Table 2. As shown in columns (7) and (8) of Table 4 for ages 25-60, the marginal effects of GOVSIZE are -0.67 and -0.90, which are also distinctly larger than those of columns (7) and (8) of Table 2. This means that controlling for the endogenous bias of GOVSIZE leads to an increase in the GOVSIZE effect on trust. What is more, the

two-stage estimations suggest that there is causality from government size to generalized trust.

From the estimations, I derive the argument that controlling for benefits, which are given to particular industries by the government, makes it more evident that government discourages workers from trusting others. In Japan, lobbying activity by local interest groups living in rural and agricultural areas has resulted in many deficits (Doi & Ihori 2002; Doi & Ihori 2009, Ch.7). Workers in an over-funded industry can enjoy the benefits given by government and so trustful relationships do not collapse within that industry²². On the other hand, workers in an over-funded industry are thought to be envied by workers in other industries, leading to friction and distrust between workers in over-funded ones and others. What is more, the cost for the supply of public goods is financed through taxation²³. That is, workers in the public sector are employed by the government and so rely on the contributions of tax payers. A lack of competition leads public sector workers to provide lower quality service than the service provided by the private sector. Nevertheless, even if this is true, public sector's workers do not lose their jobs. This situation leads to private sector workers distrusting those in the public sector.

The combined results of Tables 2, 3 and 4 indicate that government size does not generally affect the magnitude of generalized trust. Nevertheless, closer examination tells us that government size has a detriment effect on the generalized trust of workers, but none on that of non-workers. It follows from this that government size hampers

²² 'Agricultural-related public capital, fishing ports, flood control, and forest conservation have been over funded as a result of the lobbying activities of local-interest groups' (Doi & Ihori 2009, p.181).

²³ In Japan, items subject to the local taxes, and the tax rates, are specified in the Local Tax Law. This is a national law; local governments have very little authority to set local tax rates or impose local taxes (Doi & Ihori 2009, p. 157).

mutual trust in market transactions, but not in non-market. Government is considered to disturb efficient market transactions and so such activities destroy trustful relationships among individuals. Eventually, the larger a government becomes, the higher the transaction costs to the market. Government hampers the formation of social capital, resulting in impediments to economic development. This channel has hardly been acknowledged, but is considered important from the view point of public choice theory.

4.2. Probit model.

To check the robustness of the results obtained above, I look at the results of the Probit model presented in Table 5 and the two-stage Probit model in Table 6²⁴. Tables 5 and 6 show that GOVSIZE has positive signs for non-workers and negative ones for workers. GOVSIZE is statistically significant only for workers. Furthermore, the marginal effects of GOVSIZE are -0.89 and -1.21 in columns (3) and (4) of Table 5. Compared with the results of the Ordered Probit, marginal effects for workers are far larger than the corresponding results in Table 2. As presented in columns (3) and (4) of Table 6, after controlling for the endogenous bias cause by the reverse causality, they are -1.25 and -1.69, respectively. They are also larger than the corresponding results in Table 4.

All in all, the results are consistent with Tables 2, 3 (1), and 4; even when I discard samples that show an ambiguous attitude to the question concerning trust. That is, alternative estimations show that results are unchanged and so what has been argued thus far can be strongly supported.

²⁴ The first stage results of Table 5 are similar to those in Table 3(2). These results are available on request.

4.3. *Discussion.*

When the market does not function well in the early stages of economic development, informal social norms formed in a closed society can have important roles preventing members of the society from cheating others because ostracism leads to them losing the opportunity to gain a long-term benefit (Greif 1993, 1994, 2002; Kandori 1992). In this situation, an informal institution such as a community can function well with high levels of particularized trust. Informal social norms and the particularized trust can be considered complements. However, economic activity increases in a closed society and importance of social norms declines; in turn, formal rules based on a formal institution become more important to enhance efficient market transactions (Greif 1994; 2002). A formal institution is more effective with high levels of generalized, rather than particularized trust. For instance, generalized trust reinforces the effectiveness of the quality of formal institutions by reducing corruption (Bjørnskov, 2010). Formal rules and generalized trust can be regarded as complements.

Generalized trust has a critical impact; on which economic policy is partly adopted. Aghion et al (2010) show that the level of distrust is associated with government regulation as follows. In low trust society, individuals do not trust business because business is not honest. They support government regulation for the purpose of removing producers imposing negative externalities even if such regulation leads to corruption. There is also reverse causality that government regulation leads to distrust. Aghion et al (2010) draw attention to the deep historical roots of modern society by discussing the persistent effects of legal origins on the level of trust. Apart from government regulation, outcomes of government policies possibly vary according to cultural and social

backgrounds including trust. Algan and Cahuc (2009) argued as follows: The Danish policy on the labor market is characterized by unemployment insurance; which if adopted leads to low unemployment rates. However, such a policy raises a moral hazard that is more difficult to overcome under conditions where individuals are more inclined to cheat over receiving government benefits. Accordingly, the provision of unemployment insurance is more costly in countries where social values are soft on cheating on unemployment, leading to the government providing lower unemployment benefits.

Individual behavior is profoundly based on social values including trust shaped in a far distant historical incident or through long-term social interactions. Social values persist for a long time and are thus considered to impose real constraints on the choice of economic policy. *Preexisting* (historical) high level of social trust enables the Scandinavian welfare states to function well from their outset (Bergh and Bjørnskov 2009). That is, the level of social trust formed under historical and cultural backgrounds can have an important role in determining the effectiveness of government and government size (Bergh and Bjørnskov 2009). This paper examines the reverse causality after alleviating the endogeneity bias and suggests that government size reduces the level of generalized trust. However, the results of this paper do not exclude positive feedback from social trust to government size. It might still be important to investigate the optimum government size by considering the cultural and historical background of society.

5. Conclusion

This paper explores the question of how government influences generalized trust,

something that is considered beneficial for various economic activities. Using individual level data from Japan, it is found that government size is not associated with generalized trust for non-workers, while government size is negatively associated with generalized trust for workers. This suggests that bureaucratic red tape coming from larger government is confronted and is understood through workers' work experience. On the other hand, non-workers do not perceive the corruption caused by large government so their generalized trust is not affected. Furthermore, for workers, government size has a larger negative effect on generalized trust after controlling for a worker's job category. This leads me to argue that some industries consist of special interest groups that benefit from particular government actions. Hence, the effect of government size varies according to the job category.

Besides the direct influence of government on economic inefficiency through rent-seeking activities (Niskanen 1971), government reduces generalized trust among workers, resulting in the failure of collective action and high transaction costs, causing economic inefficiency. An individual's economic activity basically relies on mutual trust, which appears hindered by interruptions from government. A negative relationship between corruption and economic growth has been established (Mauro 1995). This negative relationship can be considered in part to be the outcome of a decrease of generalized trust, an issue that to date has not been well considered. The main contribution of this paper is to suggest that there is an indirect negative effect of government size on economic activity.

Evidence provided in this research paper has been deduced from Japanese data sources. The effect of government size appears different between developing and developed stages (Yamamura 2009a). Furthermore, the extent of generalized trust

depends on country-specific characteristics such as culture and history. Hence, it is not clear that this paper's argument holds for countries other than Japan. Further research will be required to gather individual data from various countries to more closely examine the effects of government size on generalized trust.

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Table 1. Variable Definitions and Comparisons Between Workers and Non-workers

Variables	Definition	Workers	Non-workers
Prefecture level data			
<i>GOVSIZE</i>	Government size: (Government expenditure in 1996)/ (Total household Income in 1996)	0.13	0.14
<i>IMIGRA</i>	Rates of immigrant from other prefectures in 1996	0.02	0.02
<i>GINI</i>	Gini coefficient of income in 1994.	0.29	0.29
Individual level data			
<i>GTRUST</i>	Generalized trust. Values range from 1 (No) to 3 (Yes)	2.11	2.05
<i>EDU</i>	Years of schooling	12.6	11.1
<i>AGE</i>	Ages	46.4	60.7
<i>MALE</i>	Male dummy, which takes 1 if individual is male, otherwise 0.	0.54	0.30
<i>INCOM</i>	Household income (10 million Yen)	0.71	0.46
<i>MARRY</i>	Marriage dummy, which takes 1 if individual is married, otherwise 0.	0.74	0.72
<i>CHILD</i>	Number of children	1.59	1.95
<i>DIV</i>	Divorce dummy, which takes 1 if individual experience divorce, otherwise 0.	0.07	0.04
<i>MCITY</i>	Medium size cities dummy, which takes 1 if residential place is in medium size cities, otherwise 0.	0.57	0.56
<i>TOWN</i>	Towns and villages dummy, which takes 1 if residential place is in towns or villages, otherwise 0.	0.24	0.24
Instrumental variable for <i>GOVISE</i> (Prefecture level data)			
<i>PGROUP</i>	Number of political groups per capita: Number of political groups/ population (Unit of Population is one thousand)	0.31	0.32
<i>DISCINF</i>	Rates of municipalities enacting disclosure of official information ordinance. (municipalities which enacted a disclosure of official information ordinance) / (All municipalities)	0.77	0.76

Note: Values are simple averages. Data sourced from the Asahi Shimbun (2004) and Index Publishing (2006), and the Statistics Bureau of the Ministry of Internal Affairs and Communications (various years). Statistics Bureau Management and Coordination Agency. (2002)

Table 2. Determinants of Generalized Trust: Ordered Probit.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All	Non- workers	Workers	Workers	All	Non- workers	Workers	Workers
	All ages				Ages 25-60			
<i>GOVSIZE</i>	-0.15 <-0.04> (-0.26)	1.37 <0.39 > (1.43)	-1.15 <-0.38> (-1.45)	-1.64* <-0.54> (-2.04)	-0.72 <-0.23> (-0.94)	1.89 <0.58 > (1.11)	-1.58* <-0.53> (-1.81)	-2.11** <-0.71> (-2.37)
<i>IMIGRA</i>	3.80 (0.75)	6.82 (0.87)	1.95 (0.29)	0.10 (0.02)	-1.17 (-0.19)	-1.08 (-0.10)	-1.12 (-0.15)	-2.53 (-0.34)
<i>GINI</i>	-0.06 (-0.03)	3.93 (1.29)	-4.12 (-1.60)	-3.87 (-1.43)	-1.60 (-0.65)	2.09 (0.45)	-4.78* (-1.66)	-4.24 (-1.41)
<i>EDU</i>	0.04** (3.41)	0.02 (1.03)	0.06** (3.71)	0.05** (2.87)	0.07** (3.82)	0.07 (1.62)	0.07** (3.53)	0.06** (2.67)
<i>AGE</i>	-0.002 (-0.88)	-0.006 (-1.57)	0.0008 (0.24)	-0.0009 (-0.02)	0.002 (0.54)	-0.001 (-0.23)	0.003 (0.65)	0.002 (0.52)
<i>MALE</i>	0.10* (1.70)	0.16 (1.41)	0.07 (0.91)	0.10 (1.21)	0.01 (0.25)	0.35 (1.23)	0.02 (0.26)	0.04 (0.48)
<i>INCOM</i>	0.20** (4.13)	0.21* (1.73)	0.30** (3.31)	0.28** (3.01)	0.23** (2.50)	-0.009 (-0.04)	0.28** (2.75)	0.26** (2.48)
<i>MARRY</i>	-0.002 (-0.03)	0.05 (0.35)	-0.11 (-0.72)	-0.16 (-0.97)	0.07 (0.42)	0.39 (0.65)	0.01 (0.08)	-0.03 (-0.17)
<i>CHILD</i>	0.05* (1.92)	0.01 (0.30)	0.08* (2.06)	0.08* (1.88)	0.08* (2.01)	0.06 (0.82)	0.08* (1.87)	0.08* (1.70)
<i>DIV</i>	0.01 (0.09)	0.11 (0.62)	-0.05 (-0.33)	-0.09 (-0.51)	0.01 (0.08)	0.10 (0.28)	0.02 (0.13)	-0.006 (-0.03)
<i>MCITY</i>	0.15* (1.95)	0.12 (0.94)	0.15 (1.63)	0.18* (1.92)	0.10 (1.19)	-0.19 (-1.01)	0.16 (1.60)	0.18* (1.80)
<i>TOWN</i>	0.30** (3.03)	0.32* (1.98)	0.28* (2.29)	0.32** (2.56)	0.16 (1.29)	-0.34 (-1.12)	0.27* (2.00)	0.30* (2.19)
<i>Job category dummies</i>	No	No	No	Yes	No	No	No	Yes
Observations	1619	642	977	974	1048	240	808	805
Wald chi ² test	70.4	23.5	56.4	243.4	41.9	10.1	45.8	224.4

Prob>chi ²	Prob>chi ²	Prob>chi ²	Prob>chi ²	Prob>chi ²	Prob>chi ²	Prob>chi ²	Prob>chi ²
=0.00	=0.02	=0.00	=0.00	=0.00	=0.60	=0.00	=0.00

Note: Numbers are coefficients. Numbers in angle bracket are marginal effects calculated at the highest category. Numbers in parentheses are z-statistics calculated using robust standard errors. * and ** indicate significance at 5 and 1 per cent levels, respectively. “Yes” in job category dummies means that job category dummies are included as independent variables, while “No” means that these dummies are not included.

Table 3. (1) Determinants of Generalized Trust: 2SLS estimation (Second stage).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All	Non- workers	Workers	Workers	All	Non- workers	Workers	Workers
		All ages				Ages 25-60		
<i>GOVSIZE</i>	-0.39 (-0.87)	0.72 (1.12)	-0.96* (-1.95)	-1.29** (-2.59)	-0.67 (-1.45)	0.46 (0.51)	-1.05* (-1.93)	-1.39** (-2.52)
<i>IMIGRA</i>	1.11 (0.40)	3.60 (0.82)	-0.24 (-0.07)	-1.46 (-0.40)	-1.65 (-0.50)	-1.83 (-0.33)	-1.40 (-0.34)	-2.37 (-0.59)
<i>GINI</i>	0.09 (0.09)	2.05 (1.28)	-2.02 (-1.49)	-1.80 (-1.27)	-0.68 (-0.53)	1.20 (0.55)	-2.44 (-1.61)	-2.05 (-1.29)
<i>EDU</i>	0.02** (3.44)	0.01 (1.02)	0.03** (3.76)	0.02** (2.85)	0.03** (3.89)	0.03 (1.63)	0.03** (3.58)	0.03** (2.66)
<i>AGE</i>	-0.001 (-0.86)	-0.003 (-1.55)	0.0004 (0.25)	-0.0003 (-0.02)	0.001 (0.57)	-0.0005 (-0.15)	0.001 (0.64)	0.001 (0.49)
<i>MALE</i>	0.05* (1.66)	0.08 (1.39)	0.03 (0.85)	0.04 (1.11)	0.007 (0.27)	0.16 (1.17)	0.009 (0.22)	0.01 (0.40)
<i>INCOM</i>	0.15** (4.04)	0.11* (1.71)	0.15** (3.21)	0.14** (2.86)	0.11** (2.40)	-0.01 (-0.10)	0.14** (2.71)	0.13** (2.42)
<i>MARRY</i>	-0.001 (-0.02)	0.02 (0.34)	-0.06 (-0.71)	-0.08 (-0.96)	0.04 (0.44)	0.18 (0.64)	0.009 (0.09)	-0.01 (-0.15)
<i>CHILD</i>	0.03* (1.93)	0.007 (0.29)	0.04* (2.04)	0.04* (1.84)	0.04* (1.98)	0.03 (0.80)	0.04* (1.85)	0.04* (1.67)
<i>DIV</i>	0.008 (0.12)	0.06 (0.93)	-0.02 (-0.28)	-0.04 (-0.46)	0.01 (0.13)	0.05 (0.30)	0.01 (0.16)	0.009 (0.01)
<i>MCITY</i>	0.08* (2.03)	0.06 (0.93)	0.08* (1.69)	0.10* (1.97)	0.06 (1.28)	-0.07 (-0.88)	0.09 (1.63)	0.10* (1.82)
<i>TOWN</i>	0.16** (3.14)	0.17* (1.97)	0.16** (2.43)	0.18** (2.68)	0.09 (1.43)	-0.14 (-0.99)	0.15* (2.07)	0.16* (2.25)
<i>Job category dummies</i>	No	No	No	Yes	No	No	No	Yes
O-I test	p-value =0.72	p-value =0.40	p-value =0.85	p-value =0.98		p-value =0.38	p-value =0.94	p-value =0.75
Observations	1619	642	977	974	1048	240	808	805

R^2	0.04	0.03	0.05	0.08	0.03	0.03	0.05	0.08
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Note: Numbers are coefficients. Numbers in parentheses are t-statistics calculated using robust standard errors. * and ** indicate significance at 5 and 1 per cent levels, respectively. Constant is included in all estimations but not reported to save the space. “Yes” in job category dummies means that job category dummies are included as independent variables, while “No” means that these dummies are not included. O-I test means the over identification test (Hansen J test).

Table 3. (2) Determinants of government size: 2SLS estimation (first stage).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All	Non- workers	Workers	Workers	All	Non- workers	Workers	Workers
	All ages				Ages 25-60			
<i>PGROUP</i>	0.27** (46.9)	0.26** (28.5)	0.27** (36.8)	0.27** (36.5)	0.27** (38.5)	0.26** (16.5)	0.28** (34.7)	0.28** (34.9)
<i>DISCINF</i>	-0.08** (-23.9)	-0.08** (-14.4)	-0.08** (-18.9)	-0.08** (-18.4)	-0.08** (-18.7)	-0.08** (-8.70)	-0.07** (-16.5)	-0.07** (-16.0)
<i>IMIGRA</i>	-1.94** (-17.0)	-2.07** (-11.3)	-1.84** (-12.5)	-1.80** (-12.1)	-1.90** (-13.5)	-2.30** (-7.95)	-1.75** (-10.7)	-1.70** (-10.4)
<i>GINI</i>	-0.36** (-7.54)	-0.31** (-4.14)	-0.39** (-6.28)	-0.39** (-6.14)	-0.41** (-7.22)	-0.38** (-3.41)	-0.46** (-6.70)	-0.45** (-6.49)
<i>EDU</i>	0.0007** (2.39)	0.0002 (0.42)	0.001** (2.78)	0.0009** (2.34)	0.0009* (2.25)	0.0004 (0.41)	0.001* (2.23)	0.0009* (2.04)
<i>AGE</i>	0.0001* (2.26)	0.00006 (0.73)	0.0001* (1.78)	0.0001* (1.75)	0.0002* (2.18)	0.0001 (0.69)	0.0002* (1.90)	0.0001* (1.73)
<i>MALE</i>	-0.0008 (-0.60)	0.001 (0.48)	-0.001 (-0.73)	-0.0008 (-0.20)	-0.0005 (-0.31)	0.0001 (0.69)	-0.0008 (-0.45)	-0.0001 (-0.06)
<i>INCOM</i>	-0.003* (-1.86)	-0.002 (-0.66)	-0.003 (-1.49)	-0.003* (-1.75)	-0.003 (-1.38)	0.0008 (0.14)	-0.003 (-1.54)	-0.004* (-1.75)
<i>MARRY</i>	0.001 (0.74)	0.004 (1.29)	-0.002 (-0.60)	-0.002 (-0.66)	0.003 (0.07)	-0.0007 (-0.06)	-0.0003 (-0.07)	-0.003 (-0.09)
<i>CHILD</i>	-0.0002 (-0.31)	0.0008 (0.74)	-0.0009 (-1.08)	-0.001 (-1.09)	-0.001 (-1.26)	-0.0007 (-0.06)	-0.001 (-1.12)	-0.001 (-1.16)
<i>DIV</i>	0.001 (0.40)	0.0009 (0.17)	-0.0006 (-0.17)	-0.0002 (-0.06)	0.002 (0.66)	-0.001 (-0.58)	0.002 (0.47)	0.003 (0.73)
<i>MCITY</i>	0.01** (7.73)	0.01** (4.94)	0.01** (5.88)	0.01** (6.09)	0.01** (6.48)	0.01** (2.69)	0.01** (5.92)	0.01** (6.10)
<i>TOWN</i>	0.01** (7.38)	0.01** (3.54)	0.01** (6.60)	0.01** (6.60)	0.01** (5.57)	0.001 (0.16)	0.01** (6.13)	0.01** (6.06)
<i>Job category dummies</i>	No	No	No	Yes	No	No	No	Yes
Observations	1619	642	977	974	1048	240	808	805

<i>F-statistics</i>	384	142	243	100	258	52	210	87
	Prob>0.00	Prob>0.00	Prob>0.00	Prob>0.00	Prob>0.00	Prob>0.00	Prob>0.00	Prob>0.00

Note: Numbers are coefficients. Numbers in parentheses are t-statistics calculated using robust standard errors. * and ** indicate significance at 5 and 1 per cent levels, respectively. A constant is included in all estimations but not reported to save space.

Table 4. Determinants of Generalized Trust: Two stage Ordered Probit

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All	Non- workers	Workers	Workers	All	Non- workers	Workers	Workers
		All ages				Ages 25-60		
<i>GOVSIZE</i>	-0.63 <-0.20> (-0.87)	1.37 <0.39 > (1.13)	-1.84* <-0.60> (-1.97)	-2.47** <-0.81> (-2.62)	-1.31 <-0.43> (-1.47)	1.07 <0.33 > (0.54)	-2.00* <-0.67> (-1.96)	-2.65** <-0.90> (-2.59)
<i>IMIGRA</i>	2.09 (0.40)	6.82 (0.83)	-0.48 (-0.07)	-2.77 (-0.40)	-3.23 (-0.51)	-3.76 (-0.32)	-2.62 (-0.34)	-4.49 (-0.59)
<i>GINI</i>	0.17 (0.09)	3.91 (1.28)	-3.81 (-1.47)	-3.58 (-1.33)	-1.33 (-0.53)	2.60 (0.56)	-4.63 (-1.61)	-4.08 (-1.35)
<i>EDU</i>	0.04** (3.43)	0.02 (1.03)	0.06** (3.75)	0.05** (2.93)	0.07** (3.87)	0.07 (1.64)	0.07** (3.57)	0.06** (2.72)
<i>AGE</i>	-0.002 (-0.84)	-0.006 (-1.58)	0.001 (0.29)	0.0001 (0.04)	0.002 (0.57)	-0.001 (-0.18)	0.003 (0.66)	0.003 (0.61)
<i>MALE</i>	0.09* (1.66)	0.16 (1.41)	0.06 (0.85)	0.09 (1.09)	0.01 (0.20)	0.37 (1.23)	0.01 (0.22)	0.03 (0.43)
<i>INCOM</i>	0.29** (4.03)	0.21* (1.72)	0.29** (3.19)	0.27** (2.84)	0.22** (2.42)	-0.002 (-0.09)	0.27** (2.70)	0.25** (2.37)
<i>MARRY</i>	-0.003 (-0.03)	0.05 (0.35)	-0.11 (-0.72)	-0.15 (-0.96)	0.08 (0.43)	0.42 (0.70)	0.01 (0.09)	-0.02 (-0.14)
<i>CHILD</i>	0.05* (1.93)	0.01 (0.30)	0.08* (2.03)	0.07* (1.84)	0.08* (2.00)	0.07 (0.85)	0.08* (1.87)	0.07* (1.67)
<i>DIV</i>	0.01 (0.12)	0.11 (0.61)	-0.05 (-0.29)	-0.08 (-0.47)	0.02 (0.13)	0.10 (0.29)	0.03 (0.17)	0.002 (0.01)
<i>MCITY</i>	0.15* (2.03)	0.12 (0.93)	0.16* (1.70)	0.19* (2.03)	0.11 (1.28)	-0.18 (-0.94)	0.17 (1.64)	0.19* (1.88)
<i>TOWN</i>	0.31** (3.13)	0.32* (1.98)	0.30** (2.43)	0.34** (2.70)	0.18 (1.43)	-0.33 (-1.07)	0.28* (2.08)	0.32* (2.27)
<i>Job category dummies</i>	No	No	No	Yes	No	No	No	Yes
Observations	1619	642	977	974	1048	240	808	805
Wald chi ² test	70.8	23.9	58.7	167	43.9	9.75	46.7	163.7

Prob>chi ²	Prob>chi ²	Prob>chi ²	Prob>chi ²	Prob>chi ²	Prob>chi ²	Prob>chi ²	Prob>chi ²
=0.00	=0.02	=0.00	=0.00	=0.00	=0.63	=0.00	=0.00

Note: Numbers are coefficients. Numbers in angle bracket are marginal effects calculated at the highest category. Numbers in parentheses are z-statistics calculated using robust standard errors. * and ** indicate significance at 5 and 1 per cent levels, respectively. “Yes” in job category dummies means that job category dummies are included as independent variables, while “No” means that these dummies are not included. *GOVSIZE* is the predicted value obtained by OLS estimations in the first stage where instruments are the same as the 2SLS estimation reported in Table 3(2). The results of the first stage are the same as reported in Table 3(2), and so are not reported here to save space.

Table 5. Determinants of Generalized Trust: Probit (Excluding 'depends' samples)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All	Non- workers	Workers	Workers	All	Non- workers	Workers	Workers
	All ages				Ages 25-60			
<i>GOVSIZE</i>	-0.80 <-0.27> (-0.74)	2.06 <0.75> (1.14)	-2.86* <-0.89> (-2.09)	-4.09** <-1.21> (-2.79)	-2.14 <-0.67> (-1.62)	3.15 <0.89> (0.91)	-3.62** <-1.11> (-2.46)	-5.81** <-1.62> (-3.51)
<i>IMIGRA</i>	6.71 (0.68)	15.7 (1.00)	1.02 (0.08)	-3.82 (-0.30)	-7.48 (-0.58)	14.5 (0.43)	-7.42 (-0.51)	-13.9 (-0.94)
<i>GINI</i>	0.52 (0.14)	7.74 (1.30)	-7.09 (-1.53)	-8.05* (-1.69)	-2.03 (-0.48)	9.18 (0.99)	-7.37 (-1.51)	-7.65 (-1.48)
<i>EDU</i>	0.06** (2.82)	0.03 (0.88)	0.11** (3.17)	0.12** (3.27)	0.10** (3.00)	0.06 (0.58)	0.10** (2.65)	0.09* (2.29)
<i>AGE</i>	-0.004 (-1.09)	-0.01* (-1.82)	0.001 (0.28)	0.001 (0.18)	-0.0002 (-0.03)	-0.01 (-0.64)	0.003 (0.36)	0.008 (0.94)
<i>MALE</i>	0.15 (1.43)	0.29 (1.46)	0.11 (0.80)	0.14 (0.85)	-0.02 (-0.21)		0.02 (0.16)	0.07 (0.39)
<i>INCOM</i>	0.70** (4.40)	0.46* (1.77)	0.79** (3.38)	0.81** (3.58)	0.71** (3.08)	0.01 (-0.03)	0.82** (3.05)	0.78** (3.25)
<i>MARRY</i>	-0.004 (-0.02)	0.11 (0.46)	-0.24 (-0.76)	-0.30 (-0.89)	0.18 (0.58)	1.76 (1.47)	0.04 (0.12)	0.11 (0.29)
<i>CHILD</i>	0.12** (2.33)	0.05 (0.68)	0.16** (2.33)	0.15* (2.05)	0.16* (2.28)	0.27 (1.53)	0.16* (1.95)	0.14 (1.57)
<i>DIV</i>	-0.03 (-0.15)	0.10 (0.20)	-0.05 (-0.20)	-0.02 (-0.08)	0.10 (0.36)	-0.41 (-0.34)	0.10 (0.32)	0.23 (0.64)
<i>MCITY</i>	0.17 (1.15)	0.20 (0.91)	0.17 (0.79)	0.19 (0.92)	0.09 (0.45)	-0.61 (-1.08)	0.25 (1.07)	0.28 (1.24)
<i>TOWN</i>	0.42* (2.27)	0.49* (1.79)	0.39 (1.48)	0.40 (1.58)	0.15 (0.63)	-1.00 (-1.55)	0.42 (1.44)	0.49* (1.67)
<i>Job category dummies</i>	No	No	No	Yes	No	No	No	Yes
Observations	640	244	396	364	409	77	332	332

Wald chi ² test	65.3	23.2	49.9	67.8	39.2	12.1	44.1	76.4
	Prob>chi ²	Prob>chi ²	Prob>chi ²	Prob>chi ²	Prob>chi ²	Prob>chi ²	Prob>chi ²	Prob>chi ²
	=0.00	=0.02	=0.00	=0.00	=0.00	=0.36	=0.00	=0.00

Note: Numbers are coefficients. Numbers in angle bracket are marginal effects calculated at the highest category. Numbers in parentheses are z-statistics calculated using robust standard errors. * and ** indicate significance at 5 and 1 per cent levels, respectively. “Yes” in job category dummies means that job category dummies are included as independent variables, while “No” means that these dummies are not included. A constant is included in all estimations but not reported to save space.

Table 6. Determinants of Generalized Trust (Excluding 'depends' samples): Two stage Probit

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All	Non- workers	Workers	Workers	All	Non- workers	Workers	Workers
		All ages				Ages 25-60		
<i>GOVSIZE</i>	-1.34 <-0.45> (-1.01)	2.66 <0.96> (1.19)	-4.03** <-1.25> (-2.40)	-5.79** <-1.69> (-3.20)	-3.25* <-1.01> (-2.01)	3.58 <1.00> (1.19)	-4.38** <-1.33> (-2.43)	-7.18** <-2.00> (-3.64)
<i>IMIGRA</i>	4.65 (0.45)	18.1 (1.09)	-3.29 (-0.24)	-10.2 (-0.77)	-11.9 (-0.89)	16.5 (0.48)	-10.2 (-0.68)	-19.3 (-1.28)
<i>GINI</i>	0.80 (0.22)	7.34 (1.22)	-6.61 (-1.44)	-7.11 (-1.52)	-1.51 (-0.36)	8.89 (0.96)	-7.04 (-1.45)	-6.87 (-1.35)
<i>EDU</i>	0.06** (2.86)	0.02 (0.97)	0.11** (3.27)	0.12** (3.28)	0.11** (3.11)	0.06 (0.55)	0.11** (2.71)	0.09** (2.36)
<i>AGE</i>	-0.004 (-1.05)	-0.01* (-1.80)	0.002 (0.39)	0.002 (0.29)	0.004 (0.06)	-0.01 (-0.65)	0.003 (0.43)	0.009 (1.03)
<i>MALE</i>	0.15 (1.41)	0.28 (1.43)	0.10 (0.70)	0.12 (0.75)	-0.04 (-0.29)		0.01 (0.09)	0.05 (0.32)
<i>INCOM</i>	0.69** (4.35)	0.43* (1.78)	0.77** (3.29)	0.78** (3.40)	0.70** (3.00)	0.01 (-0.02)	0.83** (2.99)	0.75** (3.09)
<i>MARRY</i>	-0.0008 (-0.00)	0.11 (0.45)	-0.23 (-0.72)	-0.29 (-0.87)	0.19 (0.62)	1.77 (1.45)	0.04 (0.13)	0.13 (0.31)
<i>CHILD</i>	0.12** (2.34)	0.05 (0.65)	0.17** (2.34)	0.15* (2.06)	0.17* (2.30)	0.27 (1.51)	0.16* (1.96)	0.14 (1.55)
<i>DIV</i>	-0.02 (-0.11)	0.10 (0.21)	-0.03 (-0.11)	0.01 (0.05)	0.13 (0.45)	-0.40 (-0.33)	0.12 (0.37)	0.27 (0.74)
<i>MCITY</i>	0.18 (1.19)	0.19 (0.88)	0.19 (0.87)	0.21 (1.03)	0.11 (0.54)	-0.61 (-1.07)	0.27 (1.13)	0.21 (1.34)
<i>TOWN</i>	0.43** (2.32)	0.47* (1.73)	0.42 (1.56)	0.44* (1.68)	0.19 (0.75)	-1.01 (-1.55)	0.44 (1.50)	0.53* (1.78)
<i>Job category dummies</i>	No	No	No	Yes	No	No	No	Yes
Observations	640	244	396	364	409	77	332	332
Wald chi ² test	65.7	23.1	51.3	71.2	40.9	11.3	44.5	78.0

Prob>chi ² =0.00	Prob>chi ² =0.02	Prob>chi ² =0.00	Prob>chi ² =0.00	Prob>chi ² =0.00	Prob>chi ² =0.41	Prob>chi ² =0.00	Prob>chi ² =0.00
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Note: Numbers are coefficients. Numbers in angle bracket are marginal effects calculated at the highest category. Numbers in parentheses are z-statistics calculated using robust standard errors. * and ** indicate significance at 5 and 1 per cent levels, respectively. “Yes” in job category dummies means that job category dummies are included as independent variables, while “No” means that these dummies are not included. A constant is included in all estimations but not reported to save space. The first stage estimation result is very similar to those appearing in Table 3.2 and therefore this is omitted to save space.

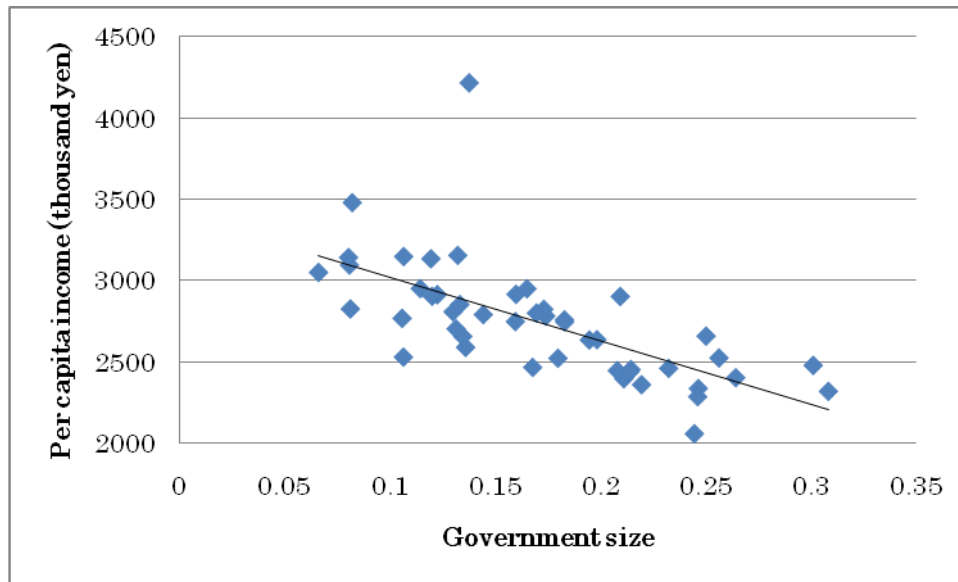


Figure 1. Relationship between Government Size and per capita income. (All sample)

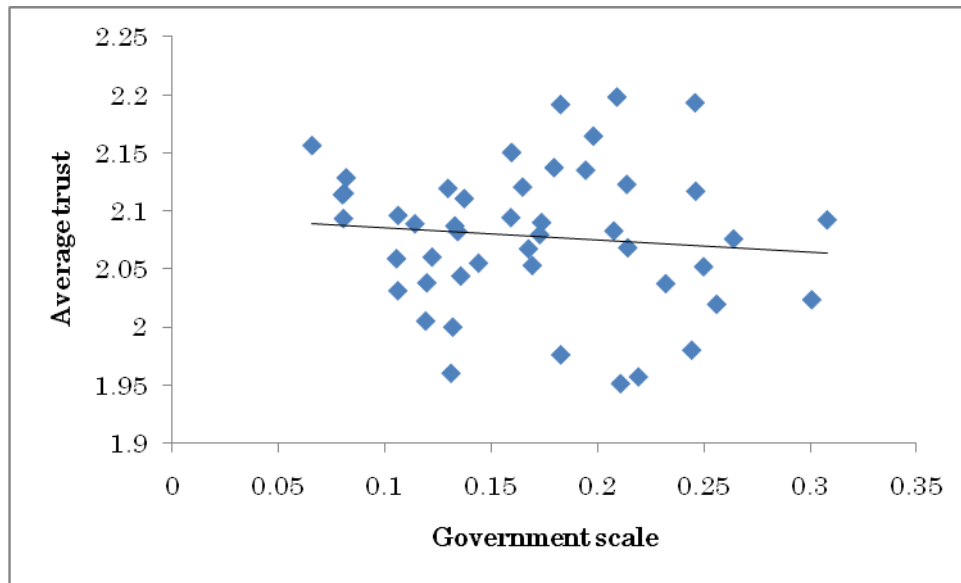


Figure 2 (1). Relationship between Government Size and Average Trust. (All sample)

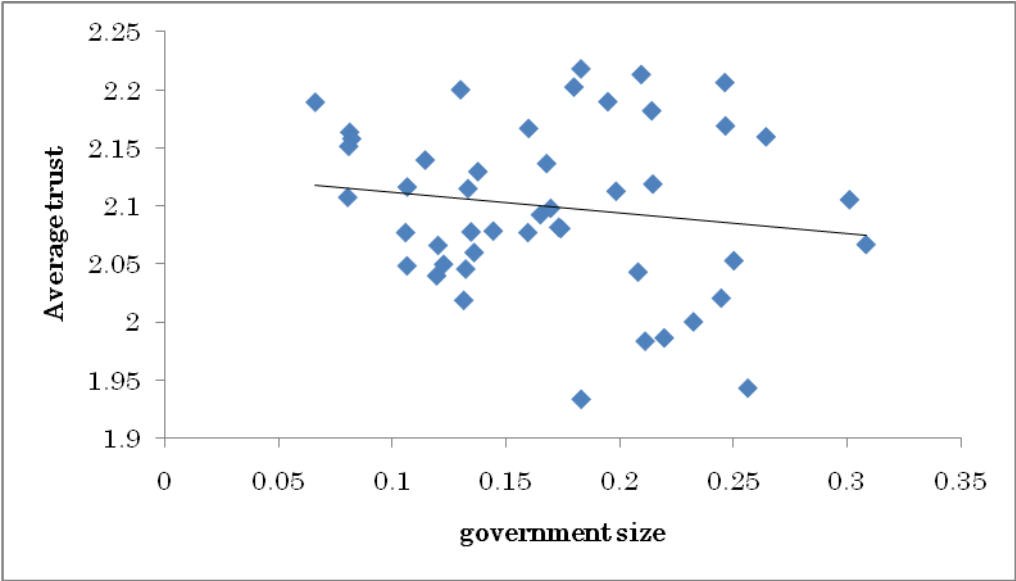


Figure 2 (2). Relationship between Government Size and Average Trust. (Workers)

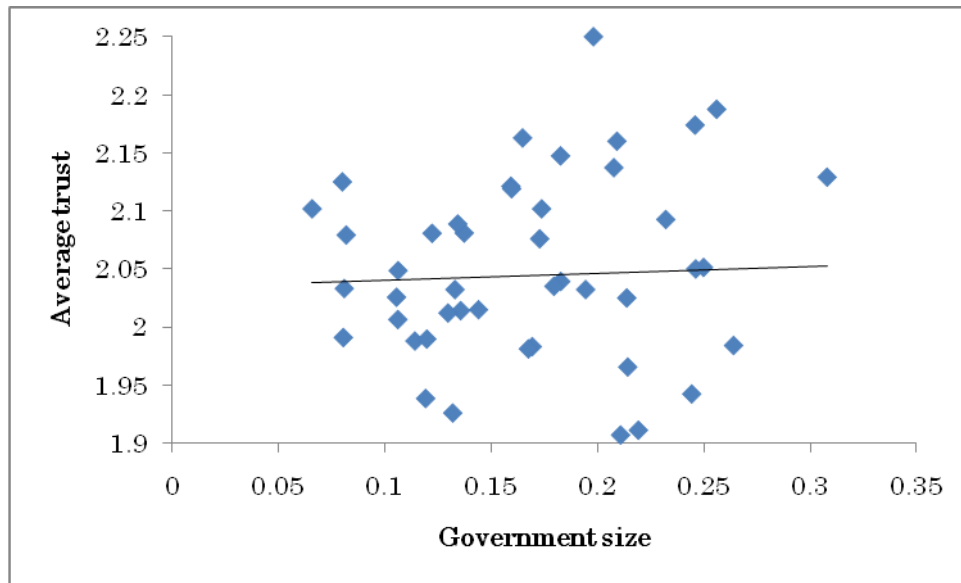


Figure 2 (3). Relationship between Government Size and Average Trust. (Non-workers)

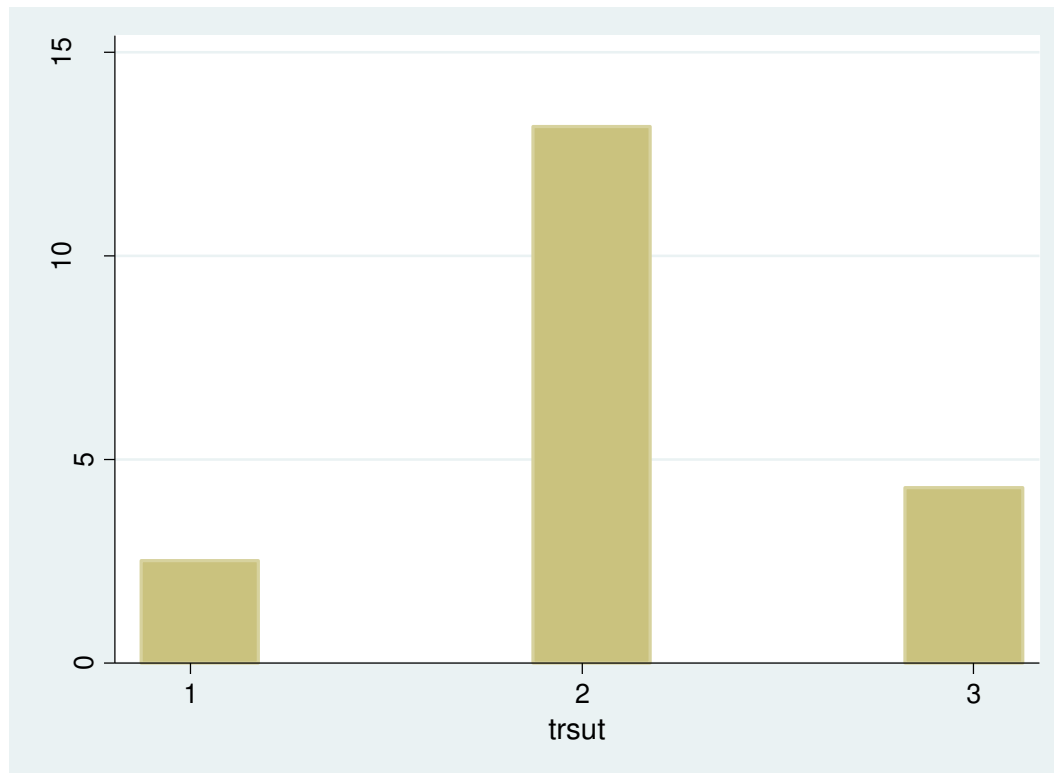


Figure 3. Distribution of Trust

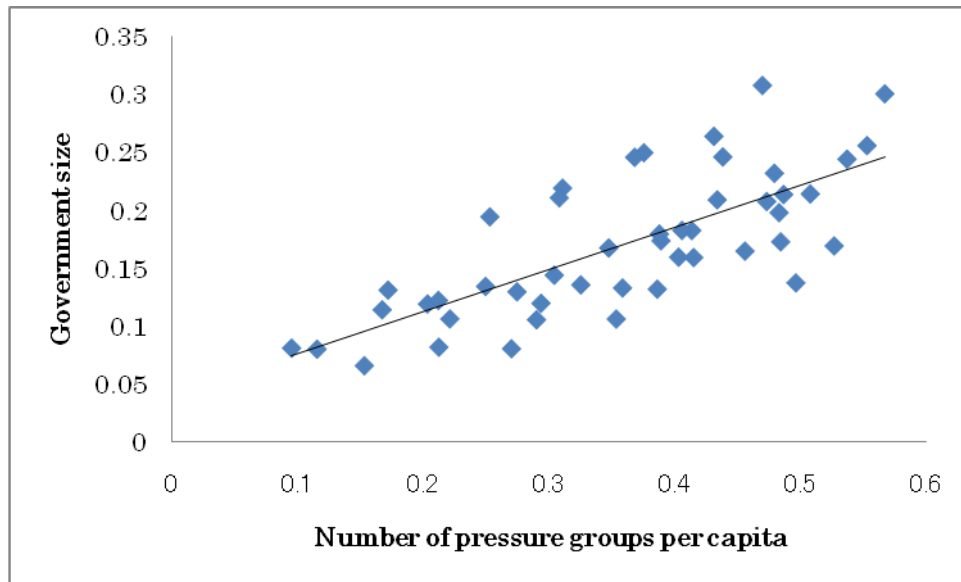


Figure 4 (1). Relationship between Government Size and number of pressure groups per capita. (All samples)

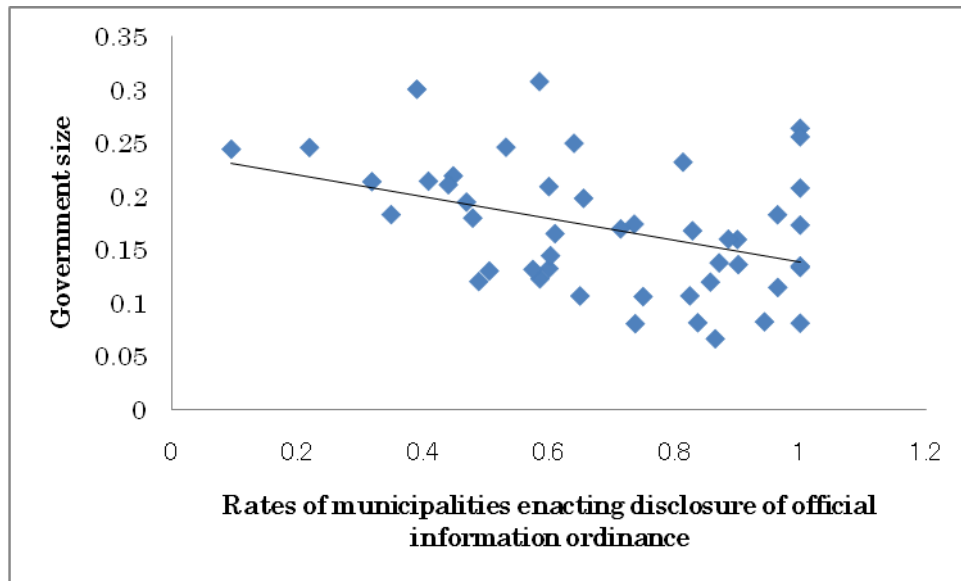


Figure 4 (2). Relationship between Government Size and rates of municipalities enacting a disclosure of official information ordinance. (All samples)

Appendix

Table A1 . Determinants of Generalized Trust: Ordered Probit.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All	Non- workers	Workers	Workers	All	Non- workers	Workers	Workers
	All ages				Ages 25-60			
<i>GOVSIZE</i>	-0.15 (-0.15)	1.43 (1.45)	-1.11 (-1.33)	-1.60* (-1.90)	-0.71 (-0.91)	1.96 (1.16)	-1.64* (-1.78)	-2.16** (-2.32)
<i>Per capita income</i>	0.27*10 ⁴ (0.34)	0.30*10 ⁴ (0.24)	0.15*10 ⁴ (0.14)	0.14*10 ⁴ (0.13)	0.01*10 ⁴ (0.02)	0.47*10 ⁴ (0.25)	-0.22*10 ⁴ (-0.18)	-0.21*10 ⁴ (-0.18)
<i>Job category dummies</i>	No	No	No	Yes	No	No	No	Yes
Observations	1619	642	977	974	1048	240	808	805
Wald chi ² test	70.5	23.7	56.5	244.1	42.0	10.2	45.8	222.8
	Prob>chi ² =0.00	Prob>chi ² =0.02	Prob>chi ² =0.00	Prob>chi ² =0.00	Prob>chi ² =0.00	Prob>chi ² =0.60	Prob>chi ² =0.00	Prob>chi ² =0.00

Note: Numbers are coefficients. Numbers in parentheses are z-statistics calculated using robust standard errors. Besides GOVSIZE and per capita income, other independent variables used in Table 2 are included although their results are not reported in order to save the space. * and ** indicate significance at 5 and 1 per cent levels, respectively. “Yes” in job category dummies means that job category dummies are included as independent variables, while “No” means that these dummies are not included.