E C O N O M I C S B U L L E T I N

Determinants of trust in a racially homogeneous society

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Abstract

Using prefecture level data of Japan for the years 1979 and 1996, I explore the extent to which inequality, age heterogeneity, and social capital have an effect upon interpersonal trust. The major finding is that inequality is associated with low trust, while generational heterogeneity is associated with high trust. However, this tendency is not observed when the sample includes female respondents only. These results are not changed when I instrument for inequality using the relative size of the mature-aged cohort.

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I. INTRODUCTION

Since the seminal work of Alesina and La Ferrara (2002), a growing amount of empirical research in economics has tried to investigate the determinants of trust (Berggren and Jordahl, 2006; Leigh, 2006 a, 2006b).

Case studies in the United States (Alesina and La Ferrara, 2002) and Australia (Leigh, 2006b) have mainly shed light on the influence of racial heterogeneity and economic inequality on trust. This is partly because racial heterogeneity is dominant in the studied countries[1]. They have found a negative relationship between trust and ethic heterogeneity[2]. Nonetheless, little is known about the mechanism of trust in a relatively racially homogeneous society such as Japan[3]. The aim of this paper is to ascertain the determinants of interpersonal trust in a racially homogeneous society. In addition to this, economic inequality can be also considered as one of the key factors affecting trust. In US studies (Alesina and La Ferrara,2002) and cross-national studies (Leigh, 2006a), a negative relationship between inequality and trust has been observed observed.

Vigdor (2004) analyzed the effect not only of racial and economic but also of generational and socio-economic heterogeneity upon collective action. These factors are also likely to be critical in a racially homogeneous society. Moreover, it has been argued that social capital (Putnam, 2000) and education (Alesina and La Ferrara, 2002) are associated with interpersonal trust. Therefore, I also examine these effects and their impact upon trust. I conducted both fixed effects and fixed effects two stage least squares (2SLS) estimations (Baltagi, 2005) in order to control for the unobservable fixed effects and the endogeneity problem of inequality (Leigh, 2006a).

II. DATA AND MTHOD

Surveys were carried out in 1979 and 1996 by the Japan Broadcasting Corporation (Nihon Hoso Kyokai) where respondents were asked, “Are there many persons whom you can trust in your neighborhood?”. I use this data drawn from the Japan Broadcasting Corporation (1979, 1996), in which the rate of respondents who said “yes” was separately reported for males and females at the prefecture level. This rate is used as the measure of trust.

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[1] Alesina and La Ferrara (2000) studied participation behavior in heterogeneous communities.

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

[3] The component ratio of Japanese in the 1996 population of Japan was 99 % (Index Corporation, 2006).

In line with the discussion above, the estimated function of trust then takes the following form[4]:

$$TRUST_{it} = \alpha_0 + \alpha_1 GINI_{it} + \alpha_2 RACFRA_{it} + \alpha_3 GENFRA_t + \alpha_4 DIVO_{it} + \alpha_5 CRIM_{it} + \alpha_6 EDU_{it} + \alpha_7 SC_{it} + \alpha_8 MOBI_{it-} + \alpha_9 POP_{it} + \alpha_{10} INCOM_{it} + \alpha_{11} MALE_{it} + + \varepsilon_i + v_t + \omega_{it},$$

where *TRUST* represents the rate of trust in prefecture *i* in year *t*, and α's represents the regression parameters. ε_i and v_t represent the unobservable specific effects of the individual effects of *i* 's prefecture (a fixed effect prefecture vector) in year *t* (a fixed effect time vector)respectively; ω_{it} represents the error term.

The structure of the data set used in this study is a survey panel covering two years and 47 prefectures;ε_i holds the time invariant feature, for which I control by means of fixed effects estimation. Macroeconomic conditions will be captured inv_t, and I incorporate each year's dummy variables to restrain the time specific effects. Furthermore, to address potential endogenous problems with the Gini coefficient and the error terms - issues which Leigh (2006a) stresses - 2SLS estimation was performed.

Table 1 includes the independent variable definitions, means, and standard deviations of the analyzed data. Each variable is discussed as follows. The sign of *GINI*, which represents the Gini coefficient of income in 1979 and 1994 collected from the Statistics Bureau of the Ministry of Internal Affairs and Communications (1979, 1994), will be negative if income inequality results in lowering trust[5]. Apart from *TRUST*, *GINI*, and *MALE*, all data were collected from Asahi Newspaper Publsihing (2004).

ETFRAC and *AGFRAC*, which are proxies for the heterogeneity of race and age respectively, will also take negative signs if fractionalization leads to the undermining of interpersonal trust[6]. *DIVO* and *CRIM*, representing the rates of divorce and crime, capture negative experiences in the past year. *EDU*, being expenditure for education, will be positively correlated with trust and take a positive sign. People are more likely to trust each other if there is a place where they can communicate with each other and if

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[4] The logarithm values used are *DIVO*, *CRIM*, *MOBI*, and *POP*.

[5] Gini data at the prefecture level can be obtained every five years, and in 1996 the data are not available. Therefore, I use the 1994 data.

[6] Due to the lack of data, the ratio of non-Japanese is used as a proxy for ethnic fractionalization. Following the general index of fractionalization (Alesina and La Ferra, 2002), generational fractionalization can be written as

$$AGFRAC = 1 - \sum_{i=1}^{N} \pi_i^2$$

where π_i is the proportion of people who belong to the generational group i, and N is the number of groups.

the community is well organized. *SC*, which is the number of community centers, is a proxy for social capital. Frequent movers weaken community ties such that communities with higher rates of residential turnover are less well integrated. This is why residential mobility tends to undermine community-based social capital (Putnam, 2000), thereby hampering trust. *DECSC*, which is the number of residence changes within a prefecture during the last year, represents the proxy for the decay of social capital. Hence, it is possible that the coefficients of *SC* and *DECSC* take positive and negative signs, respectively. *POP* and *INCOM*, representing population and per capita income, are the control variables used to capture the economic conditions. *MALE* takes 1 if the sample is male respondents; otherwise, 0 denotes the male dummy.

III. RESULTS

Table 2 presents the results of the fixed effects estimations. In Table 3, the results of the fixed effects 2SLS estimations are reported, where, following Leigh (2006a), the size of the mature-aged cohort is used as an instrument for *GINI*[7]. The results for all samples are shown in Column (1), and those for male and female samples are reported in columns (2) and (3) respectively.

In Table 1 the signs of *GINI* are negative and statistically insignificant, with the exception of column (3) which supports my expectation that economic inequality lowers trust. Those of *AGFRAC* are positive and statistically significant in columns (1) and (2), which is inconsistent with the prediction. My interpretation of this is as follows. The larger the size of a generation, the larger the number of rivals becomes within it. People are more likely to become rivals each other in various situations if they belong to the same generation, resulting in a reduction in trust between them.

As predicted, *EDU* takes a statistically significant positive sign in columns (1) and (2). Regarding social capital, *SC* and *DECSC* take the predicted positive and negative signs respectively. These results strongly support the hypothesis that social capital enhances interpersonal trust.

As for gender, *MALE* is significantly negative, implying that males have less inclination to trust others than females. This is different from the case of the United

[7] I use the following as instrument variables: (1) ratio of the size of the cohort aged between 40 and 59 to the size of the cohort aged 15 to 69; and (2) the logarithm of the population aged between 40 and 59. Though not reported here, in the first stage estimation, the ratio of the cohort sizes and the logarithm of the population in column (2) take a significant positive sign, which is consistent with Leigh (2006a).

States (Alesina and La Ferrara, 2002). As reported in column (3), none of independent variables significantly affect trust when the sample is limited to female respondents.

As is reported in Table 3, the results remain the same as in Table 2 when not only the unobservable individual fixed effects but also the endogeneity bias are controlled for. Accordingly, as a whole these results are robust.

IV. CONCLUSION

The purpose of this research was to ascertain the determinants of interpersonal trust in a homogeneous society. To this end, using prefecture level data from Japan in 1979 and 1996, I explored the extent to which inequality, age heterogeneity, and social capital have an effect upon interpersonal trust. The major findings, obtained through fixed effects estimations and fixed effects 2SLS estimations are as follows; (1) inequality is associated with low trust, while generational heterogeneity is associated with high trust; (2) social capital and expenditure for education have a positive impact upon trust; (3) none of the independent variables significantly affects trust when the sample is limited to female respondents.

Table 1. *Variable definitions, means, and standard deviations.*

Variables	Definition	Mean	S.D.
TRUST	Rates of trusting neighbors	0.47	0.05
GINI [a]	Gini coefficient of income	0.27	0.02
RACFRA	Ratio of non-Japanese in population of Japan	0.005	0.004
GENFRA	Hirfindahl-type index of age heterogeneity	0.92	0.005
DIVO	Number of divorces	3,607	4,021
CRIM	Number of crimes	33,500	44,251
EDU	Expenditure for education	34.5	38.1
SC	Number of community centers	357	270
MOBI	Number of immigrants from other prefectures	69,457	86,067
POP	Number of population	2,516	2,297
INCOM	Regional real income (Millions of Yen)	47.1	5.38

Note: Values are simple averages. Data source is Asahi Newspaper Publsihing (2004).

[a] Value collected from the Statistics Bureau of the Ministry of Internal Affairs and Communications (1999).

Table 2

Dependent variable: rates of respondent trusting neighbors. (Fixed effects model)

	(1)ALL	(2)MALE	(3)FEMALE
GINI	-0.68*	-1.13*	-0.23
	(-1.87)	(-2.23)	(-0.36)
RACFRA	3.62	5.24	2.00
	(1.60)	(1.67)	(0.51)
GENFRA	6.16**	7.99**	4.33
	(2.64)	(2.46)	(1.06)
DIVO	0.06	0.06	0.06
	(1.14)	(0.81)	(0.66)
CRIM	-0.01	0.003	-0.02
	(-0.06)	(0.10)	(-0.77)
EDU	$0.70*10^{-3*}$	$1.15*10^{-3}$*	$0.24*10^{-3}$
	(2.02)	(2.39)	(0.41)
SC	$0.16*10^{-3}$	$0.30*10^{-3}$*	$0.02*10^{-3}$
	(1.60)	(2.15)	(0.11)
MOBI	-0.14*	-0.20*	-0.09
	(-2.23)	(-2.19)	(-0.81)
POP	-0.31*	-0.39*	-0.23
	(-1.89)	(-1.70)	(-0.80)
INCOM	$-0.23*10^{-3}$	$0.38*10^{-3}$	$-0.82*10^{-3}$
	(-0.18)	(0.20)	(-0.36)
MALE	-0.01**		
	(-3.10)		
Obs	188	94	94
Adj. R^2	0.15	0.30	0.08

Note: Values in parentheses are t-statistics calculated by the robust standard errors.

* and ** denote significance at the 5% and 1% levels, respectively.

Table 3

Dependent variable: rates of respondent trusting neighbors. (Fixed effects 2sls model)

	(1)ALL	(2)MALE	(3)FEMALE
GINI	-2.72**	-2.95*	-2.50
	(-2.56)	(-1.91)	(-1.29)
RACFRA	1.28	3.16	-0.59
	(0.46)	(0.79)	(-0.12)
GENFRA	10.8**	12.1**	9.49
	(3.15)	(2.43)	(1.52)
DIVO	0.11	0.10	0.12
	(1.63)	(1.07)	(0.94)
CRIM	-0.01	0.004	-0.02
	(-0.50)	(0.111)	(-0.64)
EDU	$1.32*10^{-3}$**	$1.71*10^{-3}$*	$0.94*10^{-3}$
	(2.70)	(2.40)	(1.05)
SC	$0.14*10^{-3}$	$0.28*10^{-3}$*	$0.001*10^{-3}$
	(1.28)	(1.76)	(0.01)
MOBI	-0.16*	-0.21*	-0.11
	(-2.20)	(-2.00)	(-0.82)
POP	-0.45*	-0.52*	-0.38
	(-2.31)	(-1.82)	(-1.08)
INCOM	$0.48*10^{-3}$	$0.99*10^{-3}$	$-0.02*10^{-3}$
	(0.33)	(0.46)	(-0.01)
MALE	-0.01**		
	(-2.78)		
Obs	188	94	94
Adj. R^2	0.15	0.30	0.08

Note: Values in parentheses are t-statistics calculated by the robust standard errors.

* and ** denote significance at the 5% and 1% levels, respectively.

The two proxy variables for the size of the mature aged cohort used as instruments were

a) the ratio of the size of the cohort aged between 40 and 59 to the whole population, and b) the logarithm of the population aged between 50 and 59.

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