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The role of social trust in reducing long-term truancy and forming
human capital in Japan

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ABSTRACT

This paper attempts to examine how social trust influences human capital formation using prefectural level data in Japan. To this end, I constructed a proxy for social trust, based on the Japanese General Social Surveys. After controlling for socioeconomic factors, I found that social trust plays an important role in reducing the rate of long-term truancy in primary and junior high school. Results suggest that social trust improves educational quality and plays a critical role in human capital formation in developed countries.

Keywords: human capital, educational economics, economic impact

JEL classification: O10, Z13.

1. Introduction

Social capital draws much attention from researchers in the field of social science (Putnam 1993, 2000). In terms of economics, social capital, which includes social trust, improves efficiency by reducing transaction costs, resulting in economic growth (Knack and Keefer, 1997; Zak and Knack, 2001). From another point of view, economic growth in part depends on physical and human capital formation. Previous works provide evidence that social trust is positively associated with school enrollment rates (Papagapitos and Riley, 2009) and growth of schooling (Bjørnskov, 2009). Through human capital formation, social trust also makes a contribution to economic growth. In these studies, quantity of education has been mainly examined, providing important policy implications for developing countries where quantity of education is not sufficiently provided.

In contrast to developing countries, school enrollment rates are high in developed countries. Taking Japan as an example, the secondary school enrollment rate was about 99% in 2000, indicating that quantity of education is sufficient. It is more important to improve the quality of education in Japan. According to a white paper, as shown in Fig. 1, the rate of long-term truancy has risen since the 1990s. This tendency is especially obvious in junior high school. Furthermore, the truancy rate for junior high school is distinctly higher than that for primary school. This suggests that a problem in educational quality exists.

Although there are no data regarding the truancy rate for high school, after entering high school, which is not compulsory in Japan, those who had a tendency to skip junior high school are likely to skip high school, resulting in dropouts. It is appropriately argued that long-term truancy has become one of the central issues in Japanese education policy. Social capital, including social networks and social trust, is thought to play a critical role in coping with the long-term truancy problem (Ministry of Education, Culture, Sports, Science and Technology,

Japan, 2008, Ch. 2). Long-term truancy or dropping out of school are thought to reflect a low quality of education, leading to an impediment in human capital formation even if quantity of education is sufficiently provided. However, little is known about the effect of social capital on quality of education, with the exception of the work of Coleman (1988). Therefore, this paper attempts to examine how and to what extent social trust, considered a kind of social capital, affects the long-term truancy rate in Japan.

2. Data and Model

2.1. Data

Table 1 includes variable definitions and a summary of statistics. I used 2004 prefectural level data for Japan.¹ A Japanese prefecture is roughly the equivalent of a state in the United States or a province in Canada. As explained later, the proxy for the social trust variable was calculated based on Japanese General Social Surveys (JGSS) in 2000-2003. Gini coefficients are available every five years, for example, 1994, 1999 and 2004.² Hence, I used other variables in 2004 to correspond to these variables.

Rates of long-term truancy (i.e., skipping school more than 30 days) in primary or junior high school, denoted as PRSKIP and JHSKIP, were collected from the *School Basic Survey* (Ministry of Education, Culture, Sports, Science and Technology, Japan, 2005). The Gini coefficient, represented as GINI of income, came from the *National Survey of Family Income and Expenditure* (Ministry of Internal Affairs and Communications, 2005).³ Per capita income, represented as INCOM, was collected from the *Japan Statistical Yearbook* (Ministry of Internal

¹ To more closely examine the relationship between social trust and skipping school, microdata is more appropriate. However, I could not obtain microdata.

² The Gini coefficient for 2009 will be published in December 2010. See http://www.stat.go.jp/data/kouhyou/e-stat_zensho2009.xml (Accessed June 14, 2010).

³ The data is available at <http://www.stat.go.jp/english/data/zensho/2004/submen10.htm> (Accessed June 14, 2010).

Affairs and Communications, 2006). The index of human capital (HC) can be obtained from Fukao and Yue (2000).⁴ The HC is available for the period during 1955-1995. Therefore, the HC for 2004 could not be obtained. In previous work (Papagapitos and Riley, 2009), the lagged human capital index was used as the independent variable.⁵ Consistent with that study, I incorporated the HC in 1995 into the function as the independent variable.

With the aim of constructing a proxy for social trust, this paper used data from the Japanese General Social Surveys (JGSS), which are individual level data. The JGSS adopted a two-step stratified sampling method and were conducted throughout Japan between 2000 and 2003. The JGSS was designed to be the Japanese counterpart of the General Social Survey in the United States. This survey included standard questions concerning the prefecture of the respondent's current address and various subjective questions presented in face-to-face interviews. The survey collected data on 12,299 adults between ages 20 to 89. One question included was "Generally speaking, would you say that most people can be trusted?" There were three choices for respondents: "Yes", "Depends", and "No". Not all respondents answered the question. Therefore, the number of samples used for calculating the average score of social trust within a prefecture was 10,519. For measuring the degree of social trust, I quantified the choices "Yes", "Depends", and "No" as 3, 2 and 1, respectively. In addition, I calculated the average value of social trust within a prefecture and used it as a proxy for social trust used in this paper.

⁴ Human capital data is available from the Hi-stat HP: <http://21coe.ier.hit-u.ac.jp/research/database/> (Accessed June 14, 2010). See <http://www.ier.hit-u.ac.jp/~fukao/japanese/data/fuken2000/datamaking.pdf> (Accessed June 14, 2010) for a full account of the method of calculation.

⁵ Papagapitos and Riley (2009) used average years of education in the adult population in 1970 to examine the determinants of average secondary school enrollment from 1999-2002.

2.2. Model

The seminal work of Coleman (1988) raised the hypothesis that communities rich in trust, considered social capital, contribute to human capital formation by lowering rates of high school dropouts. Along the same lines, I postulated the hypothesis that social trust deters students from skipping school. This hypothesis was examined using the data explained in the previous section.⁶ A cursory examination of Fig. 2 (a) and (b) reveals that social trust is negatively associated with rates of long-term truancy for primary school as well as junior high school. Consistent with the hypothesis, social trust seems to decrease the rate of long-term truancy.

For a closer examination of the influence of social trust on the rate of long-term truancy, the estimated function takes the following form:

$$\text{PRSKIP}_i \text{ (or JHSKIP)}_i = \alpha_0 + \alpha_1 \text{ TRUST}_i + \alpha_2 \text{HC}_i + \alpha_3 \text{INCOM}_i + \alpha_4 \text{GINI}_i + \varepsilon_i,$$

where SKIPRAT_i are dependent variables in the prefecture i , α represents the regression parameter, and ε_i represents the error term. If TRUST decreases the rate of long-term truancy, TRUST would take the negative sign. With the exception of the dummy variables, dependent and independent variables were evaluated at the sample means. Therefore, the coefficient values reported can be interpreted as elasticity.⁷

⁶ Existing works mainly consider the association between social trust and the supply of education (e.g., Coleman, 1988; la Porta, Lopez-de-Silanes, Schleifer, and Vishny, 1997; Putnam 2000). Bjørnskov (2009) focused on demand for education rather than supply. His argument was that, generally speaking, educated workers tend to do complex work. When social trust is low, the cost of monitoring educated workers inevitably becomes very high. As a consequence, the demand for education is low.

⁷ See more details in Greene (1997, p. 280).

In the linear model, $y = x' \beta + e$; the elasticity of y with respect to changes in x is

$$\gamma_k = \frac{\partial \ln y}{\partial \ln x_k} = \beta_k \left(\frac{x_k}{y} \right).$$

These values can be estimated at the sample means as

In this paper, the effect of social trust on human capital formation was examined. On the other hand, human capital is thought to influence social trust (Yamamura, 2008). The direction of causality is ambiguous. Hence, potential reverse causation should be controlled for. I employed the GMM 2SLS method rather than the simple 2SLS method because the GMM estimator produces efficiency gains in the presence of heteroscedasticity, (Greene, 1997, pp. 757-759). Bjørnskov (2009) used a measure of absence of corruption as an instrumental variable for social trust when human capital growth was examined. Previous works have suggested that absence of corruption may be associated with social trust (Uslaner, 2002) but not with human capital formation. I chose the instrumental variables based on this line of thinking.

The disclosure of official information allows citizens to keep a close eye on corruption, resulting in a reduction in corruption. In Japan, prior to the 1980s, official information was not disclosed. According to Jiyukokuminsha (2010), the town of Kanayama, located in Yamagata prefecture, was the first to enact a disclosure of official information ordinance in 1982, triggering a surge in enactments of such ordinances. Since then, cities and towns have actively issued disclosure of official information ordinances. As a consequence, the number of cities, towns, and villages issuing ordinances has reached 1,795, with an enactment rate of 99.7%. Enactment of the ordinances seems to be positively associated with the relative absence of corruption. Hence, the number of towns and villages that have issued the disclosure of official information ordinance was used as an instrumental variable. In addition, I also used population size as an instrumental variable.

$$\lambda_k = \beta_k \left(\frac{\overline{x_k}}{\overline{y}} \right).$$

The standard error of the elasticity of y , γ_k , can be calculated by the delta method (Greene 1997, pp. 278-280).

3. Results

The results for TRUST, the key variable for examining the effect of social trust on long-term truancy, are shown in Table 2. The coefficients of TRUST take the negative sign and are statistically significant in columns (1) and (2). This implies that social trust plays a significant role in reduction of long-term truancy in primary and junior high school.

Results of the GMM 2SLS estimation are exhibited in Table 3. A test of endogeneity rejected the null hypothesis that TRUST is exogenous in column (1), but did not reject it in column (2). TRUST is considered an endogenous variable in column (1), whereas TRUST can be treated as an exogenous variable in column (2). Hence, the GMM 2SLS was valid for primary school estimation, but not for junior high school estimation. The OLS results were not biased and were appropriate for junior high school estimation. Hereafter, I have concentrated focus on the results of the primary school estimation. A specification error occurs if the instrumental variables are correlated with the error term. An over-identification test provides a method of testing for exogeneity of instrumental variables. Test statistics are not significant in column (1) and thus do not reject the null hypothesis that the instrumental variable is uncorrelated with the error term. This suggests that the instrumental variables are valid. TRUST yields significant negative signs in column (1), evidence that TRUST deters long-term truancy in primary school students.

The absolute value of the coefficient for junior high school shown in column (2) of Table 2 is 1.61, whereas that of primary school in column (1) of Table 3 is 11.9. This indicates that social trust has a greater role in primary school than in junior high school. Hence, I argue that social trust makes a more important contribution in earlier stages of child growth.

4. Conclusions

Previous studies using cross-country data have provided evidence that social trust is positively associated with quantity of education such as school enrollment rate. In developed countries like Japan, quantity of education is sufficiently supplied. Thus, quality of education is more important in forming human capital. Long-term truancy can be considered one of the proxies for educational quality, despite not being reflected in school enrollment rate. This paper constructed a proxy for prefectural level social trust to examine the effect of social trust on long-term truancy in Japan.

The main findings of the regression analysis are as follows. After controlling for socioeconomic factors, I found that social trust plays an important role in decreasing long-term truancy in primary and junior high school. This indicates that social trust improves the quality of education and thus plays a crucial role in human capital formation in developed countries.

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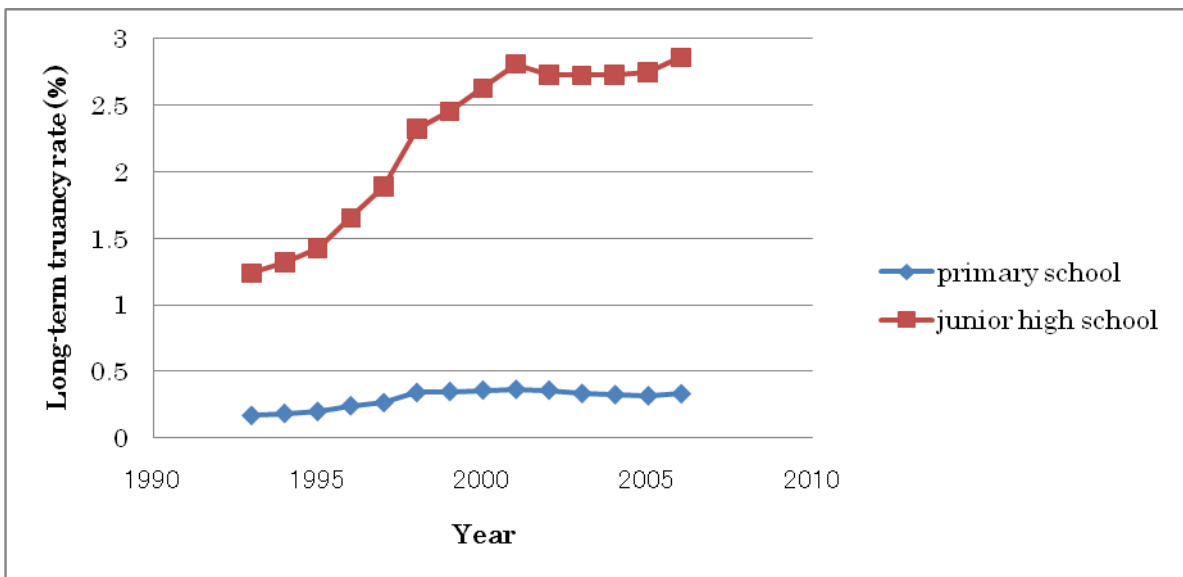
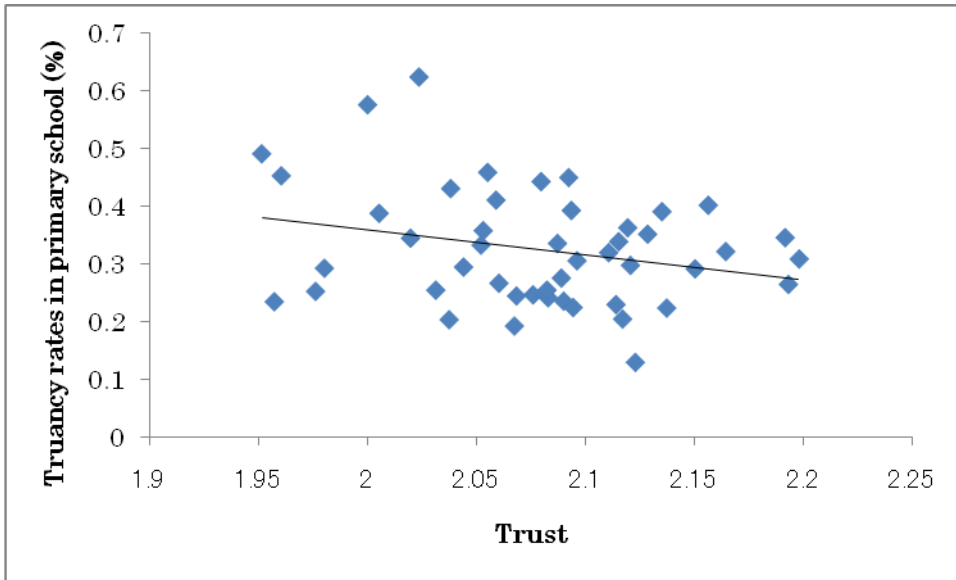


Fig. 1. Change in long-term truancy rate.

Source: Ministry of Education, Culture, Sports, Science and Technology (2009).



(a) Primary school



(b) Junior high school

Fig. 2. Relationship between long-term truancy and trust in 2004.

Table 1.
Variable definitions and basic statistics

Variables	Definition	Mean	Standard deviation	Max	Min
PRSKIP	Percentage of students who skipped primary school more than 30 days in 2004 (%).	0.32	0.10	0.62	0.13
JHSKIP	Percentage of students who skipped junior high school more than 30 days in 2004 (%).	2.64	0.41	3.61	1.81
TRUST	Rate of people who think that most people can be trusted (2000-2003; %).	2.07	0.06	2.19	1.95
HC	Index of human capital in 1995.	1.09	0.02	1.14	1.02
INCOM	Per capita income in 2004 (thousands of yen).	2706	425	4559	1987
GINI	Gini coefficient of income in 2004.	0.30	0.01	0.34	0.27

Table 2.

Dependent variable: Rate of long-term truancy (%; OLS model)

Variables	Primary school (1)	Junior high school (2)
TRUST	-3.28** (-2.18)	-1.61*** (-3.13)
HC	0.87 (0.39)	1.71* (1.74)
INCOM	0.48 (1.52)	0.23 (1.05)
GINI	-1.19 (-1.60)	-0.18 (-0.38)
CONSTANT	1.34 (1.24)	2.23 (0.62)
Adjusted R ²	0.11	0.20
Observations	47	47

Note. Values are elasticity evaluated at the sample means (Greene, 1997, pp. 278-280). Values in parentheses are t-statistics calculated by robust standard errors. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 3.

Dependent variable: Rate of long-term truancy
(%; GMM 2SLS model)

Variables	Primary school (1)	Junior high school (2)
TRUST	-11.9* (-1.77)	-3.70 (-1.12)
HC	-0.90 (-0.28)	1.06 (0.79)
INCOM	0.94* (1.83)	0.32 (1.30)
GINI	-1.13 (-1.20)	-0.38 (-0.81)
CONSTANT	4.58* (1.80)	9.72 (0.94)
Wald chi-square	6.93	6.10
Test of endogeneity (GMM C statistic chi-square)	3.76* $p = 0.05$	0.37 $p = 0.54$
Over-identification test (Hansen's J chi-square)	0.07 $p = 0.78$	0.80 $p = 0.37$
Observations	47	47

Note. Values are elasticity evaluated at the sample means (Greene, 1997, pp. 278-280). Values in parentheses are z-statistics. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.