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6 March 2011

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Abstract

This paper explores the relationship of social capital to self-rated health status in Japan, and how this is affected by the labor market. Data of 3075 adult participants in the 2000 Social Policy and Social Consciousness (SPSC) survey were used. Controlling for endogenous bias, the main finding is that social capital has a significant positive influence on health status for people without a job but not for those with. This empirical study provides evidence that people without a job can afford to allocate time to accumulate social capital and thereby improve their health status.

JEL classification: I19; J22; Z13

Keywords: health status, social capital, labor market.

1. Introduction

Putnam defined social capital (hereafter, abbreviated as SC) as "features of social organization, such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated action" (Putnam 1993, p.167)[2]. Previous works provide evidence that SC favors economic growth (Knack and Keefer 1997, Zak and Knack 2001). Besides economic growth, SC has a critical influence on facets of socio-economic outcomes.

Investigation of the relationship between health status and SC is a major topic in economic policy research. Empirical analyses have presented evidence that SC has a critical influence on health-related behaviors and related outcomes (e.g., Costa-Font and Mladovsky, 2008; Islam, 2008; Laporte et al., 2008; Scheffler and Brown, 2008). Although positive relationships between health status and SC have been observed in some studies (e.g., Kawachi et al., 1997; 1999; Islam et al., 2006; Petrou and Kupek, 2008), others do not report a positive association (Iversen 2008). Most existing literature has failed to consider the reasons why the relationship between SC and health status varies, at least from the point of view of economics[3]. An individual's decision to accumulate SC can be explained by a standard optimal investment model (Glaeser et al., 2002). Putnam (2000) notes that the extent to which people volunteer or take part in neighborhood activities is considered SC; that is, participation in such activities is an investment in SC. Therefore, the economic conditions confronting people are thought to have an influence on health

[2] It should be noted that, despite its tremendous influence on research in the social sciences, the notion of social capital is ambiguous and thus there seems little agreement as to how to measure and conceptualize it (e.g., Paldam 2000, Sobel 2002, Durlauf 2002, Bjørnskov 2006).

[3] Folland (2006; 2008) constructed a theoretical economic model connecting social capital with health.

outcomes through SC accumulation. Consideration of the constraints under which people make a decision to accumulate SC would be important when analyzing the effects of SC on health.

If time can be allocated to work and leisure, time for investing in SC can be considered a part of one's leisure time because people participate in neighborhood activity when they are not working. Furthermore, non-workers are more likely to rely on the mutual assistance provided by social capital when they are sick because under budget constraints they are not able to use assistance supplied in the market. Few researchers, however, have attempted to investigate empirically the extent to which the condition of the labor market is associated with SC, and in turn health status[4]. This paper aims to examine how and the extent to which the effect of SC on health status differs between workers and non-workers by using individual level data from a Japanese sample. As well, two-stage estimations are employed to control for an endogeneity bias of SC. This paper is the first to compare the influence of SC on health status across different work statuses. The data set used in this paper is cross section in structure and was conducted in 2000. In this paper, 3991 observations collected from all around Japan, are used. Respondents were adult males and females over 20 years of age. The crucial finding in this paper is that social capital improves health status for non-workers but not for workers.

The organization of the remainder of this paper is as follows: In section II, the

[4] Prior works have focused mainly on the relationship between social capital and physical (or mental) health; however, they include employment status and other labor market variables as independent variables. For instance, employment status is controlled for in Araya et al. (2006), Baron-Epel et al. (2008), Carlson (1998), D'hombres et al. (2010), Folland (2007), Frjiters et al. (2005), Giordano and Lindstrom (2010), Poortinga (2006), and Yip et al. (2007). Economic shocks such as job losses are captured in De Silva et al. (2007).

data, method of analysis and estimation strategy are described. The results of the estimation and their interpretation are provided in section III. The final section offers concluding remarks.

2. Data and method

2.1. Data

This paper uses individual-level data including self-rated health status, demographics (age and sex), economic status (occupation, income, and experience of bankruptcy), SC index, and years of living at current address[5]. Data were from the Social Policy and Social Consciousness (SPSC) survey, which was conducted in all parts of Japan in 2000. 5000 adults (aged 20 years or over) were invited to participate in a survey incorporating stratified two-stage random sampling. The survey collected data on 3991 adults from 11 areas, a response rate of 79.8 %[6].

Table 1 includes variable definitions, means and standard deviations. The dependent variable, self-rated health status, was measured using the question "How would you describe your current health during the past three months?" Response categories were 0 (not good) to 4 (very good). Following a discussion of previous works (Putnam 2000, Fidrmuc and Gërxhani 2008), the degree of civic engagement is considered as SC in this research. SC was measured using the question "Are you actively involved in the activities of your neighborhood

[5] The data for this secondary analysis, "Social Policy and Social Consciousness survey (SPSC), Shogo Takekawa," was provided by the Social Science Japan Data Archive, Information Center for Social Science Research in Japan, Institute of Social Science, The University of Tokyo.

[6] Respondents did not answer all questions; therefore, the sample size for regression estimations was 3075.

association?" Response categories were 0 (not at all) to 3 (yes, actively involved).

2.2. Limitation of proxy for social capital.

The choice of proxy for SC has been discussed (e.g., Paldam 2000, Sobel 2002, Durlauf 2002, Bjørnskov 2006, Sabatini, 2007, 2008)[7]. Previous studies have stressed the importance of social capital dimensions such as social trust, rather than the involvement in associational activities (D'Hombres et al.2010, Giordano and Lindstrom 2010, Petrou et al. 2008, Poortinga 2006, Subramanian et al. 2002). Araya et al. (2006) argued that social trust is positively associated with mental health. Chuang et al. (2008) focused on the influence of social trust on drinking and smoking behaviors.

It should be noted that membership in associations has been queried as a measure of SC (Hooghe and Stolle 2003). Even if a measure of associational membership or associational activities is appropriate as a proxy for social capital, there are conflicting views about involvement in associations. Involvement in associational activities is not significantly related to self-rated health (e.g., D'Hombres et al. 2010, De Silva et al. 2007, Kennelly et al. 2003, Yip et al. 2007). On the other hand, a positive association between perceived health and membership in associations has been observed (e.g., Carlson 1998, Kawachi et al. 1999, Lochner et al. 2003, Poortinga 2006). This paper provides further evidence related to the controversy regarding the effectiveness of involvement in association. However, it

[7] Social capital is measured by the frequency of meetings with friends (Fiorillo et al., 2010), social support (Baron-Epel et al. 2008), perception of social cohesion (Berry and Welsh 2010, Fujisawa et al. 2010, Petrou et al. 2008), participation in religious groups (Brown et al. 2008 in relation to unhealthy behavior), and social isolation (Carlson 1998, D'Hombres et al. 2010, Petrou et al. 2008).

should be noted that this paper uses a single indicator, such as involvement in a neighborhood association, and so does not examine the relationship between various facets of social capital and health status.

2.3. Hypothesis

Table 2 shows that the SC of individuals without a job is greater than those with. This difference is statistically significant at the 1 % level. My conjecture is that people without a job appear to have more time to invest in SC than those with. Furthermore, in case of sickness, economic constraints are thought to force non-workers to rely on the informal mechanisms of mutual assistance to gain access to health care services. Apart from time constraints, non-workers are more likely to invest in social capital because mutual assistance formed in a neighborhood is a substitute for formal networks and thus help them[8]. If this holds true, I thus raise the following hypothesis:

Hypothesis: *People without a job are more likely to improve their health status through accumulation of SC than people with.*

2.4. Econometric Framework and Estimation Strategy

To test the above hypothesis, I explore how health status is affected by SC and economic circumstances. The estimated function takes the following form:

$$HEALT_i = \alpha_0 + \alpha_1 SC_i + \alpha_2 CHILDCON_i + \alpha_3 BANKRPT_i + \alpha_4 DIV_i + \alpha_5 MARRI_i +$$

[8] On-the-job relationships lead to formation of social capital in the work place, which may be a source of health-related information. Work place social capital measured by the degree of trust within a work place contributes to the cessation of smoking and improvement of health status in Japan (Suzuki et al., 2010a, 2010b).

$\alpha_6 AGE_i + \alpha_7 UNIV_i + \alpha_8 MALE_i + u_i$,

where $HEALT_i$ represents the dependent variable in resident i, α's represents regression parameters, and u_i represents the error term. SC is measured by the degree of involvement in neighborhood association activities; range 0 (not at all) to 3 (actively involved).

I focus on the results of SC, which I considered the main variable. First, with the aim of comparing the results of people with a job with those without, I split the samples into those with and those without a job when estimations are conducted. Second, samples are further divided into male and female in order to examine whether the results presented above persisted regardless of gender. If the results are not different between genders, they can be considered robust.

It seems appropriately argued that the participation in social activity depends on a person's mental and physical condition. If health status is better, people are more inclined to involve themselves in the activities of their neighborhood association. This tells us that causality between health status and magnitude of SC accumulation is ambiguous. As a consequence, the endogeneity problem occurs, leading to estimation bias[9]. For the purpose of controlling for this bias, in addition to simple estimations, I employ two-stage estimations by using instrumental variables for proxies of SC. Following the argument that homeowners are more likely to invest in SC than renters (e.g., DiPasquale and Glaeser, 1999; Glaeser et al., 2002; Hilber, 2007), I use a homeowner dummy as an instrument for SC[10]. After controlling for household income, health status was not likely to depend on whether

[9] The causality between SC and health status is ambiguous because it is reasonably argued that healthy people are more likely to take part in neighborhood activities. This may also be the reason why an estimation bias occurs.

[10] Homeowner is defined as those who own home or those whose parents own a home.

people are homeowners. Therefore, the homeowner dummy was correctly considered to be an exogenous variable and so could be used as an instrumental variable. DiPasquale and Glaeser (1999) also considered children. In particular, parents with pre-school and elementary school children might be involved in neighborhood activities more than others. Also, longer residential years and experience in a local area might encourage neighborhood activities. Hence, as is seen in the Table, I used additional instrumental variables as follows: RESY20, RESY10, RESY5 and CHILD. However, it is worth noting the possibility that instrumental variables are correlated with dependent variables and so are not considered as exogenous for an dependent variable. With respect to homeownership, the cost of rent in a metropolitan area is very high, while owning a flat could be a relief factor possibly benefiting perceived health status. Hence, homeownership appears to exert a direct effect on health by reducing mental stress. As for children, it seems that having a responsibility towards others such as between ones wife and child may lead agents to take more care of themselves, thereby improving health. Existing works have investigated this causality by including children in households as an independent variable (De Silva et al., 2007, Engstrom et al., 2008). The exogeneity of instrumental variables can be checked by the over-identification test. Therefore, it is useful to examine the validity of instrumental variables using the over-identification test. Under this test, the null hypothesis is that the instrumental variables are uncorrelated with the error term. If the test is not rejected, the instrumental variables can be considered as exogenous and so valid.

The literature (e.g., Kawachi et al., 1997, 1999; Islam et al., 2006; Petrou and Kupek, 2008) shows that SC improves health status. Hence, the proxy for SC is

expected to yield a positive sign. Assuming that the marginal effect of SC accumulation is an increasing return to scale, the larger SC is, the larger the elasticity of SC becomes with respect to health. If people without a job are more likely to invest in SC, the elasticity of these people is therefore predicted to be larger than for those with a job.

2.5. Control variables

Socio-economic conditions during childhood affect health status during adulthood (Draper et al., 2008; Schilling et al., 2008). The greater the number of years spent living in poverty during childhood, the worse the adult health status becomes (Evans and Kim, 2007). In this study, childhood economic conditions were measured using the question "How would you describe your economic conditions during childhood?" The responses were 0 (not good) to 3 (good). The sign of CHILDCON is thus predicted to be negative. Past economic conditions are also captured by the experience of bankruptcy, denoted as BANKRPT. I expect BANKRPT to take a negative sign.

It is generally thought that marriage improves health status (Waite and Gallagher, 2000; Waite et al., 2009). Hence the sign of MARRI is predicted to be positive. On the other hand, the experience of divorce is found to be related to health status, the effect depending on the person's gender and their socio-economic status (e.g., Amato, 2000; Lorenz et al., 2006).

The higher the income, the better the health status of an individual becomes. This is because those with high incomes can afford to maintain or improve their health status. The data set includes 17 categories of household income and so I use

16 dummy variables (one category is the reference group) to capture the income effect[11]. Several control variables are included to capture individual characteristics: age, a male gender dummy, and a university graduation dummy.

3. Estimation results and interpretation

Tables 3 and 4 show the results of OLS and 2SLS estimations. The appendix table of Table A1 shows the first stage estimation results of Table 4. In Tables 3, 4 and A1, columns (1)-(3) show results for the genders combined. Furthermore, column (1) includes results for the whole sample; columns (2) and (3) are restricted to people with a job and those without, respectively. Columns (4) and (5) present results of people with a job for males and females, respectively. Columns (6) and (7) exhibit results of people without a job for males and females, respectively. With the aim of comparing the magnitude of the dependent variables, the dependent and independent variables are evaluated as sample means. Therefore, the coefficient values reported can be interpreted as elasticity in Tables 3 and 4[12].

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[11] Categories of household income are in millions of yen: (1) 0, (2) ~0.7, (3) 0.7~1., (4)1.5~2.5, (5)2.5~3.5, (6)3.5~4.5, (7)4.5~5.5, (8)5.5~6.5, (9)6.5~7.5, (10)7.5~8.5, (11)8.5~10.0, (12)10.0~12., (13)12.0~14.0, (14)14.0~16.0, (15)16.0~18.5, (16)18.5~23.0, and (17)23.0~.

[12] For more detail see Greene (1997, p.280).

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

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

This value can be estimated by sample means as

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

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

Table 3 provides results of OLS estimations. The first row reveals that the proxy for SC shows a positive sign in all estimations; with the exception of column (5), and the results are statistically significant. This implies that SC contributes to an improvement in health status. Comparing columns (2) and (3) shows that the value for SC decreases when the sample is restricted to people with a job. As anticipated, people without a job are able to derive greater benefit from SC than those with[13]. As shown in column (4), the coefficient for males with a job exhibits a significant positive sign, whereas that for females with a job shows a positive sign but is not significant. This implies that there is a difference in the influence of social capita on health status between genders for those with a job.

Turning now to economic factors including CHILDCON, and BANKRPT, I find that the signs of CHILDCON are positive, and BANKRPT negative, in all estimations. These results are consistent with other reports. Furthermore, from the results of people with a job I see as follows: Concerning BANKRPT, the values of the coefficients and statistical significance for males are similar to those for females. On the other hand, values of CHILDCON for females are several times larger than those for males; estimations for females are statistically significant in column (5) while those for males are not significant in column (4). In addition, DIV shows the expected negative sign for females (statistically significant at the 1 % level), but this is not observed for males. DIV causes a household's income to decrease because the spouse's income disappears. If the wife is a worker, her income is lower than the optimum level. This might be in part due to economic policy such as spousal tax

[13] Generally, an annual medical examination is provided for regular employees in Japan. It should be noted that there is a possibility that those without a job are considered to report their health conditions relating to daily life including neighborhood activities, rather than their actual health condition.

deduction in Japan (Akabayashi 2006). Hence, the reduction of household income is thought to be larger for a wife than for a husband because a household's income is mainly composed of the husband's income. As shown in columns (6) and (7), however, differences in CHILDCON and DIV results between genders are not affected when the samples are restricted to people with a job. In short, considering people with a job shows that the health status of females is influenced more by socio-economic conditions such as economic ones during childhood and the experience of divorce than is the health status of men. This tendency is, however, not observed for people without a job. Hence, what is seen in these results is that work place conditions or job status result in differences in the effects of economic factors on health status between males and females.

Before analyzing the results of 2SLS in Table 4, I review the results of the first stage of 2SLS estimations in Table A1. As anticipated, the signs of HOUS are positive and statistically significant at the 1 % level, with the exception of column (6). In most cases RESY20, RESY10, RESY5 and CHILD also yield the expected positive signs. Especially, RESY20 and CHILD show statistically significance for four-sixth of the estimations.

Table 4 sets out the results of the 2SLS estimation. In the bottom part of the table, the results of the over-identification test (Sargan-test) and F-test are shown for examining the validity of the first stage estimation. The statistics from the over-identification test are not statistically significant although the statistics in column (4) are statistically significant at the 10 % level. With the exception of column (4), the results do not reject the null hypothesis that the instrumental variables are uncorrelated with the error term; suggesting that the instrumental

variables can be considered as exogenous. It follows from this that instrumental variables are valid. Results of the F-tests show that the instruments have significant explanation power for SC. Overall, these tests suggest the validity of the first stage estimation.

Turning our attention to the second stage results for SC allows us to examine the hypothesis. All estimation results for SC show the predicted positive sign. Examination of columns (1) and (2) of the first row reveals that the coefficient values of column (2) are about half of those in column (1), but are statistically insignificant. On the other hand, SC continues to show a significantly positive sign in column (3). This suggests that controlling for endogenous bias reduced the effect of SC when the sample was restricted to people with a job. Hence, the SC effect appears to depend on whether people have a job or not.

In columns (4), it is interesting to observe that the coefficient of SC becomes statistically insignificant for males although its sign continue to be positive. The result for males is remarkably different from the results presented in Table 3. On the other hand, column (5) tells me that the result of SC for females is similar to that in Table 3. I interpret the results obtained by OLS and 2SLS estimations as showing that endogenous bias is very large when males with a job are examined. These results indicate that SC has no effect on health status for people with a job, regardless of gender.

The results seen in columns (6) and (7) suggest that the coefficient of SC takes a significant positive sign, which is similar to the results presented in Table 3. These results imply that SC has a positive effect on health status for people without a job, regardless of gender, if the endogeneity of SC is controlled for.

A brief examination of other variables shows that CHILDCON has a positive influence on health status, whereas BANKRPT and AGE have a negative impact. Overall, the results of other control variables mostly similar to those in Table 3, which is consistent with the argument as above.

Thus when considering the results for SC, the hypothesis presented earlier is supported by the estimation results. In this paper, SC has been defined as the degree of involvement in neighborhood associations. As discussed in sub-section 2.2, there is opposing evidence reported concerning the relationship between involvement in associations and health status. Several reports have not demonstrated a positive relationship between involvement in associations and health status (e.g., D'Hombres et al. 2010, De Silva et al. 2007, Kennelly et al. 2003, Yip et al. 2007). Contrarily, a positive relationship has been observed in some other works (e.g., Carlson 1998, Kawachi et al. 1999, Lochner et al. 2003, Poortinga 2006). The finding of this paper supports the latter view.

4. Conclusions

In this paper, I used individual-level data to examined how and the extent to which SC make a contribution to the improvement of self-rated health status in Japan, and how the effect of SC on health status is affected by the labor market. To control for the endogeneity of SC, I conducted two-stage estimations. The main finding was that SC has a significant positive influence on health status for people without a job but not for those with.

The positive effects of SC on health are limited by the time allocated to invest in accumulating SC. Assuming that the marginal effect of SC accumulation is

increasingly returned to scale, time constraints would be important. This empirical study provides evidence that people without a job can allocate time to accumulate SC and thereby improve their health status. This is considered to be a positive labor market externality. Admittedly, worsening labor market conditions lead to reduced mental health, especially for less-educated people who may have a difficulty in finding a job (Charles and Decicca, 2008). A clear finding from this investigation is that SC can to some extent serve as a safety net for people who are less likely to find a job. If this is the case, SC may help compensate for market imperfections (Hayami, 2001). These results regarding labor market externalities have policy implications.

The present research was limited to Japan, and the sample size of subjects used in the analyses was small. As such, the findings provided here cannot be generalized to other countries. To increase the generalizability of these results, a comparable study of the situation in other countries with different socio-cultural backgrounds should be conducted using a larger sample size. Furthermore, only involvement in neighborhood association is used as a proxy for SC, and so the results presented in this paper are not supported by other measures of SC. The use of a single indicator is a limitation of this paper. It will be worthwhile comparing the effects of other measures such as social trust on health status. These are issues that remain to be addressed in future studies.

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Table 1

Variable definitions and descriptive statistics

Variables	Definition	Mean	Standard deviation
HEALTH	The degree of self-rated general health status; range 0 (poor) to 4 (very good).	2.80	1.07
SC	The degree of involvement in activities of neighborhood associations; range 0 (not at all) to 3 (actively involved).	1.35	0.95
CHILDCON	Economic condition during childhood; range 0 (poor) to 3 (very good).	1.25	0.89
BANKRPT	Value is 1 if respondent or spouse has experienced bankruptcy during these three years, otherwise value is 0.	0.18	0.39
DIV	Value is 1 if respondent has experienced divorce, otherwise 0.	0.03	0.17
MARRI	Value is 1 if respondent has a spouse, otherwise 0.	0.75	0.43
AGE	Age in years	49	15
UNIV	Value is 1 if respondent graduated from university, otherwise 0.	0.15	0.36
MALE	Value is 1 if male, 0 if female.	0.47	0.49
HOUS	Value is 1 if respondent is a homeowner, otherwise 0.	0.76	0.42
RESY20	Value is 1 if person has lived at their current address for longer than 20 years, otherwise 0.	0.62	0.48
RESY10	Value is 1 if person has lived at their current address from 10 to 19 years, otherwise 0.	0.17	0.37
RESY5	Value is 1 if person has lived at their current address from 5 to 9 years, otherwise 0.	0.09	0.29
CHILD	Value is 1 if person has a child who is younger than 12 years old, otherwise 0.	0.08	0.27

Table 2

Social capital and labor market conditions

Comparison of social capital between people with jobs and those without.

	People with jobs	People without jobs	t-value
SC	1.33	1.44	2.54 **

** indicates significance at 1 percent level.

Table 3 Determinants of self-rated health (OLS model)

Variables	ALL	With a Job	Without a Job	With a Job		Without a Job	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ALL	ALL	ALL	MALE	FEMALE	MALE	FEMALE
SC	0.05***	0.03***	0.08***	0.05***	0.009	0.14***	0.05**
	(5.31)	(3.62)	(3.50)	(4.25)	(0.53)	(2.83)	(2.17)
CHILDCON	0.01*	0.01*	0.03*	0.006	0.03**	0.01	0.04
	(1.84)	(1.69)	(1.71)	(0.53)	(1.98)	(0.28)	(1.59)
BANKRPT	-0.01***	-0.01***	-0.008	-0.008**	-0.01***	-0.01	-0.005
	(-3.09)	(-3.25)	(-1.28)	(-1.97)	(-2.76)	(-0.81)	(-0.71)
DIV	-0.001	-0.004**	-0.009	0.0003	-0.008***	0.001	-0.001
	(-1.07)	(-1.96)	(-0.52)	(0.02)	(-2.58)	(0.29)	(-0.89)
MARRI	0.01	0.001	0.02	-0.008	-0.0006	0.09	-0.03
	(0.79)	(0.10)	(0.64)	(-0.36)	(-0.03)	(1.27)	(-0.98)
AGE	-0.24***	-0.09***	-0.37**	-0.11***	-0.09**	-0.36**	-0.42***
	(-9.64)	(-3.31)	(-6.48)	(-2.79)	(-1.96)	(-2.17)	(-6.51)
UNIV	0.002	-0.001	0.009**	0.002	-0.002	0.01	0.009*
	(0.80)	(-0.19)	(1.99)	(0.39)	(-0.69)	(1.05)	(1.85)
MALE	0.01***	0.01*	0.001				
	(2.66)	(1.84)	(0.12)				
Adj R- square	0.07	0.04	0.08	0.03	0.04	0.05	0.09
Sample size	3075	2111	964	1250	861	287	677

Numbers show elasticity. Numbers in parentheses are t-statistics. *, **, *** indicate significance at 10, 5 and 1 per cent levels, respectively. A constant term was included when the estimation was conducted (results not reported). Constant and 16 household income dummies are included, but their results are not reported to save the space.

Table 4 Determinants of self-rated health (2SLS model)

Variables	ALL	With a Job	Without a Job	With a Job		Without a Job	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ALL	ALL	ALL	MALE	FEMALE	MALE	FEMALE
SC	0.12**	0.05	0.32*	0.08	0.02	0.77*	0.29*
	(2.09)	(1.04)	(1.73)	(1.21)	(0.22)	(1.78)	(1.86)
CHILDCON	0.01**	0.01*	0.04*	0.007	0.03**	-0.01	0.05**
	(1.95)	(1.69)	(1.97)	(0.57)	(1.95)	(-0.20)	(1.98)
BANKRPT	-0.01***	-0.01***	-0.009	-0.008**	-0.01***	-0.02	-0.005
	(-3.02)	(-3.21)	(-1.17)	(-1.97)	(-2.71)	(-0.98)	(-0.62)
DIV	-0.001	-0.003*	-0.001	0.0001	-0.008***	0.004	-0.002
	(-1.07)	(-1.93)	(-0.54)	(0.07)	(-2.58)	(1.00)	(-1.04)
MARRI	-0.002	-0.01	-0.02	-0.01	-0.004	0.002	-0.07
	(-0.11)	(-0.68)	(-0.44)	(-0.45)	(-0.11)	(0.02)	(-1.55)
AGE	-0.27***	-0.11**	-0.51**	-0.12**	-0.10	-0.79**	-0.54***
	(-7.00)	(-2.52)	(-4.21)	(-2.23)	(-1.31)	(-2.19)	(-5.21)
UNIV	0.003	-0.0002	0.01*	0.003	-0.002	0.02	0.007
	(1.09)	(-0.06)	(1.85)	(0.49)	(-0.65)	(1.52)	(1.29)
MALE	0.01***	0.01**	0.006				
	(2.69)	(1.83)	(0.55)				
Adj R- square	0.06	0.03	0.03	0.03	0.04	0.03	0.01
Sample size	3075	2111	964	1250	861	287	677
Over-identification test	7.66	3.73	7.04	8.38	0.82	4.66	4.28
	P-value=0.11	p-value=0.44	p-value=0.13	p-value=0.08	p-value=0.93	p-value=0.32	p-value=0.36
F-test (first stage)	15.4	12.1	4.28	7.50	6.04	3.09	2.94
	Prob>F=0.00	Prob>F=0.00	Prob>F=0.00	Prob>F=0.00	Prob>F=0.00	Prob>F=0.00	Prob>F=0.00

Numbers show elasticity. Numbers in parentheses are t-statistics. *, **, *** indicate significance at 10, 5 and 1 per cent levels, respectively. A constant term was included when the estimation was conducted (results not reported). Constant and 16 household income dummies are included, but their results are not reported to save the space.

Table A1 Determinants of SC (the first stage estimation of 2SLS model is in Table 4)

Variables	ALL	With a Job	Without a Job	With a Job		Without a Job	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ALL	ALL	ALL	MALE	FEMALE	MALE	FEMALE
HOUS	0.28***	0.28***	0.25***	0.31***	0.24***	-0.12	0.33***
	(6.70)	(5.75)	(3.23)	(4.72)	(3.14)	(-0.73)	(3.69)
RESY20	0.18***	0.23***	0.06	0.25***	0.19*	-0.08	0.15
	(3.11)	(3.26)	(0.62)	(2.73)	(1.71)	(-0.34)	(1.25)
RESY10	0.002	0.02	-0.03	0.01	0.03	-0.26	0.03
	(0.04)	(0.33)	(-0.21)	(0.15)	(0.26)	(-0.92)	(0.22)
RESY5	-0.02	0.04	-0.18	0.08	0.01	-0.05	-0.20
	(-0.29)	(0.58)	(-1.34)	(0.76)	(0.10)	(-0.17)	(-1.30)
CHILD	0.11*	0.12*	0.09	0.06	0.19*	1.53**	0.01
	(1.94)	(1.86)	(0.68)	(0.70)	(1.90)	(2.26)	(0.09)
CHILDCON	-0.01	-0.006	-0.04	-0.02	0.01	0.06	-0.06
	(-0.95)	(-0.30)	(-1.19)	(-0.77)	(0.36)	(1.03)	(-1.67*)
BANKRPT	-0.001	-0.007	0.01	0.03	-0.04	0.06	0.01
	(-0.01)	(-0.15)	(0.17)	(0.58)	(-0.63)	(0.46)	(0.11)
DIV	0.08	0.02	0.12	-0.08	0.10	-0.93*	0.31
	(0.87)	(0.25)	(0.48)	(-0.49)	(0.69)	(-1.69)	(1.01)
MARRI	0.37***	0.37***	0.29***	0.29***	0.48***	0.27	0.24**
	(7.94)	(6.22)	(3.61)	(3.52)	(5.52)	(1.54)	(2.42)
AGE	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.007***
	(7.95)	(6.37)	(4.99)	(4.48)	(4.88)	(3.88)	(2.73)
UNIV	-0.10**	-0.13**	0.01	-0.13**	-0.07**	-0.39**	0.19
	(-2.31)	(-2.52)	(0.14)	(-2.26)	(-0.73)	(-2.02)	(1.37)
MALE	-0.02	0.008	-0.13*				
	(-0.79)	(0.21)	(-1.88)				
Adj R- square	0.11	0.12	0.08	0.12	0.13	0.16	0.07
Sample size	3075	2111	964	1250	861	287	677

Numbers show elasticity. Numbers in parentheses are t-statistics. *, **, *** indicate significance at 10, 5 and 1 per cent levels, respectively. A constant term was included when the estimation was conducted (results not reported). Constant and 16 household

income dummies are included, but their results are not reported to save the space.