Giving Price, Governement Expenditure, and Political Trust

Hiroki Kato[1] Tsuyoshi Goto[2] Yong-Rok Kim[3]

[1]Osaka University

[2]Chiba University

[3]Kobe University

2021/01/10

Introduction

Charitable Giving and Governement Policy

There are huge literatures to investigate relationship bewteen chariable giving and governement policies

1. price elasticity of charitable giving using the tax benefit
2. the crowd-out effect of government expenditure

Even though tax benefits directly affect government expenditure, there is no literature to try to connect the tax benefit with governement expenditure as far as we know.

We investigate the price effect and the crowd-out effect simultaneously, and connect two effects through political trust.

Why Political Trust?

We conjecture that the political trust is key driver to determine the price effect and the crowd-out effect

- Price effect: If people untrust politicians, then they may also suspect the system of tax banefit. If people trust politicians sufficiently, then they may try to send money to government. Thus, they do not use the tax benefit which decreases governement's revenue.
- Crowd-out effect: If people untrust politicians, then they may expect that governement does not invest the public goods. This is related with the strategic uncertainty.

Background of South Korea Tax Reform

To investigate the price effect, we use the 2014 tax reform in the South Korea.

- Before 2014, tax deduction was adopted to subsidize charitable donation behavior.
- After 2014, tax credit have been adopted.

The main difference is that tax credits reduce taxes directly, while tax deductions indirectly lower the tax burden by decreasing the taxpayer's marginal tax rate, which increases with gross income

Data

Data Source

To construct dataset, we use two surveys:

1. National Survey of Tax and Benefit (NaSTaB)
2. Data on local government finance from Ministry of the Interior and Safety (MIS data)

National Survey of Tax and Benefit (NaSTaB)

- The Korea Institute of Taxation and Finance implements the financial panel survey to study the tax burden of households and the benefits that households receive from goverment.
- The subjects of this survey are general household and household members living in 15 cities and provinces nationwide.
- This survey is based on a face-to-face interview. If it is difficult for investigators to meet subjects, another family member answers on behalf of him.
- Survey items: Annual taxable income (last year), charitable donations (last year), trust for politicians (5-Likert scale), and other covariates (age, education, gender etc.).
- Survey period: 2008 $\sim$ 2019
  - We use survey data after 2013 to focus on tax policy change in 2014.

MIS data

- MIS of South Korean collects data on local governement finance.
- From this data, we obtain infomation about tax revenue and expenditure for social welfare.
- Using the population data, we calculate the local governement expenditure per capita and use this variable as main explanatory variable.
- Since the NaSTab includes residence area of respondents, it merges with the data on local governement finance.

Variable of Giving Price

In the South Korea, the tax policy about charitable giving drastically changed in 2014. Before 2014, the **tax deduction** adpoted. After 2014, the **tax credit** adopted. Under two systems, the giving price is

- tax deduction: Price $= 1 - \tau$
- tax credit: Price $= 1 - r$

τ is the marginal income tax rate calculated by annual taxable income reported in the NaSTaB, and r is the tax credit rate determined exogeneity. In the South Korea, $r = 0.15$.

Results

Trust Index

The trust for politicans is time-varying variable because it depends on governments' policies. We make time-invarying trust index using the fixed effect model.

$$\text{Trust}_{ijt} = \text{Trustid}_i + c_j \cdot \lambda_t + \lambda_t + \epsilon_{ijt}.$$

- Trust_{ijt}: trust for politicians (5-Likert scale)
- Trustid_i: individual fixed effect (**Trust index**)
- $c_j \cdot \lambda_t$ captures local governments' policies effect
- λ_t captures the central government policies effect

We rescale the trust index to an interval $[0, 1]$.

Histrogram of Trust Index

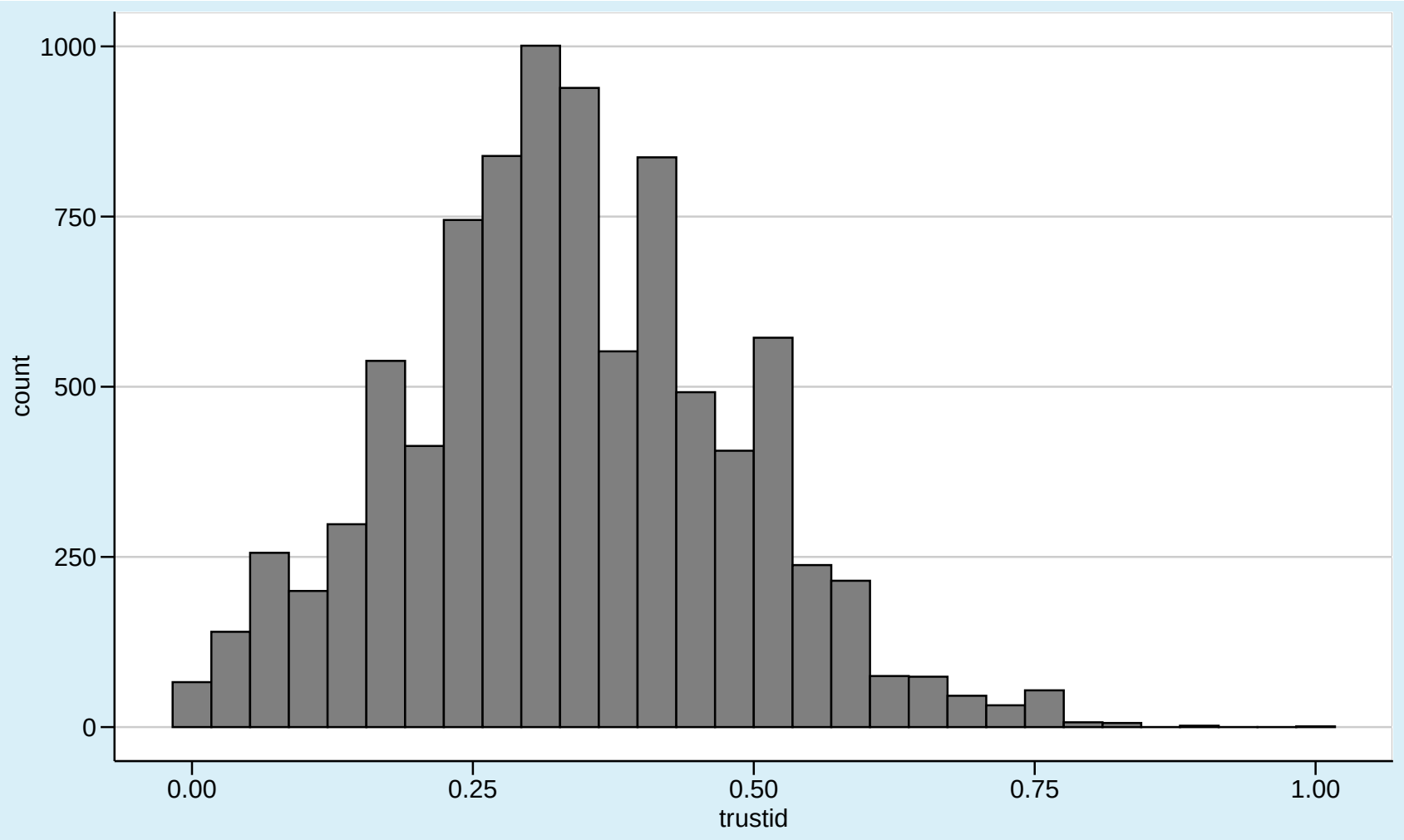

Figure 1: Histogram of Trust Index

Regression of Trust Index

Table 1: Regression of Trust Index (Year = 2018)

Variables	Coefficients	S.E.
gender	0.007**	(0.003)
age	-0.003***	(0.001)
I((age/100)^2)	0.311***	(0.055)
factor(educ)2	0.004	(0.005)
factor(educ)3	0.003	(0.006)
factor(political_pref)2	0.027**	(0.013)
factor(political_pref)3	0.033***	(0.012)
factor(political_pref)4	0.021*	(0.013)
factor(political_pref)5	-0.065***	(0.014)
Obs	7697	
Adjusted R-sq	0.0316	

Baseline Regressions

Our baseline regression equation is

$$\begin{aligned}\log(\text{Giving}_{ijt}) =& \alpha_i + \beta_1 \log(\text{Price}_{ijt}) + \beta_2 \log(\text{Expend}_{jt}) \\ &+ \delta X_{ijt} + \lambda_t + \epsilon_{ijt}.\end{aligned}$$

- $\log(\text{Giving}_{ijt})$ is logarithm of individual i's charitable giving in year t.
- $\log(\text{Price}_{ijt})$ is logarithm of individual i's giving price in year t.
- $\log(\text{Expend}_{jt})$ is local government j's expenditure for social welfare in year t.
- β_1 represents the price elasticity of giving.
- β_2 represents the local government expenditure elasticity of giving.
- α_i and λ_t are individual and time fixed effect, respectively.

Result of Baseline Regressions

Table 2: Baseline Regressions

	(1)	(2)	(3)
ln(Social Welfare+1)	0.124**	0.101*	0.839***
	(0.053)	(0.055)	(0.278)
ln(giving price)	-1.089***	-1.066***	-1.083***
	(0.201)	(0.226)	(0.226)
Logarithm of income	Y	Y	Y
Age	N	Y	Y
Year X Educ	N	Y	Y
Year X Gender	N	Y	Y
Living Dummy	N	N	Y
Obs	54213	54211	54211

Interpretations of Baseline Regression

- We found the **price effect** of giving (1% price increase leads to about 1.1% giving decrease)
- We found the **crowd-in effect** of local government expenditure (1% expenditure increase leads to 0.8% increase giving)
  - This effect is heterogenous by the level of government expenditure. As local government expenditure increases, the crowd-in effect vanish, and the crowd-out effect emerges.

Subgroup Regressions

We estimate the baseline regression equation, using sample grouped by the trust index.

- Lowest: $0 \sim 20\%$ quantile of trust index
- Lower: $20 \sim 40\%$ quantile of trust index
- Neutral: $40 \sim 60\%$ quantile of trust index
- Higher: $60 \sim 80\%$ quantile of trust index
- Highest: $80 \sim 100\%$ quantile of trust index

We include the logarithm of income, age, interactions b/w year and education, interactions b/w year and gender, and living are dummy into covariates.

Results of Subgroup Regressions

Table 3: Subgroup Regressions

	Lowest	Lower	Neutral	Higher	Highest
ln(Social Welfare+1)	0.371	0.472	1.090*	1.471**	0.817
	(0.669)	(0.636)	(0.653)	(0.621)	(0.554)
ln(giving price)	-0.682	-0.482	-1.629***	-1.277**	-1.211**
	(0.556)	(0.460)	(0.480)	(0.529)	(0.503)
Obs	10239	10358	10367	10368	12879

Interpretations of Subgroup Regressions

- We could **NOT** find the crowd-in (crowd-out) effect for respondents whose trust is very low and very high.
  - We found the crowd-in effect for middle group.
  - If the trust for politicians is low, respondents have a willingness to provide public goods without governement help.
  - If the trust for politicians is very high, respondents take a strategy of free-rides.
- We cound **NOT** find the price effect for respondents whose trust is very low.
  - If the trust is very low, respondents do not want to use a tax benefit policies.

Heterogenity By Political Trust

To capture heterogeneity precisely, we estimate the following regression equations:

$$\begin{aligned}\log(\text{Giving}_{ijt}) =& \alpha_i + \beta_0 \text{Trust}_{ij} \\ &+ \beta_1 \log(\text{Price}_{ijt}) + \beta_2 \log(\text{Price}_{ijt}) \cdot \text{Trust}_{ij} \\ &+ \beta_3 \log(\text{Expend}_{jt}) + \beta_4 \log(\text{Expend}_{ijt}) \cdot \text{Trust}_{ij} \\ &+ \delta X_{ijt} + \lambda_t + \epsilon_{ijt}.\end{aligned}$$

- Price elasticity is obtained by $\beta_1 + \beta_2 \cdot \text{Trust}_{ij}$.
- Governement expenditure elasticity is obtained by $\beta_3 + \beta_4 \cdot \text{Trust}_{ij}$.

Result of Heterogeneity By Political Trust (1)

Table 4: Heterogeneity of Political Trust

Variables	Coefficients	S.E.
ln(Social Welfare+1)	0.836***	(0.296)
X Trust index	-0.064	(0.252)
ln(giving price)	-0.268	(0.503)
X Trust index	-2.558*	(1.319)
Obs	51306	

Result of Heterogeneity of Political Trust (2)

Table 5: Heterogeneity of Political Trust (include squared term)

Variables	Coefficients	S.E.
ln(Social Welfare+1)	0.522	(0.327)
X Trust index	2.064**	(0.986)
X Squared trust index	-3.032**	(1.324)
ln(giving price)	0.190	(0.886)
X Trust index	-5.783	(4.815)
X Squared trust index	4.625	(6.302)
Obs	51306	

Graphical Representation of Heterogeneity Effect

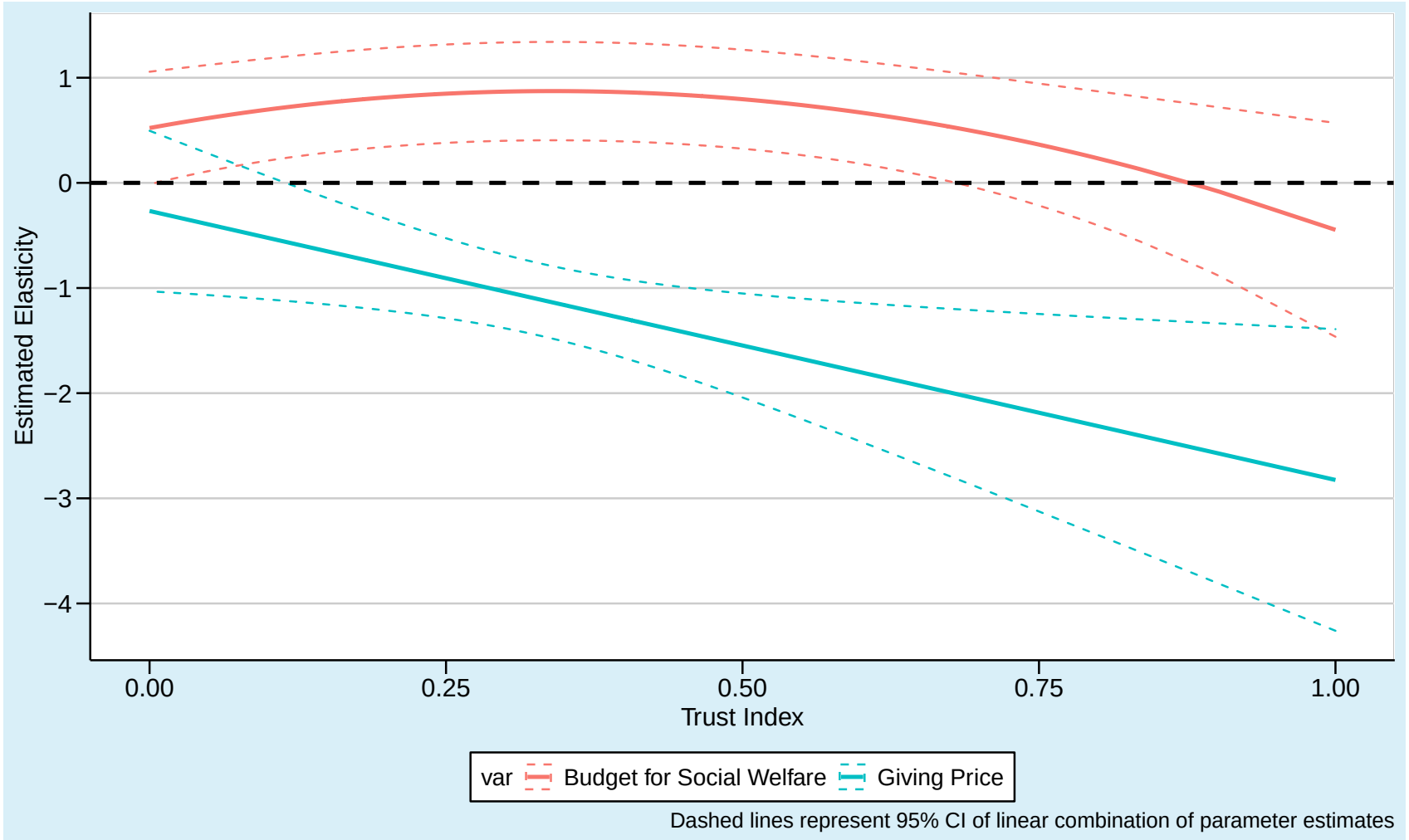

Figure 2: Relationship between Trust Index and Predicted Elasticity

Conclusions

Conclusions