

# Charitable Giving, Tax Reform, and Political Trust

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# Introduction

# 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

# 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 government.
- ▶ 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 ~ 2019
  - ▶ We use survey data after 2013 to focus on tax policy change in 2014.

# Time Series of Charitable Giving

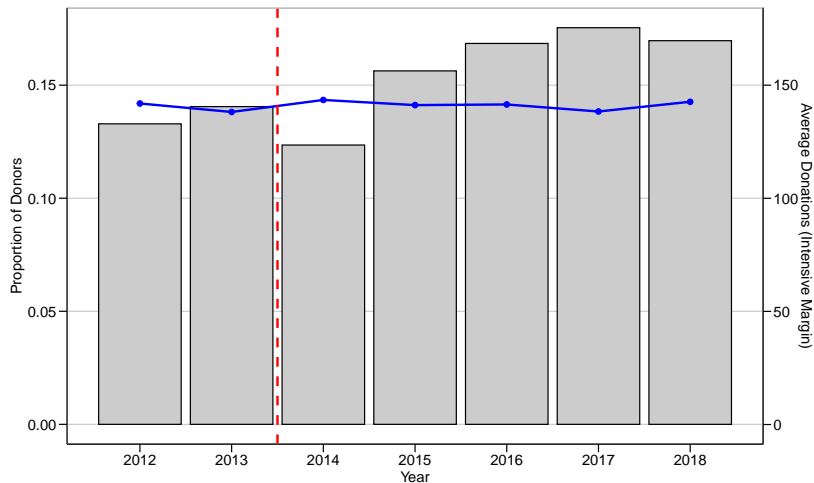


Figure 1: Proportion of Donors (bar chart) and Average Donations among Donors (blue line)

# Summary Statistics of Covariates

Table 1: Summary Statistics of Covariates

	2012	2013	2014	2015
Female	0.51	0.51	0.52	0.52
Age	38.39	39.10	39.67	40.51
Annual Taxable Income	1699.86	1764.04	1838.76	1872.54
<b>Education</b>				
Junior High School Graduate	0.42	0.41	0.40	0.39
High School Graduate	0.30	0.30	0.31	0.31
University Graduate	0.28	0.28	0.29	0.30
#.Respondents	14138	13984	13787	13524
#.Households	4756	4807	4819	4832

## Summary Statistics of Covariates (Cont'd)

Table 2: Summary Statistics of Covariates (Continued)

	2016	2017	2018
Female	0.52	0.52	0.52
Age	41.07	41.89	42.55
Annual Taxable Income	1906.91	1951.55	2039.47
<b>Education</b>			
Junior High School Graduate	0.38	0.37	0.35
High School Graduate	0.31	0.31	0.31
University Graduate	0.31	0.33	0.34
#.Respondents	13238	12963	12795
#.Households	4790	4770	4765



# What is Giving Price?

Consider allocation between private consumptions ( $x_i$ ) and charitable giving ( $g_i$ ). Let  $y_i$  be pre-tax total income. Then, the budget constraint is

$$x_i + g_i = y_i - T_i(y_i, g_i),$$

where  $T_i$  is tax amount depending on the pre-tax income and charitable giving.

## Determination of Tax Amount

Tax deduction reduces taxable income by giving, that is,

$$T_i = \tau(y_i - g_i) \cdot (y_i - g_i),$$

where  $\tau(\cdot)$  is the marginal income tax rate which is determined by  $y_i - g_i$ .

Tax credit reduces tax amount directly, that is,

$$T_i = \tau(y_i) \cdot y_i - mg_i,$$

where  $m \in [0, 1]$  is the tax credit rate.

## Derive Giving Price

Under the tax deduction system, the budget constraint is

$$x_i + [1 - \tau(y_i - g_i)]g_i = [1 - \tau(y_i - g_i)]y_i.$$

Thus, the giving price of tax deduction system is

$$p_i^d = 1 - \tau(y_i - g_i).$$

Under the tax credit system, the budget constraint is

$$x_i + (1 - m)g_i = [1 - \tau(y_i)]y_i.$$

Thus, the giving price of tax credit system is  $p_i^c = 1 - m$ .

# Construct Giving Price

In the South Korea, the tax policy about charitable giving drastically changed in 2014.

- ▶ tax deduction (before 2014):  $\text{Price}_i = 1 - \tau(y_i - g_i)$ 
  - ▶ the giving price is endogenous because people can manipulate  $\tau(y_i - g_i)$  using the charitable giving  $g_i$ . Since this problem is caused by *last* donations, we use the giving price applying to the *first* donations (**first price**). The first price is calculate by  $\tau(y_i)$  where  $y_i$  is the annual taxable income reported in the NaSTaB.
- ▶ tax credit (after 2014):  $\text{Price}_i = 1 - m$ 
  - ▶ In the South Korea, the tax credit rate determines exogeneity,  $m = 0.15$ .

# Income Distribution and Giving Price

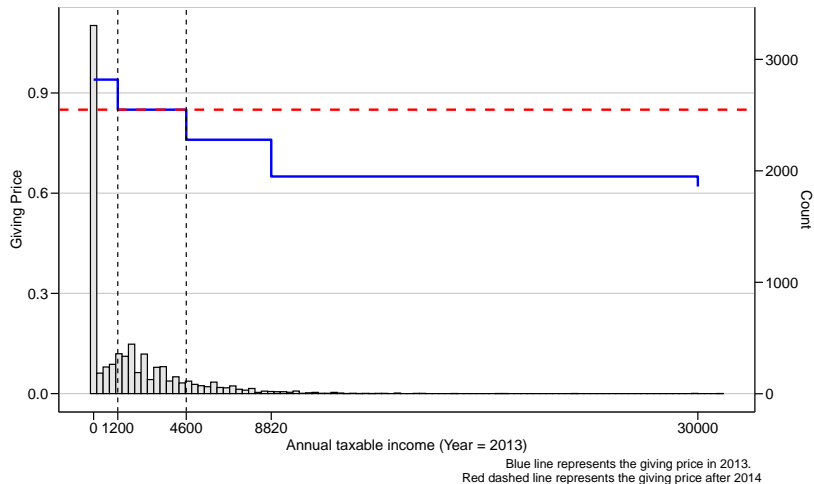


Figure 2: Income Distribution and Giving Price

## Trust Index

# Estimation of Trust Index

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

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

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

# Histogram of Trust Index

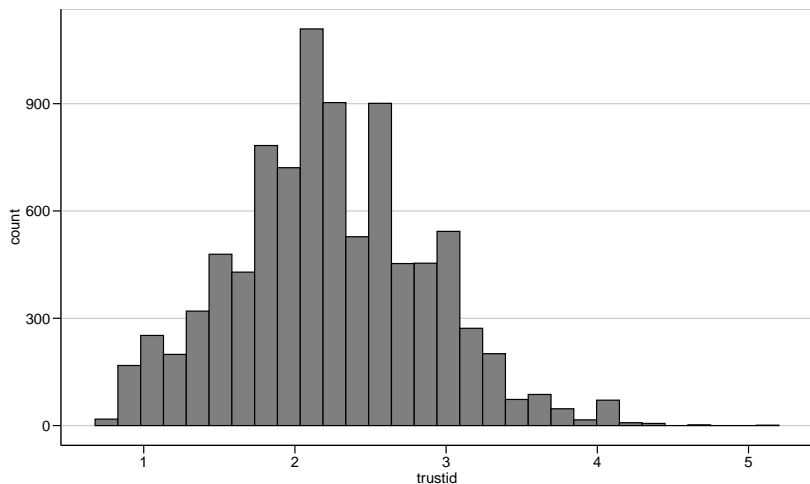


Figure 3: Histogram of Trust Index



## Relationship b/w Donations and Trust Index

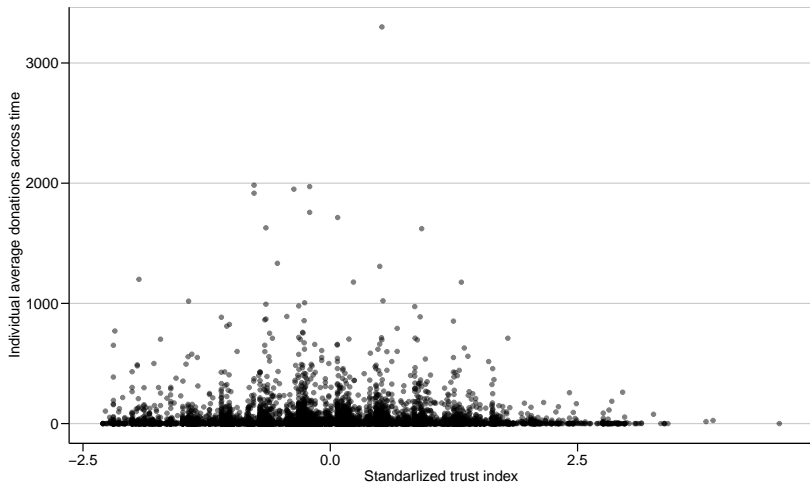


Figure 4: Scatter Plot between Donations and Trust Index

## Relationship b/w Receiving Tax Benefit and Trust Index

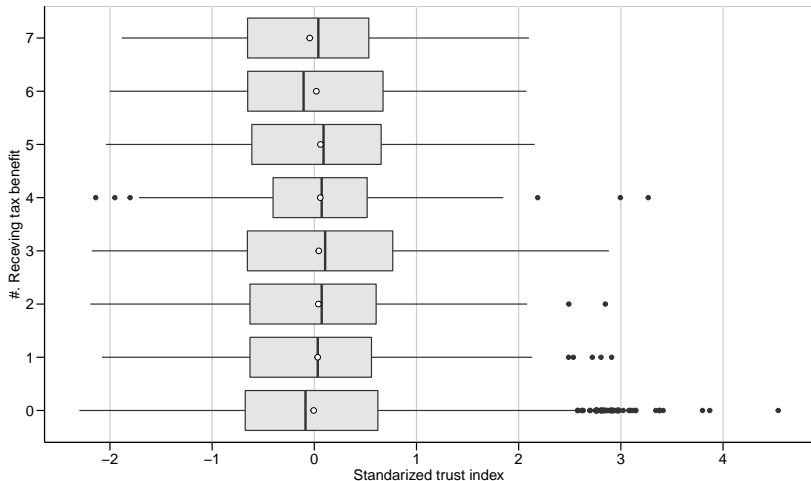


Figure 5: Box Plot of Trust Index Grouped By Tax Benefit

# Regression of Trust Index on Covariates

Table 3: Regression of Standardized Trust Index (Year = 2018)

Variables	Coefficients	S.E.
Female	0.056**	(0.023)
Logarithm of income	0.828*	(0.440)
Age	-0.022***	(0.004)
squared age/100	0.022***	(0.004)
High school graduate	0.029	(0.035)
University graduate	0.010	(0.038)
Extreme right wing	-0.224***	(0.085)
Right wing	-0.036	(0.028)
Left wing	-0.078***	(0.028)
Extreme left wing	-0.663***	(0.046)
Obs	7697	

# Presidential Transition and Trust Index

In May 2017, South Korean president changed from Park Geun-hye to Moon Jae-in. This presidential transition was due to the impeachment charge against Park Geun-hye. People became distrustful of Park Geun-hye due to the sinking of MV Sewol (April 2014).

Even though we control time fixed effect to estimate trust index, we are concerned whether time fixed effect can rule out this presidential transition effect.

To check it, we estimate trust index using both either in 2015 and 2016 (Park's Trust index) or data in 2017 and 2018 (Moon's Trust index).

## Difference in mean b/w Park's and Moon's Trust

- ▶ We made a scatter plot between president-specific trust indexes.
  - ▶ **Large variation of Moon's trust index among those who have same value of the Park's trust index.**
- ▶ We carried out t-test of difference in mean between president-specific trust indexes.
  - ▶ **The average Park's trust index is lower than the average Moon's trust index, which is statistically significant.**

## Scatter Plot b/w Park's and Moon's Trust Index

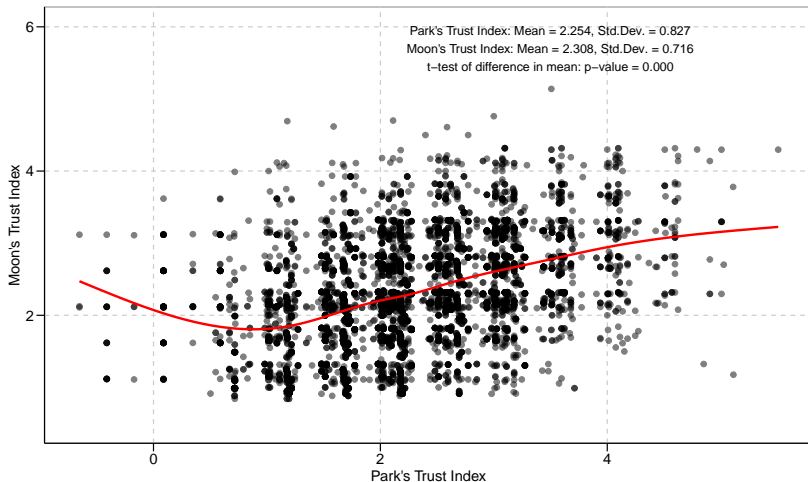


Figure 6: Scatter Plot between Trust Index under Park Geun-hye and Moon Jae-in

## Regressions on Difference b/w President-specific Trust

- ▶ We made a scatter plot between difference of president-specific trust indexes and the original trust index.
  - ▶ **there is large variation of difference of president-specific trust indexes, and there is large variation of the original trust index among those who have similar value of two president-specific trust indexes.**
- ▶ We regress the original trust index on difference of president-specific trust indexes. We restrict units whose absolute value of president-specific trust index difference is less than 2 ( $Abs < 2$ ), 1 ( $Abs < 1$ ), and 0.5 ( $Abs < 0.5$ ).
  - ▶ **the positive correlations between difference of president-specific trust indexes and the original one.** However, **this positive correlation is statistically insignificant if we use units whose president-specific trust indexes have similar values.**

# Scatter Plot b/w Difference of Separated Trust Indexs and Original One

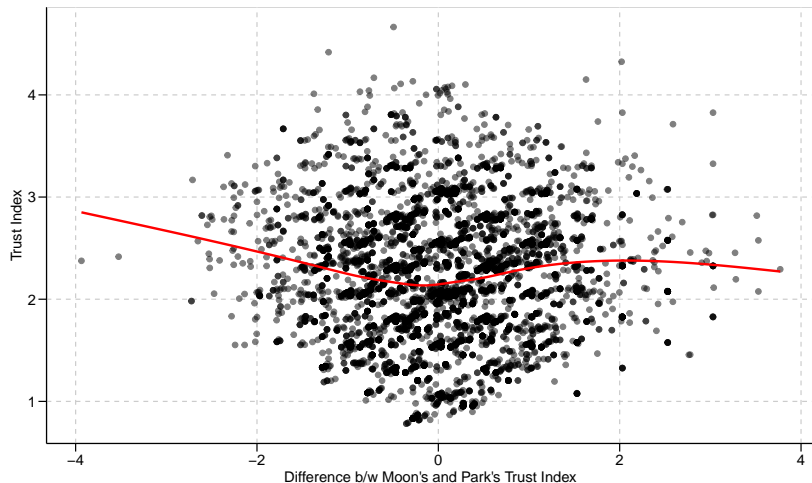


Figure 7: Scatter Plot between Difference of President-specific Trust Indexs and Original One



# Result of Regressions on Difference b/w President-specific Trust

Table 4: Regressions of Trust Index on President-specific Trust Index

	Full	Abs < 2	Abs < 1	Abs < 0.5
Moon's trust - Park's trust	0.020** (0.008)	0.026*** (0.010)	0.031* (0.016)	0.035 (0.038)
Obs	7314	7080	5666	3528
Adjusted R-sq	0.001	0.001	0.000	-0.000

# Regressions on President-specific Trust Indexs

- ▶ We regress the original trust index on two president-specific trust indexes.
  - ▶ **The variation of trust index can be explained by Moon's trust index largely.**

# Result of Regressions on President-specific Trust Indexs

Table 5: Regressions of Trust Index on Park's and Moon's Trust Index

	(1)	(2)	(3)
Trust ID (Moon Jae-in)	0.723*** (0.005)		0.574*** (0.003)
Trust ID (Park Geun-hye)		0.521*** (0.006)	0.322*** (0.003)
Obs	7314	7314	7314
Adjusted R-sq	0.745	0.516	0.911

## Price Elasticity

# Baseline Regressions

Our baseline regression equation is

$$\log(\text{Giving}_{ijt}) = \alpha_i + \beta_1 \log(\text{Price}_{ijt}) + \delta X_{ijt} + \lambda_t + \epsilon_{ijt}.$$

- ▶  $\log(\text{Giving}_{ijt})$  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  $t$ .
- ▶  $\beta_1$  represents the price elasticity of giving.
- ▶  $\alpha_i$  and  $\lambda_t$  are individual and time fixed effect, respectively.

## Result of Baseline Regressions

We found the **price effect** of giving (1% price increase leads to about 1.1% giving decrease)

Table 6: Baseline Regressions

	(1)	(2)	(3)
ln(giving price)	-1.071*** (0.201)	-1.059*** (0.226)	-1.062*** (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

# Subgroup Regressions

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

- ▶ Lowest: 0 ~ 20% quantile of trust index
- ▶ Lower: 20 ~ 40% quantile of trust index
- ▶ Neutral: 40 ~ 60% quantile of trust index
- ▶ Higher: 60 ~ 80% quantile of trust index
- ▶ Highest: 80 ~ 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

We could **NOT** find the price effect for respondents whose trust is very low.

Table 7: Subgroup Regressions

	Lowest	Lower	Neutral	Higher	Highest
ln(giving price)	-0.675 (0.556)	-0.460 (0.458)	-1.582*** (0.481)	-1.284** (0.530)	-1.202** (0.503)
Obs	10239	10358	10367	10368	12879



# Heterogeneity By Political Trust

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

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

Price elasticity is obtained by  $\beta_1 + \beta_2 \cdot \text{Trust}_{ij}$ .

## Result of Heterogeneity of Political Trust

The price elasticity is **convex** in the trust index. Those whose trust index is low and high do not respond to the price incentive.

Table 8: Heterogeneity of Political Trust

	(1)	(2)
ln(giving price)	-1.108*** (0.230)	-1.314*** (0.249)
X Trust index	-0.373** (0.171)	-0.412** (0.175)
X Squared trust index		0.229** (0.111)
Obs	51306	51306
R-sq	0.0120	0.0121

# Graphical Representation of Heterogeneity Effect

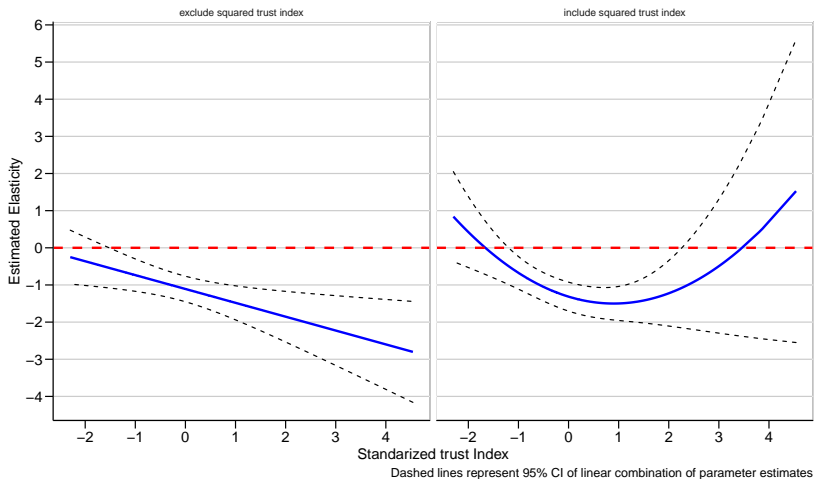


Figure 8: Relationship between Trust Index and Predicted Elasticity

## Conclusions

# Conclusions