

Charitable Giving, Tax Reform, and Government Efficiency^{*}

Hiroki Kato ^{a,*}, Tsuyoshi Goto^b, Yong-Rok Kim^c

^a*Graduate School of Economics, Osaka University, Japan*

^b*Graduate School of Economics, Chiba University, Japan*

^c*Graduate School of Economics, Kobe University, Japan*

Abstract

Brah

Keywords: Charitable giving, Giving price, Tax reform, Government efficiency, South Korea

JEL: D91, I10, I18

1. Introduction

In many countries, governments set a tax relief for charitable giving. This is because, if subsidizing charitable giving induces a large increase in donations, it is desirable for public good provision. To evaluate the effect of tax relief, many papers investigate the elasticity of charitable donations with respect to their tax price (Almunia et al., 2020; Auten et al., 2002; Bakija and Heim, 2011; Fack and Landais, 2010; Randolph, 1995). Focusing on the tax deduction or tax credit on the charity, they show that the price elasticity of giving is about -1 or more in terms of absolute value, which means that the tax relief for the charitable giving is good in the sense that 1% tax relief derives more than 1% donation.

However, if the government can provide public good more efficiently than the direct donation, the donation may not be preferable because the public good provision via donation would be costly then. Moreover, when the government is much more efficient than charities, people may not donate so much even if they have a warm-glow preference. Saez (2004) suggests that the change of the relative price between public good provision by donation and government will change the behavior of people and the price elasticity of donation. However, the evaluation about the efficiency of the government is usually subjective and different for people. If someone regard the government as efficient, the perceived relative price of giving would be high for them. Thus, the giving behavior would be affected by the subjective perception towards the government.

Considering these points, this paper investigates (1) the price elasticity of giving and (2) whether the different perception towards the government cause the different giving behavior using South Korean panel data. Our first main concern is the price elasticity of charity. South Korea (Korea hereafter) experienced

^{*}This research is base on

^{*}Corresponding Author.

Email address: vge008kh@student.econ.osaka-u.ac.jp (Hiroki Kato)

the tax reform in 2014, from when the tax relief on charitable giving was conducted by tax credit, though tax deduction had been used before 2014. Thus, we exploit this tax reform as an exogenous policy change to derive the price elasticity of giving. Since the extant research focus on the tax reform within the scheme of tax deduction or tax credit, this paper firstly deals with the tax reform from tax deduction system to tax credit system. Our result classifies that the price elasticity of giving in Korea is $-1.07 \sim -1.26$, which is within the range of the extant research.

Our second concern is the relationship between the giving behavior and the perception towards the government. As we explained, people feeling administrative inefficiency would consider the direct donation is more efficient and would have more willingness to donate. Using the Korean field data, we investigate this and show that the amount of donation is not different between those who regard government as inefficient and the others, though the giving price elasticity of the former is more elastic than the latter. This means that those who think of government as inefficient have more willingness to donate for 1% reduction of giving price.

This paper contributes two strands of charitable giving literature: the elasticity of charitable donations with respect to their tax price and the perception of government's inefficiency. The examples of papers in the first strand are Randolph (1995), Auten et al. (2002), Fack and Landaï (2010), Bakija and Heim (2011), and Almunia et al. (2020). They typically use the tax return data, the main part of which is the data about wealthy people. Since our data is based on survey, which reflects the income distribution of population, we believe that we can estimate the giving price elasticity of population more precisely. Using the data with low-income households may be difficult to estimate the giving price elasticity in terms of intensive margin since they are expected to donate less than high-income households. To address this issue, we estimate not only the elasticity of intensive margin, as most of papers do, but also the elasticity of extensive margin following Almunia et al. (2020). Moreover, we use the data of Korea, a non-Western country, which the extant research did not examine¹.

In the second strand, there are some experimental studies and papers considering the tax evasion. Using an experiment, Li et al. (2011) compare people's willingness to give money for private charities and government agencies whose missions are the same. They show that people tend to donate for private charities more than government agency though they do not directly investigate the relationship between people's perception toward the government and giving behavior. Sheremeta and Uler (2020) show that people increase the voluntary public good provision when they face the wasteful government spending in the experimental setting. Although the government in their setting does not provide public good, they suggest that the willingness for donation may increase if people perceive the inefficiency of government. In

¹This point may be important since @Kim2021 reports that the giving behavior is strongly affected by the cultural matter such as the religious belief.

the tax evasion literature, several paper suggests the perceived inefficiency of government reduce tax morale (Anderson, 2017; Frey and Torgler, 2007; Hammar et al., 2009). We contribute on this literature by showing the relation between the perception of government efficiency and the giving behavior.

This paper consist of XXX sections. Section 2 and 3 respectively explain the institutional background and data. Section 4 deals with the analysis of giving price elasticity and section 5 shows the analysis of perceptions toward the government. We discuss the result in section 6 and section 7 concludes.

2. Institutional background

In this section, we describe the income tax relief for charitable giving in Korea and used dataset.

2.1. Tax relief for charitable giving by tax deduction and tax credit

In the South Korea, the tax policy about charitable giving drastically changed in 2014. Before then, tax relief of charitable giving was provided by tax deduction while, from 2014, tax relief by tax credit was introduced instead of tax deduction.

The tax deduction and tax credit may have different effects on giving behavior. This subsection summarize the difference of tax deduction and tax credit. Consider that a household has a choice between private consumptions (x_i) and charitable giving (g_i). Let y_i be pre-tax total income. Then, the budget constraint is

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

T_i is tax amount which depends on the pre-tax income and charitable giving. On one hand, 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 $y_i - g_i$. The budget constraint will be

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

Thus, the giving price compared to the price of private consumption is $p_i^d \equiv 1 - \tau(y_i - g_i)$ in tax deduction system. Since the giving price in tax deduction scheme varies depending on (1) the income level and (2) the amount of charitable giving, it is endogenous to them, i.e. (1) and (2).

On the other hand, tax credit reduces tax amount directly, that is,

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

Figure 1: Marginal income tax rate

Income/Year	2008	2009	2010~2011	2012~2013	2014~2016	2017	2018
(A) ~1200	8%	6%	6%	6%	6%	6%	6%
(B) 1200~4600	17%	16%	15%	15%	15%	15%	15%
(C) 4600~8800	26%	25%	24%	24%	24%	24%	24%
(D) 8800~15000	35%	35%	35%	24%	35%	35%	35%
(E) 15000~30000				35%	38%		38%
(F) 30000~50000				38%		38%	40%
(G) 50000~						40%	42%

Marginal income tax rates applied from 2008 to 2018 are summarized. The income level is shown in terms of 10,000 KRW, which is approximately 10 United States dollars (USD) at an exchange rate of 1,000 KRW to one USD.

where $m \in [0, 1]$ is the tax credit rate. 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 will be $p_i^c = 1 - m$, which is only dependent on the tax credit rate m , which is exogenously determined by the government. Therefore, the giving price in the tax credit system would not be manipulated by donors.

2.2. Korean tax reform in 2014 (Need modification by Kim san)

The tax incentives for charitable giving in Korea started in 2000. Since the income tax deduction was initially used as a tax incentive and the marginal income tax rate was determined as Figure 1, the minimum giving price before 2014 was 0.62. In addition, the government set the limit of charitable giving deduction, which was initially the 5% of income. The government gradually expanded the limit and it finally became 30% in 2012.

However, the government reformed tax system again in 2014, where the tax credit was introduced instead of tax deduction. Since then, 15% of the total amount of charitable giving has been allowed as a tax credit, which means that the giving price from 2014 is 0.85 irrelevant to the income level.

Summarizing this, compared to tax credit system, the high income household, whose (average) income tax rate is more than 15%, get benefit from charitable giving under the tax deduction system. However, middle or low income households would enjoy tax relief in tax credit system more than tax deduction system. We exploit this policy change as an identification strategy.

Additional description needed:

- The limit of tax relief compared to income under the tax credit system (it was 30% in tax deduction system in 2012).

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
University graduate	0.28	0.28	0.29	0.30
High school graduate	0.30	0.30	0.31	0.31
#.Respondents	14138	13984	13787	13524
#.Households	4756	4807	4819	4832

- The reason why the government execute the tax reform (short background)
- Description of donation market in Korea (what % of GDP is the donation market?/ what is the main outlet of the charity fund?)
- Political background

3. Data

3.1. 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.

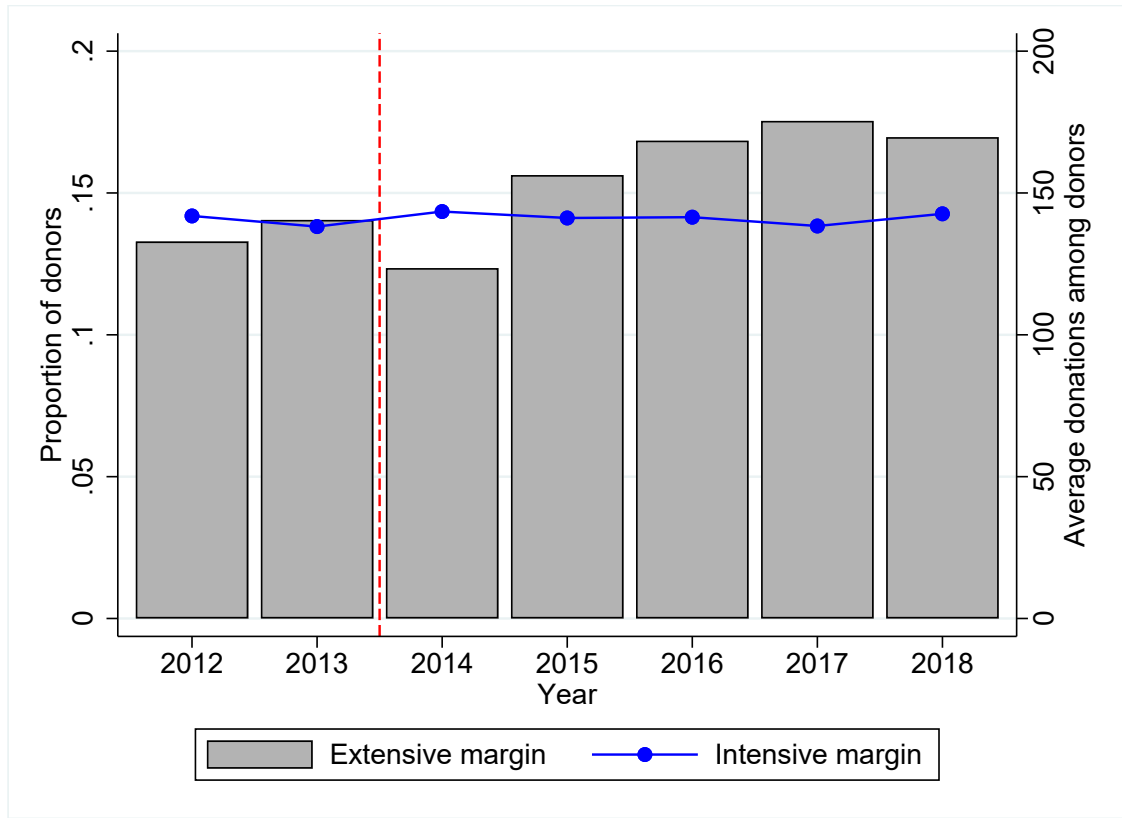


Figure 2: Proportion of Donors and Average Donations among Donors

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
University graduate	0.31	0.33	0.34
High school graduate	0.31	0.31	0.31
#.Respondents	13238	12963	12795
#.Households	4790	4770	4765

3.2. Time Series of Charitable Giving

3.3. Summary Statistics of Covariates

3.4. Summary Statistics of Covariates (Cont'd)

3.5. 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.

3.6. 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.

3.7. 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 $p_i^c = 1 - m$.

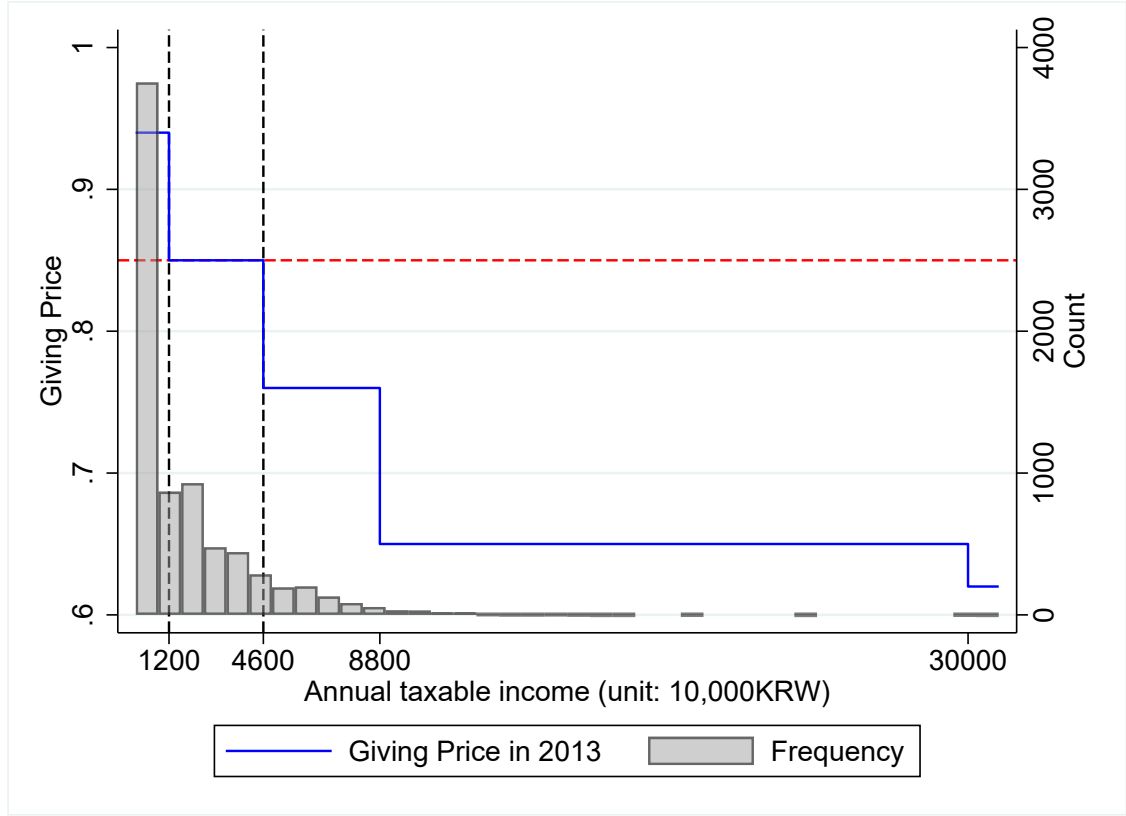


Figure 3: Income Distribution and Giving Price in 2013

3.8. 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, $m = 0.15$.

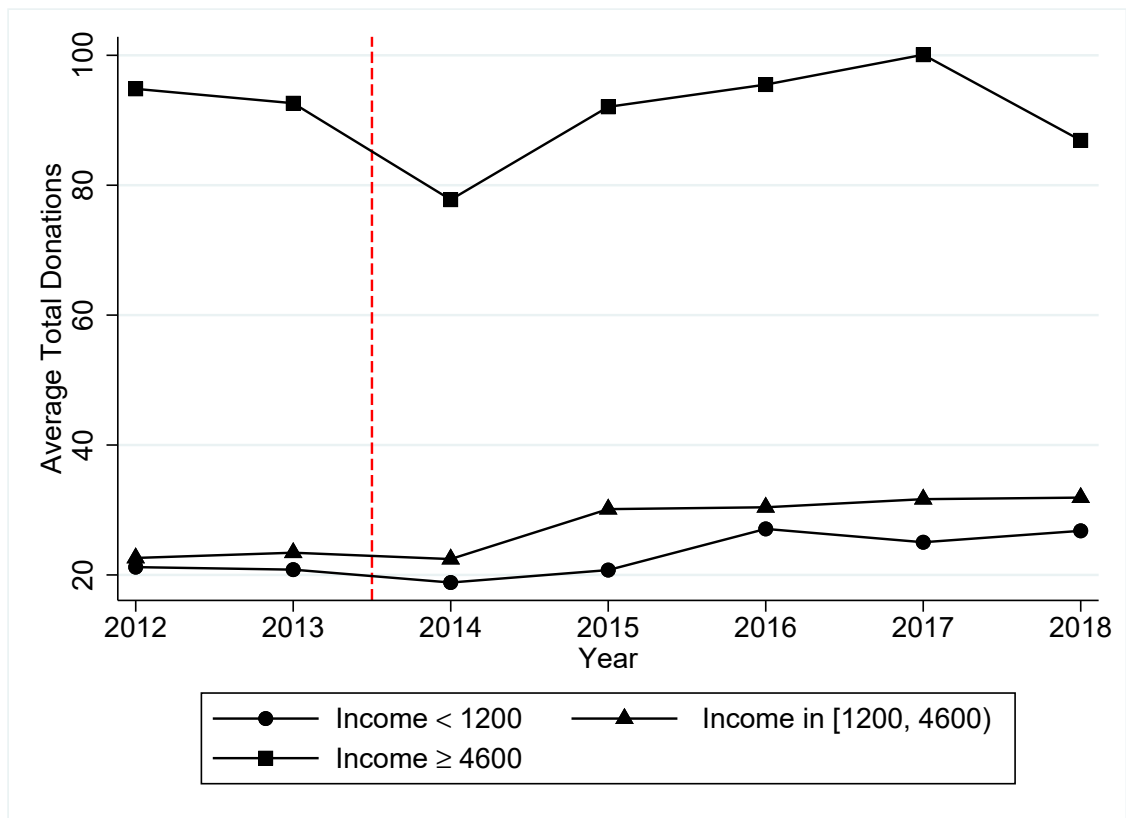


Figure 4: Time Series of Average Donations by Benefit Group

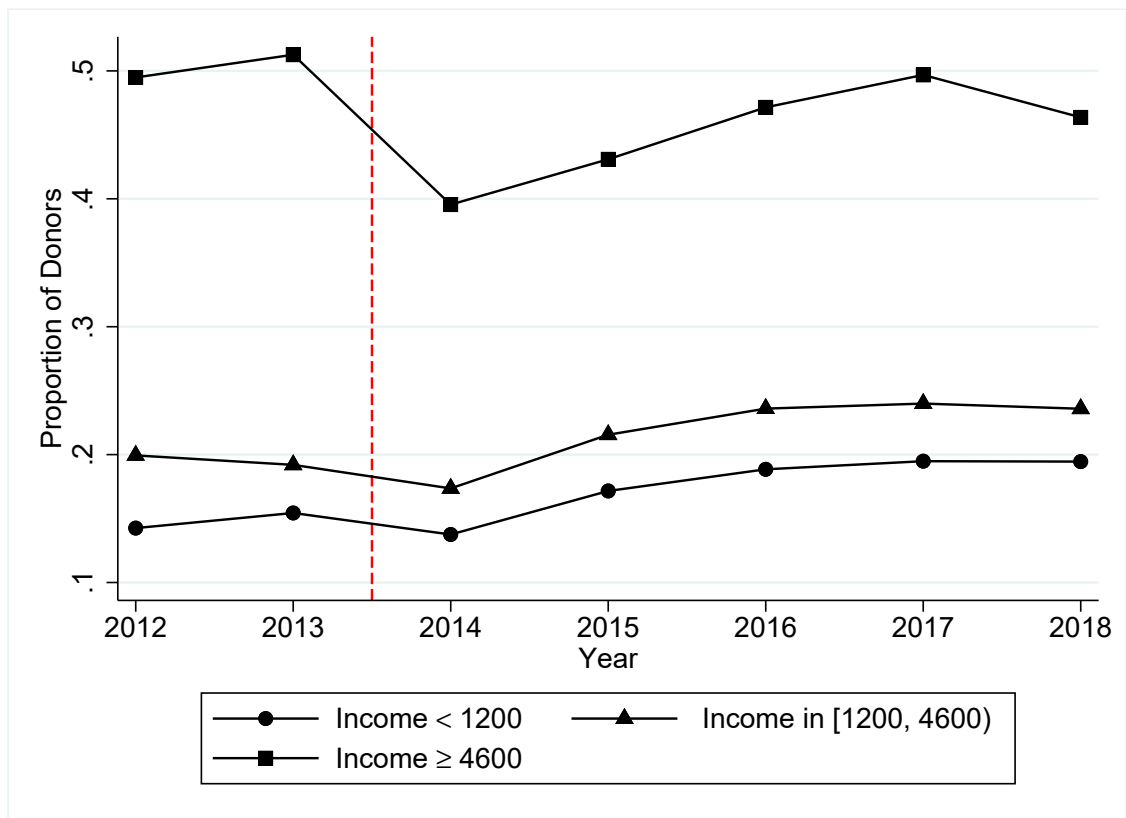


Figure 5: Time Series of Proportion of Donors by Benefit Group

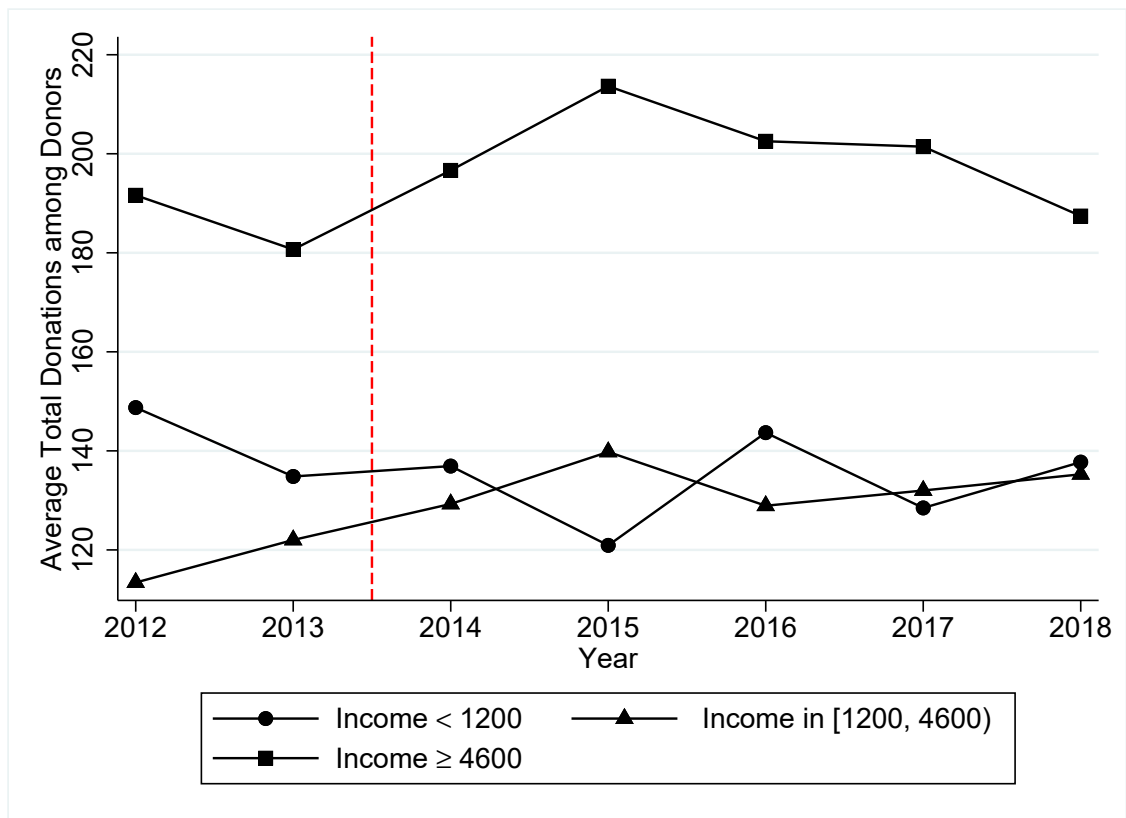


Figure 6: Time Series of Average Donations among Donors by Benefit Group

3.9. Income Distribution and Giving Price

3.10. Time Series of Average Donations By Benefit Group

3.11. Time Series of Extensive Margin by Benefit Group

3.12. Time Series of Intensive Margin by Benefit Group

3.13. Empirical Strategy

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 .
- β_1 represents the price elasticity of giving.
- α_i and λ_t are individual and time fixed effect, respectively.

3.14. Intensive Margin and Extensive Margin

Let D_{ijt} be a dummy variable taking 1 if individual i whose resident area j in year t donate in year t

- Intensive margin: Estimate β_1 where outcome variable is $\log(\text{Giving}_{ijt})$, using units with $D_{ijt} = 1$.
- Extensive margin: Estimate β_1 where outcome variable is D_{ijt} .
 - Extensive-margin price elasticity can be calculated by β_1/\bar{D} where \bar{D} is the sample mean of D_{ijt} .

Covariates in each column corresponds to a column in a previous slide.

4. Main Results

4.1. Price and Income Elasticity

4.2. Robustness Check

5. Government Efficient and Price Elasticity

5.1. Government Efficiency

From the 2015 survey, NaSTaB asks the current and ideal balance between tax burden and welfare size.

These variables provide us to investigate the relationship between price elasticity and government's efficiency more directly.

Thus, we did same exercise, using the current balance between tax burden and welfare size.

Table 3: Main Results

	(1)	(2)	(3)	(4)	(5)
ln(giving price)	-1.071*** (0.201)	-1.264*** (0.212)	-1.298*** (0.229)	-1.117*** (0.228)	-1.121*** (0.228)
Time FE	Y	Y	Y	Y	Y
Age	N	Y	Y	Y	Y
Year X Education	N	N	Y	Y	Y
Year X Gender	N	N	N	Y	Y
Resident Area	N	N	N	N	Y
N	54213	54213	54211	54211	54211

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at individual level. When controlling age, we also include its squared term.

5.2. Construct Efficient Index

Questionnaire of tax-welfare balance index is

Table 4: Main Results: Intensive- and Extensive-Margin Elasticity

	(1)	(2)	(3)	(4)	(5)
Intensive-Margin Elasticity					
ln(giving price)	-0.593*** (0.202)	-0.843*** (0.212)	-1.022*** (0.231)	-0.887*** (0.242)	-0.891*** (0.243)
N	11704	11704	11704	11704	11704
Extensive-Margin Elasticity					
ln(giving price)	-0.258*** (0.046)	-0.290*** (0.048)	-0.274*** (0.052)	-0.238*** (0.052)	-0.239*** (0.052)
Price elasticity at mean	-1.699*** (0.301)	-1.907*** (0.316)	-1.807*** (0.341)	-1.569*** (0.341)	-1.573*** (0.341)
Time FE	Y	Y	Y	Y	Y
Age	N	Y	Y	Y	Y
Year X Education	N	N	Y	Y	Y
Year X Gender	N	N	N	Y	Y
Resident Area	N	N	N	N	Y
N	54213	54213	54211	54211	54211

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at individual level. When controlling age, we also include its squared term. The implied extensive-margin price elasticity is evaluated at the sample mean of D_{ijt} .

Table 5: Panel IV Results

Lag k	$k = 1$	$k = 2$	$k = 3$
	(1)	(2)	(3)
ln(giving price)	-1.279*** (0.478)	-1.155*** (0.414)	-1.150*** (0.369)
Individual FE	Y	Y	Y
Time FE	Y	Y	Y
Other Controls	Y	Y	Y
F-stat of IV	10315.94	11506.64	11569.61
N	51548	49217	46399

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at individual level. Other controls are age (its squared value), the interaction between year dummies and education dummies, the interaction between year dummies and gender dummies, and resident area. The instrumental variable is $\log(\text{Price}_{ijt}/\text{Price}_{ij(t-k)})$.

Table 6: Panel IV Results: Intensive- and Extensive-Margin Elasticity

Lag k	$k = 1$	$k = 2$	$k = 3$
	(1)	(2)	(3)
Intensive Margin			
ln(giving price)	-0.0004 (0.5687)	0.0261 (0.4410)	-0.4378 (0.3763)
F-stat of IV	1679.78	2040.66	2419.05
N	11332	10954	10451
Extensive Margin			
ln(giving price)	-0.3036*** (0.1101)	-0.2944*** (0.0934)	-0.2472*** (0.0847)
Price elasticity at mean	-2.000*** (0.725)	-1.939*** (0.615)	-1.628*** (0.558)
Individual FE	Y	Y	Y
Time FE	Y	Y	Y
Other Controls	Y	Y	Y
F-stat of IV	10315.94	11506.64	11569.61
N	51548	49217	46399

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at individual level. Other controls are age (its squared value), the interaction between year dummies and education dummies, the interaction between year dummies and gender dummies, and resident area. The instrumental variable is $\log(\text{Price}_{ijt}/\text{Price}_{ij(t-k)})$. The implied extensive-margin price elasticity is evaluated at the sample mean of D_{ijt} .

Table 7: Results with 2013 and 2014 Data

Model	FE	Panel IV		
Lag k		$k = 1$	$k = 2$	$k = 3$
	(1)	(2)	(3)	(4)
ln(giving price)	-1.466*** (0.327)	-1.535*** (0.360)	-1.683*** (0.378)	-1.151*** (0.385)
Individual FE	Y	Y	Y	Y
Time FE	Y	Y	Y	Y
Other Controls	Y	Y	Y	Y
F-stat of IV		7420.10	4490.74	5034.58
N	15134	13727	12902	12420

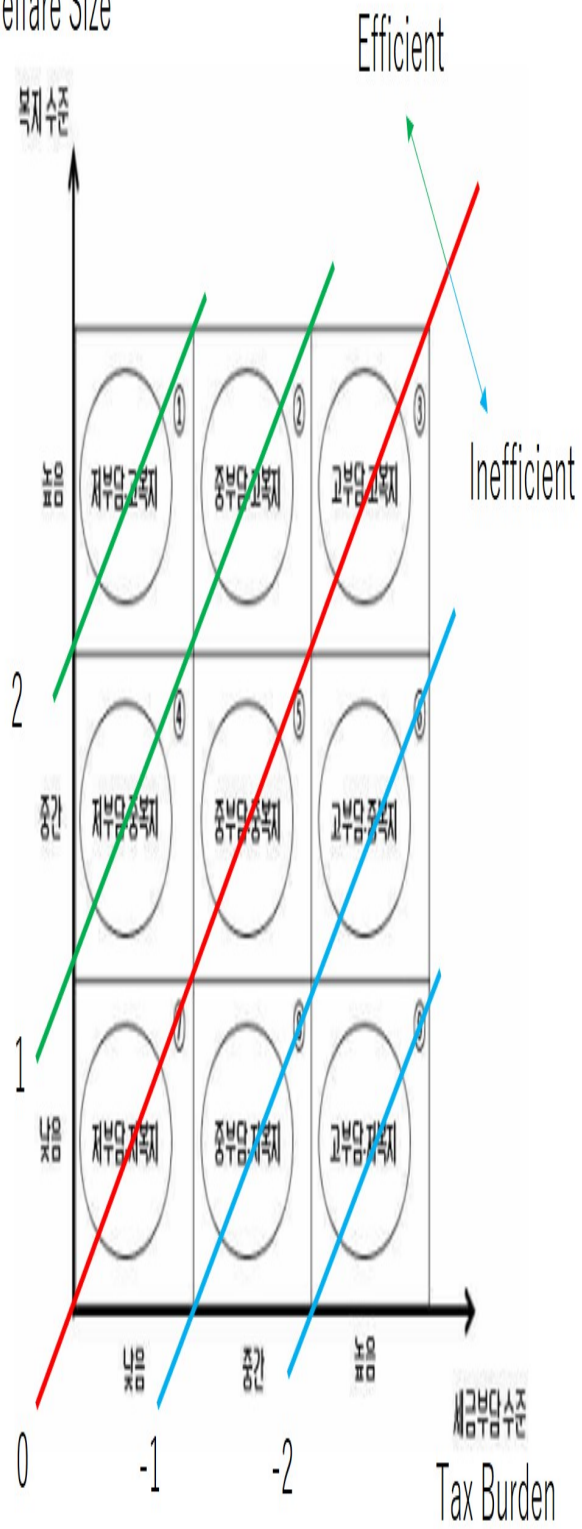
Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at individual level. Other controls are age (its squared value), the interaction between year dummies and education dummies, the interaction between year dummies and gender dummies, and resident area. The instrumental variable is $\log(\text{Price}_{ijt}/\text{Price}_{ij(t-k)})$.

Table 8: Intensive- and Extensive-Margin Elasticity with 2013 and 2014 Data

Model	FE	Panel IV with FE		
Lag k		$k = 1$	$k = 2$	$k = 3$
	(1)	(2)	(3)	(4)
Intensive Margin				
ln(giving price)	-0.759**	-0.736*	-0.819**	-0.543
	(0.344)	(0.418)	(0.404)	(0.371)
F-stat of IV		1920.08	1762.03	1706.53
N	2938	2746	2615	2512
Extensive Margin				
ln(giving price)	-0.332***	-0.341***	-0.380***	-0.291***
	(0.074)	(0.083)	(0.085)	(0.089)
Elasticity	-2.186***	-2.249***	-2.504***	-1.920***
	(0.488)	(0.547)	(0.559)	(0.583)
Individual FE	Y	Y	Y	Y
Time FE	Y	Y	Y	Y
Other Controls	Y	Y	Y	Y
F-stat of IV		7420.10	4490.74	5034.58
N	15134	13727	12902	12420

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at individual level. Other controls are age (its squared value), the interaction between year dummies and education dummies, the interaction between year dummies and gender dummies, and resident area. The instrumental variable is $\log(\text{Price}_{ijt}/\text{Price}_{ij(t-k)})$. The implied extensive-margin price elasticity is evaluated at the sample mean of D_{ijt} .

Welfare Size



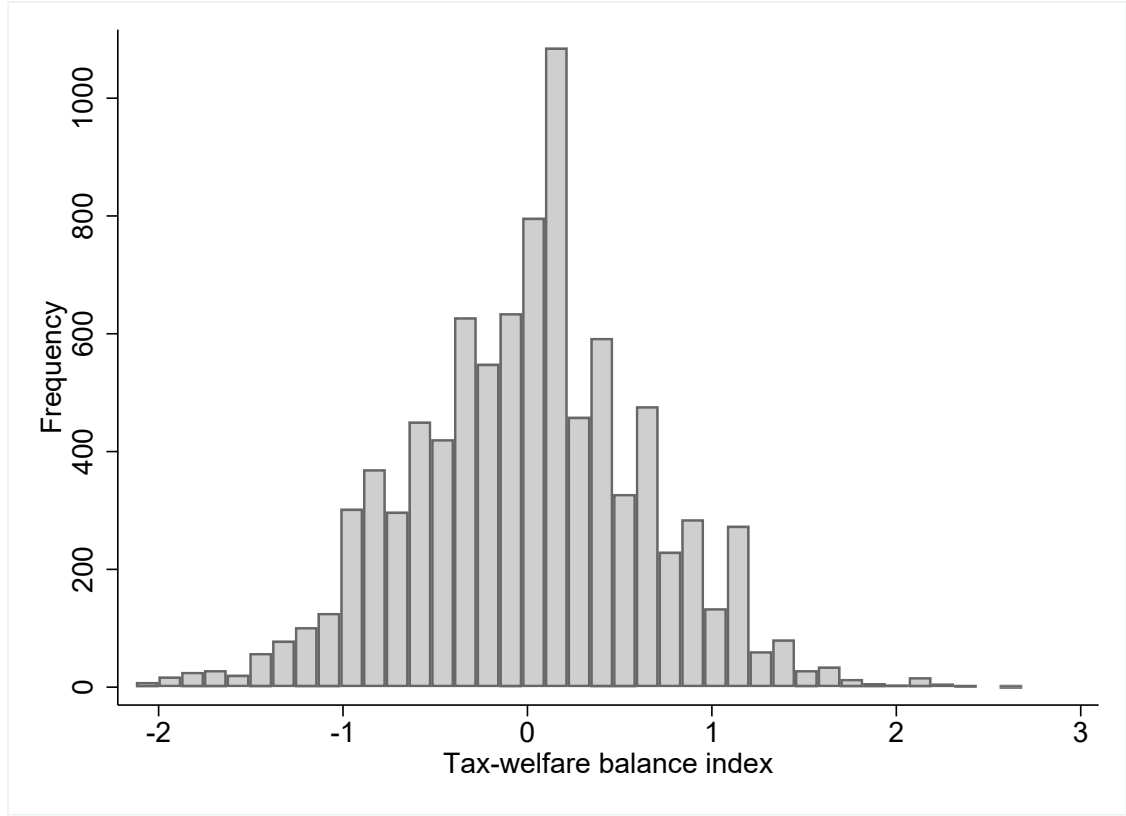


Figure 7: Histogram of Efficient Index

To rule out government's policies, we use individual fixed effect as the **efficient index**

5.3. Histogram of Efficient Index

5.4. Heterogenous Price Elasticity by Gouvernement Efficiency

To see the heterogenous price elasticity by efficient index, We estimated the baseline regression model (5) (see Table ??), using sample grouped by the efficient index.

- Three quantile groups: we divide units i into the first, second, and third quantile of efficient index (1Q, 2Q, and 3Q, respectively).

5.5. Efficient Groups: Descriptive Stats

5.6. Efficient Groups: Descriptive Statis (Extensive Margin)

5.7. Efficient Groups: Descriptive Stats (Intensive Margin)

5.8. Efficient Groups: Estimation Results

5.9. Robustness Check

1. Efficient index captures both government efficiency on concerns about budget deficits

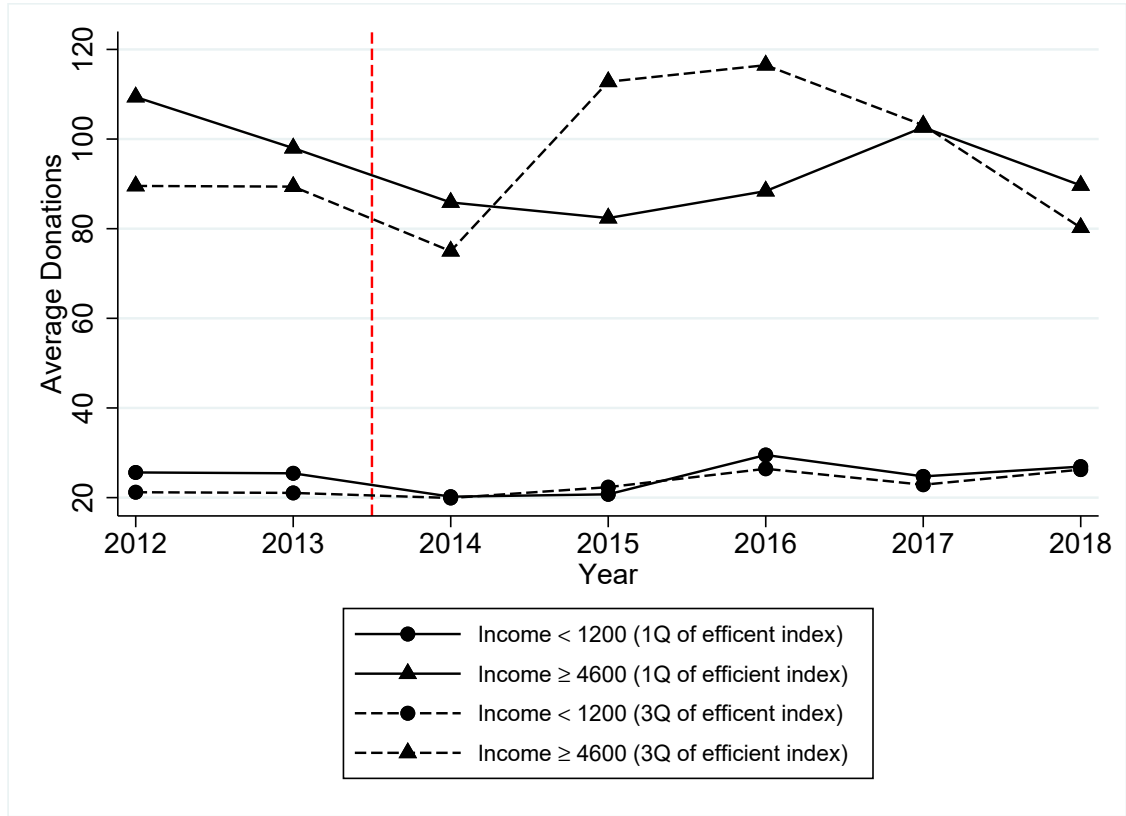


Figure 8: Time Series of Average Donations by Subgroup

Table 9: Price Elasticity by Three Quantile Efficient Groups

	1Q	2Q	3Q
Overall			
ln(giving price)	-1.321*** (0.388)	-0.844** (0.404)	-0.929** (0.404)
N	17119	16662	17525
Intensive Margin			
ln(giving price)	-0.792** (0.383)	-0.360 (0.423)	-1.111** (0.497)
N	3696	3591	4105
Extensive Margin			
ln(giving price)	-0.276*** (0.087)	-0.225** (0.094)	-0.174* (0.091)
Elasticity	-1.380*** (0.435)	-1.115** (0.466)	-0.787* (0.412)
N	17119	16662	17525

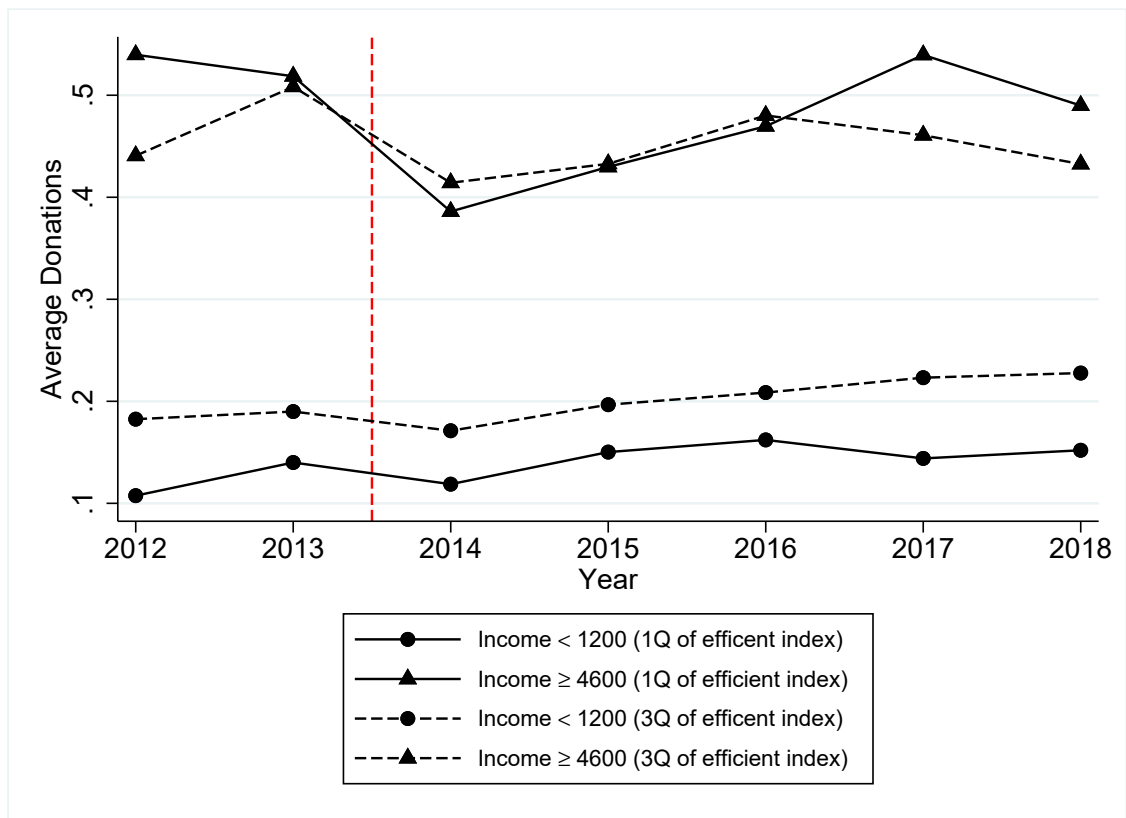


Figure 9: Time Series of Proportion of Donors by Subgroup

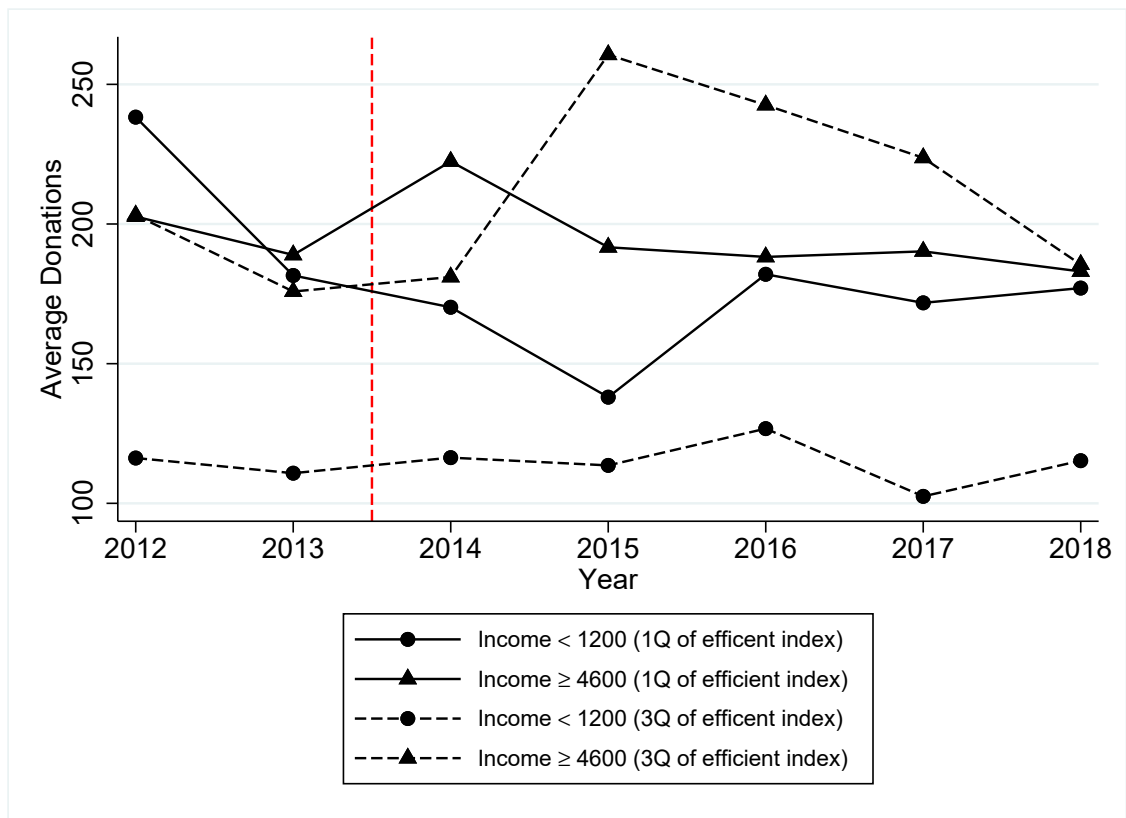


Figure 10: Time Series of Average Donations among Donors by Subgroup

2. Effect of presidential transition on efficient index
3. Effect of presidential transition on donation behavior
4. Income and donations are determined simultaneously
5. Last price elasticity
6. Self-selection of receiving tax benefit
7. Transitory and permanent elasticity

5.10. Robustness Check 1

- Efficient index may capture both government efficiency on concerns about budget deficits
 - NASTAB asks respondents to answer the ideal balance b/w tax burden and welfare size.
 - We constructed the **ideal** efficient index, using the FE model to estimate the efficient index.
 - We dropped units with the ideal efficient index is less than 0 from each quantile group and repeated the same exercise.
 - This is because respondents whose the ideal efficient index is less than 0 think governments should try to avoid budget deficits (high tax, low welfare).
- Presidential transition effect on perceived efficiency
 - We constructed president-specific (ideal) efficient index and implemented the pair-wise t-test.
 - As a result, average difference of these two indexes are not statistically significant zero.

5.11. Robustness Check 1: Estimation Results

5.12. Robustness Check 2

We check the following two potential concerns

- Presidential transition effect on donation behavior
- Income and donations are determined simultaneously

To address these problems, we estimated the FE model and Panel IV model with FE where instrument is $\log(\text{Price}_{ijt}/\text{Price}_{ij(t-k)})$ for $k = 1, 2, 3$, using data in 2013 and 2014. Moreover, we dropped units with the ideal efficient index < 0 from each quantile group.

Note that f-statistics of IV is greater than 500 when we estimate overall elasticity and extensive-margin elasticity, and greater than 100 when we estimate the intensive-margin elasticity.

Table 10: Heterogenous Price Elasticity by Efficiency Using Units with Ideal Efficient Index > 0

	1Q	2Q	3Q
Overall			
ln(giving price)	-1.996*** (0.648)	-1.122* (0.597)	-0.063 (0.488)
N	7527	6900	9339
Intensive Margin			
ln(giving price)	-1.138* (0.640)	-0.900 (0.652)	-0.952 (0.741)
N	1541	1474	2023
Extensive Margin			
ln(giving price)	-0.317** (0.136)	-0.220 (0.137)	0.014 (0.119)
Elasticity	-1.582** (0.681)	-1.091 (0.679)	0.062 (0.537)
N	7527	6900	9339

Table 11: Robustness Check of Heterogenous Price Elasticity by Government Efficiency

	1Q	2Q	3Q
FE Model			
ln(giving price)	-1.989** (0.913)	-1.047 (1.078)	-1.881** (0.835)
N	2021	1841	2504
Panel IV (k = 1)			
ln(giving price)	-1.881* (0.992)	-1.093 (1.272)	-2.189** (0.851)
N	1842	1689	2292
Panel IV (k = 2)			
ln(giving price)	-1.958* (1.101)	-1.594 (1.212)	-1.684 (1.024)
N	1723	1582	2174
Panel IV (k = 3)			
ln(giving price)	-1.608 (1.079)	-0.317 (1.219)	-1.544 (0.999)
N	1645	1529	2096

Table 12: Robustness Check of Heterogenous Extensive-Margin Price Elasticity by Government Efficiency

	1Q	2Q	3Q
FE Model			
Implied Elasticity	-1.558 (1.119)	-0.649 (1.326)	-2.453** (1.147)
N	2021	1841	2504
Panel IV (k = 1)			
Implied Elasticity	-1.345 (1.255)	-0.517 (1.612)	-2.934** (1.180)
N	1842	1689	2292
Panel IV (k = 2)			
Implied Elasticity	-1.396 (1.264)	-1.557 (1.486)	-1.998 (1.439)
N	1723	1582	2174
Panel IV (k = 3)			
Implied Elasticity	-1.056 (1.262)	-0.460 (1.477)	-1.795 (1.355)
N	1645	1529	2096

Table 13: Robustness Check of Heterogenous Intensive-Margin Price Elasticity by Government Efficiency

	1Q	2Q	3Q
FE Model			
ln(giving price)	-0.753 (0.848)	-2.301* (1.310)	-1.362 (0.956)
N	404	361	479
Panel IV (k = 1)			
ln(giving price)	-0.749 (1.088)	-3.220* (1.812)	-1.471 (1.013)
N	380	340	449
Panel IV (k = 2)			
ln(giving price)	-0.770 (0.997)	-1.216 (1.504)	-0.771 (0.966)
N	357	322	433
Panel IV (k = 3)			
ln(giving price)	0.573 (1.117)	-0.691 (1.088)	-1.472 (0.991)
N	337	307	414

5.13. Robustness Check 2: Result

5.14. Robustness Check 2: Result (Extensive Margin)

5.15. Robustness Check 2: Result (Intensive Margin)

6. Conclusions

6.1. Conclusions

References

- Almunia, M., Guceri, I., Lockwood, B., Scharf, K., 2020. More giving or more givers? The effects of tax incentives on charitable donations in the UK. *Journal of Public Economics* 183. doi:{10.1016/j.jpubeco.2019.104114}
- Anderson, J.E., 2017. Trust in Government and Willingness to Pay Taxes in Transition Countries. *Comparative Economic Studies* 59, 1–22. doi:{10.1057/s41294-016-0017-x}
- Auten, G.E., Sieg, H., Clotfelter, C.T., 2002. Charitable Giving, Income, and Taxes: An Analysis of Panel Data. *American Economic Review* 92, 371–382.
- Bakija, J., Heim, B.T., 2011. How does charitable giving respond to incentives and income? New estimates from panel data. *National Tax Journal* 64, 615–650. doi:{10.17310/ntj.2011.2S.08}
- Fack, G., Landaïs, C., 2010. Are tax incentives for charitable giving efficient? Evidence from france. *American Economic Journal - Economic Policy* 2, 117–141. doi:{10.1257/pol.2.2.117}
- Frey, B.S., Torgler, B., 2007. Tax morale and conditional cooperation. *Journal of Comparative Economics* 35, 136–159. doi:10.1016/j.jce.2006.10.006
- Hammar, H., Jagers, S.C., Nordblom, K., 2009. Perceived tax evasion and the importance of trust. *The Journal of Socio-Economics* 38, 238–245. doi:https://doi.org/10.1016/j.socec.2008.07.003
- Li, S.X., Eckel, C.C., Grossman, P.J., Brown, T.L., 2011. Giving to government: Voluntary taxation in the lab. *Journal of Public Economics* 95, 1190–1201. doi:{10.1016/j.jpubeco.2011.03.005}
- Randolph, W.C., 1995. Dynamic income, progressive taxes, and the timing of charitable contributions. *Journal of Political Economy* 103, 709–738. doi:{10.1086/262000}
- Saez, E., 2004. The optimal treatment of tax expenditures. *Journal of Public Economics* 88, 2657–2684. doi:{10.1016/j.jpubeco.2003.09.004}
- Sheremeta, R.M., Uler, N., 2020. The impact of taxes and wasteful government spending on giving. *Experimental Economics*. doi:10.1007/s10683-020-09673-9