Charitable Giving, Tax Reform, and Self-selection of Tax Report: Evidence from South Korea

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2021/07/28

Abstract

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 result classifies that the price elasticity of giving in Korea is -0.59 ~ -1.01 for intensive margin and -1.17 ~ -1.48 for extensive margin. We also 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.
Keywords: Charitable giving, Giving price, Tax reform, South Korea,
JEL Codes: 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.

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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 someones 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 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 -0.59 ~ -1.01 for intensive margin and -1.17 ~ -1.48 for extensive margin.

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 giving price elasticity of those who regard government as inefficient is more elastic than the others. 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 Landais (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 pop-

ulation, 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 examine.[1]

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 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 seven sections. Section 2 and 3 respectively explain the institutional background and data. Section 4 explains the estimation method. Section 5 deals with the analysis of giving price elasticity and section 6 shows the analysis of perceptions toward the government. Section 7 concludes.

2 Institutional background

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

[1]This point may be important since Kim (2021) reports that the giving behavior is strongly affected by the cultural matter such as the religious belief.

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. The amount of tax is

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

where $\tau(\cdot)$ is the income tax rate which is determined by $y_i - g_i$.[2] 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,

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

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

[2] $\tau(\cdot)$ here is a function which shows the average tax rate, which is determined progressively. Since the price elasticity of giving shows the marginal and additional increment for one unit of price reduction increase, we use not average but marginal tax rate to construct the giving price following the literature. Usage of the function of the average tax rate here is for explanatory simplicity.

Table 1: Marginal Income Tax Rate

<table>
<tr><th>Income/Year</th><th>2008</th><th>2009</th><th>2010 ~ 2011</th><th>2012 ~ 2013</th><th>2014 ~ 2016</th><th>2017</th><th>2018</th></tr>
<tr><td>(A) ~ 1200</td><td>8%</td><td>6%</td><td>6%</td><td>6%</td><td>6%</td><td>6%</td><td>6%</td></tr>
<tr><td>(B) 1200 ~ 4600</td><td>17%</td><td>16%</td><td>15%</td><td>15%</td><td>15%</td><td>15%</td><td>15%</td></tr>
<tr><td>(C) 4600 ~ 8800</td><td>26%</td><td>25%</td><td>24%</td><td>24%</td><td>24%</td><td>24%</td><td>24%</td></tr>
<tr><td>(D) 8800 ~ 15000</td><td rowspan="4">35%</td><td rowspan="4">35%</td><td rowspan="4">35%</td><td rowspan="2">35%</td><td>35%</td><td rowspan="2">35%</td><td>35%</td></tr>
<tr><td>(E) 15000 ~ 30000</td><td rowspan="3">38%</td><td rowspan="2">38%</td><td>38%</td></tr>
<tr><td>(F) 30000 ~ 50000</td><td rowspan="2">38%</td><td>40%</td></tr>
<tr><td>(G) 50000 ~</td><td>40%</td><td>42%</td></tr>
</table>

Notes: 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.

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

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 Our Identification Strategy

In 2014, aiming at the relaxation of regressivity of giving price, the Korean government reformed tax system again, 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.

2.3 Korean tax reform in 2014

The tax incentives for charitable giving in Korea stared in 1967 and the market of charitable giving in Korea totaled 10.9 trillion KRW (approximately 1.09 bilion USD, 0.761% of GDP) in 2012 according to the national tax statistics. Since the income tax deduction was initially used as a tax incentive and the marginal income tax rate was determined as Table 1, the minimum giving price before 2014 was 0.62.

Table 2: Descriptive Statistics

	N	Mean	Std.Dev.	Min	Median	Max
Charitable Donations						
Annual charitable giving (unit: 10,000KRW)	67848	29.52	132.91	0.00	0.00	10000.00
Dummy of Donation > 0	67848	0.20	0.40	0.00	0.00	1.00
Income, giving price, and tax report						
Annual taxable labor income (unit: 10,000KRW)	53269	1876.12	2700.97	0.00	900.00	91772.00
First giving price	62877	0.86	0.04	0.62	0.85	0.94
Dummy of tax report of charitable giving	12172	0.48	0.50	0.00	0.00	1.00
Individual Characteristics						
Age	67848	51.35	15.81	24.00	50.00	104.00
Female dummy	67848	0.53	0.50	0.00	1.00	1.00
Employee dummy	42362	0.53	0.50	0.00	1.00	1.00
University graduate	67842	0.41	0.49	0.00	0.00	1.00
High school graduate dummy	67842	0.35	0.48	0.00	0.00	1.00
Junior high school graduate dummy	67842	0.24	0.43	0.00	0.00	1.00

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3 Data

The National Survey of Tax and Benefit (hereafter, NaSTab) is an annual financial panel survey implemented by The Korea Institute of Taxation and Finance to study the tax burden of households and the benefits that households receive from the government. The subjects of this survey are general households and household members living in 15 cities and provinces nationwide. This survey is based on a face-to-face interview.[3] The NaSTaB data is constructed as the subjects represent the population of Korean society. This enables us to derive giving price elasticity of population without re-weighting samples, which is used in the extant research. Moreover, note that subjects are not limited to the taxpayer or income earner reflecting the population. We use this panel survey from 2013 to 2019 because we focus on the 2014 tax reform. In addition, we exclude the subject of the sample, whose age is under 23, since they are not likely to have income or assets.

[3]If it is difficult for investigators to meet subjects, another family member answers on behalf of him.

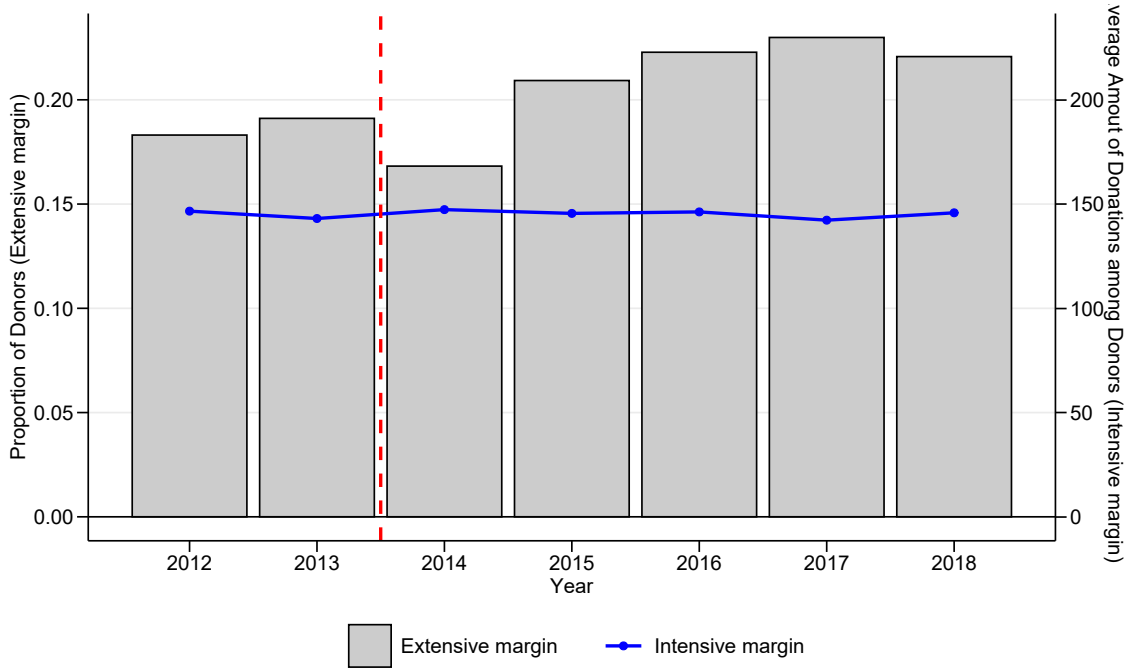

Figure 1: Proportion of Donors and Average Donations among Donors. Notes: The left and right axises respectively mesure proportion of donors and the average amount donations among donors. Authors made this graph based on NasTaB data.

Table 2 shows summary statistics of our data.[4] The first panel of this table shows variables about charitable giving. The NaSTaB asks respondents to answer the amount of donation last year. This is the first outcome variables. Using this, we make a dummy taking 1 if respondent donated last year. This is the second outcome variables to estimate the price effect on the decision of donations (extensive margin). Table 2 shows that the average amount of donation is almost 300,000 KRW, and the proportion of donors is roughly 20%. Figure 1 shows the time-series of two variables. The blue line shows the average amount of donation among donors. In each year, its value is nearly 1.5 million KRW, which is 7% of average annual taxable income. The grey bar shows the proportion of donors. After the tax reform, the proportion of donors decreases by 2%. After that, the proportion of donors is greter than 20%.

The second panel of Table 2 shows variables about income, tax report, and the giving price. NaSTaB asks respondents to answer the annual labor income last year. In our sample, the average annual taxable income is 18.76 million KRW. According to the National

[4]Respondents answer the amount of donation for seven specific purposes last year. Seven specific purposes are policitical parties, educational organizations, social welfare organizations, organizations for culutre and art, religious groups, charity activies organaized by religious group, other purposes. We sum up the amount of donations, and consider it as the annual charitable giving.

Tax Statistical Yearbook published by Korean National Tax Service, the average annual taxable income is 32.77 million from 2012 to 2018 for employees who submitted the tax return. Since our sample includes subjects with no labor income, such as housewives, our sample mean of income is lower than the average income calculated by the public organizations. In Figure 2, the grey bars show the distribution of annual taxable income in 2013. The income distribution is left-skewed.

Using this variable, we construct the giving price under the tax deduction system (2012 and 2013).[5] After the tax reform (after 2014), the giving price is 0.85 regardless of labor income. as we explained in the section 2. In Figure 2, the blue line shows the giving price in 2012 and 2013, while the red dashed line shows the giving price after 2014. From this figure, those whose annual income is less than 120,000,000 KRW in 2013 could receive benefit from the 2014 tax reform because the tax reform decreases the giving price. On the other hand, those whose annual income is greater than 460,000,000 KRW in 2013 had a loss by the 2014 tax reform since the tax reform increases the giving price.

The NaSTaB also asks respondents to answer whether they applied for a tax deduction of giving. Although this variable is unique, the sample size is relatively small due to unanswering. This survey investigates separately for the case of *total* income (for example, business income, dividend income, rental income) and the case of *labor* income. We make a dummy taking one if respondents applied for a business income deduction of giving or a labor income deduction of giving. Table 2 shows the proportion of tax deduction is about 48%.

4 Empirical Strategy

Following Almunia et al. (2020), we estimate giving price elasticity for intensive margin and extensive margin. The elasticity of intensive margin shows how much donors additionally donates reacting to the marginal increase of giving price, while the elasticity of extensive margin shows how much the probability to donate changes reacting to marginal increase of giving price. We estimate the elasticity of intensive margin using the following specification:

[5]The giving price shown in Table 2 is the *first* giving price. The giving price can be manipulated by an amount of donation. To avoid this endogeneity, we use the giving price where the amount of donation is zero. We will discuss this issue in the next section.

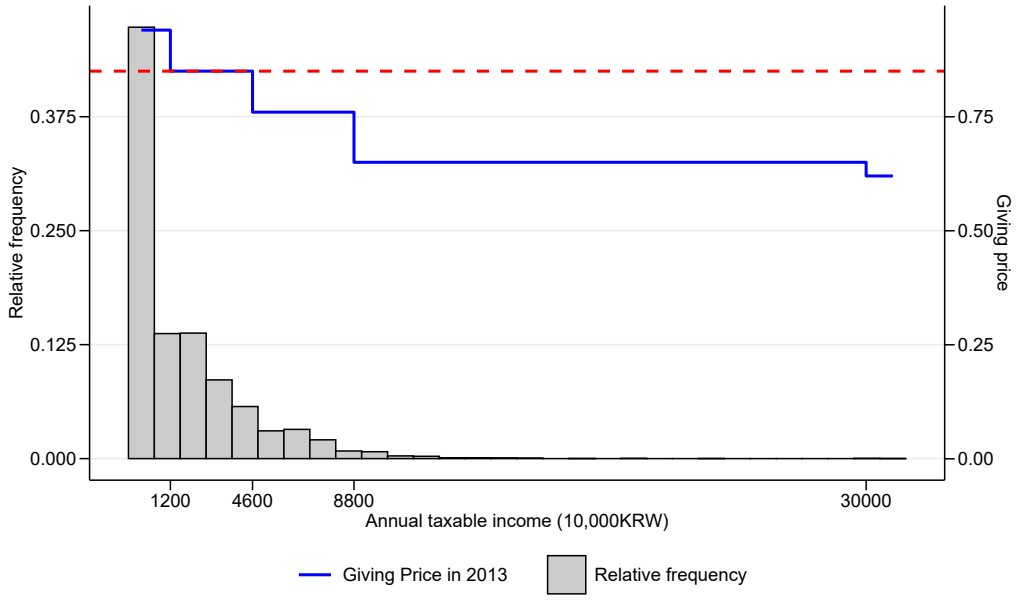

Figure 2: Income Distribution and Giving Price in 2013

$$\ln g_{it} = \varepsilon_p^{int} R_{it} \ln p_{it} + \varepsilon_y^{int} \ln y_{it} + X_{it}\beta + \mu_i + \iota_t + u_{it}. \tag{1}$$

g_{it}, p_{it} and y_{it} respectively indicates the amount of giving, the giving price, and income of i in year t. R_{it} is a dummy taking one if individual i applied for a tax deduction in year t. μ_i, ι_t and u_{it} are individual fixed effect, year fixed effect, and the error term, respectively. The individual fixed effect controls for time-invariant individual characteristics. The year fixed effect controls for events that affect all subjects at the same time. X_{it} is a vector of covariates that include variables about education and gender. Moreover, we add some interaction terms between year fixed effect and control variables into X_{it}, since they will control for events that affect subject with specific characteristics at the same time following Zeldow and Hatfield (2019).

On the other hand, the elasticity of extensive margin is estimated using the linear probability model such as

$$D_{it} = \delta R_{it} \ln p_{it} + \gamma \ln y_{it} + X_{it}\beta + \mu_i + \iota_t + v_{it}. \tag{2}$$

D_{it} is a dummy variable taking 1 if individual i donates at year t and 0 otherwise. Since we use the linear probability model, the estimated coefficient δ represents $\hat{\delta} = \frac{\partial D_{it}}{\partial p_{it}} p_{it}$. Also, the estimated coefficient γ represents $\hat{\gamma} = \frac{\partial D_{it}}{\partial y_{it}} y_{it}$. Thus, the implied extensive-margin price and income elasticity are obtained by $\hat{\delta}/\bar{D}$ and $\hat{\gamma}/\bar{D}$, respectively, where $\bar{D}$

is sample average of outcome variable D_{it}.

As shown in the section 2, the giving price p_{it} is defined as follows:

$$p_{it}(y_{it}, g_{it}) = \begin{cases} 1 - \tau_t(y_{it} - g_{it}) & \text{if} \quad t < 2014 \\ 1 - m & \text{if} \quad t \geq 2014 \end{cases}, \tag{3}$$

where $\tau_t(\cdot)$ is average tax rate in year t.

Our identification assumption is that the *within* price variation is exogenous due to the fixed effect model. From the equation (3), the within price variation comes from the 2014 tax reform, the within variation of giving g_{it} and income y_{it}. Moreover, by the equation (1) and (2), the within price variation comes from tax report R_{it}. Since these three variables are self-selected, we need to solve three potential endogeneity problems to hold our identification assumption.

As a benchmark, we estimate the equation (1) and (2), assuming that $R_{it} = 1$ for all i and t. This means that we see individuals who did not apply for a tax deduction as those who applied for a tax deduction. In the context of treatment effect literature, we can see the relative price of giving as a treatment assignment. However, individuals can choose whether to receive this treatment by appling for a tax deduction. Although assuming $R_{it} = 1$ for all i and t can ignore this self-selection problem, the estimates of price effect includes the *true* price effect and effect of self-selection of a tax deduction. this treatment effect is sometimes called the "intention-to-treat" effect (ITT). Later, we relax this assumption, using the instrumental variable strategy.

Next, we deal with the possibility that the giving price is endogenous because the taxpayer can reduce their giving price by reducing their amount of donation and shifting themselves to the lower tax bracket in the tax deduction system. Since this issue does not happen for the first unit of donation, whose price ("first price") cannot be changed by adjusting the donation, we use this first price as the giving price in the estimation. The first price is obtained by $p_{it}^f = p_{it}(y_{it}, g_{it})$ evalueated at $g_{it} = 0$. As long as income y_{it} is exogenous, the within giving price p_{it}^f is also exogenous. Thus, assuming income y_{it} is exogenous variable, we first estimate the first-price elasticity with the equation (1) and (2) which replace $\ln p_{it}$ with $\ln p_{it}^f$. Moreover, we also estimate the last-price elasticity, using the first price p_{it}^f as an instrument.

We can justify the first price method, assuming that income is exogenous. The second approach relaxes this assumption. Under the tax deduction system, the change of income have effects on both donations through the income effect and the giving price through the marginal tax rate. Therefore, we employ lagged values of taxable income and construct a variable for the change in the first price of giving as following:

$$\Delta^k \ln p_{it} = \ln \left(\frac{p_{it}(y_{it-k} - g_{it-k})}{p_{it-k}(y_{it-k} - g_{it-k})} \right), \tag{4}$$

where $g_{it-k} = 0$. The numerator is the first price that individual i would have faced in year t if she had declared her year $(t-k)$ taxable income at that year. By fixing the income at year $t-k$, the instrument isolates changes in price from income responses to the tax reform. Note that this problem does not happen for the tax credit system, where the giving price is the same across all individuals.

Using this lagged variable, we estimate the k-th difference model formualted as follows:

$$\Delta^k \ln g_{it} = \varepsilon_p \Delta^k \ln p_{it} + \varepsilon_y \Delta^k \ln y_{it} + \Delta^k X_{it}\beta + \mu_i + \iota_t + v_{it}, \tag{5}$$

where $\Delta^k \ln g_{it} = \ln g_{it} - \ln g_{it-k}$, and $\Delta^k \ln y_{it} = \ln y_{it} - \ln y_{it-k}$. The variation of $\Delta^k \ln p_{it}$ comes from the tax reform because we fix the annual income at year $t-k$. Therefore, we can interpret this coefficient as the giving price elasticity due to the tax reform. Note that we do not estimate the extensive-margin elasticity because it is hard to interpret this estimation equation when we use $\Delta^k D_{it}$ as an outcome variable.

5 Price and Income Elasticitiy: ITT Approach

In this section, as a benchmark, we first report the price effect on donations, using the ITT approach. Reducing the relative price of giving through a tax deduction includes self-selection. The ITT approach sees respondents who did not apply for a tax deduction in a specific year as those who applied for it. In our main results, we report estimation results of price effect, using the first price method. As robustness, we report the last price effect using the first price as an instrumental variable, the first price effect with short-period panel to focus on the 2014 tax reform more precisely, and the k-th difference model to

Table 3: Overall Elasticity of First Price

	(1)	(2)	(3)	(4)	(5)
ln(giving price)	-1.072***	-1.264***	-1.291***	-1.114***	-1.241***
	(0.202)	(0.213)	(0.230)	(0.229)	(0.227)
ln(annual taxable income)	5.393***	5.080***	5.047***	5.116***	4.946***
	(0.970)	(0.964)	(0.964)	(0.966)	(0.949)
Individual FE	Y	Y	Y	Y	Y
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
Year x Resident Area	N	N	N	N	Y
N	53269	53269	53267	53267	53267
Adjusted R-squared	0.526	0.526	0.526	0.527	0.530

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

avoid the problem that income affects the giving price.

5.1 Results

Before the estimation of giving price elasticities for intensive and extensive margin, we estimate the elasticity without distinguishing them. We call this elasticity overall elasticity. Table 3 shows estimation results of overall elasticity. Column (1) is the baseline estimation, which includes individual and time fixed effects. The price elasticity is roughly -1, which is statistically significantly different from zero. This implies that a 1% increase of giving price raises charitable giving by 1%. This result is in line with previous researches which focuses on Western countries. The income elasticity is about 5.3, which is statistically significantly different from zero. This implies that a 1% increase of annual income raises charitable giving by 5.3%. The remaining four columns control for events that affect subjects with specific characteristics at the same time. As a result, the price elasticity is more elastic than the baseline result. The price elasticity lies between -1.3 and -1.1. On the other hand, the income elasticity is less elastic than the baseline result. The income elasticity lies between -5.1 and -4.9.

Table 4 shows the intensive-margin elasticities. Compared to the overall elasticity, the price and income elasticities are less elastic. Controlling individual and time fixed effects, the price and income elasticity are about -0.6 and about 2, respectively, which are statistically significantly different from zero (See column (1)). Moreover, when we include the interaction term between individual characteristics and year dummies, these values vary. The price elasticity lies between -1.1 and -0.8, and the income elasticity lies between 1.4 and 1.6. Anyway, we conclude that the amount of donations is insensitive to the giving

Table 4: Intensive-Margin Elasticity of First Price

	(1)	(2)	(3)	(4)	(5)
ln(giving price)	-0.593***	-0.838***	-1.016***	-0.893***	-0.904***
	(0.203)	(0.212)	(0.232)	(0.243)	(0.249)
ln(annual taxable income)	2.015***	1.562**	1.445**	1.528**	1.571**
	(0.675)	(0.655)	(0.647)	(0.651)	(0.653)
Individual FE	Y	Y	Y	Y	Y
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
Year x Resident Area	N	N	N	N	Y
N	11637	11637	11637	11637	11637
Adjusted R-squared	0.675	0.675	0.676	0.676	0.678

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

price among donors.

Table 5 shows the extensive-margin elasticities. As a result of overall elasticities and the intensive-margin elasticities, we expect that the extensive-margin price and income elasticity is more elastic than the overall elasticities. In column (1), the coefficient of logged giving price and logged annual income are -0.257 and 1.175 respectively, which are statistically significantly different from zero. Due to the linear probability model, the coefficient of logged giving price and logged income represents the lower bound of price and income elasticity, respectively. When we evaluate the price elasticity at the sample mean of D_{it}, the implied price elasticity is -1.264, which is slightly more elastic than the overall one. Also, we evaluate the income elasticity at the sample mean of the outcome. The implied income elasticity is 5.778, which is slightly more elastic than the overall one. Although the implied price and income elasticity vary with covariates, the results are in line with our expectations. Thus, the decision of donations is sensitive to the giving price and annual income.

In summary, our first conclusion is that the decision of donations is sensitive to the giving price, and the amount of donations is insensitive to the giving price once they decide to donate. In the next subsection, we check the robustness of our first conclusion, using three methods.

5.2 Robustness Check

Last Price Elasticity. The first robustness check estimates the last price elasticity using the first price of giving as an instrument. Our main results show that first price elasticity to avoid the problem that giving price depends on an amount of giving. However, the first

Table 5: Extensive-Margin Elasticity of First Price

	(1)	(2)	(3)	(4)	(5)
ln(giving price)	-0.257***	-0.288***	-0.273***	-0.237***	-0.267***
	(0.046)	(0.048)	(0.052)	(0.052)	(0.051)
ln(annual taxable income)	1.175***	1.124***	1.125***	1.139***	1.102***
	(0.223)	(0.223)	(0.223)	(0.224)	(0.220)
Implied price elasticity	-1.176***	-1.320***	-1.250***	-1.086***	-1.221***
	(0.210)	(0.221)	(0.239)	(0.238)	(0.235)
Implied income elasticity	5.379***	5.145***	5.148***	5.212***	5.045***
	(1.023)	(1.021)	(1.023)	(1.024)	(1.005)
Individual FE	Y	Y	Y	Y	Y
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
Year x Resident Area	N	N	N	N	Y
N	53269	53269	53267	53267	53267
Adjusted R-squared	0.458	0.458	0.458	0.458	0.462

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

Table 6: Overall Elasticity of Last Price

	(1)	(2)	(3)	(4)	(5)
ln(last giving price)	-2.421***	-2.536***	-2.750***	-2.529***	-2.650***
	(0.204)	(0.216)	(0.233)	(0.231)	(0.229)
ln(annual taxable income)	5.258***	5.072***	4.981***	5.058***	4.910***
	(0.961)	(0.961)	(0.959)	(0.961)	(0.948)
Individual FE	Y	Y	Y	Y	Y
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
Year x Resident Area	N	N	N	N	Y
N	52304	52304	52302	52302	52302
Adjusted R-squared	0.529	0.529	0.529	0.530	0.533

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at individual level. The instumental variable is the first giving price in year t. When controlling age, we alson include its squared term.

Table 7: Intensive-Margin Elasticity of Last Price

	(1)	(2)	(3)	(4)	(5)
ln(last giving price)	-0.898***	-0.961***	-1.197***	-0.998***	-1.074***
	(0.271)	(0.271)	(0.307)	(0.325)	(0.332)
ln(annual taxable income)	2.024***	1.638**	1.460**	1.530**	1.572**
	(0.694)	(0.678)	(0.667)	(0.670)	(0.667)
Individual FE	Y	Y	Y	Y	Y
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
Year x Resident Area	N	N	N	N	Y
N	10672	10672	10672	10672	10672
Adjusted R-squared	0.671	0.671	0.672	0.672	0.674

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at individual level. The instumental variable is the first giving price in year t. When controlling age, we alson include its squared term.

Table 8: Extensive-Margin Elasticity of Last Price

	(1)	(2)	(3)	(4)	(5)
ln(last giving price)	-0.623***	-0.630***	-0.644***	-0.593***	-0.619***
	(0.046)	(0.049)	(0.053)	(0.052)	(0.052)
ln(annual taxable income)	1.125***	1.113***	1.103***	1.121***	1.090***
	(0.221)	(0.223)	(0.223)	(0.223)	(0.220)
Implied price elasticity	-3.052***	-3.090***	-3.156***	-2.907***	-3.035***
	(0.227)	(0.239)	(0.258)	(0.257)	(0.254)
Implied income elasticity	5.514***	5.453***	5.407***	5.494***	5.343***
	(1.084)	(1.092)	(1.092)	(1.095)	(1.078)
Individual FE	Y	Y	Y	Y	Y
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
Year x Resident Area	N	N	N	N	Y
N	52304	52304	52302	52302	52302
Adjusted R-squared	0.464	0.464	0.464	0.465	0.469

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at individual level. The instumental variable is the first giving price in year t. When controlling age, we alson include its squared term. The implied extensive-marign price elasticity is evaluated at the sample mean of D_{ijt}.

price elasticity is not realistic because people face the last marginal price when deciding on an amount of donation. Thus, we estimate the last price elasticity, using the first price as an instrumental variable. The last giving price is strongly correlated with the first one because major observation units are observed when the tax credit system is implemented, and the last price is equivalent to the first one in the case of the tax credit system. In fact, in any specifications, the coefficient of the first price is greater than 0.952, and its F-statistics is greater than 6425.96. Our estimates of the last price effect are not caused by a weak instrument problem. As a result, the intensive-margin elasticity of the last price takes a similar value to the case of the first price, while the overall elasticity and extensive-margin elasticity of the last price are more elastic than the case of the first price. Table 6 shows the overall last price elasticity. Compared to the main results, the last price elasticity is more elastic. The absolute value of the estimated coefficient is larger than 2.4, which is statistically significantly different from zero. This implies that a 1% increase of last price decreases charitable contributions by 2.4% or more. Table 7 and 8 shows the intensive-margin and extensive-margin last price elasticity. the intensive-margin last price elasticity is a similar value to the main results. Its absolute value lies between 0.89 and 1.2. These results are statistically different from zero. About the extensive-margin elasticities, the coefficient of logged last price, which represents the lower bound of last price elasticity, lies between -0.63 and -0.59. The implied last price elasticity evaluated at the sample mean of D_{it} is roughly -3. These results are statistically significantly different

Table 9: Overall Elasticity with Short-Period Panel

	After 2012		2013 and 2014	
	(1)	(2)	(3)	(4)
ln(giving price)	-1.014***	-1.286***	-1.398***	-1.686***
	(0.255)	(0.290)	(0.289)	(0.338)
ln(annual taxable income)	5.108***	4.743***	4.013**	3.035
	(1.009)	(0.990)	(1.948)	(1.992)
Individual FE	Y	Y	Y	Y
Time FE	Y	Y	Y	Y
Other Controls	N	Y	N	Y
N	45994	45992	14893	14893
Adjusted R-squared	0.535	0.538	0.590	0.592

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 the interaction between year dummies and resident area.

Table 10: Intensive-Margin Elasticity with Short-Period Panel

	After 2012		2013 and 2014	
	(1)	(2)	(3)	(4)
ln(giving price)	-0.647***	-1.129***	-0.394	-0.712**
	(0.236)	(0.291)	(0.310)	(0.363)
ln(annual taxable income)	1.943***	1.714***	1.440	1.047
	(0.662)	(0.649)	(2.975)	(3.072)
Individual FE	Y	Y	Y	Y
Time FE	Y	Y	Y	Y
Other Controls	N	Y	N	Y
N	10158	10158	2922	2922
Adjusted R-squared	0.684	0.687	0.735	0.737

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 the interaction between year dummies and resident area.

from zero, and more elastic than the first price elasticity.

Short-Period Panel. The second robustness check try to control the manipulation of giving price by adjusting income level, using two datasets whose ranges are (i) from 2013 to 2018 and (ii) from 2013 to 2014. Under the tax deduction system, the giving price can be manipulated by income level, though it cannot be under the tax credit system. Therefore, if we use the dataset which contains data under the tax deduction system, the estimator may capture the effect of price change which is caused not by tax reform but by price manipulation by income adjustment. To address this issue, we use a dataset in which the time range under the tax deduction system is shorter than the baseline analysis. By doing this exercise, we try to suppress the effect which comes from the price change due to the change of income. Table 9 shows the overall first giving price elasticity. When we use data from 2013 to 2018, the estimated price elasticity is a similar value to the main results. On the other hand, when we use data from 2013 to 2014, the estimated price

Table 11: Extensive-Margin Elasticity with Short-Period Panel

	After 2012		2013 and 2014	
	(1)	(2)	(3)	(4)
ln(giving price)	-0.235***	-0.269***	-0.331***	-0.383***
	(0.058)	(0.065)	(0.065)	(0.076)
ln(annual taxable income)	1.093***	1.024***	0.801*	0.574
	(0.230)	(0.226)	(0.428)	(0.447)
Implied price elasticity	-1.064***	-1.217***	-1.689***	-1.951***
	(0.262)	(0.294)	(0.333)	(0.387)
Implied income elasticity	4.951***	4.638***	4.082*	2.926
	(1.043)	(1.024)	(2.181)	(2.279)
Individual FE	Y	Y	Y	Y
Time FE	Y	Y	Y	Y
Other Controls	N	Y	N	Y
N	45994	45992	14893	14893
Adjusted R-squared	0.465	0.469	0.524	0.525

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 the interaction between year dummies and resident area. The implied extensive-marign price elasticity is evaluated at the sample mean of D_{ijt}.

elasticity is more elastic than the main results. The estimated absolute value is roughly -1.7 when we control covariates and their interaction with year dummies. This value is statistically significantly different from zero. Table 10 and 11 shows the intensive-margin and the extensive-margin first price elasticity. When we use data from 2012 to 2018, the intensive-margin price elasticity is similar to the main results, which is statistically significant from zero. However, when we use data from 2013 to 2014 and include only individual and time fixed effects, the estimated coefficient is statistically insignificantly different from zero. By controlling covariates and their interaction with year dummies, the intensive-margin price elasticity is -0.712, which is statistically significant. About the extensive-margin price effect, when we use data from 2012 to 2018, the extensive-margin price elasticity is similar to the main results, which is statistically significant. When we use data from 2013 to 2014, the extensive-margin price elasticity is more elastic than the main results. Its absolute value is roughly -2, which is statistically significant.

k-th difference model. The third robustness check is to estimate the k-th difference model. As explained in section 4, the giving price depends on income. Thus, there are two paths that income affects charitable giving: (i) income effect; (ii) giving price via manipulation. To tackel with this endogeneity problem, we employ lagged value of giving price fixing income at year $t-k$, that is, $\Delta^k \ln p_{it} = lnp_{it}(y_{it-k}) - \ln p_{it-k}(y_{it-k})$.[6] By fixing income, the variation of this lagged variable completely depends on tax reform.

[6]Under the tax credit system, the giving price does not depend on income y_{it-k}. If the tax credit system is implemented in year t and $t-k$, then the value of $\Delta^k p_{it}$ takes zero.

Table 12: Estimation of Overall Elasticity with k-th Difference Model

	(1)	(2)	(3)
1-year lagged difference of first price (log)	-1.894***		
	(0.389)		
1-year lagged difference of annual income (log)	2.737***		
	(1.042)		
2-year lagged difference of first price (log)		-2.158***	
		(0.355)	
2-year lagged difference of annual income (log)		4.661***	
		(1.139)	
3-year lagged difference of first price (log)			-1.805***
			(0.345)
3-year lagged difference of annual income (log)			5.422***
			(1.181)
Individual FE	Y	Y	Y
Time FE	Y	Y	Y
Other controls	Y	Y	Y
N	49014	46587	44142
Adjusted R-squared	-0.153	-0.082	-0.024

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at individual level. The lagged difference of first price (log) is $\ln(\text{Price}^k_{ijt}) - \ln(\text{Price}_{ij(t-k)})$, where Price^k_{ijt} calculates the giving price under the tax system in year t, using annual taxable income in year $t-k$, $\text{Income}_{ij(t-k)}$. The lagged of annual income (log) is $\ln(\text{Income}_{ijt}) - \ln(\text{Income}_{ij(t-k)})$. Other controls are lagged difference of age, lagged difference of squared age, the interaction between year dummies and education dummies, the interaction between year dummies and gender dummies, and the interaction between year dummies and resident area.

Table 13: Estimation of Intensitve-Margin Elasticity with kth Difference Model

	(1)	(2)	(3)
1-year lagged difference of first price (log)	-1.852**		
	(0.763)		
1-year lagged difference of annual income (log)	2.222		
	(1.715)		
2-year lagged difference of first price (log)		-2.274***	
		(0.621)	
2-year lagged difference of annual income (log)		4.601**	
		(1.789)	
3-year lagged difference of first price (log)			-2.243***
			(0.550)
3-year lagged difference of annual income (log)			5.826***
			(2.166)
Individual FE	Y	Y	Y
Time FE	Y	Y	Y
Other controls	Y	Y	Y
N	10939	10505	10040
Adjusted R-squared	0.137	0.191	0.220

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at individual level. The lagged difference of first price (log) is $\ln(\text{Price}^k_{ijt}) - \ln(\text{Price}_{ij(t-k)})$, where Price^k_{ijt} calculates the giving price under the tax system in year t, using annual taxable income in year $t-k$, $\text{Income}_{ij(t-k)}$. The lagged of annual income (log) is $\ln(\text{Income}_{ijt}) - \ln(\text{Income}_{ij(t-k)})$. Other controls are lagged difference of age, lagged difference of squared age, the interaction between year dummies and education dummies, the interaction between year dummies and gender dummies, and the interaction between year dummies and resident area.

Using this variable, we estimate the k-th difference model (5) shown in the section 4. Table 12 and 13 shows results of k-th difference model. About the overall elasticity, when we take the one-year lag ($k = 1$), the overall price elasticity is roughly -1.9, which is statistically significant. This elasticity slightly varies when we take the two or more year lag ($k > 1$). The overall price elasticity lies between -2.1 and -1.7, which is statistically significant. This implies that the overall price elasticity obtained by this model is more elastic than the main results. About the intensive-margin elasticity, when we take the one-year lag ($k = 1$), the intensive-margin price elasticity is roughly -1.8, which is statistically significant. The absolute value of the price elasticity is more than 2 when we take two or more years lag ($k > 1$). Thus, contrary to our first conclusion, this model implies that the amount of donations is sensitive to the giving price once we decide to donate.

6 Price Elasicity with Tax Report

In the previous section, the result shows that the size of estimated elasticity may vary depending on the estimation methods. This may be because the sample size is small compared to the extant research. However, our three robustness checks are in line with the baseline result, which shows that the price elasticity of intensive margin is less elastic than one of extensive margin. Thus, the obtained results suggest that the decision to donate is sensitive to the giving price, though the amount of donations is insensitive to the giving price once they decide to donate.

These results are obtained by the ITT approach. This means that our estimates obtained in the previous section reflect not only the true price effect of tax incentive but also the effect of self-selection of applying for a tax deduction. Since the tax reform affects not the only relative price of giving but also the decision-making of a tax deduction, previous results have some policy implications. If we explicitly control the self-selection of a tax deduction, we may obtain further policy implications about the tax incentive of charitable giving. In this section, we report the results of the panel IV method which controls the self-selection of a tax deduction.

6.1 Instrumental Variable of Tax Deduction

Before describing the strategy of instrumental variables in detail, we show descriptive statistics of a tax deduction. NaSTaB asks respondents to answer whether to apply for

Table 14: Descriptive Statistics of Tax Deduction among Donors

	Applying for a tax deduction		Not applying for a tax deduction	
Year	Labor income	Labor and Total income	Labor income	Labor and Total income
2012	53	740	142	136
2013	67	778	157	156
2014	14	443	159	150
2015	21	520	199	191
2016	23	555	211	201
2017	17	657	224	211

a tax deduction in the case of labor income and total income separately. 14 shows the number of tax deduct among donors in our sample.[7] When we only use information about tax deduction in the case of labor income, the majority of respondents did not apply for a tax deduction (see the first and third columns). When we use information about tax deduction in the case of both labor and total income, we make a dummy taking 1 if respondents applied for a tax deduction in the case of either labor or total income. As a result, more than half of the respondents applied for a tax deduction.

If there is no (physical or psychological) cost to apply for a tax deduction, then all individuals should apply for a tax deduction. However, as shown in Table 14, applying for a tax deduction may incur some costs because some respondents did not apply for a tax deduction. Employment status is one dimension of variation of applied cost. Those who are employed in a firm can ask a firm to apply for a tax deduction instead, while those who are self-employed need to apply for it by themselves. Figure 3 shows that the proportion of applying for a tax deduction among employees is higher than among others. Thus, we use employment status as an instrument of a tax deduction.

Our estimation strategy is the panel IV method to estimate the true price effect. The equation of the first stage is as follows:

$$R_{it} = \alpha_{1i} + \lambda \text{Employee}_{it} + X_{it}\beta_1 + \mu_{i1} + \iota_{t1} + \eta_{it} \tag{6}$$

where R_{it} is a dummy of tax deduction, and Employee_{it} is a dummy of employee. After estimating this equation, we calcluate the fitted value of R_{it} denoted by $\hat{R}_{it}$. Using the fitted value $\hat{R}_{it}$, we estimat the following second-stage equation:

[7] Due to the small sample, we rule out observations in 2018.

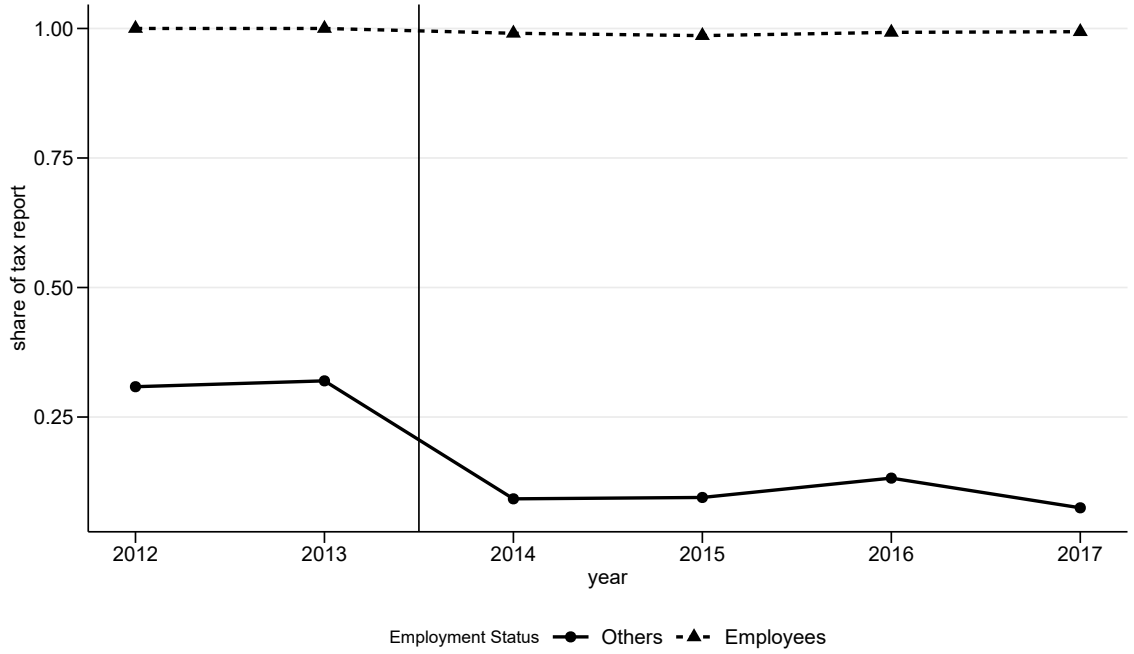

Figure 3: Proportion of Applying for a Tax Deduction Grouped by Employment Status. Notes: We restrict sample to those who donated.

$$Y_{it} = \varepsilon_p^{int} \hat{R}_{it} \ln p_{it}^f + \varepsilon_y^{int} \ln y_{it} + X_{it}\beta + \mu_i + \iota_t + u_{it}. \tag{7}$$

where Y_{it} is an outcome variable. When we estimate the extensive-margin elasticity, an outcome variable Y_{it} is a dummy of giving, D_{it}. When we estimate the intensive-margin elasticity, an outcome variable Y_{it} is a logged value of giving, $\ln g_{it}$. The variable $\ln p_{it}^f$ is the first price of charitable giving to avoid the problem that the giving price depends on charitable giving.

The instrumental vairbale Employed_{it} must hold independence of u_{it} conditional on covariates. There are two potential sources to violate this assumption. First, the employment status may produce income variation. If this is true, then the employment status affects charitable giving through an income effect. Second, an opportunity of giving may depend on employment status. For example, a doctor and a public servant may have more opportunities to donate than others. If so, the instrument is correlated with u_{it}. To avoid this problem, we control the interaction between year dummies and industry dummies.

Table 15: First-Stage Result: Effect of Employee on Tax Deduction

	(1)	(2)	(3)
employee	0.508***	0.464***	0.457***
	(0.047)	(0.049)	(0.050)
Individual and time FE	Y	Y	Y
log(income)	N	Y	Y
Age	N	Y	Y
Year x Education	N	Y	Y
Year x Gender	N	Y	Y
Year x Resident Area	N	Y	Y
Year x Dummy of industry	N	N	Y
N	11088	11085	10942
Adjusted R-squared	0.918	0.919	0.920

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

Table 16: Second-Stage Result (Overall Price Elasticity)

	(1)	(2)	(3)
Propensity of Deduction x log(first price)	-2.364***	-1.710***	-1.603***
	(0.401)	(0.447)	(0.466)
Individual and time FE	Y	Y	Y
log(income)	N	Y	Y
Age	N	Y	Y
Year x Education	N	Y	Y
Year x Gender	N	Y	Y
Year x Resident Area	N	Y	Y
Year x Dummy of industry	N	N	Y
N	16946	16946	16946
Adjusted R-squared	0.511	0.513	0.514

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at individual level. When controlling age, we alson include its squared term. Propensity of Deduction is the predicted value of R_{it} calculated by the model (3) in Table 15.

6.2 Results

Table 15 shows estimation results of the first stage. As a result, the employed dummy is strongly positively correlated with applying for a tax deduction. In any specification, employed dummy increases the probability of tax deduction by more than 45 percentage points. Moreover, the ratio of coefficient to standard error is greater than nine. This implies that the F-statistics of the instrument is greater than 81. Thus, our panel IV method does not have a weak instrument problem. For the second stage, we obtain the predicted value of R_{it}, using the model (3).

Table 16 reports overall elasticities controlling the self-selection of the tax report. The estimated elasticities are similar value to the benchmark results shown in Table 3. When we only include individual and time fixed effects, the overall elasticity is -2.364. When we control the same covariates as the model (5) in Table 3, the overall elasticity is -1.710. These values are statistically significant, and slightly more elastic than the benchmark results (see the column (1) and (5) in Table 3). Since those who did not apply for the

Table 17: Second-Stage Result (Intensive-Margin Price Elasticity)

	(1)	(2)	(3)
Propensity of Report x log(first price)	-1.161***	-0.947***	-0.987***
	(0.284)	(0.318)	(0.342)
Individual and time FE	Y	Y	Y
log(income)	N	Y	Y
Age	N	Y	Y
Year x Education	N	Y	Y
Year x Gender	N	Y	Y
Year x Resident Area	N	Y	Y
Year x Dummy of industry	N	N	Y
N	5840	5840	5840
Adjusted R-squared	0.696	0.698	0.697

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at individual level. When controlling age, we alson include its squared term. Propensity of Deduction is the predicted value of R_{it} calculated by the model (3) in Table 15.

Table 18: Second-Stage Result (Extensive-Margin Price Elasticity)

	(1)	(2)	(3)
Propensity of Deduction x log(first price)	-0.506***	-0.347***	-0.319***
	(0.090)	(0.104)	(0.110)
Implied price elasticity	-1.469***	-1.008***	-0.926***
	(0.262)	(0.301)	(0.320)
Individual and time FE	Y	Y	Y
log(income)	N	Y	Y
Age	N	Y	Y
Year x Education	N	Y	Y
Year x Gender	N	Y	Y
Year x Resident Area	N	Y	Y
Year x Dummy of industry	N	N	Y
N	16946	16946	16946
Adjusted R-squared	0.426	0.427	0.428

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at individual level. When controlling age, we alson include its squared term. Propensity of Deduction is the predicted value of R_{it} calculated by the model (3) in Table 15. The implied extensive-marign price elasticity is evaluated at the sample mean of D_{ijt}.

tax deduction did not receive the tax incentive actually, these results can be naturally interactable. Furthermore, when we control the interaction term between year dummies and industry dummies, the result does not change.

In Table 17 and Table 18, we show the intensive-margin elasticity and the extensive-margin elasticity. The estimated elasticities are quite similar to the benchmark results shown in Table 4 and Table 5. Column (2) of Table 17 uses the same covariates as in the benchmark result, the estimated value is similar to the benchmark one (the fifth column of Table 4). About the extensive-margin elasticity, column (2) of Table 18 uses the same covariates as in the benchmark result, the estimated value is similar to the benchmark one (the fifth column of Table 5). When we further control for the interaction between year dummies and industry dummies, we can obtain similar estimated values.

We estimate the true price effect using panel IV. As a result, we obtain similar results to the benchmark results shown in Table 3, Table 4, and Table 5.

7 Conclusions

In this paper, we investigate the giving price elasticity and its heterogeneity as for perception towards the government using South Korean panel data. As a result, we obtain two findings.

Firstly, the estimation shows that the giving price elasticity in Korea is larger than 1 in the sense of absolute value. Although the estimated values seem vulnerable for the estimation method, most of results show that the giving price elasticity is more elastic for extensive margin than intensive margin. This implies that the policymakers should consider not only how much donors additionally pay (intensive margin) but also how many people will be donors (extensive margin) for tax reform.

Secondly, we show that the giving price elasticity for those who think that the government is inefficient is more elastic than the others. Although the previous research shows that those who do not believe the efficiency of the government would donate more than the others, our result firstly shows that such a behavior may depend on the giving price.

From the results, we show that the giving price elasticity would be affected by the efficiency of the government. However, researchers may find the difference of giving behavior as for the other dimensions of heterogeneities. To understand the giving behavior and to contribute the policy making, more sophisticated research is neeeded.

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