Estimating Effect of Tax Incentives on Charitable Giving Considering Self-Selection of Tax Relief in South Korea

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Introduction

- In many countries, tax relief for charitable giving are implemented.
- The elasticity of giving tax relief is known as a key parameter to evaluate the welfare implication (Saez, 2004).
  - Intuitively, if the elasticity is more than 1 in absolute value, \$1 of tax relief make more than \$1 of charitable giving.
- Many papers investigate the elasticity based on tax return data (Almunia et al., 2020; Auten et al., 2002).

Introduction

- However, the tax return data record only the declared charitable giving.
  - First issue: **Actual donations is different from declared donations.** (Fack and Landais, 2016; Gillitzer and Skov, 2018)
  - We use panel survey data in South Korea to deal with this issue.
- Tax payers decide the amount of donation and whether to declare tax relief based on the size of tax incentive and declaration cost.
  - Second issue: Neglect of this declaration cost may bias the estimations of elasticity.
  - We use instrumental variable (IV) and control function approach for this issue.
- Based on DID as an identification strategy, we investigate the giving price elasticity of South Korea.

Introduction

Result

1. Baseline results show that the giving price elasticity is less than -1.4 in terms of intensive margins and less than -1.7 in terms of extensive margins in Korea.
2. The estimated giving price elasticity for those who declare charitable giving is around -1.2 -1.6.
   - These estimates are more elastic than the estimates in the extant research, many of which show around -1.
3. (Not in the paper) The estimated declaration cost of giving is KRW ($).
4. (Not in the paper) Given our estimates, increasing the subsidy on charitable giving will be desirable in Korea.

Conceptual Frameworks

Optimization Problem

Following Almunia et al. (2020), consider allocation problem between private consumption (x_{it}) and charitable giving (g_{it})

$$\max_{x_{it}, g_{it}, R_{it}} U(x_{it}, g_{it}, G_t) = u_i(x_{it}, g_{it}, G_t) - R_{it}K_{it}, \tag{1}$$

$$\text{s.t. } x_{it} + g_{it} = y_{it} - R_{it}T_{it}(y_{it}, g_{it}) - (1 - R_{it})T_{it}(y_{it}), \tag{2}$$

$$G_t = g_{it} + G_{-it}, \tag{3}$$

where y_{it} is pre-tax total income, R_{it} is a dummy of declaration of tax relief and $T_{it}(y_{it})$ and $T_{it}(y_{it}, g_{it})$ are respectively the amount of tax when i does not declare tax relief and when i declares tax relief in year t. G_{-it} is public goods supplied by others.

Remarks on Optimization Problem

We assume

- No saving
- G_{-it} is large enough to $\frac{\partial u_i}{\partial G}(x, g, G) \approx 0$

Given R_{it}, optimal level of donations sloves

$$\max_{g_{it}} u_i(y_{it} - R_{it}T_{it}(y_{it}, g_{it}) - (1 - R_{it})T_{it}(y_{it}) - g_{it}, g_{it}, g_{it} + G_{-it}). \tag{4}$$

- We can ignore application cost K_{it} when solving optimal giving level because the application cost does not depend on g_{it}

First-Order Condition

$$-\frac{\partial u_i}{\partial x_{it}}\left(R_{it}\frac{\partial T_{it}}{\partial g_{it}}(y_{it}, g_{it}) + 1\right) + \frac{\partial u_i}{\partial g_{it}} = 0 \tag{5}$$

- $\partial T_{it}/\partial g_{it} < 0$ is tax incentive of charitable giving.
  - Let $s_{it} \equiv |\partial T_{it}/\partial g_{it}|$ be size of tax incentive.
  - Relative giving price is $1 - s_{it}$
  - As we explain later, there is *within* variation of s_{it} due to tax reform.

Let $g_i(1 - R_{it}s_{it}, y_{it})$ be a demand function of charitable giving.

- Define $g_i(1 - s_{it}, y_{it})$ and $g_i(1, y_{it})$ to be the optimal levels of donations (potential outcomes) for choices $R_{it} = 1, 0$ respectively.

Self-Selection of Tax Relief

We can write indirect utility (without application cost) as

$$v_i(1 - s_{it}, y_{it}, G_{-it}) - K_{it}, \tag{6}$$
$$v_i(1, y_{it}, G_{-it}). \tag{7}$$

Thus, individual i applies for tax relief in year t, that is, $R_{it} = 1$ iff

$$\Delta v_{it} \equiv v_i(1 - s_{it}, y_{it}, G_{-it}) - v_i(1, y_{it}, G_{-it}) \geq K_{it}. \tag{8}$$

Identification Strategy

Outcome Equation

We assume the demand function $g_i(y_{it}, 1 - R_{it}s_{it})$ can be written as the following log-log demand function with two-way FEs:

$$\ln g_{it} = \theta_i + \gamma \ln(1 - R_{it}s_{it}) + \beta X'_{it} + \iota_t + u_{it}. \tag{9}$$

- θ_i and ι_t are individual and time FE, respectively.
- X_{it} includes pre-tax income (y_{it}) and others.
- If $R_{it} = 1$, then the logged price of giving is $\ln(1 - s_{it})$; otherwise, $\ln 1 = 0$.

Our parameter of interest is γ, which represents the price elasticity of charitable giving.

2014 Tax Reform in South Korea

Our major *within* variation of tax incentive (s_{it}) comes from the 2014 tax reform.

- Before 2014, tax deduction (所得控除) was used for tax relief on charitable giving.
  - the giving price depended on income level.
- After 2014, tax credit (税額控除) started to be used for tax relief on charitable giving.
  - The tax credit rate was determined as 15%.
  - Giving price is 0.85, irrespective of income level.

2014 Tax Reform in South Korea

Tax deduction system (until 2013)

$$T_{it}(y_{it}, g_{it}) = T_{it}(y_{it} - g_{it}) \tag{10}$$

- In 2012 and 2013, the marginal tax rate was the same, though it was different from ones before 2011.
- Tax incentive is $s_{it} = T'(y_{it} - g_{it})$

Tax credit system (from 2014)

$$T_{it}(y_{it}, g_{it}) = T_{it}(y_{it}) - mg_{it} \tag{11}$$

- m is tax credit rate and is $m = 0.15$
- Tax incentive is $s_{it} = m$

Source of Endogeneity

- Giving price is endogenous to the amount of giving before 2014
  - $s_t(y_{it}, g_{it}) = T'(y_{it} - g_{it})$ if $t < 2014$. $s_t(y_{it}, g_{it}) = 0.15$ if $t \geq 2014$.
  - $1 - s_t(y_{it}, g_{it})$ is called as the last-price
- If the declaration cost is ignored, the estimation should be biased.
  - The giving price depends not only on marginal tax rate and tax credit rate, but also on the declaration behavior.
  - As far as we know, only Almunia et al. (2020) deal with this problem, though they used tax return data.

We use the first-price of giving $1 - s_t^f(y_{it})$ as an instrumental variable (IV) of $1 - R_{it}s_t(y_{it}, g_{it})$, where $s_t^f(y_{it}) = s_t(y_{it}, 0)$.

References

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

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.

Fack, G., Landais, C., 2016. The effect of tax enforcement on tax elasticities: Evidence from charitable contributions in france. Journal of Public Economics 133, 23–40. doi:https://doi.org/10.1016/j.jpubeco.2015.10.004

Gillitzer, C., Skov, P.E., 2018. The use of third-party information reporting for tax deductions: evidence and implications from charitable deductions in Denmark. Oxford Economic Papers 70, 892–916. doi:10.1093/oep/gpx055

Saez, E., 2004. The optimal treatment of tax expenditures. Journal of Public Economics 88, 2657–2684. doi:10.1016/j.jpubeco.2003.09.004