

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 Landaï, 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. By reducing application cost, we can increase charitable giving.
4. Given our estimates, increasing the subsidy on charitable giving will be desirable in Korea.

Conceptual Framework

Optimization Problem

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

$$\max_{x_{it}, g_{it}, R_{it}} U(x_{it}, g_{it}, G_t) = u_i(x_{it}, g_{it}, G_t) - R_{it}K(Z_{it}), \quad (1)$$

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

$$G_t = g_{it} + G_{-it}, \quad (3)$$

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. $K(Z_{it})$ is application cost which is a function of instrument Z_{it} .

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 solves

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

- We can ignore application cost $K(Z_{it})$ when solving optimal giving level because the application cost does not depend on g_{it}

First-Order Condition

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

- $\partial T_{it} / \partial g_{it} < 0$ 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.

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 as

$$v_i(1 - s_{it}, y_{it}, G_{-it}) - K(Z_{it}), \quad (6)$$

$$v_i(1, y_{it}, G_{-it}). \quad (7)$$

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

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

Identification Strategy

Outcome Equation

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

$$\ln g_i(1 - s_{it}, y_{it}) = \theta_i + \gamma \ln(1 - s_{it}) + \beta X'_{it} + \iota_t + u_{it}, \quad (9)$$

$$\ln g_i(1, y_{it}) = \theta_i + \beta X'_{it} + \iota_t + u_{it}. \quad (10)$$

Thus, observed outcome equation is

$$\ln g_{it} = \theta_i + \gamma R_{it} \times \ln(1 - s_{it}) + \beta X'_{it} + \iota_t + u_{it}. \quad (11)$$

- θ_i and ι_t are individual and time FE, respectively.
- X_{it} includes pre-tax income (y_{it}) and others.
- If $R_{it} = 0$, the relative price is one (its logged value is $\ln 1 = 0$).
- Our parameter of interest is γ , which represents the price elasticity of charitable giving.

Source of Price Variation

1. Within variation of tax incentive (s_{it})
 - Major variation comes from the 2014 tax reform
 - Before 2014, tax deduction (所得控除) was used for tax relief on charitable giving.
 - After 2014, tax credit (税額控除) started to be used for tax relief on charitable giving.
2. Within variation of application for tax relief (R_{it})
 - This variation is endogenous.
 - We use **wage earner dummy** and **number of tax accountant** as instrumental variables (IV).

Background: 2014 Tax Reform in South Korea

Tax deduction system (until 2013)

$$T_{it}(y_{it}, g_{it}) = T_{it}(y_{it} - g_{it}) \quad (12)$$

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

Tax credit system (from 2014)

$$T_{it}(y_{it}, g_{it}) = T_{it}(y_{it}) - mg_{it} \quad (13)$$

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

Background: Application System for Wage Earners

Background: Application System for Non Wage Earners

Data

Estimating Conventional Price Elasticities

Control Function Approach

Welfare Implication

Conclusion

References

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