

Giving Price, Government Expenditure, and Political Trust

Hiroki Kato (Osaka University) Tsuyoshi Goto (Chiba
University) Yong-Rok Kim (Kobe University)

2021/01/09

Trust Index

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

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

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

We rescale the trust index to an interval $[0, 1]$.

Histogram of Trust Index

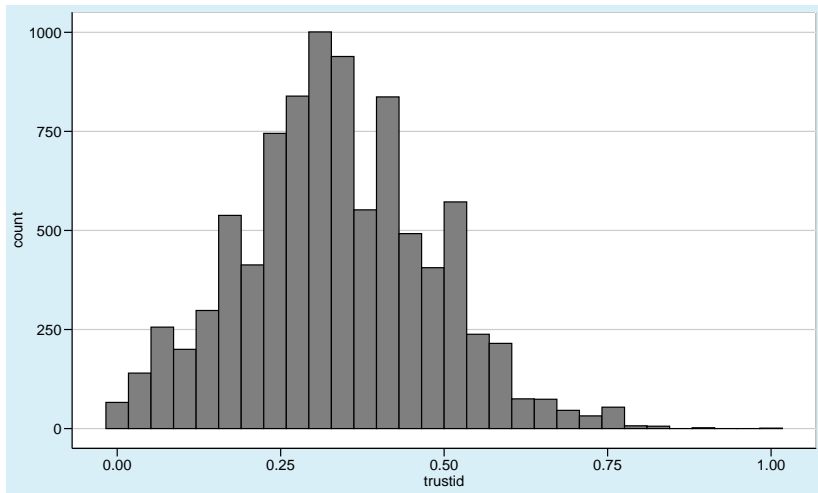


Figure 1: Histogram of Trust Index

Regression of Trust Index

Table 1: Regression of Trust Index (Year = 2018)

| Variables | Coefficients | S.E. |
|-------------------------|--------------|---------|
| gender | 0.007** | (0.003) |
| age | -0.003*** | (0.001) |
| $I((age/100)^2)$ | 0.311*** | (0.055) |
| factor(educ)2 | 0.004 | (0.005) |
| factor(educ)3 | 0.003 | (0.006) |
| factor(political_pref)2 | 0.027** | (0.013) |
| factor(political_pref)3 | 0.033*** | (0.012) |
| factor(political_pref)4 | 0.021* | (0.013) |
| factor(political_pref)5 | -0.065*** | (0.014) |
| Obs | 7697 | |
| Adjusted R-sq | 0.0316 | |

Baseline Regressions

Our baseline regression equation is

$$\log(\text{Giving}_{ijt}) = \alpha_i + \beta_1 \log(\text{Price}_{ijt}) + \beta_2 \log(\text{Expend}_{jt}) \\ + \delta X_{ijt} + \lambda_t + \epsilon_{ijt}.$$

- ▶ $\log(\text{Giving}_{ijt})$ 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 .
- ▶ $\log(\text{Expend}_{jt})$ is local government j 's expenditure for social welfare in year t .
- ▶ β_1 represents the price elasticity of giving.
- ▶ β_2 represents the local government expenditure elasticity of giving.
- ▶ α_i and λ_t are individual and time fixed effect, respectively.

Result of Baseline Regressions

Table 2: Baseline Regressions

| | (1) | (2) | (3) |
|----------------------------------|----------------------|----------------------|----------------------|
| $\ln(\text{Social Welfare}+1)$ | 0.124** (0.053) | 0.839*** (0.278) | 8.426*** (1.434) |
| $\ln(\text{Social Welfare}+1)^2$ | | | -0.591*** (0.108) |
| $\ln(\text{giving price})$ | -1.089*** (0.201) | -1.083*** (0.226) | -1.163*** (0.226) |
| Logarithm of income | Y | Y | Y |
| Age | N | Y | Y |
| Year X Educ | N | Y | Y |
| Year X Gender | N | Y | Y |
| Living Dummy | N | Y | Y |
| Obs | 54213 | 54211 | 54211 |

Interpretations of Baseline Regression

- ▶ We found the **price effect** of giving (1% price increase leads to about 1.1% giving decrease)
- ▶ We found the **crowd-in effect** of local government expenditure (1% expenditure increase leads to 0.8% increase giving)
 - ▶ This effect is heterogenous by the level of government expenditure. As local government expenditure increases, the crowd-in effect vanishes, and the crowd-out effect emerges.

Subgroup Regressions

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

- ▶ Lowest: 0 ~ 20% quantile of trust index
- ▶ Lower: 20 ~ 40% quantile of trust index
- ▶ Neutral: 40 ~ 60% quantile of trust index
- ▶ Higher: 60 ~ 80% quantile of trust index
- ▶ Highest: 80 ~ 100% quantile of trust index

We include the logarithm of income, age, interactions b/w year and education, interactions b/w year and gender, and living are dummy into covariates.

Results of Subgroup Regressions

Table 3: Subgroup Regressions

| | Lowest | Lower | Neutral | Higher | Highest |
|----------------------|-------------------|-------------------|----------------------|---------------------|---------------------|
| ln(Social Welfare+1) | 0.371 (0.669) | 0.472 (0.636) | 1.090* (0.653) | 1.471** (0.621) | 0.817 (0.554) |
| ln(giving price) | -0.682 (0.556) | -0.482 (0.460) | -1.629*** (0.480) | -1.277** (0.529) | -1.211** (0.503) |
| Obs | 10239 | 10358 | 10367 | 10368 | 12879 |

Interpretations of Subgroup Regressions

- ▶ We could **NOT** find the crowd-in (crowd-out) effect for respondents whose trust is very low and very high.
 - ▶ We found the crowd-in effect for middle group.
 - ▶ If the trust for politicians is low, respondents have a willingness to provide public goods without government help.
 - ▶ If the trust for politicians is very high, respondents take a strategy of free-rides.
- ▶ We could **NOT** find the price effect for respondents whose trust is very low.
 - ▶ If the trust is very low, respondents do not want to use a tax benefit policies.

Heterogeneity By Political Trust

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

$$\begin{aligned}\log(\text{Giving}_{ijt}) = & \alpha_i + \beta_0 \text{Trust}_{ij} \\ & + \beta_1 \log(\text{Price}_{ijt}) + \beta_2 \log(\text{Price}_{ijt}) \cdot \text{Trust}_{ij} \\ & + \beta_3 \log(\text{Expend}_{jt}) + \beta_4 \log(\text{Expend}_{ijt}) \cdot \text{Trust}_{ij} \\ & + \delta X_{ijt} + \lambda_t + \epsilon_{ijt}.\end{aligned}$$

- ▶ Price elasticity is obtained by $\beta_1 + \beta_2 \cdot \text{Trust}_{ij}$.
- ▶ Government expenditure elasticity is obtained by $\beta_3 + \beta_4 \cdot \text{Trust}_{ij}$.

Result of Heterogeneity By Political Trust (1)

Table 4: Heterogeneity of Political Trust

| Variables | Coefficients | S.E. |
|----------------------|--------------|---------|
| ln(Social Welfare+1) | 0.836*** | (0.296) |
| X Trust index | -0.064 | (0.252) |
| ln(giving price) | -0.268 | (0.503) |
| X Trust index | -2.558* | (1.319) |
| Obs | 51306 | |

Result of Heterogeneity of Political Trust (2)

Table 5: Heterogeneity of Political Trust (include squared term)

| Variables | Coefficients | S.E. |
|-----------------------|--------------|---------|
| ln(Social Welfare+1) | 0.522 | (0.327) |
| X Trust index | 2.064** | (0.986) |
| X Squared trust index | -3.032** | (1.324) |
| ln(giving price) | 0.190 | (0.886) |
| X Trust index | -5.783 | (4.815) |
| X Squared trust index | 4.625 | (6.302) |
| Obs | 51306 | |

Graphical Representation of Heterogeneity Effect

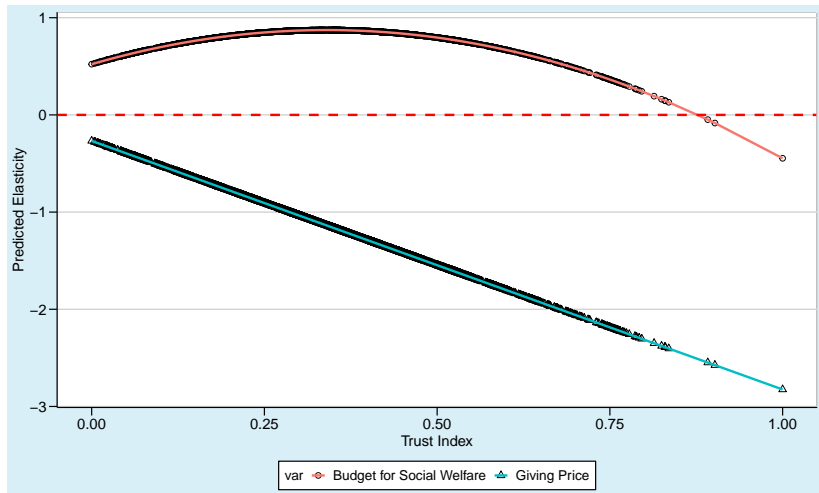


Figure 2: Relationship between Trust Index and Predicted Elasticity