Additional Analysis

Last updated on 2023/08/21

Estimate Elasticities among Claimants

Results: First-Price Elasticity

Table 1: Intensive-Margin Price Elasticity among Claimants

	Log donation
	FE
	(1)
Applicable price (β_a)	-1.147**
	(0.506)
Log income	-1.221
	(2.213)
Num.Obs.	4171

Results: Last-Price Elasticity

Table 2: Intensive-Margin Last-Price Elasticity among Claimants

	Log donation	
	FE	FE-2SLS
	(1)	(2)
Applicable last-price	−0.961*	−1.197**
	(0.517)	(0.531)
Log income	−1.108	−1.269
	(2.213)	(2.214)
1st stage information (Excluded instrument: Applicable price)		
F-statistics of instrument		40 585.827
Wu-Hausman test, p-value		0.019
Num.Obs.	4171	4171

Two Period Estimation: Removing Bracket-Shifting Effect

Use 2012 and 2015 data: First-Stage

Table 3: First-Stage Models

	Effective price	
	Donors (Intensive-margin)	Donors and Non-donors (Extensive-margin)
	(1)	(2)
Excluded instruments		
Applicable price	0.739***	0.301***
	(0.110)	(0.052)
Covariates		
Log income	−0.229	−0.026
	(0.529)	(0.190)
Num.Obs.	2004	7671
RMSE	0.02	0.03

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors clustered at household level are in parentheses. An outcome variable is logged value of the effective price. For estimation, model (1) use donors only (intensive-margin sample), and model (2) use not only donors but also non-donors (extensive-margin sample). In addition to logged income and wage earner dummy shown in table, covariates consist of squared age (divided by 100), number of household members, a dummy that indicates having dependents, a set of dummies of industry a set of dummies of residential area, and individual and time fixed effects. Excluded instrument is a logged applicable price.

Use 2012 and 2015 data: Second-Stage

Table 4: Estimation Results of Price Elasticities

	Log donation			Dummy of donor		
	FE		FE-2SLS	FE		FE-2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
Applicable price (β_a)	−1.275			−0.326*		
	(1.276)			(0.190)		
Effective price (β_e^{FE})		−1.129			−2.757***	
		(1.601)			(0.225)	
Effective price (β_e^{IV})			−1.725			−1.084*
			(1.754)			(0.574)
Log income	−3.555	−3.777	−3.951	2.062**	1.550**	2.034***
	(10.491)	(10.312)	(10.299)	(0.838)	(0.725)	(0.761)
Implied price elasticity						
Estimate				−1.388*	−11.734***	−4.612*
				(0.808)	(0.958)	(2.443)
1st stage information (Excluded instrument: Applicable price)						
F-statistics of instrument			288.802			282.264
Wu-Hausman test, p-value						
Num.Obs.	2004	2004	2004	7671	7671	7671

Notes: * p $<$ 0.1, ** p $<$ 0.05, *** p $<$ 0.01. Standard errors clustered at household level are in parentheses. An outcome variable is logged value of the effective price. For estimation, model (1) use donors only (intensive-margin sample), and model

One-Year Bracket-Shifting

Take an one-year lag of applicable price

```
## # A tibble: 4 x 4
##    year          mu       var shift
##   <dbl>       <dbl>     <dbl> <int>
## 1  2010 NaN         NA            0
## 2  2011  -0.00197    0.00195    573
## 3  2012  -0.00237    0.00207    644
## 4  2013  -0.000662   0.00202    642
```

Two-Year Bracket Shifting

Take a two-year lag of applicable price

```
## # A tibble: 4 x 4
##    year        mu       var shift
##   <dbl>     <dbl>     <dbl> <int>
## 1  2010 NaN        NA            0
## 2  2011 NaN        NA            0
## 3  2012  -0.00304  0.00233   559
## 4  2013  -0.00403  0.00247   755
```

Three-Year Bracket Shifting

```
## # A tibble: 4 x 4
##    year        mu      var shift
##   <dbl>     <dbl>    <dbl> <int>
## 1  2010 NaN       NA           0
## 2  2011 NaN       NA           0
## 3  2012 NaN       NA           0
## 4  2013  -0.00414  0.00238   492
```

How to Remove Bracket-Shifting

We remove tax-payers whose income bracket has been shifted in 2011–2013 (1477 people)

Take an one-year lag of applicable price

```
## # A tibble: 8 x 4
##    year        mu      var shift
##   <dbl>     <dbl>    <dbl> <int>
## 1  2010 NaN        NA            0
## 2  2011   0         0            0
## 3  2012   0         0            0
## 4  2013   0         0            0
## 5  2014  -0.00761   0.00414   1128
## 6  2015   0         0            0
## 7  2016   0         0            0
## 8  2017   0         0            0
```

Remove Bracket-Shifting Sample in 2011–2013

Table 5: First-Stage Models

	Effective price	
	Donors (Intensive-margin)	Donors and Non-donors (Extensive-margin)
	(1)	(2)
Excluded instruments		
Applicable price	0.750***	0.410***
	(0.047)	(0.031)
Covariates		
Log income	−0.312*	−0.279***
	(0.172)	(0.069)
Num.Obs.	5825	21 962
RMSE	0.04	0.04

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors clustered at household level are in parentheses. An outcome variable is logged value of the effective price. For estimation, model (1) use donors only (intensive-margin sample), and model (2) use not only donors but also non-donors (extensive-margin sample). In addition to logged income and wage earner dummy shown in table, covariates consist of squared age (divided by 100), number of household members, a dummy that indicates having dependents, a set of dummies of industry a set of dummies of residential area, and individual and time fixed effects. Excluded instrument is a logged applicable price.

Remove Bracket-Shifting Sample in 2011–2013

Table 6: Estimation Results of Price Elasticities

	Log donation			Dummy of donor		
	FE		FE-2SLS	FE		FE-2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
Applicable price (β_a)	−1.172***			−0.276***		
	(0.436)			(0.090)		
Effective price (β_e^{FE})		−0.670**			−2.878***	
		(0.320)			(0.094)	
Effective price (β_e^{IV})			−1.563***			−0.673***
			(0.589)			(0.203)
Log income	2.496	2.258	2.007	2.046***	1.090***	1.859***
	(1.666)	(1.674)	(1.692)	(0.300)	(0.304)	(0.286)
Implied price elasticity						
Estimate				−1.176***	−12.270***	−2.869***
				(0.385)	(0.400)	(0.866)
1st stage information (Excluded instrument: Applicable price)						
F-statistics of instrument			1068.639			1770.695
Wu-Hausman test, p-value			0.021			< 0.001
Num.Obs.	5825	5825	5825	21 962	21 962	21 962

Notes: * p < 0.1, ** p < 0.05, *** p < 0.01. Standard errors clustered at household level are in parentheses. An outcome variable is logged value of the effective price. For estimation, model (1) use donors only (intensive-margin sample), and model

Heterogeneous Elasticities

Intensive-Margin Price Elasticities

Table 7: Heterogeneity of Price Elasticity

	FE-2SLS			
	Log donation		1 = Donor	
Below/above median income	Below	Above	Below	Above
	(1)	(2)	(3)	(4)
Effective price (β_e^{IV})	−0.543	−1.913***	−9.053	−0.352
	(12.698)	(0.676)	(9.476)	(0.217)
Log income	6.604	1.293	−0.058	1.906***
	(19.053)	(1.764)	(3.021)	(0.342)
Estimate			−62.916	−1.121
			(65.857)	(0.692)
F-statistics of instrument	7.142	745.724	4.944	1152.530
Wu-Hausman test, p-value		0.039	0.396	< 0.001
Num.Obs.	1254	4571	7455	14 507

Price Elasticity of Claiming

Price Elasticity of Claiming

	1 = Claiming	
	FE	FE-2SLS
	(1)	(2)
Applicable first-price	−0.220***	
	(0.050)	
Applicable last-price		−0.223***
		(0.051)
Implied price elasticity		
Estimate	−1.982***	−2.008***
	(0.452)	(0.458)
1st stage information (Excluded instrument: Applicable first-price)		
F-statistics of instrument		1 481 835.010
Wu-Hausman test, p-value		0.102
Num.Obs.	30 252	30 252

Appendix

Full-sample analysis: Stage 1

Full-sample analysis: Stage 2