Does CSOK subsidy affect housing market?

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Introduction

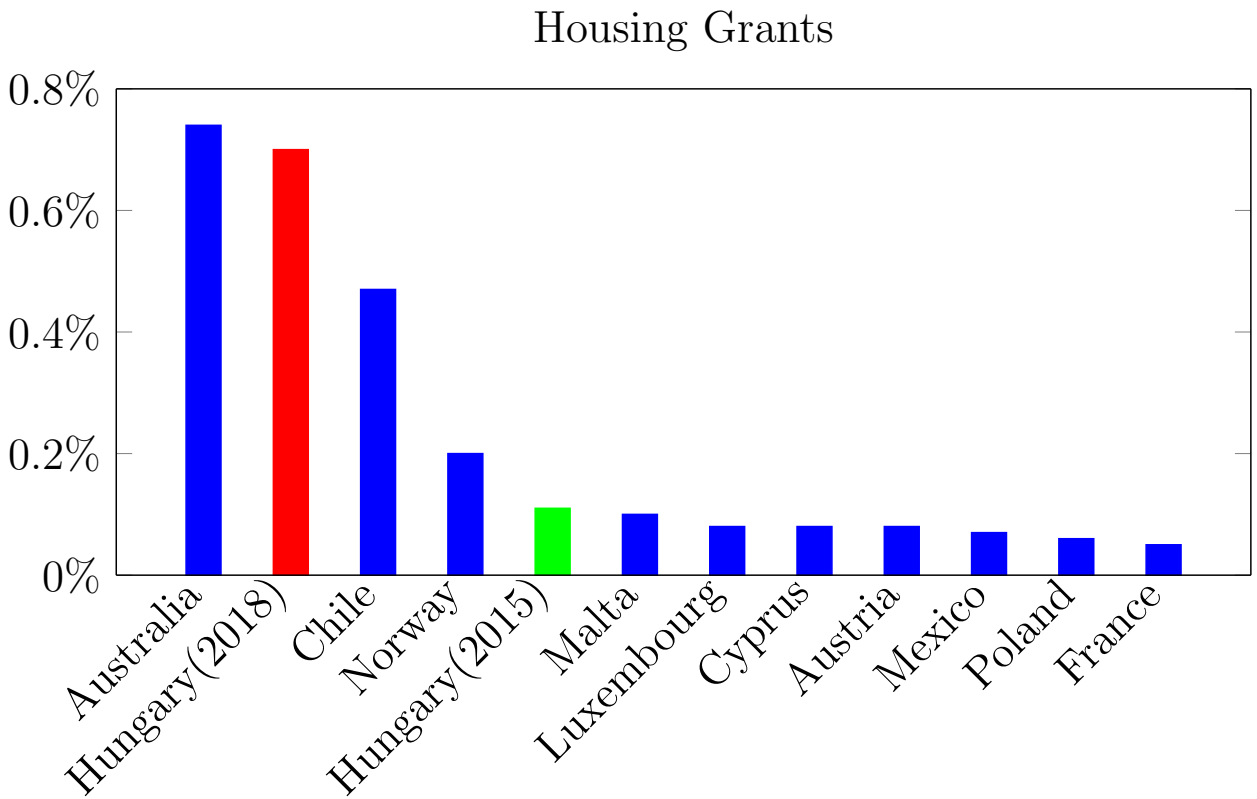
Motivation

Hungarian Expenditures on Housing Grants

1. 226 bln HUF in 2018
   - 1.2% of the budget
   - 0.7% of GDP
2. Second largest among 35 OECD countries
   - 16 have grant programs
   - Australia 1st (0.74%) and 3rd Chile (0.45%)

Introduction

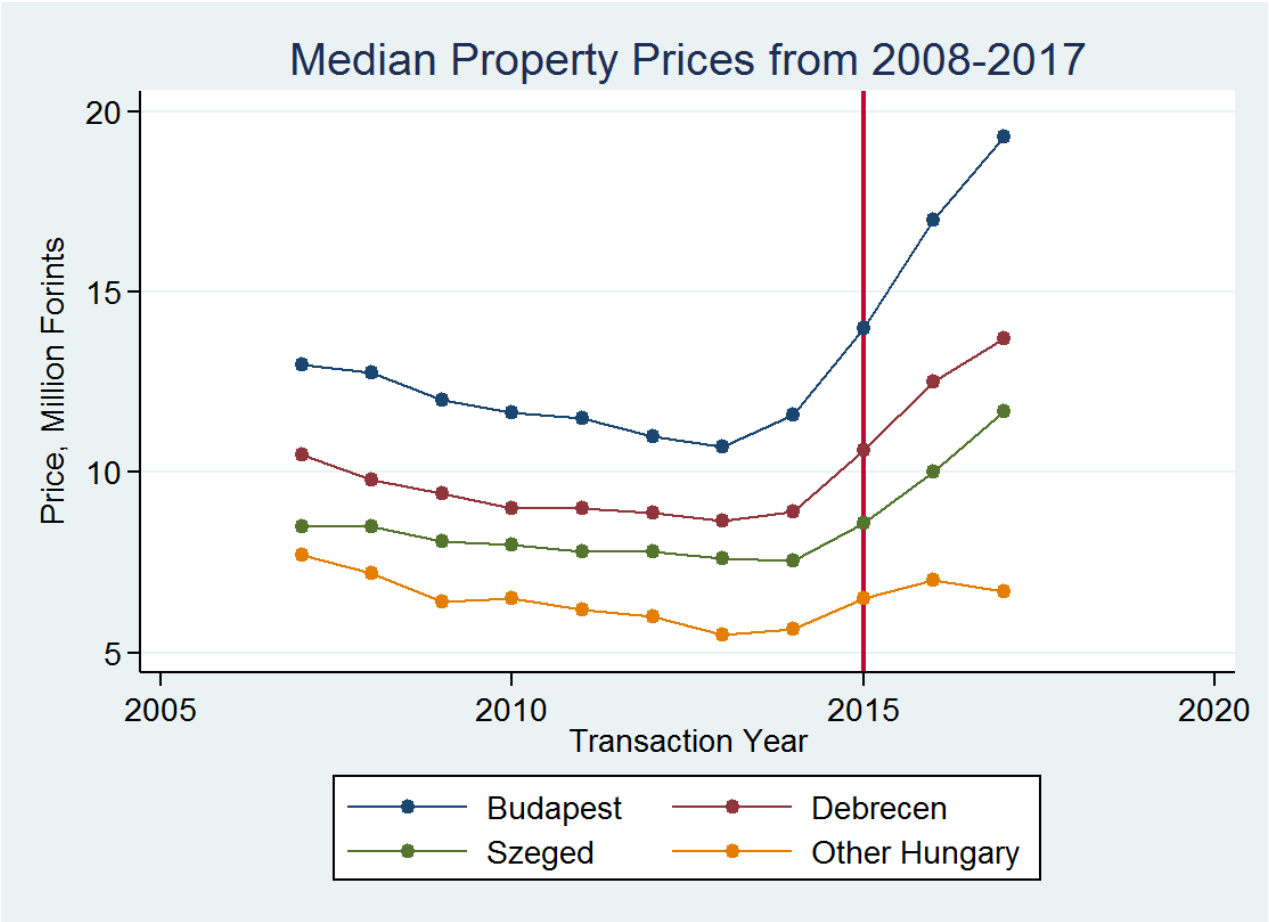
Housing Grants as GPD Share, Selected OECD countries



OECD Affordable Housing Database (2015)

Introduction

Median Property Prices in Hungary



Micro data from Hungarian Statistical Office (2017Q3)

Introduction

Research Questions

1. Does CSOK affect housing market?
2. Who benefits from the subsidy?
   - Buyers
     - Households with kids
   - Supply side
     - Home Owners
     - Developers

CSOK Subsidy

Details

Family Housing Allowance (CSOK)

- from July 2015 to 2020
- supports households with children
  - $age < 25$ + enrolled in school/university
- applies to certain properties
- favors new construction
  - + VAT reduction in Jan 2016 (27% $\rightarrow$ 5%)
- other issues
  - policy counts promised (not actual) kids
  - no criminal/tax arrears record
  - up to date with social insurance contributions
  - policy requirements changed several times

CSOK Subsidy

Subsidy Amount

Subsidy — function of HH size and property characteristics

	New Properties		Old Properties*	
Child	Area	Subsidy, M HUF	Area	Subsidy, M HUF
1^{st}	N/A	0.6	$40m^2$	0.6
2^{nd}	N/A	2.6	$50m^2$	1.43
3^{rd}	Apart.: $60m^2$	10	$60m^2$	2.2
$4^{th}+$	House: $90m^2$		$70m^2$	2.75

*Applies only to used properties priced below 35 M HUF

Nice notches $\rightarrow$ bunching or regression discontinuity design

Data

House Price Index Microdata

Census of all property transactions from 2009 to 2017

1. property characteristics
   - indicator for new (not precise)
   - net property area
   - number of rooms (for a subset of properties)
   - etc.
2. two buyer's characteristics (starting from 2015)
   - citizenship
   - age

Empirical Strategy

Bunching

Consider 35 M HUF restriction for used properties:

$$\max(\text{CSOK}_h) = \begin{cases} 2.75 \text{ M HUF}, & \text{if price} = 34.9\text{M HUF} \\ 0 \text{ M HUF}, & \text{if price} = 35\text{M HUF} \end{cases} \quad (1)$$

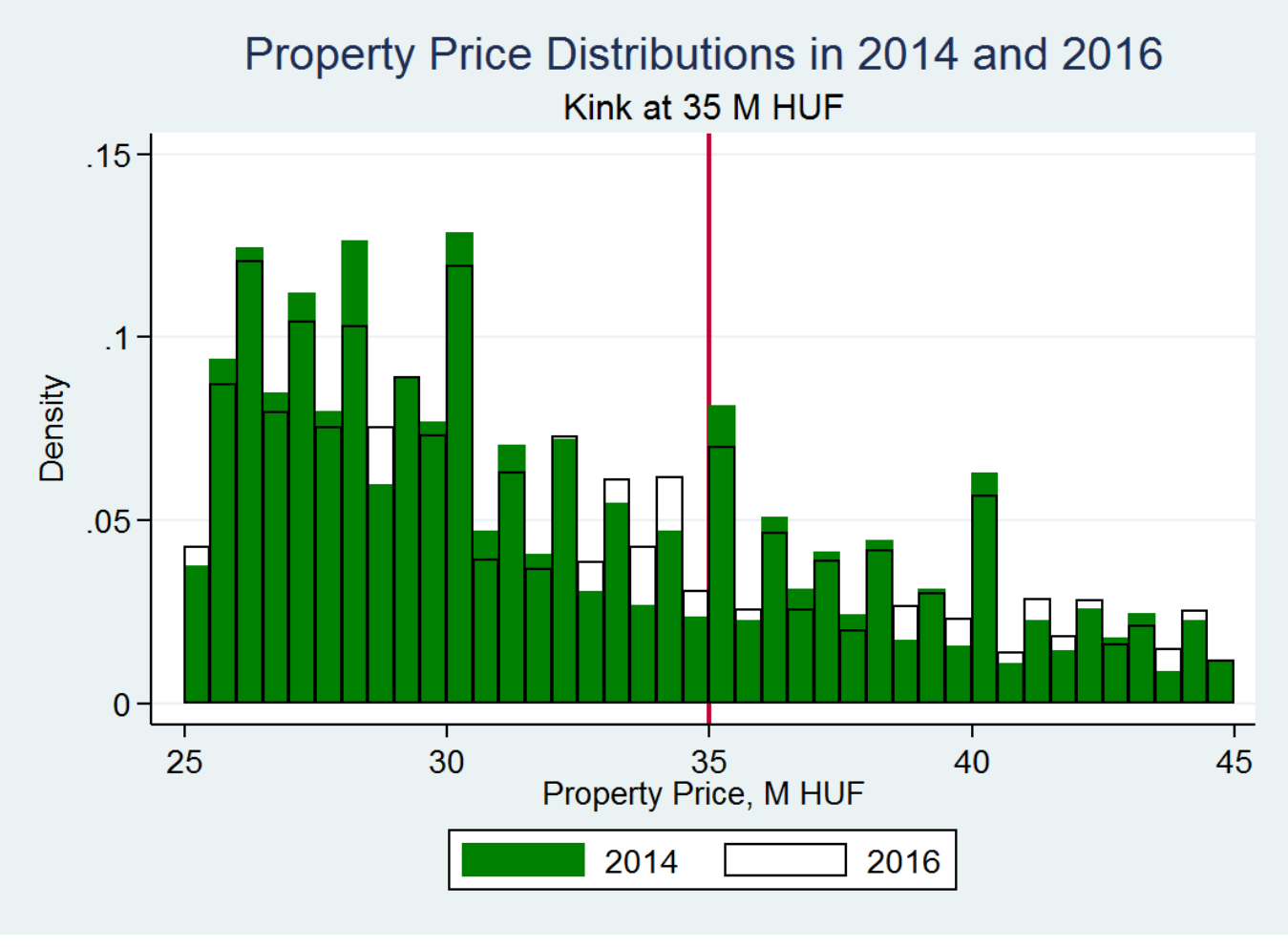
Proposition 1

If CSOK is effective, we should observe relatively more properties purchased right below the notch and less properties — right above.

Empirical Strategy

Bunching

More Properties Sold Just Below 35 M HUF Notch



Empirical Strategy

RDD

Consider $50m^2$ area restriction for used properties:

$$\max(\text{CSOK}_h) = \begin{cases} 0.6 \text{ M HUF}, & \text{if area} = 49m^2 \\ 1.43 \text{ M HUF}, & \text{if area} = 50m^2 \end{cases} \quad (2)$$

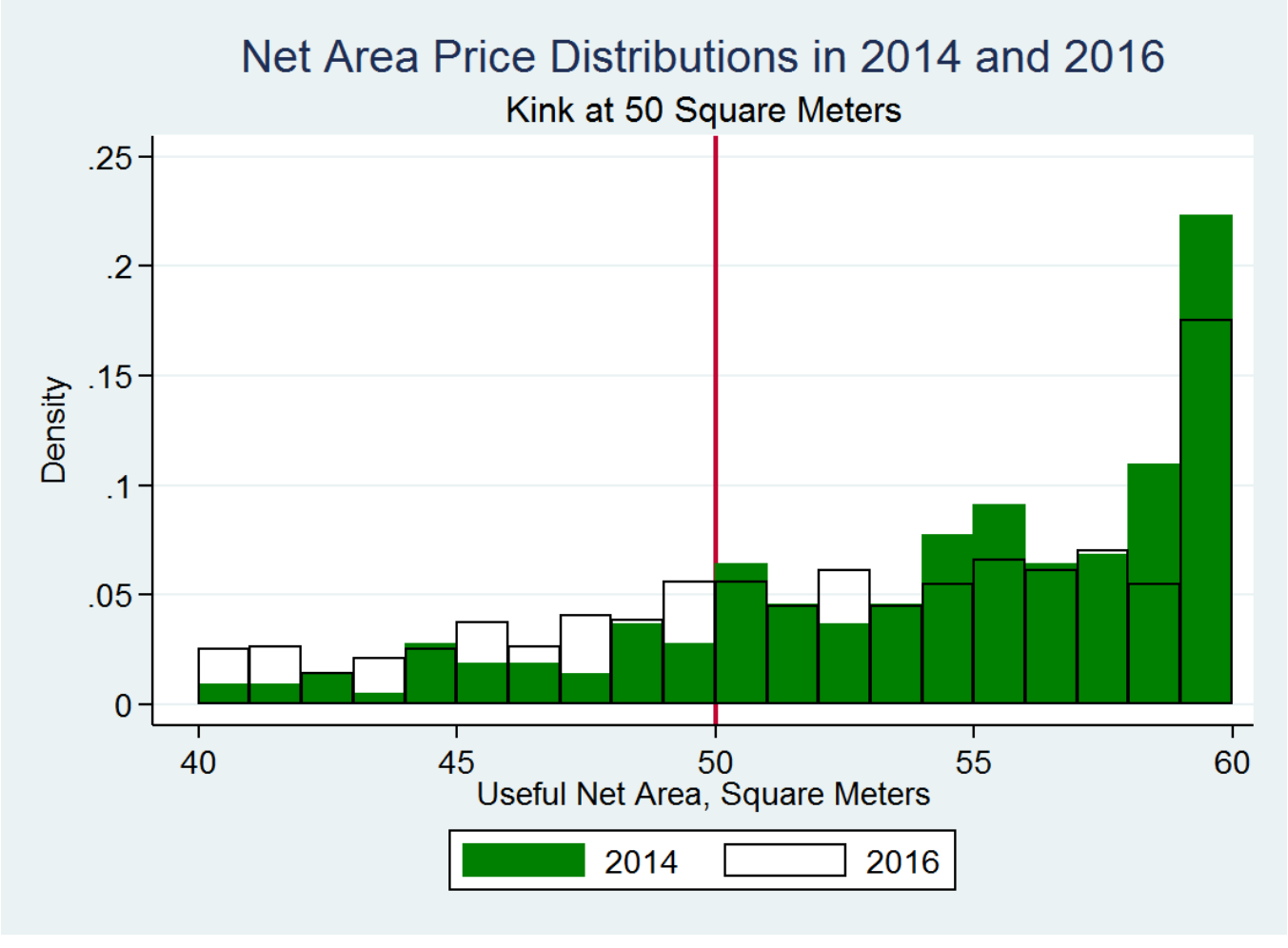
Proposition 2

If sellers appropriate part of CSOK, they should increase prices for $50m^2$ *apartments relatively more than for* $49m^2$ *after CSOK implementation.*

Empirical Strategy

RDD First Stage

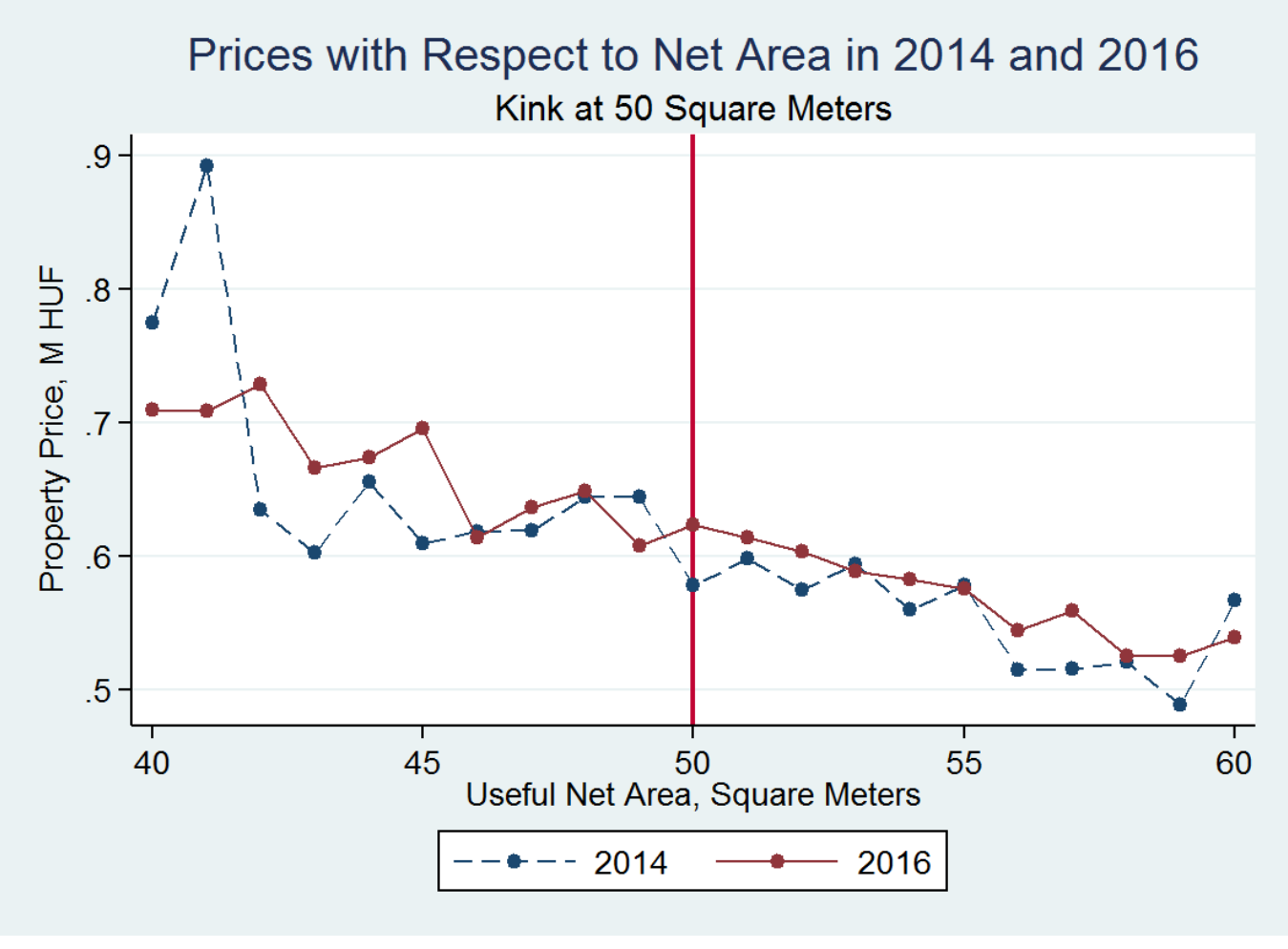
No Bunching to the Right of 50 Square Meters Notch



Empirical Strategy

RDD Second Stage

Higher Prices to the Right of 50 Square Meters Notch



Next Steps

1. Implement Bunching and RDD Estimation
   - 35 M HUF cutoff
   - old properties m^2 cutoffs
2. Improve data on property area
3. Construct data on the addresses of new properties
   - Tulajdoni lap? industry newspaper? magazine?
4. Link data on the property and buyers characteristics
   - (where) do 2-kids families buy 49 vs 50 m^2 properties?

Empirical Strategy

Accounts for 1st endogeneity concern:

- State tax policy responds to price levels

but creates another one:

- Incentives for bunching
  - Example: NYC exemption
  - Retail price: \$110 $\rightarrow$ consumer price: \$119
  - Retail price: \$109.99 $\rightarrow$ consumer price: \$109.99
  - Solution — instrument from taxable income elasticity literature

More

Empirical Strategy - Instrument

Instrument: would-be tax rate applied to predicted item price p_{im}:

$$p_{im} = \alpha + \gamma_{\text{category}} + \gamma_{\text{region}} + \mu_m + season_{im} + \epsilon_{im}$$

- Prediction sample: treatment states before 2000 and control states
- Category example: men's sweaters and vests

Back to return.

More

Robustness Checks

This result is true for most subsamples:

Dependent Variable: Logarithm of Pre-tax Price				
	(1) < 2008	(2) > 2008	(3) Tax↓	(4) Tax↑
Tax Rate	**−0.070***	**0.060**	**−0.003**	**0.074**
	(0.037)	(0.167)	(0.086)	(0.057)
F-statistic				
Sales Tax Holiday	0.634	0.467	0.366	0.571
	(0.630)	(3.18)	(0.967)	(0.293)
Item and month fixed effects are in all columns				
No. of Obs.	367,192	122,487	188,051	88,936
R^2	0.067	0.057	0.069	0.082
No. of Items	63,995	24,350	34,466	16,916

*** p<0.01, ** p<0.05, * p<0.1

More

Robustness Checks 2

Except for some apparel groups for which demand is presumably more elastic:

	Dependent Variable: Logarithm of Pre-tax Price			
	(1) Men	(2) Women	(3) Non-Seasonal	(4) Seasonal
Tax Rate	**−0.04**	**0.01**	**−0.21*****	**0.00**
	(0.077)	(0.124)	(0.050)	(0.077)
F-statistic				
Sales Tax Holiday	-0.729	-0.36	−0.302	−0.254
	(1.92)	(0.551)	(0.891)	(1.10)
Item and month fixed effects are in all columns				
No. of Obs.	141,911	164,016	184,579	324,193
R^2	0.036	0.121	0.010	0.075
No. of Items	11,780	27,306	15,466	7,651

*** p<0.01, ** p<0.05, * p<0.1

Back to return.

More

- Tax incidence (Empirics)
  - Apparel market: Besley and Rosen, 1999; Poterba, 1996
  - Other markets: Kosonen, 2015; DeCicca et al., 2013; Kopczuk et al., 2013; Harding et al., 2012; Doyle and Samphantharak, 2008
- Tax incidence (Theory)
  - Fabinger and Weyl, 2014; Anderson et al., 2001
- Elasticity of apparel expenditures:
  - Einav et al., 2014; Hu and Tang, 2014; Agarwal et al., 2013
- Sales tax and employment:
  - Burnes et al., 2013; Rohlin and Thompson, 2012; Billings, 2009; O'Keefe, 2004