Identifying the Benefits from Homeownership: A Swedish Experiment

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December 2023

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Motivation: Household effects of home ownership are poorly understood

- Many countries subsidize home ownership; U.S. spends $200bn a year
    - Area of rare policy agreement between left and right
- Little empirical causal evidence for presence and magnitude of effects on **households' economic behavior:** consumption, savings, labor supply, portfolio choice
- Economists emphasize different views:
    - Among the main benefits:
        - Housing acts as commitment device to save and work
        - Housing is a collateral asset that improves consumption smoothing
    - Among the main costs:
        - Access to home equity leads to over-spending
        - Housing crowds out financial savings and exposure to stock market

Difficult identification and measurement problem

- **Tenure status is endogenous**: owners differ from renters based on observables (e.g., income and wealth) and unobserved heterogeneity.
- **Building status is endogenous**: buildings owned differ from those that are rented based on observables (e.g., location and amenities).
- **Field experiments do not exist** for fiscal, technical, and ethical reasons. Few quasi-natural experiments in literature, their focus is on non-economic outcome variables.

Our contribution

Exploit quasi-natural experiment in Stockholm

- Study privatization attempts of municipally-owned rental housing
  - Similar to e.g. UK, U.S. (Cambridge, Brooklyn), Asia (Hong Kong)
- Experiment relies on a change in legislation surrounding the privatization process, leading to failure of attempts

Registry-based panel data

- Data at household level capturing all components of the balance sheet, enabling us to impute consumption

Study the joint economic implications of home ownership and housing wealth effect

- Consumption and savings (flows + stocks)
- Labor income and mobility
- Adjustments to the financial portfolio

Main findings

- Homeownership provides benefits: Homeowners increase wealth (in "normal times") but also increase consumption
- Homeownership brings collateral and enables households to smooth consumption: Young homeowners move consumption forward in time and homeowners smooth consumption to a greater extent upon an income shock
- Mobility and upward mobility increases among young homeowners
- Risk-taking in financial portfolios increases for homeowners that are happy with their living where they do: older households and homeowners that do not move

Outline

- **Institutional background and the quasi-experiment**
- Benchmark model
- Data and empirical strategy
- Results

Institutional background

Municipal landlords

- Stockholm as of 2000: 3 municipal landlords owned 110,000 rental apartments (30% of all apts)
- Municipal rental properties are used as benchmarks in the rent-setting for all rental properties

Mass-privatization in Stockholm 1998–2004 (politically motivated)

- 12,200 municipal apartments privatized
- Households formed hundreds of co-ops

Stopplag

- In April 2002, Stopplag law comes into effect
- Only municipal properties that are not critical benchmarks in the rent-setting can be privatized
- Local county boards given mandate to approve or deny privatization attempts based on this principle

Apartments by ownership | Apartment transactions by ownership

The co-op privatization process

1. Tenants form and register co-op
2. Apply with municipal landlord to purchase building
3. Landlord has building appraised and sets asking price to break even (political instruction)
4. Tenants vote (2/3 majority required)
5. Before April 1 2002: Landlord and co-op sign contract and transfer takes place

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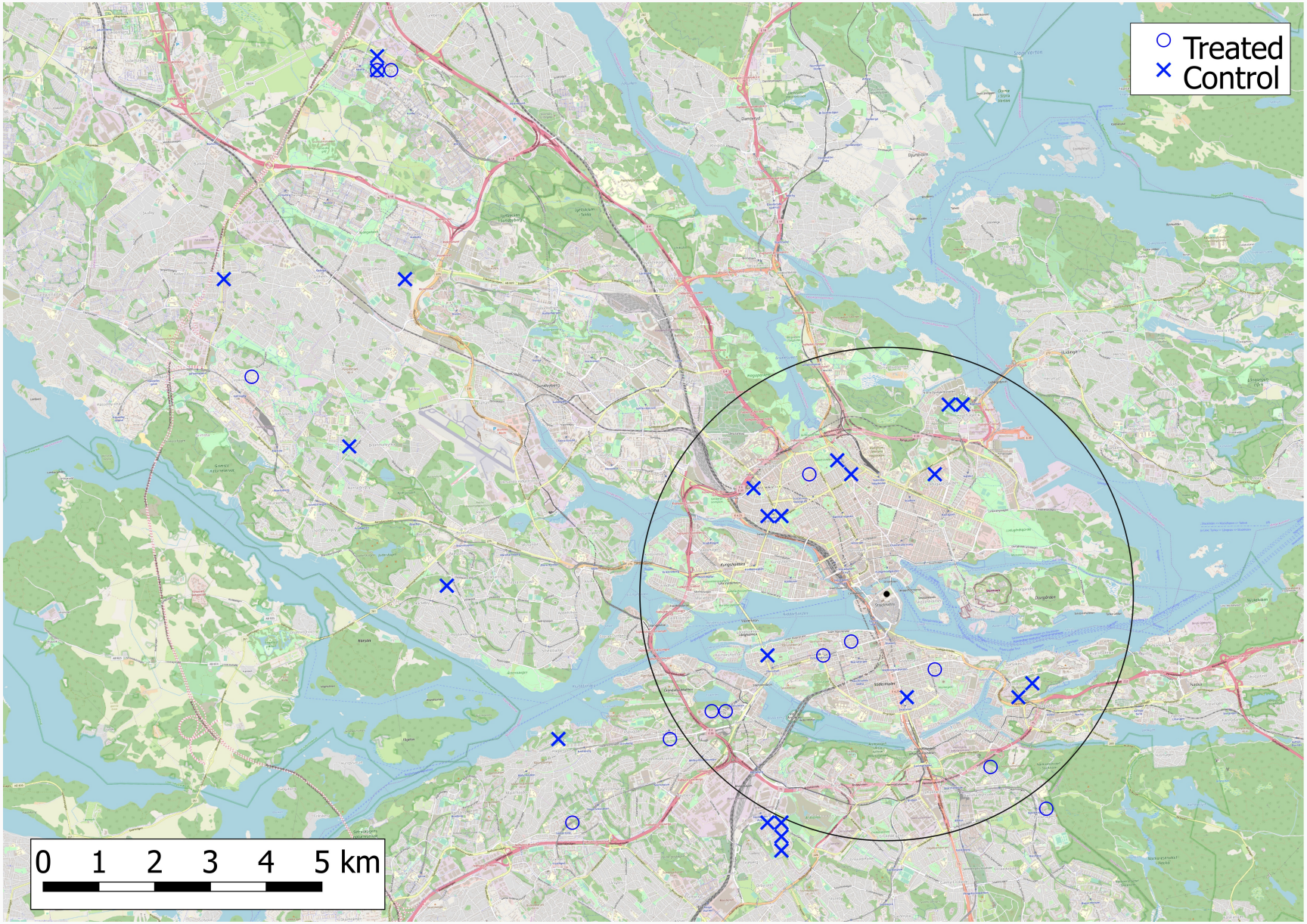
6. Stopplag after April 1 2002: Landlord and co-op sign contract and request approval by the Stockholm County Board.
    - Stockholm County Board approves or denies

Reasons for Stockholm County Board denials

- 38 co-ops/46 buildings pending as of April 1, 2002
  - 13 co-ops/13 buildings approved / **treated**
  - 25 co-ops/33 buildings denied / **control**
- Sufficient reason for denial: one apartment in the building has some unique feature
- Examples:
  - One very large one-bedroom apartment (54 sqm) in the building is unique in the neighborhood.
  - Two 5 bed room apartments in the building are unique in the neighborhood.
  - The Akalla case study
- From the perspective of the household, **denial is random**
  - Building characteristics are balanced
  - Pre-trends in all household outcomes are parallel

Sample of co-ops



The landlords' pricing policy

The municipal landlords set the asking price so that they break even (political instruction)

Three implications for the quasi-experiment:

1. User cost remains the same if costs of capital for landlord and household are equal:
   - Co-op dues + mortgage payment = rent
2. 100% loan-to-asking price $<$ 80% loan-to-co-op-value
   - For most households borrowing constraints do not bind.
   - High take-up rate of treatment.
3. Windfall in the form of housing wealth at time of treatment

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Benchmark model for the wealth effect

The landlord's perspective

- Asking price:

$$(1-\tau)P_0 = \sum_{t=0}^{\infty}(\omega_t - \phi_t)R^{-t}$$

- $\omega_t - \phi_t$: rent $-$ maintenance
- P_0: Co-op market price
- $\tau > 0$: the landlord's fractional discount offered to co-ops.

Benchmark model for the wealth effect

The renter

- $c_0^r + \omega_0 + a_0 = y_t + \hat{a}$
- $c_t^r + \omega_t + a_t = y_t + a_{t-1}R$ for all $t = 1, \cdots, T$.
- Choose a consumption path for the renter such that financial wealth at the end of period T is $a_T = 0$.

The homeowner

- Buys at $t = 0$, sells at $t = T + 1$
- $c_0^o + \phi_0 + a_0 + (1 - \tau)P_0 = y_0 + \hat{a}$
- $c_t^o + \phi_t + a_t = y_t + a_{t-1}R$ for all $t = 1, \cdots, T - 1$
- $c_T^o + \phi_T + a_T = y_T + a_{T-1}R + p_{T+1}R^{-1}$

Benchmark model for the wealth effect

Consolidated budget constraints

- Renter: $\sum_{t=0}^{T} c_t^r R^{-t} + \sum_{t=0}^{T} \omega_t R^{-t} = \sum_{t=0}^{T} y_t R^{-t} + \hat{a}$
- Homeowner:
  $\sum_{t=0}^{T} c_t^o R^{-t} + \sum_{t=0}^{T} \phi_t R^{-t} = \sum_{t=0}^{T} y_t R^{-t} + \hat{a} + P_{T+1} R^{-T-1} - (1-\tau) P_0$

Wealth shock vs. shock to home equity

- $W_0 = \tau P_{T+1} R^{-(T+1)} = \tau P_0 \left(\frac{R_h}{R}\right)^{T+1}$
- τP_0: shock to home equity
- $\left(\frac{R_h}{R}\right) = 1 - (\omega_t - \phi_t) < 1$: net rental yield
- Jorda et al. (QJE 19) on Sweden post 1950s: $\left(\frac{R_h}{R}\right) \approx 0.95$

Consumption response

$$c^o - c^r = \left(\frac{r}{1+r}\right)\left(1 - \frac{1}{(1+r)^{T+1}}\right)^{-1} \tau P_0 \left(\frac{R_h}{R}\right)^{T+1} = \left(\frac{r}{1+r}\right) \widetilde{W}.$$

The complete markets benchmark response

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Tailored household panel data set

- Track all households that lived in the buildings one year before privatization (556 treated, 1347 control; age$\leq$ 64)
  - Detailed demographics, mobility data, income data, apartment size from landlords, County Board minutes
- All components of the balance sheet
  - Debt
  - Financial securities as in Calvet, Campbell, and Sodini (07, 09)
  - Real estate registry, apartment registry (2012–2016) and tax forms on apartment transactions (1999–2017)
- Consumption expenditures and savings from budget constraint

$$C_{it} = \underbrace{Y_{it}}_{\text{Income}} - (\underbrace{H_{it} - R^h_{bt} H_{it-1}}_{\text{dHousing}} - \underbrace{(D_{it} - R^d_t D_{it-1})}_{\text{dDebt}} + \underbrace{A_{it} - R^a_t A_{it-1}}_{\text{dFin}})$$

- dHousing: improvement on Koijen, Van Nieuweburgh, and Vestman (2015)
  - Replace Stat. Sweden's imputed apt. values with accurate values ($P^h_{it} H_{it}$)
  - Construct neighborhood price indices (R^h_{bt})
  - Apartment wealth – comparison of measures

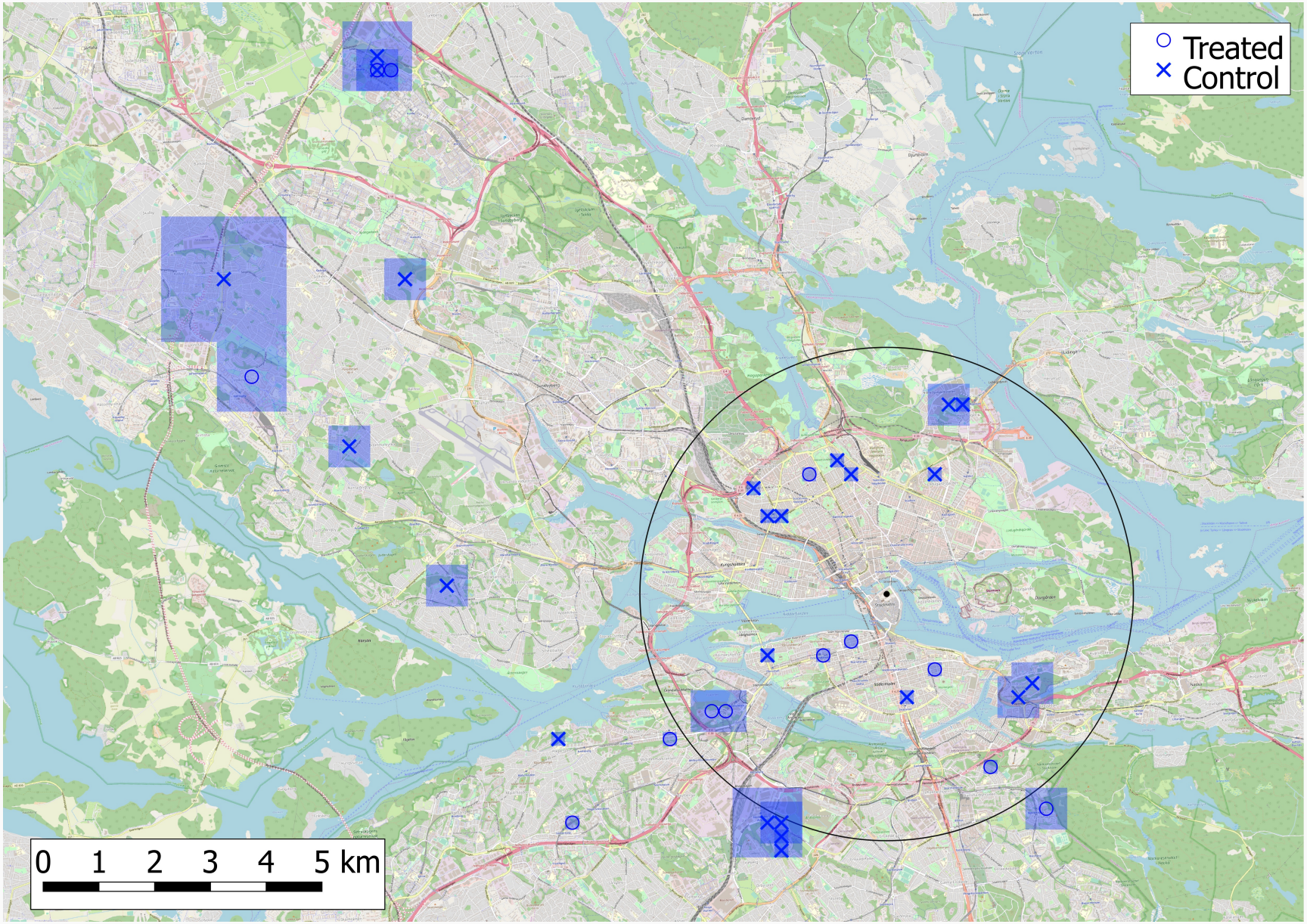
Summary stats one year before County Board decisions

	All	Treated	Control	p-value
Panel A: Sociodemographics				
Age	44.28	45.06	43.95	0.24
High school	0.44	0.43	0.44	0.65
Post high school	0.44	0.48	0.42	0.17
Partner	0.34	0.40	0.31	0.09
Number of workers per hh	1.36	1.44	1.32	0.09
Unemployed	0.15	0.14	0.16	0.56
Income shock 25% (Z_{it})	0.10	0.09	0.10	0.68
Move	0.01	0.01	0.01	0.80
Panel B: Balance sheets				
Homeowner (D(Own)$_i$)	0.04	0.04	0.04	0.56
Housing wealth	25.85	29.03	24.48	0.70
Financial wealth	85.43	86.28	85.06	0.93
Debt	92.58	95.48	91.34	0.82
Net worth	63.65	78.35	57.35	0.40
Buffer	412.26	424.46	407.03	0.62
Risky share (uncond.)	0.19	0.21	0.19	0.29
Risky share (cond.)	0.34	0.35	0.34	0.59
Number of households	1764	529	1235	

Summary stats one year before County Board decisions

	All	Treated	Control	p-value
Panel C: Cashflows				
Income	161.24	161.51	161.13	0.97
Consumption	145.25	143.17	146.14	0.79
Panel D: Apartments				
Distance to center (km)	7.27	7.89	7.01	0.66
Area (m^2)	74.04	72.40	74.75	0.58
Rent per year	41.54	38.80	42.71	0.09
Vote share	0.74	0.73	0.74	0.83
Panel E: Approved coop				
Conversion price per m^2 (p_0^c)		8.67		
Market price per m^2 (p_0)		18.21		
Discount fraction (τ)		0.54		
Wealth shock ($\widetilde{W}$)		85.16		
Apartment value (P_0)		813.14		
Number of households	1764	529	1235	

Neighborhoods for estimation of $P^h_{b,t}$



Summary stats one year before County Board decisions

	All	Treated	Control	p-value
Panel F: Neighborhoods				
Predicted conv. price per m^2 ($p_0^{c,nbd}$)	9.57	9.08	9.78	0.66
Predicted market price per m^2 (p_0^{nbd})	19.33	18.79	19.57	0.81
Predicted wealth shock ($\widetilde{W}^{nbd}$)	87.93	86.06	88.73	0.90
Predicted apartment value (P_0^{nbd})	954.98	866.99	992.67	0.48
Number of households	1764	529	1235	

Empirical strategy

Reduced form:

$$y_{it} = \sum_{k \in K} \delta^k RY_{it}(k) \times \text{Priv}_i + \phi \mathbf{X_{it}} + \psi_{\mathbf{t}} + \omega_{\mathbf{i}} + \nu_{\mathbf{it}},$$

- Priv_i indicates privatization (1, treatment) or denial (0, control)
- $\mathbf{X_{it}}$ includes baseline relative year effects $RY_{it}(k), \forall k \in K$
- $K = \{-4, -3, -2, 0, 1, 2, 3, 4\}$ or $K = \{\text{Pre}, 0, \text{Post}\}$

IV regression:

$$y_{it} = \sum_{k \in K} \alpha^k \times \text{own}_i \times RY_{it}(k) + \sum_{k \in K} \tilde{\alpha}^k \times \widetilde{W}_i \times RY_{it}(k)$$
$$+ \phi \mathbf{X_{it}} + \psi_{\mathbf{t}} + \omega_{\mathbf{i}} + \widetilde{\mathbf{W}}_{\mathbf{i}}^{\mathbf{nbd}} \times \left\{ \tilde{\phi} \mathbf{X_{it}} + \psi_{\mathbf{t}} + \omega_{\mathbf{i}} \right\} + \nu_{\mathbf{it}}.$$

- Endogenous variables: own_i, $\widetilde{W}_i$
- Instruments: Priv_i , $\widetilde{W}_i^{nbd}$
- If $y_{it} = c_{it}$ and the benchmark model holds then:
  $\alpha^k = 0$ and $\tilde{\alpha}^k = r/(1+r)$ for $k \geq 0$

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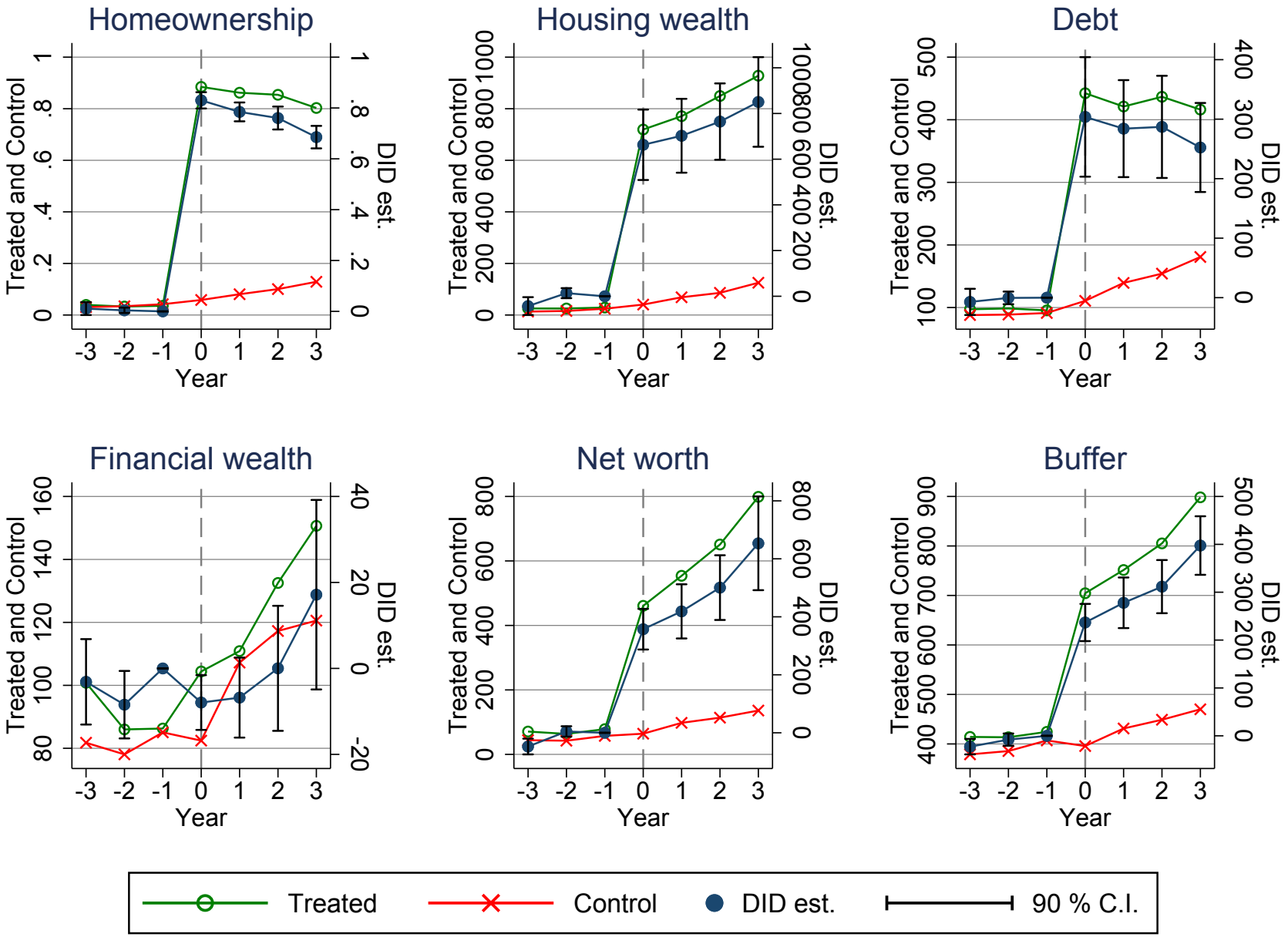
Effects on homeownership and balance sheets



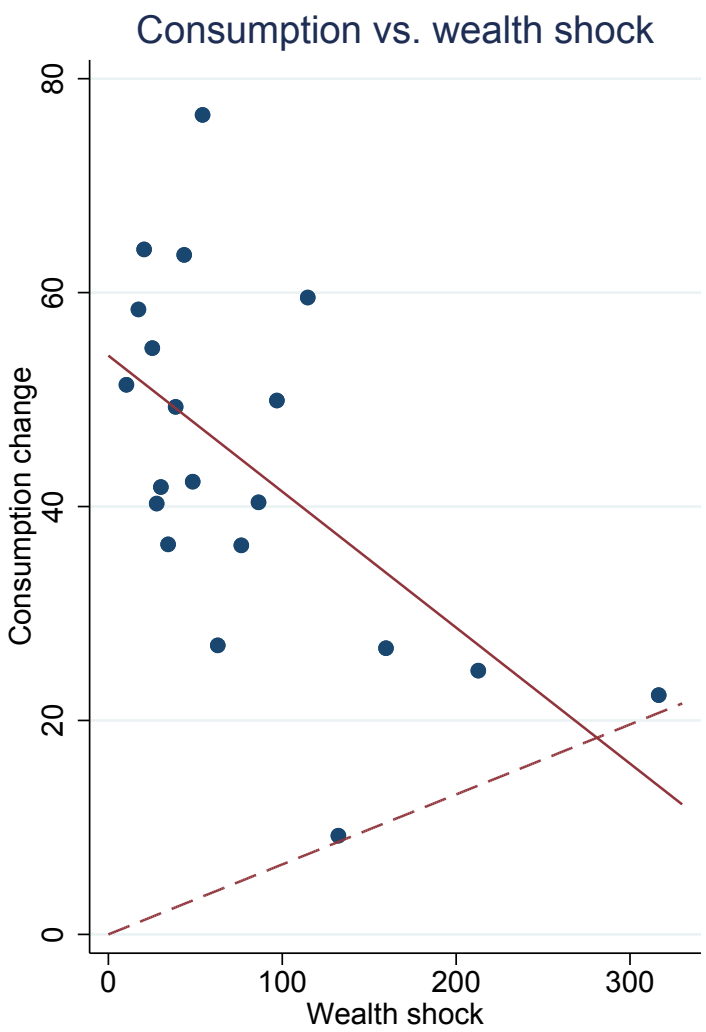
Consumption and its components

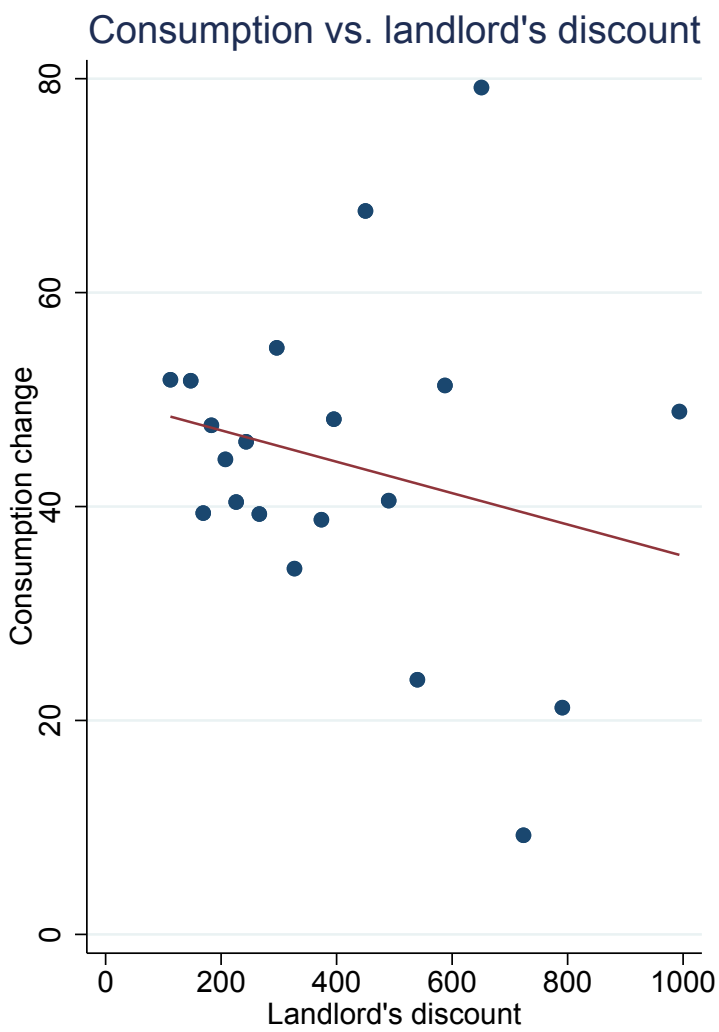
	(1) Log cons.	(2) Cons.	(3) Income	(4) dHouse	(5) dDebt	(6) dFin
Priv.$_i$ × RY$_{it}$(Pre)	0.032	2.431	-1.425	-6.661	-2.391	0.369
	(0.04)	(5.40)	(2.39)	(4.43)	(6.11)	(6.07)
Priv.$_i$ × RY$_{it}$(0)	0.078**	14.462**	2.281	319.737***	321.203***	-10.738**
	(0.04)	(5.23)	(1.64)	(57.68)	(61.78)	(4.77)
Priv.$_i$ × RY$_{it}$(Post)	0.185***	29.680***	0.784	-31.284**	-0.603	1.821
	(0.05)	(5.61)	(2.80)	(12.11)	(7.03)	(5.06)
PreTreat_Mean	4.78	142.49	157.03	-1.18	4.61	20.26
PreTreat_SD	0.64	88.63	75.44	52.99	60.84	69.00
Observations	12857	12857	12857	12857	12857	12857
R^2	0.45	0.43	0.80	0.27	0.30	0.31

Benchmark model: $\Delta c_{it} = r/(1+r) \cdot \widetilde{W}_i = 0.0654 \cdot 85.16$ =5.6 kSEK

MPC out of home equity, τP_0: 29.7/356=0.083

Weak relationship between wealth shock and consumption increase (1)



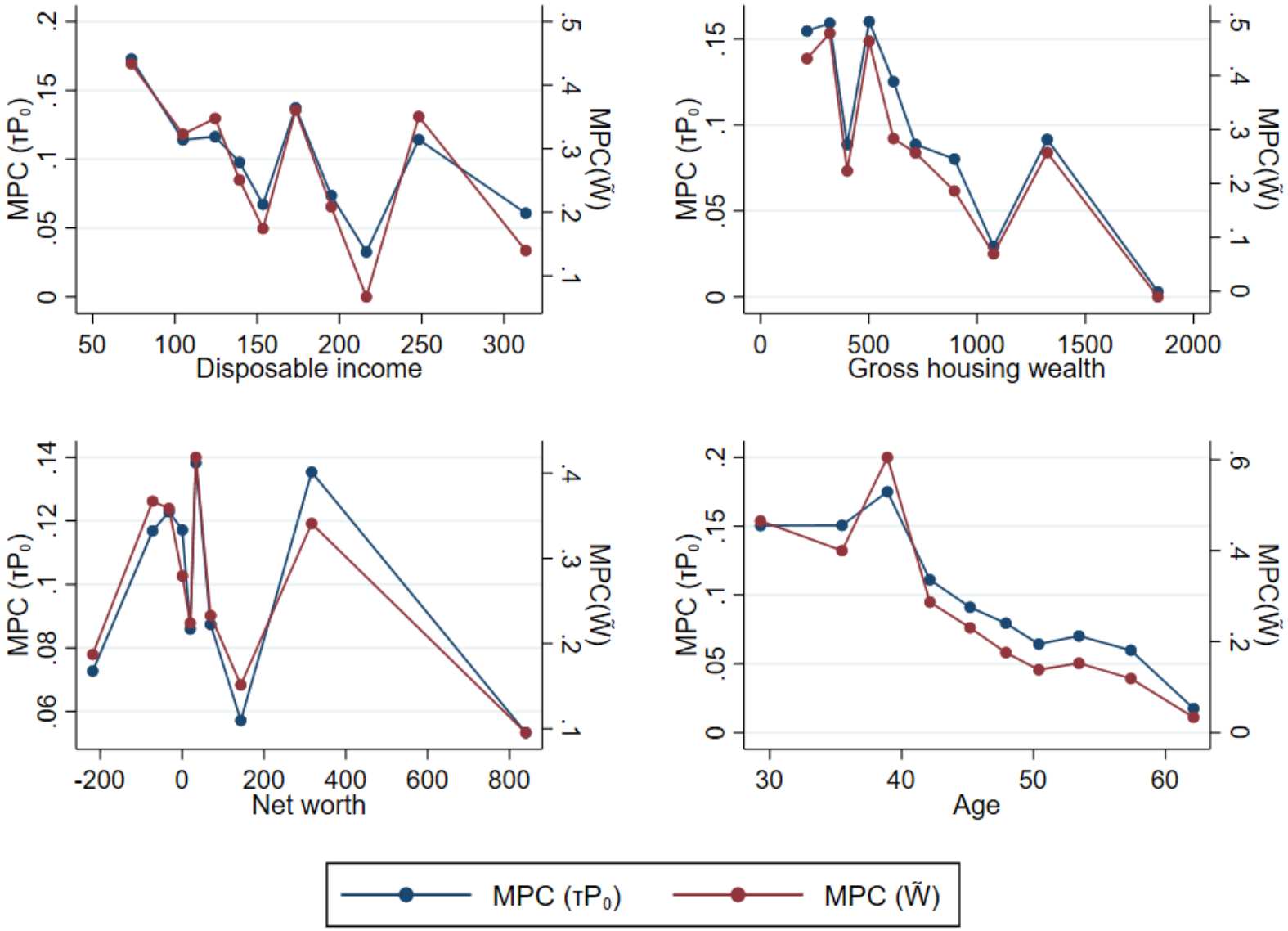


Weak relationship between wealth shock and consumption increase (2)

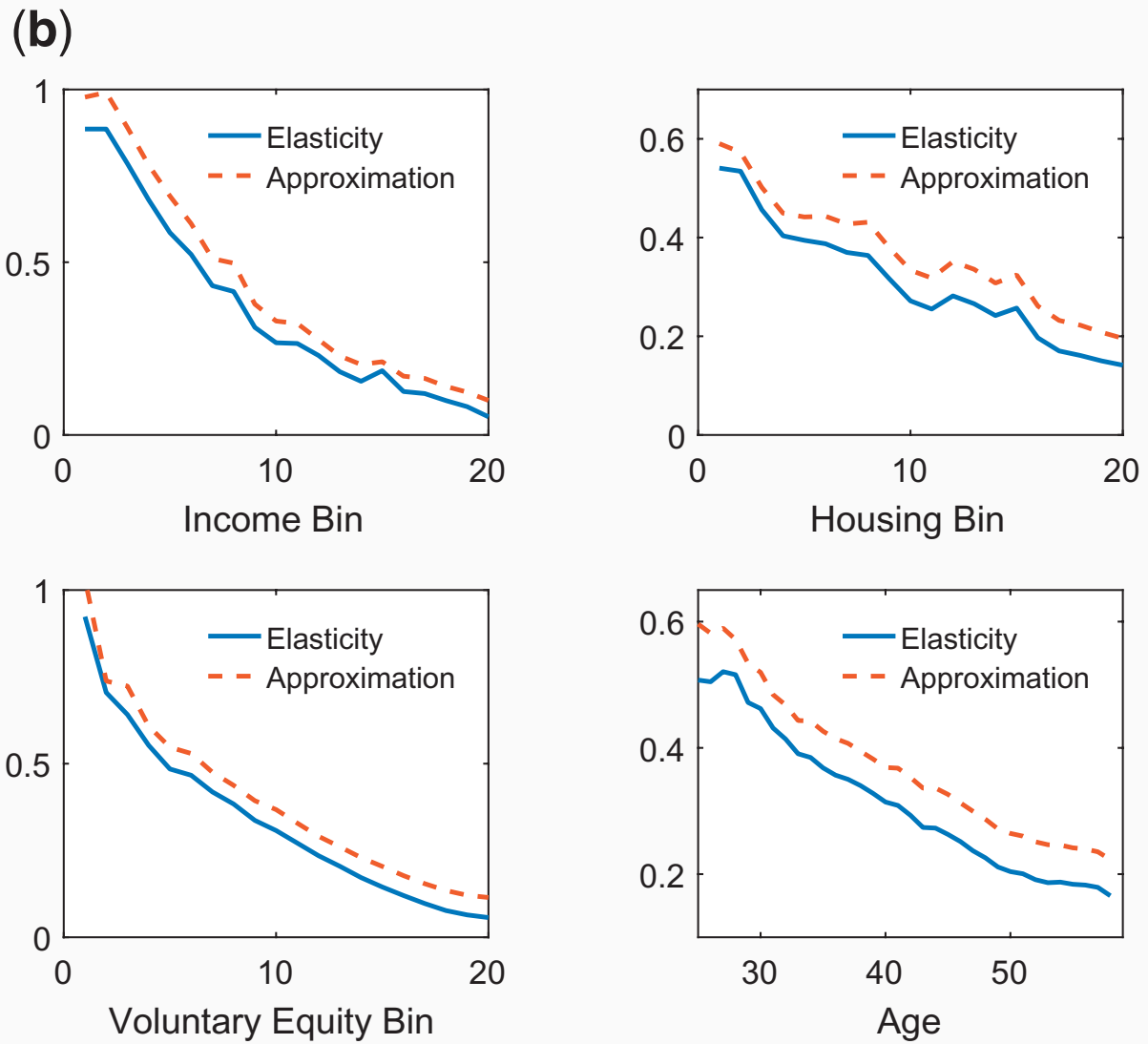
Table 1: OLS and IV estimates on consumption

	(1)	(2)	(3)	(4)	(5)	(6)
$\text{own}_i \times \text{RY}_{it}(0)$	24.932***	14.775**		1.560		-15.384
	(6.53)	(6.47)		(10.95)		(15.31)
$\text{own}_i \times \text{RY}_{it}(\text{Post})$	32.552***	32.439***		32.906***		20.054
	(5.31)	(6.63)		(8.99)		(16.69)
$\widetilde{W} \times \text{RY}_{it}(0)$			0.157**	0.152		
			(0.08)	(0.12)		
$\widetilde{W} \times \text{RY}_{it}(\text{Post})$			0.208***	-0.006		
			(0.06)	(0.08)		
$\tau P_{0,i} \times \text{RY}_{it}(0)$					0.039**	0.067*
					(0.01)	(0.03)
$\tau P_{0,i} \times \text{RY}_{it}(\text{Post})$					0.062***	0.025
					(0.02)	(0.04)
Observations	12857	12857	12857	12857	12857	12857
Kleibergen-Paap F-stat		329.75	35.44	39.70	32.55	13.92

Household characteristics better determinants of MPCs



Cross-sectional variation in MPCs in Berger et al. (ReStud, 18)



Source: Berger, David, Veronica Guerrieri, Guido Lorenzoni, and Joseph Vavra. 2018. "House prices and consumer spending." *Review of Economic Studies*, 85: 1502-1542

Consumption responses of the young versus the old

	(1) Log cons.	(2) Cons.	(3) Income	(4) dHouse	(5) dDebt	(6) dFin
$\text{Priv.}_i \times \text{RY}_{it}(\text{Pre})$	0.082	6.681	-0.327	6.384	3.722	-9.609
	(0.07)	(8.30)	(5.15)	(7.70)	(7.83)	(6.45)
$\text{Priv.}_i \times \text{RY}_{it}(0)$	0.065	14.007*	2.398	247.714***	254.699***	-4.645
	(0.06)	(8.24)	(4.10)	(43.41)	(46.28)	(6.94)
$\text{Priv.}_i \times \text{RY}_{it}(\text{Post})$	0.309***	47.562***	-2.546	-24.422	19.350*	-6.281
	(0.08)	(8.22)	(4.27)	(14.67)	(10.22)	(5.18)
$\text{Priv.}_i \times \text{RY}_{it}(\text{Pre})$	-0.070	-6.183	-1.832	-19.058**	-8.528	14.724
D(Old)_i	(0.07)	(8.22)	(4.97)	(8.55)	(8.71)	(9.10)
$\text{Priv.}_i \times \text{RY}_{it}(0)$	0.021	1.365	-0.216	107.066*	99.870*	-8.782
D(Old)_i	(0.07)	(10.46)	(4.51)	(56.23)	(54.79)	(8.32)
$\text{Priv.}_i \times \text{RY}_{it}(\text{Post})$	-0.176**	-24.897**	4.878	-8.380	-25.909**	12.214
D(Old)_i	(0.07)	(8.65)	(4.44)	(16.78)	(12.20)	(7.51)
Observations	12857	12857	12857	12857	12857	12857
R^2	0.4503	0.4284	0.8042	0.2768	0.3082	0.3065

- The young borrow more than the asking price, the old do not
- The young continue to increase debt in the post years
- The young have an MPC out of τP_0 of 0.112 (MPC out of $\widetilde{W} > 1$)

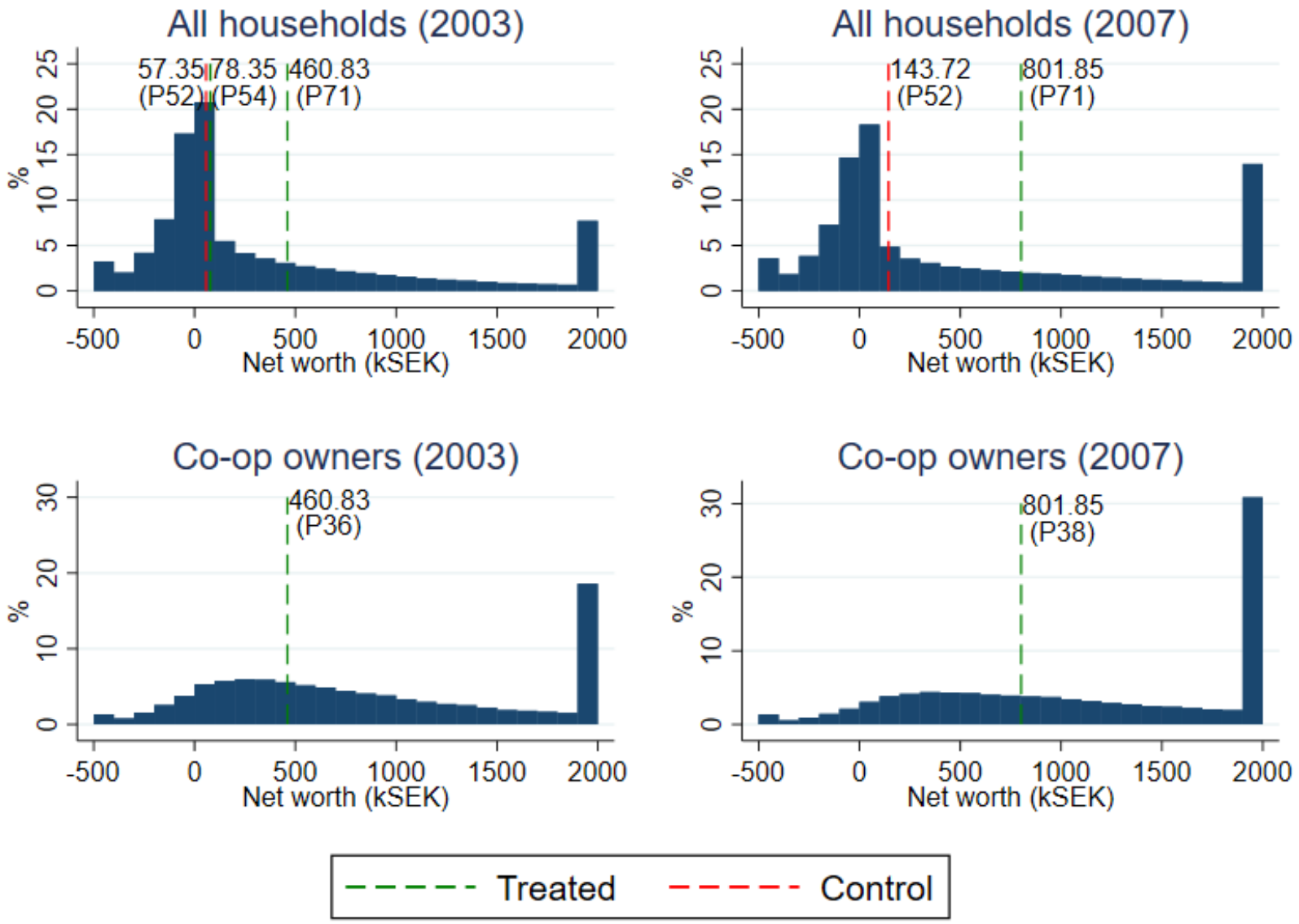
Consumption smoothing in the presence of income fluctuations

Table 2: Consumption Smoothing Across States of the World

	(1) Log cons.	(2) Cons.	(3) Income	(4) dHousing	(5) dDebt	(6) dFin
$Z_{it} \times \text{Private}_i \times \text{RY}_{it}(\text{Pre})$	0.073	-0.897	1.315	-16.320	-2.588	15.988
	(0.11)	(13.29)	(6.51)	(20.36)	(15.53)	(19.45)
$Z_{it} \times \text{Private}_i \times \text{RY}_{it}(0)$	0.135	21.318	3.174	29.203	68.218	20.866
	(0.14)	(20.23)	(8.34)	(47.01)	(52.97)	(13.15)
$Z_{it} \times \text{Private}_i \times \text{RY}_{it}(\text{Post})$	0.192*	29.940*	-3.746	-2.743	31.950**	0.916
	(0.10)	(16.20)	(8.82)	(26.70)	(11.25)	(13.80)
Z_{it}	-0.174**	-18.187**	-27.390***	6.241	3.836	-11.617**
	(0.05)	(5.29)	(4.25)	(6.05)	(6.71)	(5.57)
Observations	12857	12857	12857	12857	12857	12857
R^2	0.45	0.43	0.81	0.27	0.30	0.31

Tests for endogeneity of Z_{it}

Despite the consumption benefits treated households maintain their position in the wealth distribution



Young homeowners benefit from increased mobility

Table 3: Mobility for young and old

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Move	Move up (parish)	Move all HH	Move up Y (muni)	Move up Y (parish)	Move up (muni)	First move (owner)	First move (renter)
Priv.$_i$ × RY$_{it}$(Pre)	0.016	-0.004	0.025	-0.001	-0.005	-0.002	0.006	0.010
	(0.01)	(0.01)	(0.03)	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)
Priv.$_i$ × RY$_{it}$(0)	-0.030	-0.023**	-0.019	-0.015**	-0.027**	-0.010*	-0.009	-0.021
	(0.02)	(0.01)	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Priv.$_i$ × RY$_{it}$(Post)	0.047**	0.044***	0.041	0.024**	0.039**	0.021**	0.064***	-0.017
	(0.02)	(0.01)	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Priv.$_i$ × RY$_{it}$(Pre)	-0.021	0.006	-0.029	0.002	0.008	0.003*	-0.007	-0.014
D(Old)$_i$	(0.01)	(0.01)	(0.04)	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)
Priv.$_i$ × RY$_{it}$(0)	-0.001	0.022**	-0.001	0.014**	0.026**	0.009*	0.013	-0.014
D(Old)$_i$	(0.02)	(0.01)	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Priv.$_i$ × RY$_{it}$(Post)	-0.046**	-0.037**	-0.031	-0.022**	-0.033**	-0.019**	-0.050***	0.005
D(Old)$_i$	(0.02)	(0.01)	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Observations	12857	12857	12857	12857	12857	12857	12857	12857
R^2	0.1585	0.1671	0.2066	0.1756	0.1687	0.1788	0.1672	0.1526
PreTreat_Mean	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00
F_TR0_B0_B2	0.00	0.95	0.13	0.2	0.93	0.21	0.34	0.00
F_TPost_B0_B2	0.92	0.11	0.49	0.33	0.16	0.25	0.02	0.15

Stayers' and movers' responses

Table 4: Heterogenous Treatment Effects for Stayers and Movers

	(1) Log cons.	(2) Cons.	(3) Income	(4) dHouse	(5) dDebt	(6) dFin
$\text{Priv.}_i \times \text{RY}_{it}(\text{Pre})$	0.029	4.494	-1.160	-5.668	-1.854	-1.855
	(0.04)	(4.48)	(2.67)	(3.61)	(5.56)	(3.99)
$\text{Priv.}_i \times \text{RY}_{it}(0)$	0.069*	13.909**	1.698	327.804***	325.017***	-15.004**
	(0.04)	(4.85)	(1.95)	(59.65)	(63.23)	(4.44)
$\text{Priv.}_i \times \text{RY}_{it}(\text{Post})$	0.144**	18.363**	4.788	-2.173	3.417	-7.953**
	(0.04)	(5.18)	(3.12)	(4.32)	(4.74)	(2.91)
$\text{Priv.}_i \times \text{RY}_{it}(\text{Pre})$	0.073	-2.291	1.161	-3.549	-4.468	2.139
$\times \text{D(MoveRent)}_i$	(0.10)	(10.09)	(5.78)	(10.72)	(8.73)	(15.61)
$\text{Priv.}_i \times \text{RY}_{it}(0)$	0.057	-0.721	-3.880	25.991	40.683	11.388
$\times \text{D(MoveRent)}_i$	(0.06)	(6.69)	(4.59)	(77.15)	(75.41)	(11.31)
$\text{Priv.}_i \times \text{RY}_{it}(\text{Post})$	0.019	18.813	-30.628**	-182.497***	-70.927**	62.167**
$\times \text{D(MoveRent)}_i$	(0.09)	(12.31)	(9.12)	(48.84)	(27.36)	(21.02)
$\text{Priv.}_i \times \text{RY}_{it}(\text{Pre})$	-0.042	-12.038	0.175	16.900	15.957	11.308
$\times \text{D(MoveOwn)}_i$	(0.10)	(11.47)	(6.64)	(18.52)	(14.21)	(17.47)
$\text{Priv.}_i \times \text{RY}_{it}(0)$	-0.058	-9.532	8.708**	-72.717	-70.848	20.100
$\times \text{D(MoveOwn)}_i$	(0.11)	(15.92)	(4.08)	(73.29)	(67.21)	(16.51)
$\text{Priv.}_i \times \text{RY}_{it}(\text{Post})$	0.184**	41.868**	-1.019	-78.582**	-17.143	18.529
$\times \text{D(MoveOwn)}_i$	(0.09)	(14.65)	(6.30)	(29.41)	(23.98)	(12.56)
PreTreat_Mean	4.78	142.49	157.03	-1.18	4.61	20.26
PreTreat_SD	0.64	88.63	75.44	52.99	60.84	69.00
Observations	12857	12857	12857	12857	12857	12857
R^2	0.45	0.43	0.81	0.29	0.32	0.31

Portfolio choice consistent with theories

Table 5: Portfolio Choice Depending on Age and Moves

	(1)	(2)	(3)	(4)
	Young/Old		Stayer/Mover	
	RS (uncond.)	RS (cond.)	RS (uncond.)	RS (cond.)
$\text{Priv.}_i \times \text{RY}_{it}(\text{Pre})$	0.004	-0.000	0.004	0.009
	(0.02)	(0.03)	(0.01)	(0.02)
$\text{Priv.}_i \times \text{RY}_{it}(0)$	-0.007	-0.008	0.012	0.015
	(0.01)	(0.02)	(0.01)	(0.02)
$\text{Priv.}_i \times \text{RY}_{it}(\text{Post})$	-0.007	-0.015	0.037**	0.051**
	(0.01)	(0.02)	(0.01)	(0.02)
$\text{Priv.}_i \times \text{RY}_{it}(\text{Pre})$	0.006	0.027	0.011	0.018
$\text{D(Old)}_i/\text{D(Move)}_i$	(0.02)	(0.04)	(0.02)	(0.03)
$\text{Priv.}_i \times \text{RY}_{it}(0)$	0.028	0.046	-0.008	0.005
$\text{D(Old)}_i/\text{D(Move)}_i$	(0.02)	(0.04)	(0.02)	(0.03)
$\text{Priv.}_i \times \text{RY}_{it}(\text{Post})$	0.053**	0.082**	-0.055**	-0.081**
$\text{D(Old)}_i/\text{D(Move)}_i$	(0.02)	(0.03)	(0.02)	(0.03)
Observations	12857	7232	12857	7232
R^2	0.76	0.65	0.76	0.65

Conclusions

- We exploit a quasi-natural experiment to understand the effects of homeownership on households' economic behavior
- Homeownership provides insurance element to households – responses consistent with incomplete markets macro model
- Consume more than renters and yet increase wealth more
- Mobility increases among the young
- Portfolio choice consistent with theories

Apartments by type of ownership

Table 6: Apartments by ownership, 1990-2004, Municipality of Stockholm

Year	Co-ops	Municipal landlords	Private landlords	Total
1990	84,200	118,000	141,700	343,900
	25%	34%	41%	100%
2000	125,000	110,600	126,300	361,900
	34%	31%	35%	100%
2004	159,400	102,500	110,900	372,800
	43%	27%	30%	100%

Notes: The table reports the number and share of apartments in the municipality of Stockholm by type of ownership. Source: Utrednings- och statistikkontoret i Stockholms stad (2005, p. 11) and *http://statistik.stockholm.se/images/stories/excel/b085.htm*.

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Apartment transactions by type of ownership

Table 7: Transactions of apartments by ownership, 1999-2004, Municipality of Stockholm

	1999	2000	2001	2002	2003	2004	1999-2004
Municipal landlords	200	3,500	5,500	2,100	400	500	12,200
Other landlords	5,300	4,700	5,300	4,900	5,000	4,100	29,300
Total	5,500	8,200	10,800	7,000	5,400	4,600	41,500

Notes: The table reports the number of apartment sales by year by type of ownership. Source: Utrednings- och statistikkontoret i Stockholms stad, 2005.

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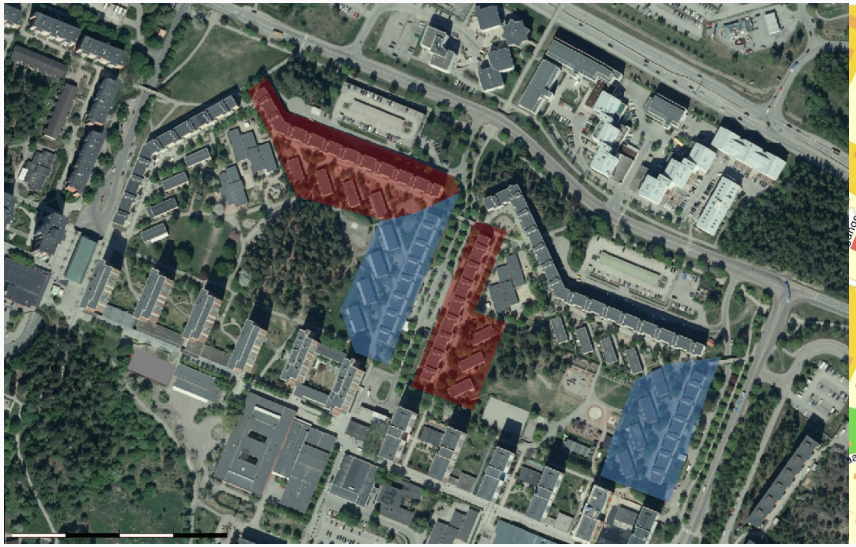
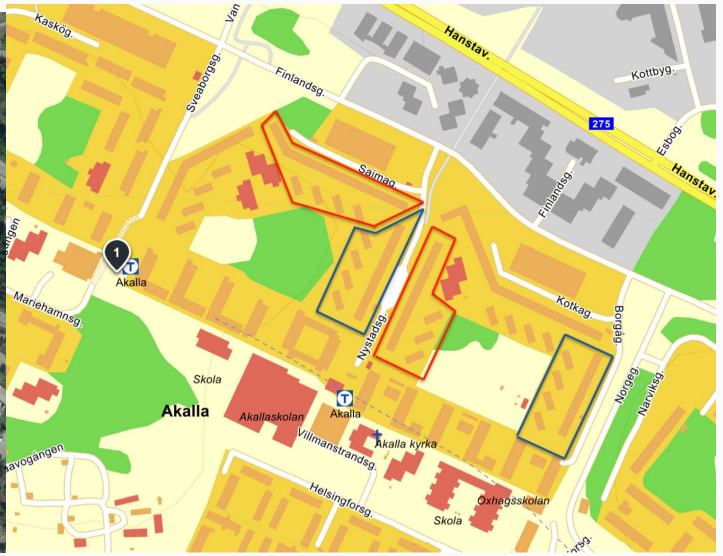
The Akalla case study (1)





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The Akalla case study (2)

Property	built	sqm comm	sqm apts	apt units	1/2	3	4	4 TH	5 TH
	Panel A: Property Details								
Nystad 5	1976	228	6055	77	1	50	10	16	0
Sveaborg 5	1976	227	6775	87	1	60	10	16	0
Sveaborg 4	1976	254	10321	133	0	103	13	16	1
Nystad 2	1976	97	7204	95	8	65	10	12	0

Property	registration	contact	appraisal	vote	vote %	accepted	County	decision	transfer
	Panel B: Conversion Process								
Nystad 5	16-May-01	14-Jun-01	24-Sep-01	21-Apr-02	67.9%	9-Sep-02	21-Feb-03	approval	26-May-03
Sveaborg 5	27-Sep-00	28-Jun-01	14-Sep-01	21-Apr-02	73.6%	9-Sep-02	21-Feb-03	approval	27-May-03
Sveaborg 4	27-Sep-00	26-Sep-01	5-Nov-01	17-Jun-02	68.6%	9-Sep-02	21-Feb-03	denial	— —
Nystad 2	17-Jul-01	1-Oct-01	5-Nov-01	19-Jun-02	70.5%	5-Sep-02	21-Feb-03	denial	— —

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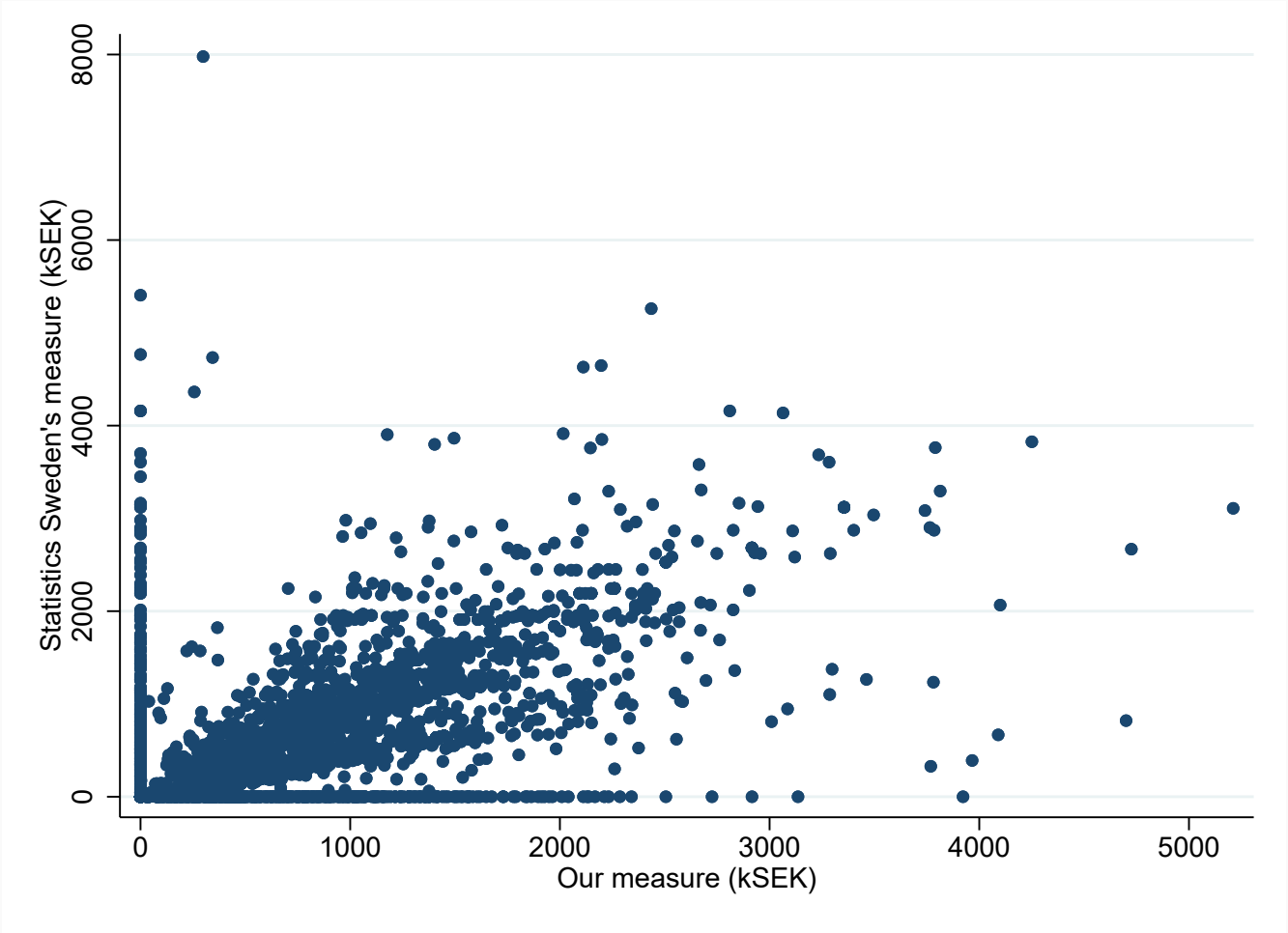
Statistics Sweden's apartment wealth measure vs. our measure



Correlation: 0.74

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Tests for endogeneity of Z_{it}

	A. Relation to observables				
Income fluctuation:	$\Delta Y \leq -10\%$	$\Delta Y \leq -15\%$	$\Delta Y \leq -20\%$	$\Delta Y \leq -25\%$	$\Delta Y \leq -30\%$
Parental Leave	0.057**	0.043**	0.035**	0.018	0.004
	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
Sick leave	0.032**	0.018*	0.002	-0.008	-0.015**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Adult in Education	0.090**	0.084**	0.091***	0.094***	0.086***
	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)
Change of Employer	-0.012	-0.016	-0.016	-0.012	-0.016**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Unemployment	0.195***	0.193***	0.177***	0.163***	0.146***
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Observations	12857	12857	12857	12857	12857
R^2	0.238	0.246	0.243	0.244	0.247
	B. Reduced form responses				
Income fluctuation:	$\Delta Y \leq -10\%$	$\Delta Y \leq -15\%$	$\Delta Y \leq -20\%$	$\Delta Y \leq -25\%$	$\Delta Y \leq -30\%$
Priv.$_i$ $\times$ RY$_{it}$(Pre)	0.032	0.012	0.012	-0.002	-0.005
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Priv.$_i$ $\times$ RY$_{it}$(0)	0.015	0.020	0.012	0.010	-0.001
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Priv.$_i$ $\times$ RY$_{it}$(Post)	0.026	0.019	0.019	0.007	0.006
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Pre-treatment mean	0.15	0.12	0.10	0.08	0.07
Observations	12857	12857	12857	12857	12857
R^2	0.22	0.22	0.22	0.22	0.22

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