Identifying the Benefits from Home Ownership: A Swedish Experiment

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Motivation

- **Costs and benefits of home ownership are poorly understood but have huge policy implications**
  - ▶ Many countries subsidize home ownership; U.S. spends $200bn a year
  - ▶ Area of rare policy agreement between left and right
  - ▶ Alleged **economic benefits**: forced savings, better consumption smoothing with housing collateral, etc.
  - ▶ Social benefits: community involvement, lower crime, etc. - *next paper*
  - ▶ Little solid empirical evidence for presence and size of benefits

Motivation

- **Costs and benefits of home ownership are poorly understood but have huge policy implications**

- **Difficult identification and measurement problem**
  - ▶ 1. Tenure status is endogenous: owners differ from renters based on observables (richer, better educated, older, whiter) and unobserved heteroegeneity
  - ▶ 2. Building status is endogenous: buildings that are owned differ from those that are rented based on observables (more suburban, larger, better school districts) and unobserved heteroegeneity

Motivation

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- **Difficult identification and measurement problem**

- **Natural experiments do not exist** for fiscal, technical, and ethical reasons
  - Few quasi-natural experiments in literature
  - But their focus is on non-economic outcome variables, small samples, survey data

Our Contribution

- Exploit quasi-natural experiment in Stockholm
    - Privatization of municipally-owned multi-family housing
    - Similar privatizations in other European countries (e.g., UK, Germany, Netherlands)

Our Contribution

- Exploit quasi-natural experiment in Stockholm

- Data advantages
  - Larger sample
  - Registry-based data panel data at individual household level from 3-4 years before to 4-5 years after
  - Data on dwelling characteristics at the unit level from landlords
  - High-quality measure of consumption: measure all components of budget constraint

Our Contribution

- Exploit quasi-natural experiment in Stockholm

- Data advantages

- Study both consequences of home ownership and the associated windfall that befell those who participated in privatization
  - Every policy that promotes home ownership has a "windfall" component
  - Allows one to study MPC out of *exogenous* increase in housing wealth

Main Findings

- Our experiment has large and persistent effects on home ownership

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- Home ownership (cum windfall)
  1. Has no effects on "family stability": marriage, divorce rates, or number of children
  2. Reduces consumption and increases savings in year of privatization
  3. Increases consumption in years following privatization, but only for the movers
  4. MPC is small for stayers but large for movers - realization of windfall
  5. Housing serves as a collateral asset: borrowing in face of income shock
  6. Increases stock market participation - home equity effect
  7. Increases labor income and, to a lesser extent, labor force participation - debt service effect
  8. Strongly increases geographic mobility and economic mobility

Main Findings

- Our experiment has large and persistent effects on home ownership

- Home ownership (cum windfall)

- Study heterogeneous response
  - Movers vs. Stayers
  - By size of the windfall: little variation
  - By age, labor income, financial wealth

Institutional Background

Municipal landlords in Sweden

- Stockholm as of year 2000: 3 municipal landlords owned 110,000 rental apartments (31% of all apts)

Rent regulation in Sweden

- Both private and municipal landlords regulated
- Rents indexed to municipal landlords' rents by housing type and area

Mass-privatization in Stockholm 1998–2004

- Center-right coalition came to power in Stockholm in 1998
- 12,200 municipal apartments privatized through creation of hundreds of co-ops
- In April 2002, Stopplag law comes into effect, adding an additional layer of approval to the privatization process

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
4. Tenant association submits "economic plan" and obtains co-op mortgage, then votes
5. Motion to privatize passes if 2/3 majority
6. Before April 1 2002: Landlord and co-op sign contract and transfer takes place

7. Stopplag after April 1 2002: Landlord and co-op sign contract and sends contract to County Board.
   1. County Board verifies whether proposed privatization would hamper ability to reliably determine rental index.
   2. If County Board approves, transfer takes place.
   3. Reduces conditional probability of success from 100% to 33% and unconditional probability from 50% to 17%

Example of Randomness in County Board Decision: Akalla

Nystad 5, Sveaborg 5, Sveaborg 4, Nystad 2
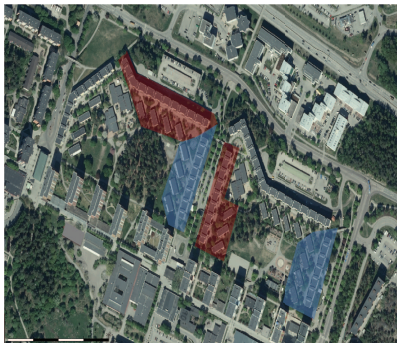
Example of Randomness in County Board Decision: Akalla

				Conversion Process in Akalla					
Property	co-op	contact	appraisal	vote	vote %	landlord	County	dec.	transfer
Nystad 5	16-May-01	14-Jun-01	24-Sep-01	21-Apr-02	67.9%	9-Sep-02	21-Feb-03	Y	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	Y	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	N	––
Nystad 2	17-Jul-01	1-Oct-01	5-Nov-01	19-Jun-02	70.5%	5-Sep-02	21-Feb-03	N	––

- County Board decided on all 4 cases in the same meeting
- Could not privatize all 4 because of inner-courtyard town house rental price index
- County Board decided it could privatize 2 out of 4
- No established procedure for which 2 – went with date of vote
- Other criteria, such as voting share or date of landlord approval, would have given different outcomes: random assignment

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Windfall: Housing wealth effect from the privatization

- Privatizations politically motivated, not profit-maximizing
  - Asking price = NPV of regulated rental income minus expenses
  - Windfall/discount = Co-op market value - Asking price

- Avg. windfall of 715k SEK per household, 500k SEK per adult equivalent

- No cash-flow implications from privatization unless apartment sold
  - Co-op dues + personal mortgage payment = regulated rent
    (if cost of capital same for landlords, co-ops, and households)

- No issue of binding borrowing constraints
  - Mortgage principal > conversion fee, because of discount
 - 100% Loan-to-conversion < 80% Loan-to-value

Data Sources

1. County Board: Stopplag decisions for each attempt

2. Archives of the 3 municipal landlords in Stockholm
   - Tenant lists create key between social security numbers and apartment characteristics (rent and size, m^2)

3. Co-ops: residual tenants

4. Statistics Sweden: information on all individuals that lived in these buildings at any point between 1999 and 2013

   - Detailed demographics, mobility data, income data, wealth, and debt data (including capital gains)

   - Form **consumption expenditures** and savings from budget constraint (2000–2007), building on Koijen et al. (2015):

     $$Cons = Income - Savings = Income - (dHousing + dFin - dDebt)$$

Sample of Co-ops Based on County Board Decisions

- 38 co-ops/46 buildings pending as of April 1, 2002
  - 36 co-ops applied before passing of Stopplag (Nov. 2001)
  - 13 co-ops/13 buildings approved: **treatment group**
  - 25 co-ops/33 buildings denied: **control group**
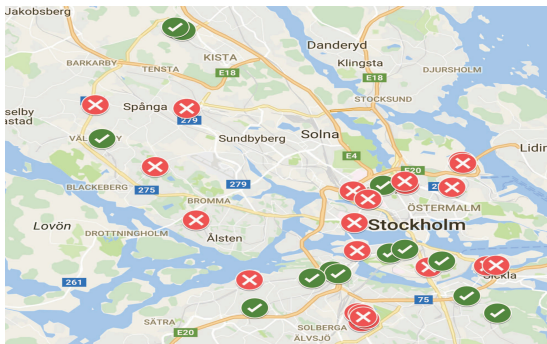
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	Control	Treated	Treated-Control
Number of apartments	68.4	70.1	1.7
	(61.9)	(39.9)	(20.4)
Average apt. size (m^2)	75.0	75.3	0.3
	(15.6)	(26.6)	(7.1)
Total floor area (m^2)	5,226	5,282	56
	(4,995)	(3,958)	(1,656)
Year of construction	1958	1954	-4
	(23.1)	(24.8)	(8.3)

- **Treatment year** (RY0): year of property transfer or County Board denial (years 2002 – 2005)

- **Household formation year** (RY-1): year in which sample of households is formed; still uncertainty over privatization outcome

Sample of Households

- **All** sample dynamically tracks Hhs before and after RY-1
  - ▶ When two singles marry or have a child, previous HHs dropped, new HH formed with treatment flag
  - ▶ When married couple divorces, previous HH dropped, new HHs formed both with treatment flag
  - ▶ When adult child leaves house and forms HH, treatment flag inherited

Sample of Households

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  - 2,464 unique households in household formation year of which 1,864 have oldest member below age 65
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- **Fixed** sample: constant adult composition
  - Same households in RY-1 as All sample
  - Before and after RY-1, drop HHs where adult composition differs from HH formation year
  - Drops divorced HHs after divorce, single households after marriage, adult child HHs after they leave house
  - Strictly fewer (more) HHs in each year before and after RY-1 in Fixed (All) sample

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- **Fixed** sample: constant adult composition

- **Stayer** and **Mover** samples: subsets of Fixed sample
  - ► Separate out those who end up moving between after houshold formation year from those who end up staying
  - ► Endogenous choice, but interesting sample split to determine theories at play
  - ► 2/3 are stayers, 1/3 are movers

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- **Stayer** and **Mover** samples: subsets of Fixed sample

- For most outcome variables: 18,300 HH-year observations in **All**, 15,000 obs. in **Fixed**, 10,000 obs. in **Stayers**, and 5,000 obs. in **Movers** sample

Main Difference-in-Difference Specification

- Main specification for outcome variable y, household i, year t

$$y_{it} = Convert_i \sum_k \delta_k RY_i(t=k) + \sum_k \gamma_k RY_i(t=k) + X_{it} + \psi_t + \omega_b + \varepsilon_{it}$$

  - $Convert_i = 1$ for treatment group
  - Intention-to-treat (ITT) effect: residual tenants in treatment group
  - $RY_i(t < 0)$: before treatment to check parallel trends
  - $RY_i(t \geq 0)$: after treatment to trace dynamic treatment effects
  - All δ_k coefficients are relative to control group in HH formation year; $Convert_i RY_i(t=-1)$ and $RY_i(t=-1)$ terms dropped
  - Year and building fixed effects account for constant differences across years and building characteristics

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- Collapsed specification
  - Combine the $RY_i(t \leq -2)$ indicator variables in a **Pre** term
  - Combine the $RY_i(t \geq 1)$ indicator variables in a **Post** term
  - Keep the $RY_i(t=0)$ term separate

Home Ownership and Household Stability

	Home Ownership			
Sample	All	Fixed	Stayers	Movers
RY-4	0.0209	0.0217	0.00918	0.0470**
	(1.35)	(1.38)	(0.60)	(2.11)
RY-3	0.0134	0.0130	0.0116	0.0145
	(1.51)	(1.56)	(1.42)	(0.99)
RY-2	0.00909	0.00770	0.000287	0.0204*
	(1.35)	(1.13)	(0.04)	(1.94)
RY0	0.750***	0.827***	0.880***	0.733***
	(21.04)	(21.12)	(24.61)	(11.25)
RY+1	0.706***	0.790***	0.865***	0.635***
	(30.99)	(31.42)	(29.23)	(13.40)
RY+2	0.645***	0.747***	0.847***	0.523***
	(28.88)	(37.13)	(30.62)	(14.66)
RY+3	0.567***	0.685***	0.821***	0.379***
	(22.68)	(30.73)	(29.25)	(11.45)
RY+4	0.502***	0.631***	0.809***	0.229***
	(15.68)	(22.41)	(25.18)	(4.36)
PT-Mean	.03	.03	.02	.04
PT-SD	.19	.17	.16	.19
N	18,284	15,076	10,273	4,803
R^2	0.423	0.535	0.672	0.397

- No effect on marriage
- No effect on divorce
- No effect on # of children
- $\Rightarrow$ Focus on Fixed sample

▸ graph HO   ▸ graph # children

Consumption and Savings

Consumption = Income - Savings (= Income - dFin - dHousing + dDebt)

	Consumption			Savings		
	Fixed	Stayers	Movers	Fixed	Stayers	Movers
RY≤-2	-4281.1	-3024.1	-5258.5	4514.3	-1174.5	12388.4
	(-0.49)	(-0.36)	(-0.40)	(0.62)	(-0.18)	(0.87)
RY=0	-16475.2*	-13663.2	-17429.6	27375.0**	21569.4*	33702.3**
	(-1.89)	(-1.12)	(-1.36)	(3.15)	(1.93)	(2.41)
RY≥1	8075.8	2338.4	24979.0*	-6170.8	705.1	-26934.5**
	(1.19)	(0.37)	(1.82)	(-1.29)	(0.17)	(-2.45)
PT-Mean	160,517	158,565	164,479	6,378	7,048	5,016
PT-SD	117,627	112,600	127,159	92,889	86,163	105,240
N	13,370	9,165	4,205	13,370	9,165	4,205
R^2	0.0652	0.0764	0.0782	0.0154	0.0207	0.0417

▸ Fully dynamic specification   ▸ cons graph   ▸ savings graph

- Car purchases weakly increase in Post period, esp. for movers
  ▸ Detailed car results

Decomposing Consumption

Consumption = Income - Savings (= Income - dFin - dHousing + dDebt)

	Change in Debt			Change in Housing Wealth		
Samples	Fixed	Stayers	Movers	Fixed	Stayers	Movers
RY≤-2	-3735.6	-7563.7	2198.5	861.3	-4358.0	9029.1
	(-0.63)	(-1.11)	(0.23)	(0.16)	(-0.83)	(1.06)
RY=0	337065.5***	329743.2***	347653.5***	376403.5***	372403.7***	380240.7***
	(4.83)	(4.46)	(5.30)	(5.18)	(4.89)	(5.38)
RY≥1	-7748.8	-14384.3**	2495.7	-14287.1	-3238.4	-45804.3*
	(-1.12)	(-2.39)	(0.14)	(-1.66)	(-0.55)	(-1.83)
PT-Mean	4,867	2,914	8,833	1,865	671	4,287
PT-SD	70,086	52,388	96,397	49,841	29,623	75,754
N	13,370	9,165	4,205	13,370	9,165	4,205
R^2	0.197	0.293	0.140	0.209	0.372	0.143

▶ Fully dynamic specification

Decomposing Consumption

Consumption = Income - Savings (= Income - dFin - dHousing + dDebt)

	Change in Financial Wealth			**Income**		
Samples	Fixed	Stayers	Movers	Fixed	Stayers	Movers
RY$\leq$-2	-82.63	-4380.3	5557.7	233.2	-4198.6	7129.9
	(-0.01)	(-0.78)	(0.41)	(0.08)	(-1.02)	(1.46)
RY=0	-11963.0**	-21091.1***	1115.0	10899.8**	7906.2**	16272.8**
	(-2.51)	(-3.79)	(0.09)	(3.24)	(2.52)	(3.03)
RY$\geq$1	367.4	-10440.9**	21365.5**	1905.0	3043.5	-1955.6
	(0.07)	(-2.64)	(2.23)	(0.52)	(0.67)	(-0.34)
PT-Mean	9,380	9,291	9,562	166,894	165,613	169,495
PT-SD	77,498	73,746	84,624	85,380	81,059	93,508
N	13,370	9,165	4,205	13,370	9,165	4,205
R^2	0.0138	0.0214	0.0288	0.142	0.153	0.178

▸ Fully dynamic specification   ▸ graph lab inc   ▸ graph lab part

- Studying labor income responses deliver similar picture
- Results strongest on intensive margin, but present at extensive margin
  ▸ Detailed labor income results

Breaking Down Initial Consumption Response

- In RY0, consumption falls by 16.5k SEK (per adult equivalent) or 10% of pre-treatment consumption; savings increase by 27.2k SEK
  - 376k SEK increase in housing wealth
  - 337k SEK increase in debt
  - 12k SEK decline in financial wealth
  - 10.8k SEK increase in income

- Reduction in consumption is *voluntary*: taking a 16.5k SEK larger mortgage was feasible

- Suggests debt or leverage aversion; inconsistent with consumption smoothing

- Treated movers choose a larger leverage, signalling their intention to move, consistent with stronger debt-service induced labor supply effect

Subsequent Consumption Response

- Consumption increases by 37k SEK cumulatively in years RY+1 to RY+4 (8k SEK per year); savings fall (6k SEK per year)

- Large differences for Stayers and Movers
  - Stayers' consumption goes up by 13k SEK or 2.3k SEK per year
  - Movers' consumption goes up by 103k SEK or 25k SEK per year

- On average, Stayers not consuming out of housing wealth
  - Stayers gradually pay off debt - forced savings benefit of home ownership
  - Movers tap into their housing wealth; consume out of *realized* windfall

- Compare these consumption responses to size of windfall to get marginal propensity to consume
  - $MPC = \frac{\Delta consumption post}{windfall}$, adjusted for home ownership rate
  - Stayers' MPC is 0.6%, less than aggregate evidence/full insurance
  - Movers' MPC is 6.7%, less than post-crisis evidence/partial insurance, life-cycle models (Mian et al. 13, Berger et al. 15, Kaplan et al. 16)

Housing Collateral Effect

- Do home owners and renters respond differentially to a similar income shock?
- Do home owners use their debt capacity to smooth consumption?
- Usually, hard question to answer because home ownership is endogenous
- Use our quasi natural setting to revisit this question
- $Z_{it} = 1$ if Hh labor income fell at least 25% between $t - 1$ and t. Estimate:

$$cons_{it} = \alpha + Convert_i \sum_k \delta_k RY_i(t = k) + Convert_i \sum_k \beta_k RY_i(t = k)Z_{it}$$
$$+ \sum_k \gamma_k RY_i(t = k) + \sum_k \lambda_k RY_i(t = k)Z_{it} + Z_{it} + X_{it} + \psi_t + \omega_b + \varepsilon_{it},$$

- Owners respond differently to income shock than renters: β_{post} of 32,904 (t-stat of 2.11) vs. λ_{post} of -4453 (t-stat -0.69)
- Positive post-privatization consumption response largely driven by those who get the income shock: δ_{post} only 4,960 (t-stat of 0.65)

Stock Market Participation and Risky Share

	Participation			Cond. Risky Share			Risky Share		
	Fixed	Stayers	Movers	Fixed	Stayers	Movers	Fixed	Stayers	Movers
RY≤-2	-0.0221	-0.0280	-0.0149	0.0188	0.0299**	0.00216	0.00681	0.0127	-0.00611
	(-1.43)	(-1.39)	(-0.41)	(1.27)	(2.10)	(0.08)	(0.56)	(1.08)	(-0.28)
RY=0	0.0229*	0.00579	0.0539**	0.0291*	0.0423**	-0.00482	0.0289**	0.0312**	0.0234
	(1.74)	(0.50)	(2.04)	(2.87)	(2.98)	(1.54)	(1.99)	(2.59)	(-0.21)
RY≥1	0.0371**	0.0237	0.0598**	0.0122	0.0204	-0.00235	0.0263**	0.0278**	0.0204
	(2.86)	(1.59)	(2.47)	(0.78)	(1.27)	(-0.07)	(2.84)	(2.79)	(1.09)
PT-Mean	.51	.51	.53	.39	.39	.38	.20	.20	.20
PT-SD	.49	.49	.49	.28	.28	.28	.28	.28	.28
N	15076	10273	4803	7728	5156	2572	15076	10273	4803
R^2	0.0916	0.110	0.106	0.0800	0.0985	0.136	0.0772	0.0996	0.0949

- Consistent with increase in home equity channel of Chetty et al. (2016)
- Extends their results to extensive margin
- Combined effects on Risky Share are sizeable

▸ Fully dynamic specification   ▸ graph risky share

Geographic and Economic Mobility

	Anymove	Parishmove	Municipmove	Moving Up P	Moving Up Y
RY$\leq$-2	0.0119	0.0149	0.0107*	0.00231	0.00176
	(0.80)	(1.65)	(1.81)	(0.39)	(0.24)
RY$=$0	-0.00883	-0.00419	-0.000274	0.00761	0.00549
	(-0.99)	(-0.40)	(-0.04)	(0.99)	(0.77)
RY$\geq$1	0.0562***	0.0502***	0.0361***	0.0377**	0.0388***
	(3.93)	(4.31)	(4.40)	(3.37)	(3.66)
PT-Mean	.10	.04	.01	.02	.02
PT-SD	.30	.20	.13	.14	.14
N	15076	15076	15076	15076	15076
R^2	0.0434	0.0391	0.0244	0.0194	0.0234

▸ Fully dynamic specification ▸ graph any move ▸ graph parish move ▸ graph municip move

- Large increases in mobility post privatization
- Inconsistent with housing lock hypothesis of home ownership
- No evidence for differential mobility between renters and owners in pre-period, in our sample or in population at large

Heterogeneity in ITT Effects

- Explore how results differ by the size of the windfall: most hold across windfall bins (▸ wf distr)
- Explore how results differ by age groups, labor income groups, and financial wealth groups
- Focus here on consumption response and MPC (full-sample MPC was 2.1%)

		Low	2	3	High
Windfall Bins	Cons Init	2831.5	-14752.5	321.8	-63884.6***
	Cons Post	30743.5***	8517.3	18286.6*	-12694.1
	MPC	19.4%	2.5%	3.2%	-1.4%
Age Bins	Cons Init	-31744.6	-13139.5	4688.8	-25958.5
	Cons Post	17864.4	-333.8	25944.9**	-9088.0
	MPC	5.5%	-0.1%	6.2%	-1.9%
Labor income Bins	Cons Init	-45013.5**	-20022.4	-9428.2	-6021.5
	Cons Post	12559.9	2995.6	18293.8*	12157.3
	MPC	5.3%	1.0%	4.4%	2.3%
Financial Wealth Bins	Cons Init	-36273.2**	2059.4	1745.1	-24005.1
	Cons Post	14986.2	14527.0	3393.2	6782.5
	MPC	6.4%	4.3%	0.8%	1.3%

▸ Windfall bins   ▸ Age bins   ▸ Income bins   ▸ Fin wealth bins

Conclusions

- Explore the private economic benefits from home ownership using unique quasi-natural experiment

- As long as home equity gains are not realized, effects on consumption are small unless household hit with a negative income shock. Savings benefits of home ownership, including higher risky share

- Realized home equity gains promote mobility, hard work, consumption expenditures, and higher stock market participation

- New set of MPC estimates and new evidence for housing collateral effect

- Next step: Study larger sample of 265 co-op privatizations

- Next paper: Social effects of home ownership

Consumption and Savings

Sample	Consumption Expenditures				Savings			
	All	Fixed	Stayers	Movers	All	Fixed	Stayers	Movers
RY-3	-4058.3	-2959.7	-69.42	-7686.8	2797.0	2834.0	-2288.1	9883.9
	(-0.46)	(-0.30)	(-0.01)	(-0.54)	(0.34)	(0.34)	(-0.31)	(0.62)
RY-2	-4218.9	-6118.1	-6375.9	-3081.6	5030.6	6783.3	-139.9	15977.2
	(-0.53)	(-0.71)	(-0.81)	(-0.20)	(0.72)	(0.89)	(-0.02)	(1.05)
RY0	-14540.9*	-16475.5*	-13913.9	-17267.7	23386.5**	27245.4**	21611.5*	33536.1**
	(-1.73)	(-1.87)	(-1.14)	(-1.34)	(2.77)	(3.12)	(1.93)	(2.39)
RY+1	13434.6	9344.9	2647.9	26730.6	-12246.5	-6446.3	507.5	-24579.7
	(1.34)	(0.85)	(0.36)	(1.15)	(-1.48)	(-0.75)	(0.10)	(-1.21)
RY+2	7618.8	7578.7	-2858.3	35795.0*	-6224.0	-4416.1	6743.0	-35613.7**
	(0.93)	(0.82)	(-0.30)	(1.91)	(-0.93)	(-0.56)	(0.89)	(-2.16)
RY+3	-977.6	-1997.1	4130.2	-12137.9	213.2	3624.7	-2067.4	11275.7
	(-0.12)	(-0.20)	(0.45)	(-0.54)	(0.04)	(0.44)	(-0.24)	(0.62)
RY+4	14695.3	22101.1*	9096.4	52474.6**	-19225.4**	-24091.0**	-7130.1	-65094.7***
	(1.39)	(2.02)	(0.83)	(2.25)	(-2.63)	(-3.30)	(-0.77)	(-3.58)
PT-Mean	160,564	160,517	158,565	164,479	5,744	6,378	7,048	5,016
PT-SD	119,201	117,627	112,600	127,159	93,471	92,889	86,163	105,240
N	16,199	13,370	9,165	4,205	16,199	13,370	9,165	4,205
R^2	0.0620	0.0652	0.0764	0.0782	0.0138	0.0154	0.0207	0.0417

▸ Back

Breaking Down Consumption and Savings

$$Consumption = dDebt - dHousing - dFin + Income$$

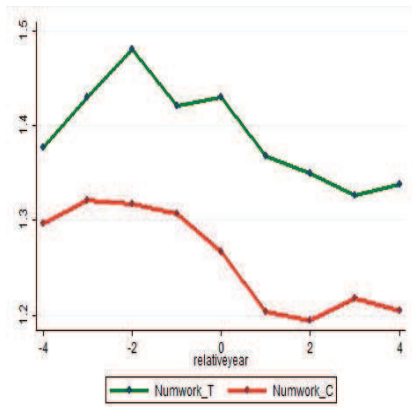|	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Change in Debt			Change in Residential RE Wealth			Change in Financial Wealth			Income		
Samples	Fixed	Stayers	Movers	Fixed	Stayers	Movers	Fixed	Stayers	Movers	Fixed	Stayers	Movers
RY-3	-2090.2	-8122.9	8448.8	1514.8	-3875.1	10106.5	-771.0	-6535.8	8226.2	-125.7	-2357.5	2197.1
	(-0.37)	(-1.25)	(0.87)	(0.29)	(-0.67)	(1.33)	(-0.09)	(-1.07)	(0.52)	(-0.04)	(-0.47)	(0.33)
RY-2	-4819.6	-6025.1	-3944.4	1489.4	-4445.6	10250.3	474.3	-1719.4	1782.4	665.2	-6515.7*	12895.5**
	(-0.71)	(-0.81)	(-0.34)	(0.27)	(-0.86)	(0.97)	(0.06)	(-0.26)	(0.13)	(0.19)	(-1.83)	(2.43)
RY0	337087.1***	329954.3***	347653.6***	376335.9***	372547.5***	380232.9***	-12003.3**	-20981.7***	956.8	10769.9**	7697.6**	16268.5**
	(4.82)	(4.45)	(5.29)	(5.17)	(4.89)	(5.36)	(-2.49)	(-3.77)	(0.08)	(3.23)	(2.51)	(3.01)
RY+1	-8163.4	-9509.3	-12799.6	-23455.7	-3231.9	-74307.4	8846.0	-5769.9	36928.1*	2898.7	3155.4	2150.9
	(-0.54)	(-0.98)	(-0.34)	(-1.16)	(-0.36)	(-1.35)	(0.99)	(-0.95)	(1.81)	(0.74)	(0.77)	(0.34)
RY+2	3126.0	-13948.1*	37799.3	-1198.4	-1832.3	-6655.2	-91.72	-5372.9	8840.8	3162.6	3884.7	181.3
	(0.32)	(-1.82)	(1.24)	(-0.10)	(-0.25)	(-0.18)	(-0.02)	(-0.87)	(0.86)	(0.83)	(0.90)	(0.02)
RY+3	-17206.1**	-24499.3**	-3553.3	-4507.8	-11785.1	6066.4	-9073.6	-14781.6**	1656.0	1627.6	2062.8	-862.2
	(-2.28)	(-3.27)	(-0.22)	(-0.55)	(-1.48)	(0.28)	(-1.37)	(-2.13)	(0.13)	(0.37)	(0.35)	(-0.12)
RY+4	-6864.3	-5126.8	-12547.0	-28728.1	9495.5	-114563.3**	-2227.2	-21752.5**	36921.6**	-1989.9	1966.3	-12620.1
	(-0.46)	(-0.55)	(-0.33)	(-1.59)	(1.13)	(-2.58)	(-0.43)	(-3.33)	(2.37)	(-0.29)	(0.25)	(-1.12)
PT-Mean	4,867	2,914	8,833	1,865	671	4,287	9,380	9,291	9,562	166,894	165,613	169,495
PT-SD	70,086	52,388	96,397	49,841	29,623	75,754	77,498	73,746	84,624	85,380	81,059	93,508
N	13,370	9,165	4,205	13,370	9,165	4,205	13,370	9,165	4,205	13,370	9,165	4,205
R^2	0.197	0.293	0.140	0.209	0.372	0.143	0.0138	0.0214	0.0288	0.142	0.153	0.178

▸ Back

Car Purchases

- Car purchases often-used proxy for consumption
- Registry-based data (not based on car loans)
- Little effect, except for Movers several years after conversion

Sample	Car Purchases			
	All	Fixed	Stayers	Movers
RY-4	-0.0335*	-0.0327	-0.0317**	-0.0370
	(-1.77)	(-1.66)	(-2.33)	(-0.77)
RY-3	0.00420	-0.00571	-0.0331	0.0532
	(0.21)	(-0.28)	(-1.36)	(1.52)
RY-2	0.00598	-0.00163	-0.0211	0.0403
	(0.18)	(-0.05)	(-0.70)	(0.74)
RY0	0.0287	0.0189	0.0201	0.0203
	(1.15)	(0.74)	(0.73)	(0.50)
RY+1	0.0175	0.00728	-0.00323	0.0287
	(0.77)	(0.30)	(-0.12)	(0.67)
RY+2	-0.000419	-0.00334	-0.0256	0.0492
	(-0.02)	(-0.16)	(-1.27)	(1.03)
RY+3	0.0168	0.0324	-0.00600	0.115**
	(0.78)	(1.33)	(-0.31)	(2.28)
RY+4	0.0112	0.0313	0.0135	0.0708
	(0.55)	(1.41)	(0.59)	(1.15)
PT-Mean	.14	.13	.12	.15
PT-SD	.34	.34	.33	.36
N	18284	15076	10273	4803
R^2	0.0367	0.0416	0.0468	0.0547

▸ Back

Labor Supply

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Number of workers				**Labor income**		
Samples	All	Fixed	Stayers	Movers	All	Fixed	Stayers	Movers
RY-4	-0.0104	0.0152	-0.0447	0.125**	5408.4	11319.4	4889.2	20661.2*
	(-0.34)	(0.48)	(-1.16)	(2.06)	(1.02)	(1.66)	(0.54)	(1.77)
RY-3	-0.0101	0.00867	-0.0351	0.0827**	169.1	2151.6	-1986.2	6089.0
	(-0.34)	(0.30)	(-0.76)	(2.46)	(0.04)	(0.49)	(-0.34)	(0.61)
RY-2	0.0349	0.0395	0.0257	0.0541	1387.2	2222.8	-2495.0	7962.9
	(1.58)	(1.68)	(0.83)	(1.47)	(0.28)	(0.48)	(-0.49)	(0.94)
RY0	0.0383*	0.0285*	0.0280	0.0209	12810.4**	15814.7**	10902.2**	23654.3**
	(1.99)	(1.87)	(1.40)	(0.70)	(3.03)	(3.33)	(2.41)	(2.81)
RY+1	0.0447	0.0337	0.00648	0.0723	7653.4	10878.0*	7383.7	15858.0*
	(1.57)	(1.28)	(0.21)	(1.35)	(1.36)	(1.97)	(1.16)	(1.91)
RY+2	0.0257	0.0508	0.0446	0.0402	2191.9	2024.4	4835.9	-5532.6
	(0.75)	(1.35)	(1.08)	(0.64)	(0.33)	(0.26)	(0.52)	(-0.42)
RY+3	-0.00581	-0.00150	-0.0346	0.0410	-329.3	1612.9	-1372.5	3884.7
	(-0.16)	(-0.04)	(-0.67)	(0.67)	(-0.04)	(0.18)	(-0.12)	(0.30)
RY+4	0.0124	0.00599	-0.0910	0.185**	-6516.2	3079.6	-41.80	2518.6
	(0.34)	(0.14)	(-1.35)	(2.50)	(-0.86)	(0.37)	(-0.00)	(0.16)
PT-Mean	1.34	1.34	1.34	1.32	193,846	193,979	187,840	206,478
PT-SD	.78	.78	.81	.71	147,830	143,536	137,187	154,945
N	17,703	14,536	9,835	4,701	17,703	14,536	9,835	4,701
R^2	0.405	0.400	0.403	0.427	0.105	0.115	0.122	0.163

Labor Supply: Extensive and Intensive Margins, Raw Data

Number of workers
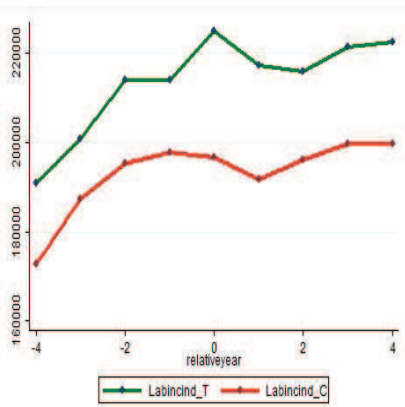
Labor income per worker

Stock Market Participation and Risky Share

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Participation				Cond. Risky Share				Risky Share			
Samples	All	Fixed	Stayers	Movers	All	Fixed	Stayers	Movers	All	Fixed	Stayers	Movers
RY-4	-0.0377	-0.0313	-0.0394	-0.0172	-0.00826	0.00588	0.0311	-0.0347	-0.0123	-0.00143	0.00981	-0.0239
	(-1.52)	(-1.18)	(-1.32)	(-0.34)	(-0.37)	(0.24)	(1.19)	(-1.00)	(-0.72)	(-0.08)	(0.55)	(-0.84)
RY-3	-0.0225	-0.0169	-0.0256	-0.00866	0.00364	0.0188	0.0263*	0.00839	-0.00143	0.00928	0.0126	-0.00128
	(-1.60)	(-0.97)	(-1.15)	(-0.19)	(0.21)	(1.27)	(1.78)	(0.24)	(-0.12)	(0.72)	(1.07)	(-0.04)
RY-2	-0.0219*	-0.0172	-0.0175	-0.0191	0.0265*	0.0336**	0.0333**	0.0365	0.00876	0.0146	0.0166	0.0102
	(-1.93)	(-1.59)	(-1.08)	(-0.75)	(1.91)	(2.45)	(2.41)	(1.44)	(0.78)	(1.39)	(1.46)	(0.63)
RY0	0.0127	0.0224*	0.00495	0.0541**	0.0246*	0.0298**	0.0426**	-0.00390	0.0220*	0.0289**	0.0308**	0.0238
	(1.12)	(1.71)	(0.43)	(2.06)	(1.73)	(2.03)	(2.64)	(-0.17)	(1.97)	(2.87)	(2.95)	(1.56)
RY+1	0.0284**	0.0393**	0.0187	0.0795**	0.00546	-0.00129	0.00942	-0.0283	0.0157*	0.0176*	0.0188**	0.0106
	(2.55)	(3.31)	(1.43)	(3.03)	(0.35)	(-0.09)	(0.68)	(-0.90)	(1.69)	(2.02)	(2.17)	(0.59)
RY+2	0.0213*	0.0230	0.0190	0.0250	0.0328*	0.0316*	0.0322**	0.0381	0.0297**	0.0304**	0.0324***	0.0271
	(1.76)	(1.53)	(1.12)	(0.98)	(1.85)	(1.82)	(2.13)	(0.95)	(2.81)	(3.06)	(3.60)	(1.18)
RY+3	0.0311	0.0481**	0.0406**	0.0660**	0.0116	0.0130	0.0175	0.00910	0.0269*	0.0326**	0.0325**	0.0334
	(1.54)	(2.68)	(2.18)	(2.16)	(0.53)	(0.55)	(0.68)	(0.24)	(1.97)	(2.69)	(2.43)	(1.56)
RY+4	0.0306	0.0382*	0.0156	0.0742*	-0.00673	0.00589	0.0259	-0.0287	0.0165	0.0256	0.0292	0.0134
	(1.58)	(1.83)	(0.68)	(1.71)	(-0.25)	(0.22)	(0.79)	(-0.52)	(0.96)	(1.38)	(1.39)	(0.38)
PT-Mean	.51	.51	.51	.53	.39	.39	.39	.38	.20	.20	.20	.20
PT-SD	.49	.49	.49	.49	.28	.28	.28	.28	.28	.28	.28	.28
N	18284	15076	10273	4803	9171	7728	5156	2572	18284	15076	10273	4803
R^2	0.0975	0.0916	0.110	0.106	0.0743	0.0800	0.0985	0.136	0.0785	0.0772	0.0996	0.0949

▸ Back

Mobility
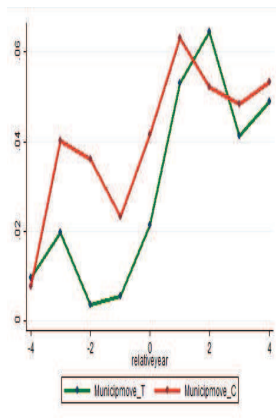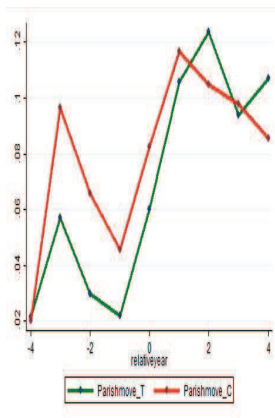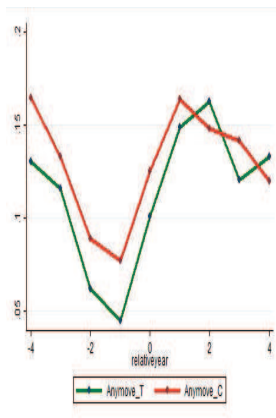
Mobility

Samples	(1) Anymove All	(2) Anymove Fixed	(3) Parishmove All	(4) Parishmove Fixed	(5) Municipmove All	(6) Municipmove Fixed	(7) Moving Up P All	(8) Moving Up P Fixed	(9) Moving Up Y All	(10) Moving Up Y Fixed
RY-4	-0.0197	-0.0163	0.0147	0.0215**	0.0167**	0.0202**	0.00900	0.00834	0.0123	0.0140
	(-1.04)	(-0.82)	(1.38)	(2.46)	(2.29)	(2.94)	(1.11)	(1.06)	(1.29)	(1.54)
RY-3	0.0189	0.0330	-0.00295	0.0175	0.00271	0.0132	-0.00250	0.00106	-0.0132	-0.00995
	(0.81)	(1.39)	(-0.17)	(1.06)	(0.27)	(1.35)	(-0.23)	(0.10)	(-1.13)	(-0.95)
RY-2	0.00882	0.0220	-0.00860	0.00424	-0.00954	-0.00268	-0.00857	-0.00366	-0.00656	-0.000898
	(0.56)	(1.43)	(-0.76)	(0.43)	(-1.34)	(-0.46)	(-1.03)	(-0.47)	(-0.66)	(-0.10)
RY0	0.00901	-0.00890	0.00127	-0.00447	-0.000846	-0.000504	0.0110	0.00764	-0.00110	0.00585
	(0.60)	(-1.01)	(0.08)	(-0.43)	(-0.10)	(-0.08)	(1.01)	(0.98)	(-0.10)	(0.82)
RY+1	0.0264	0.0537**	0.0218	0.0457**	0.0138	0.0338***	0.0440**	0.0472**	0.0372**	0.0396**
	(1.23)	(2.66)	(1.21)	(2.85)	(1.43)	(3.73)	(2.38)	(2.76)	(2.31)	(2.54)
RY+2	0.0524**	0.0681**	0.0459*	0.0571**	0.0343**	0.0527**	0.0314**	0.0361**	0.0338**	0.0403**
	(2.47)	(3.27)	(2.00)	(3.18)	(2.29)	(3.52)	(2.54)	(2.54)	(2.40)	(2.68)
RY+3	0.0159	0.0362	0.0229	0.0353**	0.0132	0.0209	0.0266*	0.0245*	0.0202	0.0299**
	(0.82)	(1.48)	(1.49)	(2.06)	(1.44)	(1.68)	(1.98)	(1.93)	(1.56)	(2.34)
RY+4	0.0515**	0.0747***	0.0415**	0.0661***	0.0169*	0.0345**	0.0379**	0.0430**	0.0366**	0.0495**
	(2.87)	(4.86)	(3.10)	(4.45)	(1.86)	(3.40)	(3.13)	(3.47)	(2.47)	(3.28)
PT-Mean	.11	.10	.04	.04	.02	.01	.02	.02	.02	.02
PT-SD	.31	.30	.21	.20	.14	.13	.14	.14	.14	.14
N	18,284	15,076	18,284	15,076	18,284	15,076	18,284	15,076	18,284	15,076
R^2	0.0756	0.0445	0.0699	0.0394	0.0401	0.0251	0.0269	0.0201	0.0308	0.0241

Windfall Distribution

RY0 Windfall Distribution
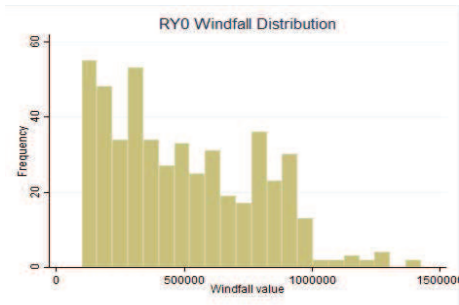
[Back]

Results By Windfall Bin

Windfall Bins	<250k	250k-445k	445k-740k	>740k
		Homeowner		
RY0	0.867***	0.901***	0.951***	0.929***
	(47.54)	(37.92)	(47.19)	(43.64)
Post	0.809***	0.785***	0.794***	0.754***
	(21.50)	(23.73)	(24.07)	(21.81)
		Anymove		
RY0	-0.0191	0.00318	-0.00114	-0.0257*
	(-1.47)	(0.18)	(-0.11)	(-1.76)
Post	0.0382**	0.0636**	0.0808***	0.0520**
	(2.14)	(2.67)	(5.02)	(2.10)
		Labinchh		
RY0	9295.6**	22256.3**	9867.3*	21129.0**
	(2.06)	(3.17)	(1.70)	(3.32)
Post	17970.9*	-693.7	7952.9	-19763.0
	(1.97)	(-0.06)	(0.79)	(-0.68)
		Consumption		
RY0	2831.5	-14752.5	321.8	-63884.6***
	(0.42)	(-1.24)	(0.02)	(-4.21)
Post	30743.5***	8517.3	18286.6*	-12694.1
	(4.79)	(1.31)	(1.69)	(-0.73)
		Savings		
RY0	4276.7	26577.3*	10232.4	75729.5***
	(0.61)	(1.91)	(0.55)	(6.17)
Post	-11979.5**	-10713.5*	-18525.1	-6076.3
	(-2.30)	(-1.97)	(-1.68)	(-0.51)
		Participation		
RY0	0.0224	-0.00425	0.0435**	0.0430
	(1.02)	(-0.22)	(2.46)	(1.00)
Post	0.0307	0.0645**	0.0526**	-0.0322
	(1.42)	(3.36)	(2.25)	(-1.32)

▶ Back

Results By Age Bin

Bins	<37	37-44	45-53	>53
			Homeowner	
RY0	0.758***	0.850***	0.874***	0.845***
	(11.45)	(21.56)	(25.90)	(15.12)
Post	0.620***	0.751***	0.773***	0.752***
	(11.06)	(23.53)	(26.02)	(14.73)
			Anymove	
RY0	-0.0535**	0.0280*	-0.0187	0.00998
	(-2.93)	(1.70)	(-1.40)	(0.49)
Post	0.0750**	0.0545**	0.0455**	0.0612**
	(3.27)	(2.80)	(3.10)	(3.31)
		Household Labor Income		
RY0	-1113.2	-15708.3	50857.4***	10831.0
	(-0.08)	(-1.00)	(4.88)	(0.54)
Post	-22279.8	-31213.7**	34027.9**	26420.7
	(-1.36)	(-2.04)	(2.05)	(1.00)
			Consumption	
RY0	-31744.6	-13139.5	4688.8	-25958.5
	(-1.54)	(-1.25)	(0.46)	(-1.26)
Post	17864.4	-333.8	25944.9**	-9088.0
	(1.63)	(-0.03)	(2.68)	(-1.10)
			Savings	
RY0	39038.2*	10659.4	19876.3**	28471.5*
	(1.79)	(1.07)	(2.15)	(1.74)
Post	-26006.6**	-9611.0	-9157.3	7097.1
	(-3.20)	(-1.49)	(-1.24)	(0.81)
		Stock Market Participation		
RY0	0.00191	0.0732**	0.0252	0.000927
	(0.04)	(2.04)	(0.58)	(0.02)
Post	-0.00251	0.0889**	0.0572	0.0110
	(-0.05)	(2.54)	(1.36)	(0.24)

Results By Labor Income Bin

Bins	<86k	86k-176k	176k-281k	>281k
Homeowner				
RY0	0.765***	0.888***	0.866***	0.791***
	(10.47)	(20.75)	(25.13)	(19.98)
Post	0.596***	0.811***	0.764***	0.706***
	(11.13)	(25.92)	(19.81)	(20.34)
Anymove				
RY0	-0.0153	-0.00764	-0.0186	0.00159
	(-0.84)	(-0.51)	(-1.13)	(0.10)
Post	0.0714**	0.0489**	0.0525**	0.0582**
	(3.37)	(2.36)	(2.30)	(2.77)
Household Labor Income				
RY0	12241.7	1033.5	13757.9	-7437.1
	(1.59)	(0.21)	(1.66)	(-0.50)
Post	13880.4	9376.2	7470.5	-3008.0
	(1.04)	(1.10)	(0.59)	(-0.15)
Consumption				
RY0	-45013.5**	-20022.4	-9428.2	-6021.5
	(-2.21)	(-1.47)	(-0.67)	(-0.42)
Post	12559.9	2995.6	18293.8*	12157.3
	(1.31)	(0.42)	(1.71)	(0.92)
Savings				
RY0	46272.6**	23458.0*	24840.5*	6059.2
	(2.25)	(1.84)	(1.87)	(0.45)
Post	-10088.7	2818.4	-9046.7	-19185.0*
	(-1.04)	(0.58)	(-1.43)	(-1.76)
Stock Market Participation				
RY0	0.0181	0.0791*	0.0160	-0.0389
	(0.35)	(2.02)	(0.32)	(-1.04)
Post	0.0539	0.0859	0.0250	-0.000243
	(1.62)	(1.55)	(0.61)	(-0.01)

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Results By Financial Wealth Bin

Bins 0	0-13k	13k-70k	>70k
		Homeowner		
RY0	0.715***	0.823***	0.908***	0.873***
	(10.41)	(16.01)	(25.50)	(41.52)
Post	0.649***	0.724***	0.766***	0.752***
	(18.46)	(21.40)	(23.84)	(22.62)
		Anymove		
RY0	-0.0000	-0.0311*	-0.0254	0.0162
	(-0.00)	(-1.84)	(-1.29)	(0.90)
Post	0.0777***	0.0541**	0.0351*	0.0590**
	(4.02)	(2.33)	(1.82)	(2.66)
		Household Labor Income		
RY0	12722.9	14251.3	-17370.0	39229.7**
	(1.41)	(1.13)	(-1.28)	(2.98)
Post	1823.9	-17192.6	-16134.4	46666.4**
	(0.15)	(-1.42)	(-1.28)	(2.51)
		Consumption		
RY0	-36273.2**	2059.4	1745.1	-24005.1
	(-2.28)	(0.16)	(0.10)	(-1.54)
Post	14986.2	14527.0	3393.2	6782.5
	(1.67)	(1.18)	(0.33)	(0.64)
		Savings		
RY0	43408.7**	6687.9	-7228.0	47280.1**
	(3.04)	(0.58)	(-0.53)	(3.23)
Post	-15175.5	-21940.6**	-9074.4	10226.1
	(-1.64)	(-2.60)	(-0.99)	(1.43)
		Stock Market Participation		
RY0	0.0197	0.0491	-0.0770**	0.0412
	(0.80)	(1.14)	(-2.05)	(1.45)
Post	0.0842**	0.0795**	-0.0357	0.0538**
	(2.16)	(2.52)	(-0.86)	(2.09)

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ITT Estimates on Home Ownership

Point estimate ├───┤ 90 % C.I.
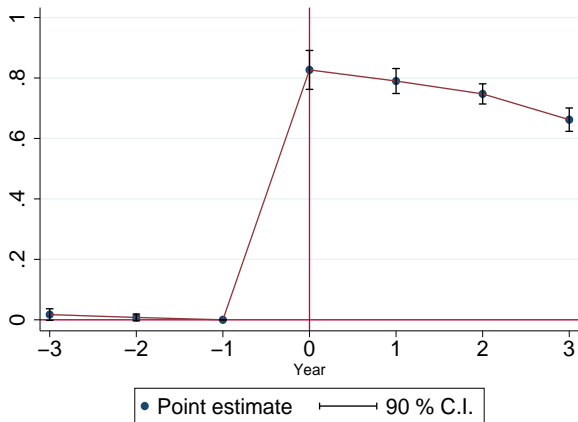
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ITT Estimates on Consumption

Point estimate   ├───────┤ 90 % C.I.
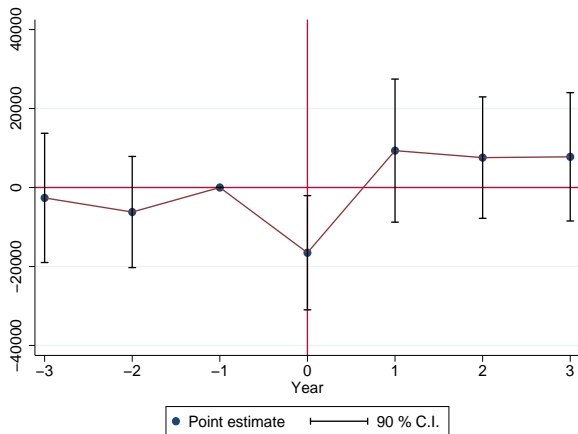
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ITT Estimates on Savings

ITT Estimates on Mobility

Point estimate ⊢——⊣ 90 % C.I.
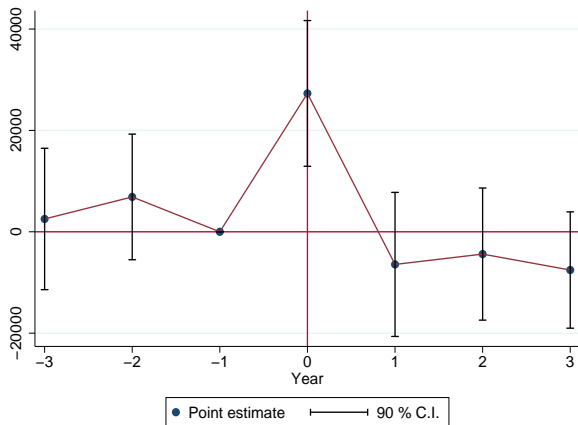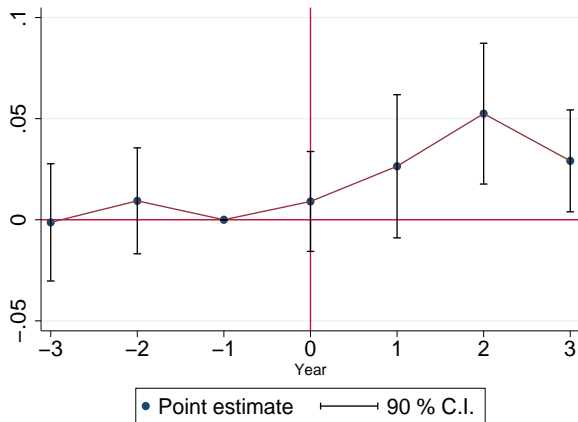
Back

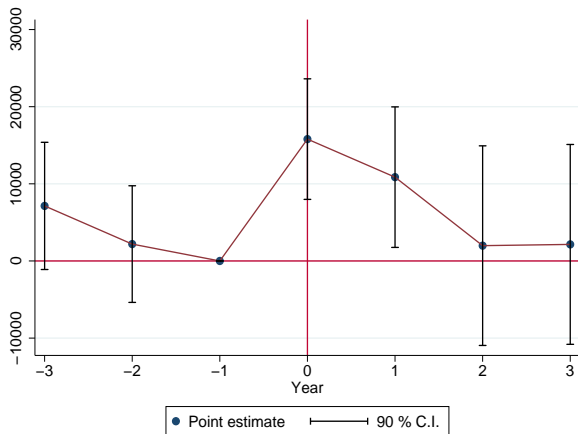# ITT Estimates on Mobility across Parishes

Point estimate ├───────┤ 90 % C.I.
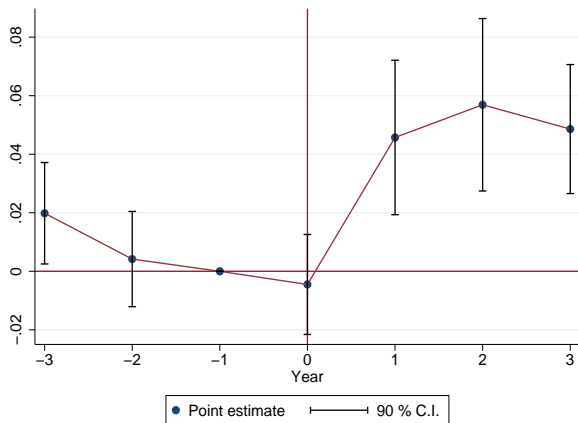
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ITT Estimates on Mobility across Municipalities
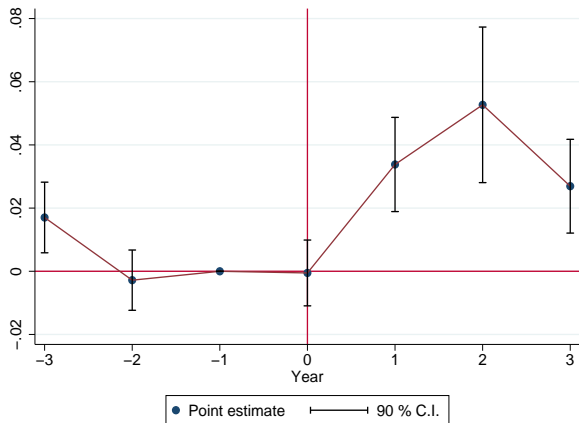
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ITT Estimates on Household Labor Income

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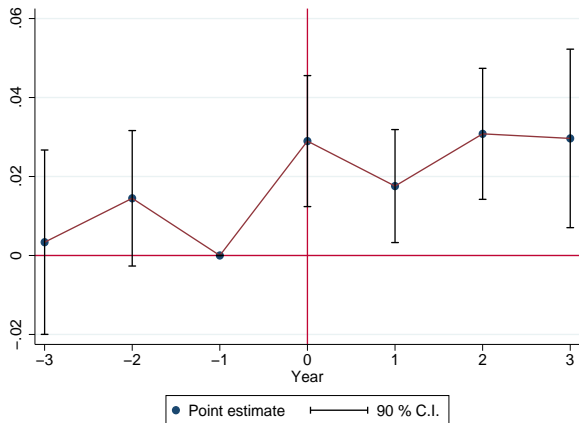# ITT Estimates on Labor Force Participation
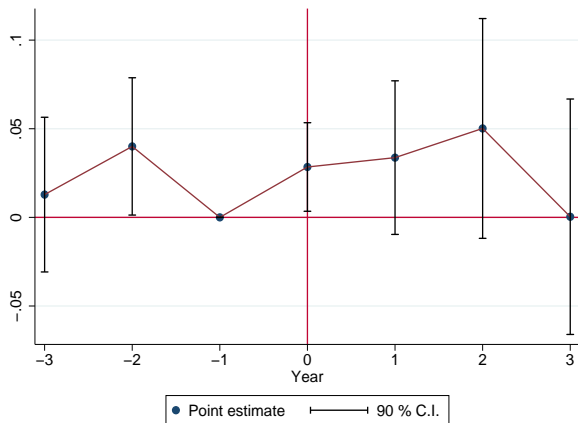
ITT Estimates on Number of Children
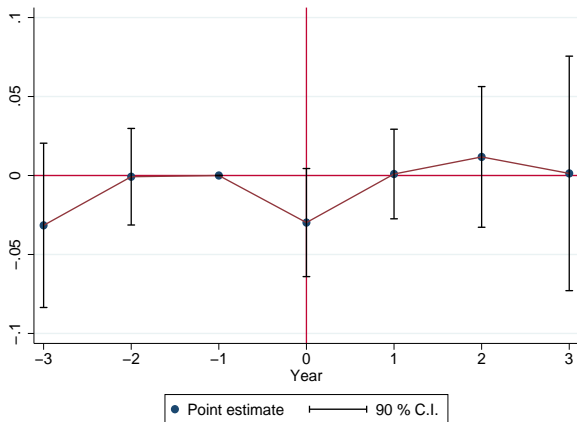
ITT Estimates on Risky Share