Wealth Taxation and Migration Patterns of the Wealthy

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Do the Rich Move to Avoid Wealth Taxes?

- Debate on desirability of wealth taxes: Saez & Zucman [2019]
  - Literature on "intensive margin" responses (Jakobsen & al [2020], Seim [2017], Avila-Mahecha & Londono-Velez [2021])
  - But international migration responses potentially important
- Looms large in public debate on wealth taxation

> *The wealth tax rate must be so low that successful entrepreneurs are not forced to move from Sweden due to taxation. The owners of all the companies that've grown large during the post-war period - IKEA, Tetra Pak, Hennes & Mauritz have all moved abroad.*

Bengt Westerberg

(Leader of the Swedish Liberal Party)

▸ Further Quotes

What do we know?

- No evidence on *international* migration responses of the very wealthy
  - Evidence on top earners/income taxation (Kleven et al. [2020])

- Enough to understand migration implications of taxing wealth?
  1. Top earners $\neq$ wealth holders= responsiveness to taxes?
  2. Wealth (stock) $\neq$ income (flow)= avoidance strategies?
  3. Wealthy entrepreneurs= economic spillovers for the economy?

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- Why hard?
  1. Few countries register international migration history
  2. Fewer countries collect information on wealth
  3. Even less countries tax wealth (needed for identification)
  4. Almost no countries link individuals to firms

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$\rightarrow$ Work on *within-country* responses to wealth taxation only: Moretti & Wilson [2023], Bruhlart et al. [2022], Agrawal et al. [2023]

This Project

- Focus on **Scandinavia**, i.e. Denmark & Sweden
  - Exceptional admin data on wealth, migration, closely-held firms
  - Credible identifying variation from large tax reforms

1. Document migration patterns at top of wealth distrib.
2. Document real economic effects of wealthy out-migration
3. Identify elasticity of migration to wealth taxation
4. Quantify aggregate economic implications of taxing wealth

Wealth Taxation in Scandinavia

- Tax on stock of wealth net of debt
  - Sweden (1910-2007)
  - Denmark (1903-1997)
- Third party reporting and assessments at market values
- Simple structure with 2 brackets:
  - 0% MTR below exemption threshold
  - Top MTR (varied from 1% to 2.2%) above threshold
- Exemption threshold varies over time / across country
  - Denmark threshold $\approx$ P98 of wealth distrib
  - Sweden threshold $\approx$ P90-97 of wealth distrib go

The Tax Base: Exemptions & Other Rules

- Various exemptions for specific types of wealth:
  - E.g. in Sweden, real estate taxed at 75% of market value, stocks at 80% of market value
- Strong exemptions for wealth from **closely-held businesses**
  - E.g. in Sweden, individuals owning more than 25% of firm are fully exempted from wealth tax on value of their stocks
- Tax ceiling/floor rules in both countries:
  - Total taxes cannot exceed X% of taxable income
  - Total taxes cannot be less than wealth tax due on Y% of taxable wealth

▸ Effective Taxation

Residence Rules, Exit Taxes and Tax Treaties

- Wealth tax applicable to all tax residents
  - Foreigners moving in Sweden only liable to wealth tax after 3 years
- Non-residents only liable for wealth held in Sweden/Denmark
- In practice, weak enforcement of wealth taxes on non-residents
- Special bilateral treaties offer additional grey area
- No exit taxes

$\Rightarrow$ Bottom-line: change in country of tax residence enables avoiding wealth tax, without further need to reallocate portfolio

Unique Administrative Data

- Third-party reported information on wealth
  - Rich info on **taxable wealth**:
    - Denmark (1980-2016)
    - Sweden (1993-2007)
  - Rich disaggregated info on **total net wealth + transactions**
    - Sweden (1999-2007, with rich info on real estate after 2007)
  - Rich info on **closely-held businesses** (CHB)
    - Link all Swedish unlisted companies to their owners in Sweden
- Population registers with rich demographic & economic info
  - E.g. info on all earnings, capital income, transfers
  - E.g. detailed info on education, occupation, etc.
- Migration registers with precise info on:
  - Dates of entry/exit, duration of stay each year
  - Country of origin/destination

▸ Data - Further Details

Empirical Roadmap

Today we will mostly focus on Sweden → Denmark used a robustness

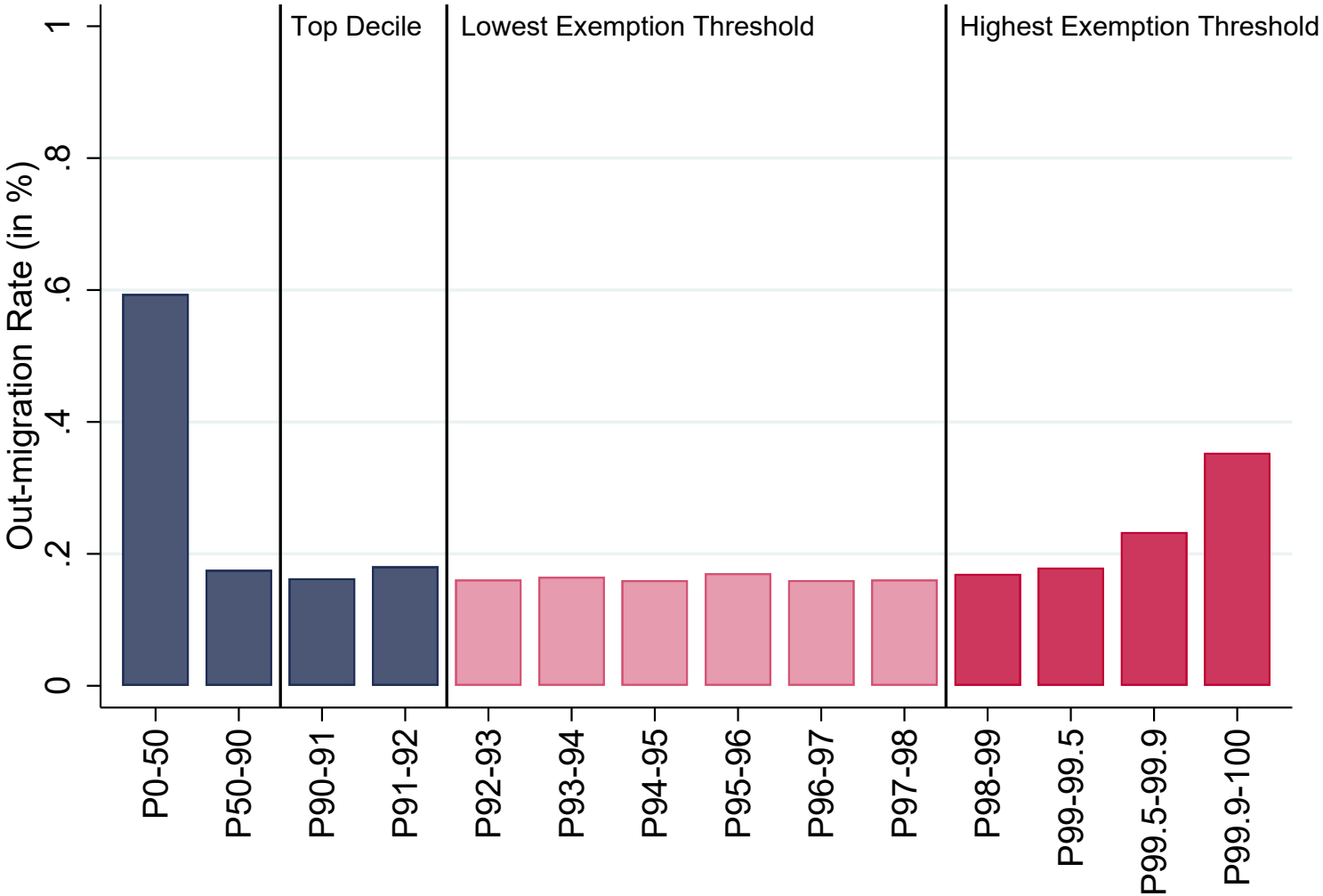
1. Who migrates at the top of wealth distribution?
   - How large and how persistent?
   - Who is more likely to leave?
2. What are the economic implications of wealthy out-migration?
   - Real effects on individual-level outcomes (taxes, portfolio reallocation)
   - Economic spillovers on closely-held businesses (employment, profits..)
3. What is the (causal) effect of wealth taxation on migration?
   - International migration responses to repeal of both wealth taxes
   - International migration elasticities with respect to wealth taxes

What are the aggregate economic implications of taxing wealth?

Out-Migration Rates by Wealth Level: 1999-2006

Out-migrants liable to wealth tax ≈ 0.2% of total taxable wealth

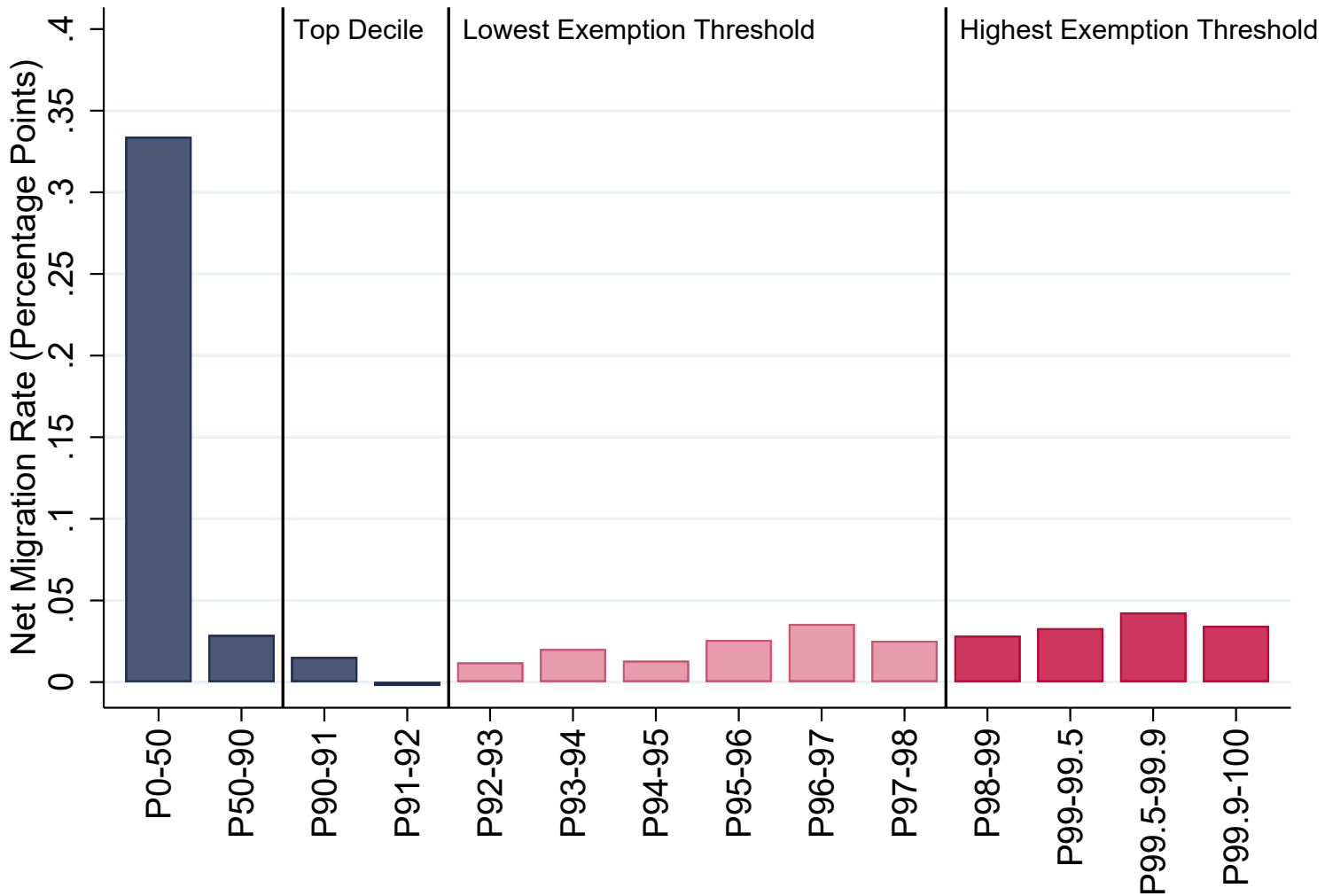
▸ Same numbers in DK



▸ Total Migrations - SCB

Net-Migration Rates by Wealth Level: 1999-2006

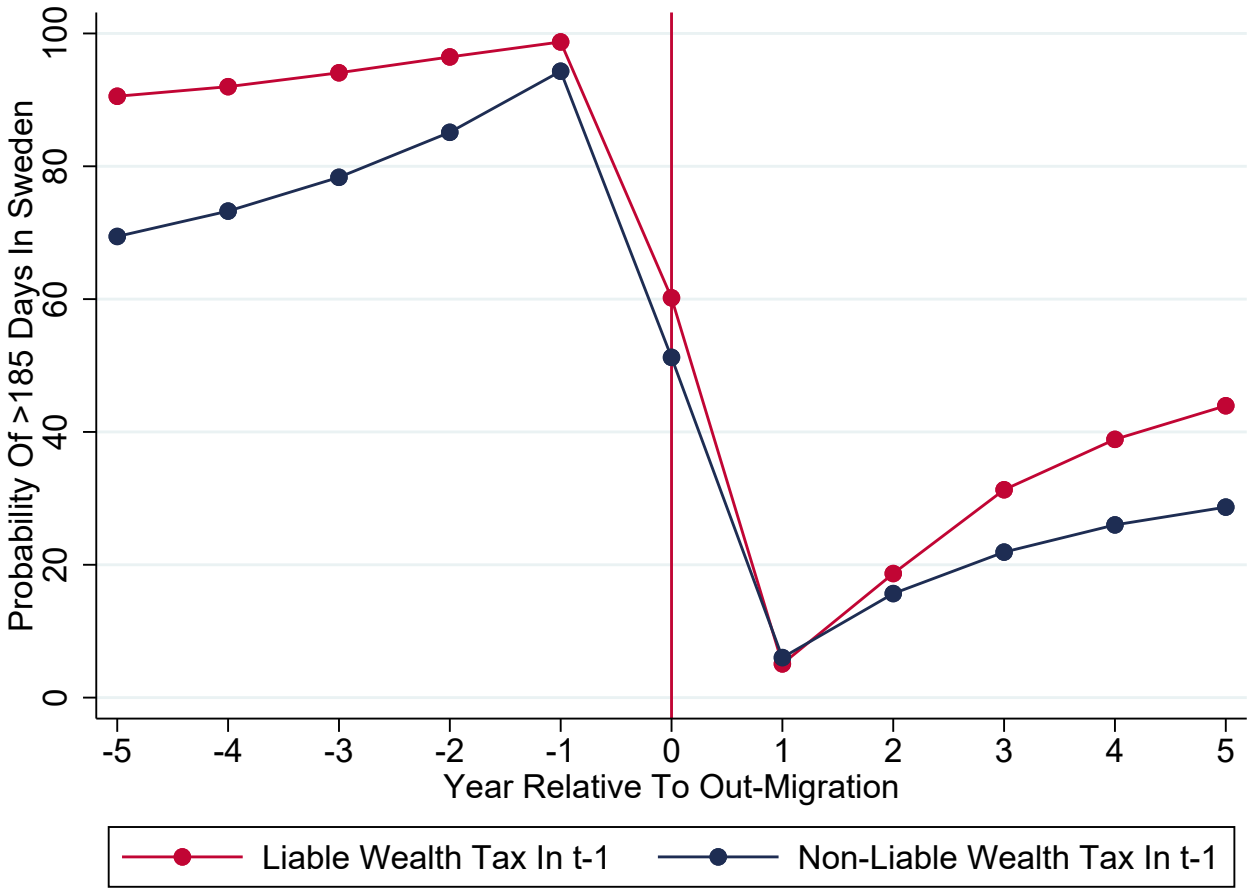
Small positive net migration rates → No exodus of the wealthy



▸ Total Migrations - SCB

Is Migration Real?

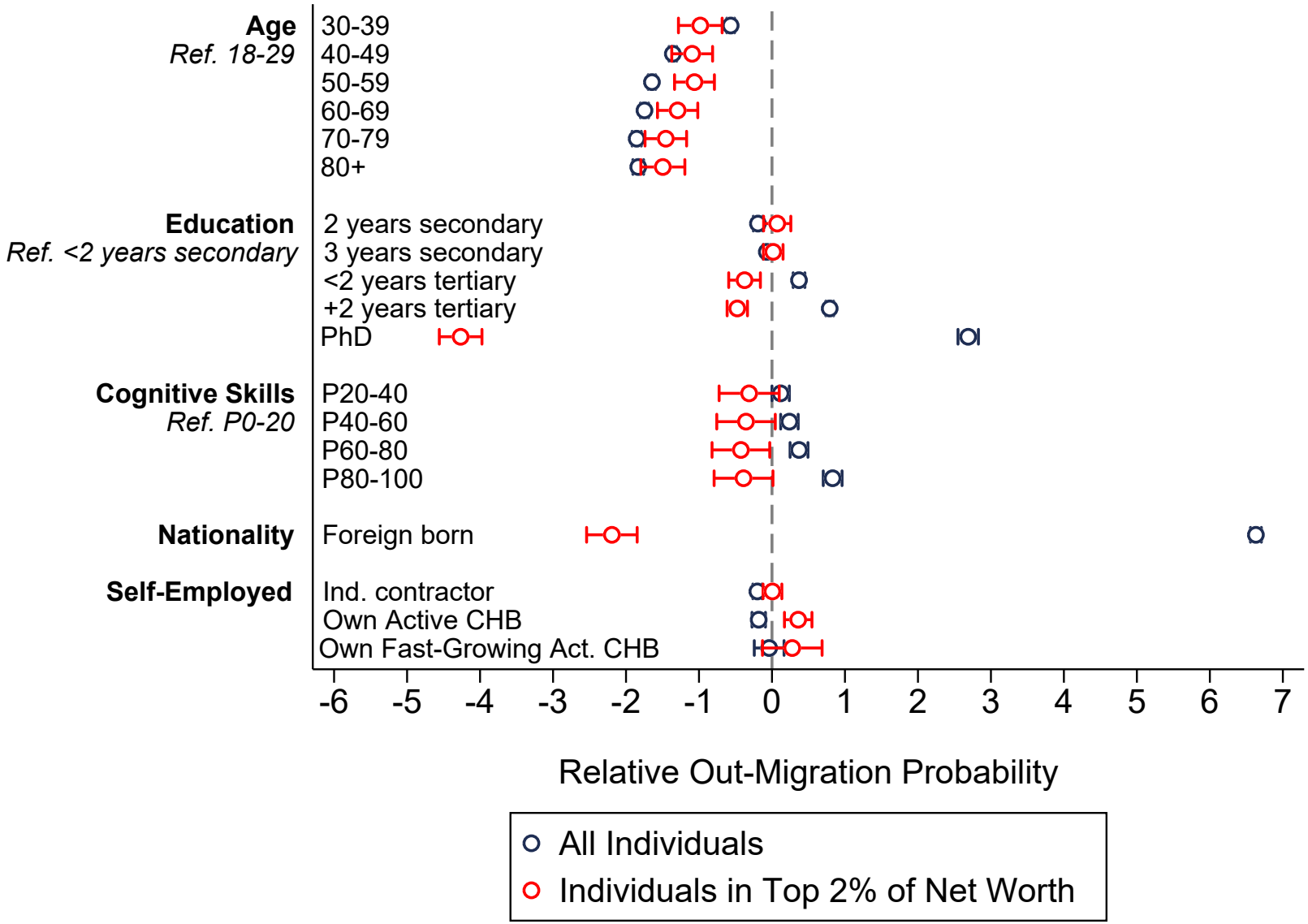
Probability to Spend > 185 Days in Sweden From Migration Register



- **Countries of Destination**:Wealthy more likely to move to countries with favorable tax regimes ▸ Destination

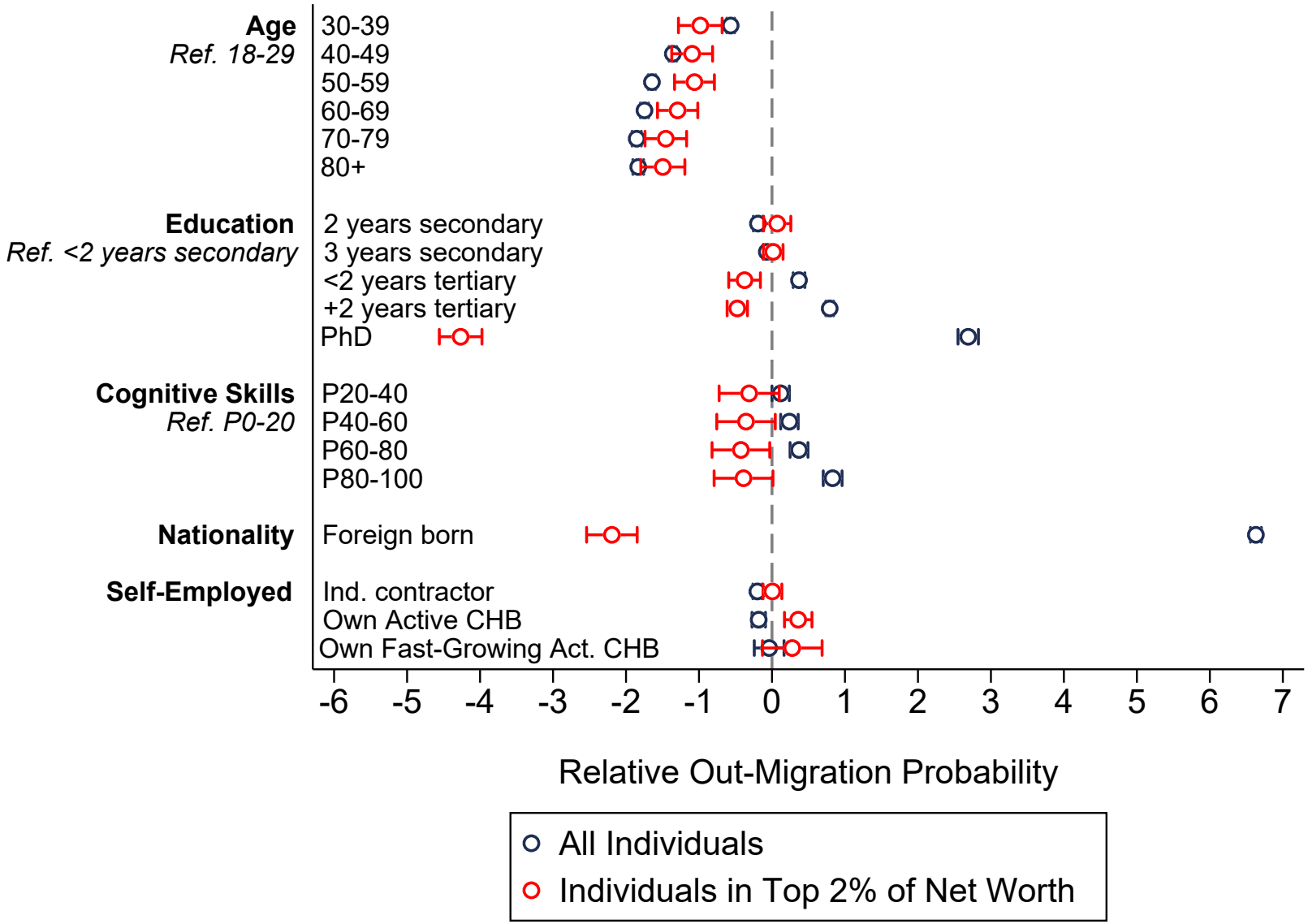
Selection Into Out-Migration: Sweden

Linear Probability Model of Out Migration 1999-2006



Selection Into Out-Migration: Sweden

No brain drain, but wealthy entrepreneurs 20% more likely to leave

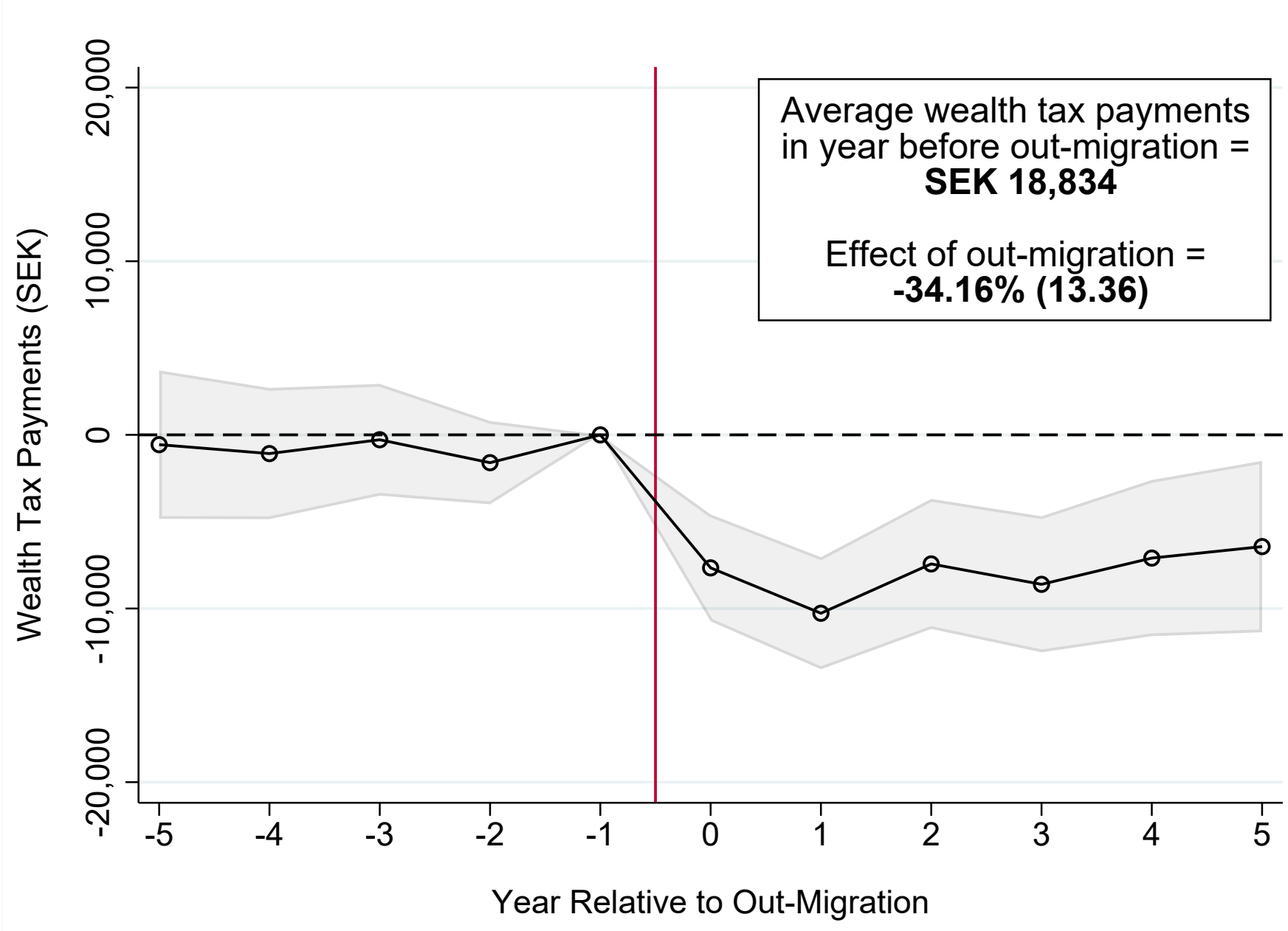


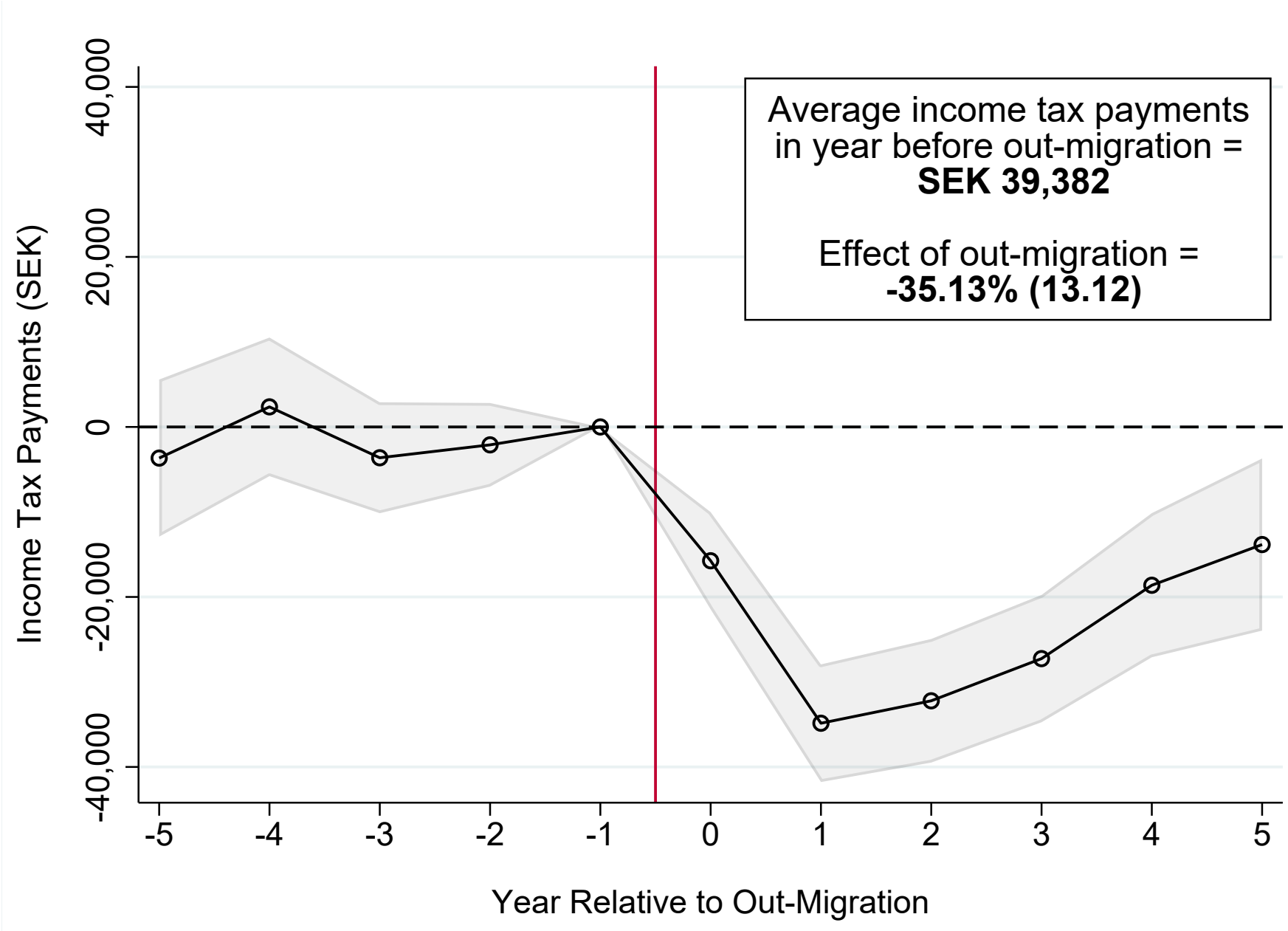
Effects of Out-Migration on Individual-Level Outcomes

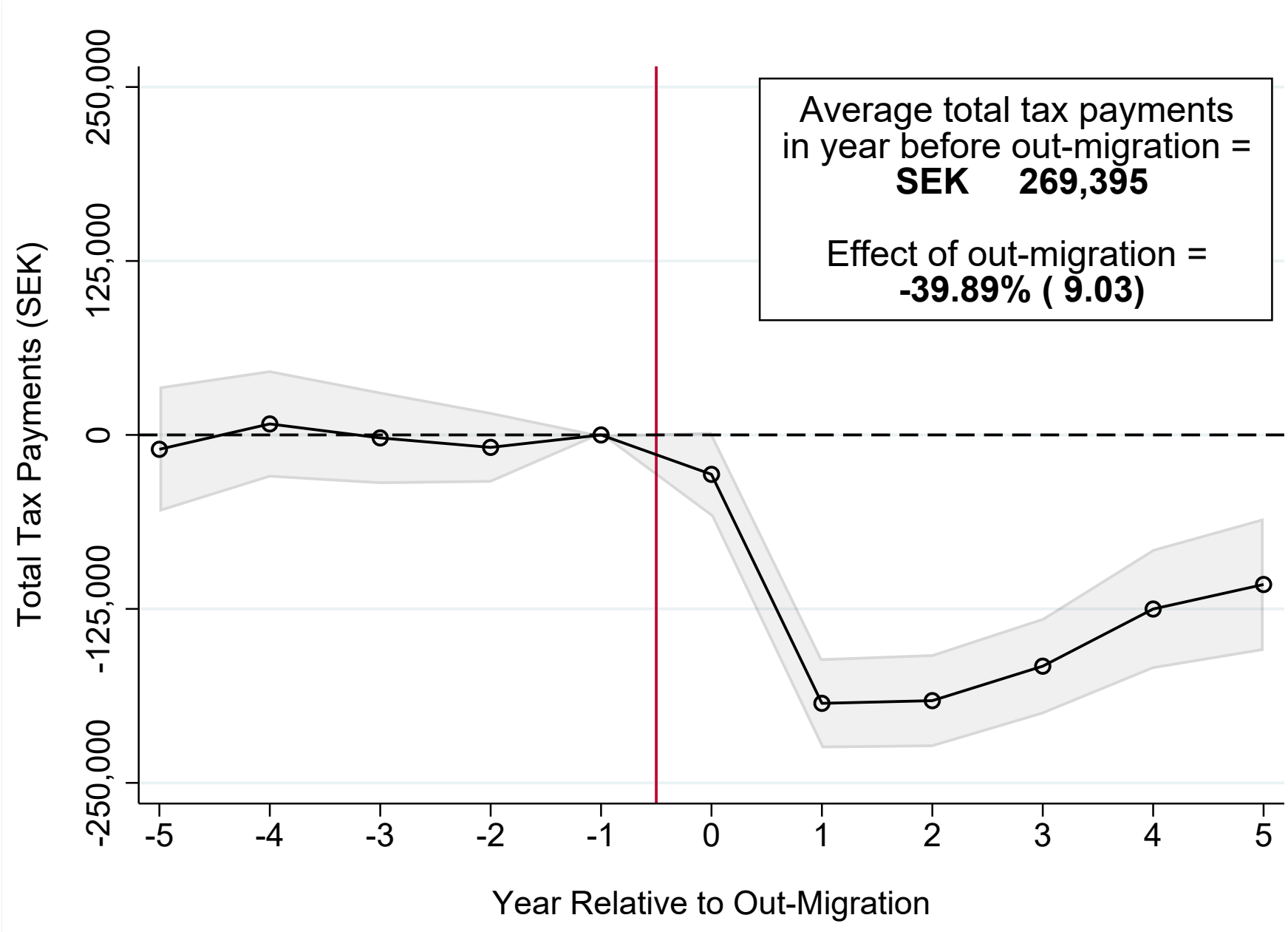
Quantifying effects on personal tax payments and portfolio reallocation

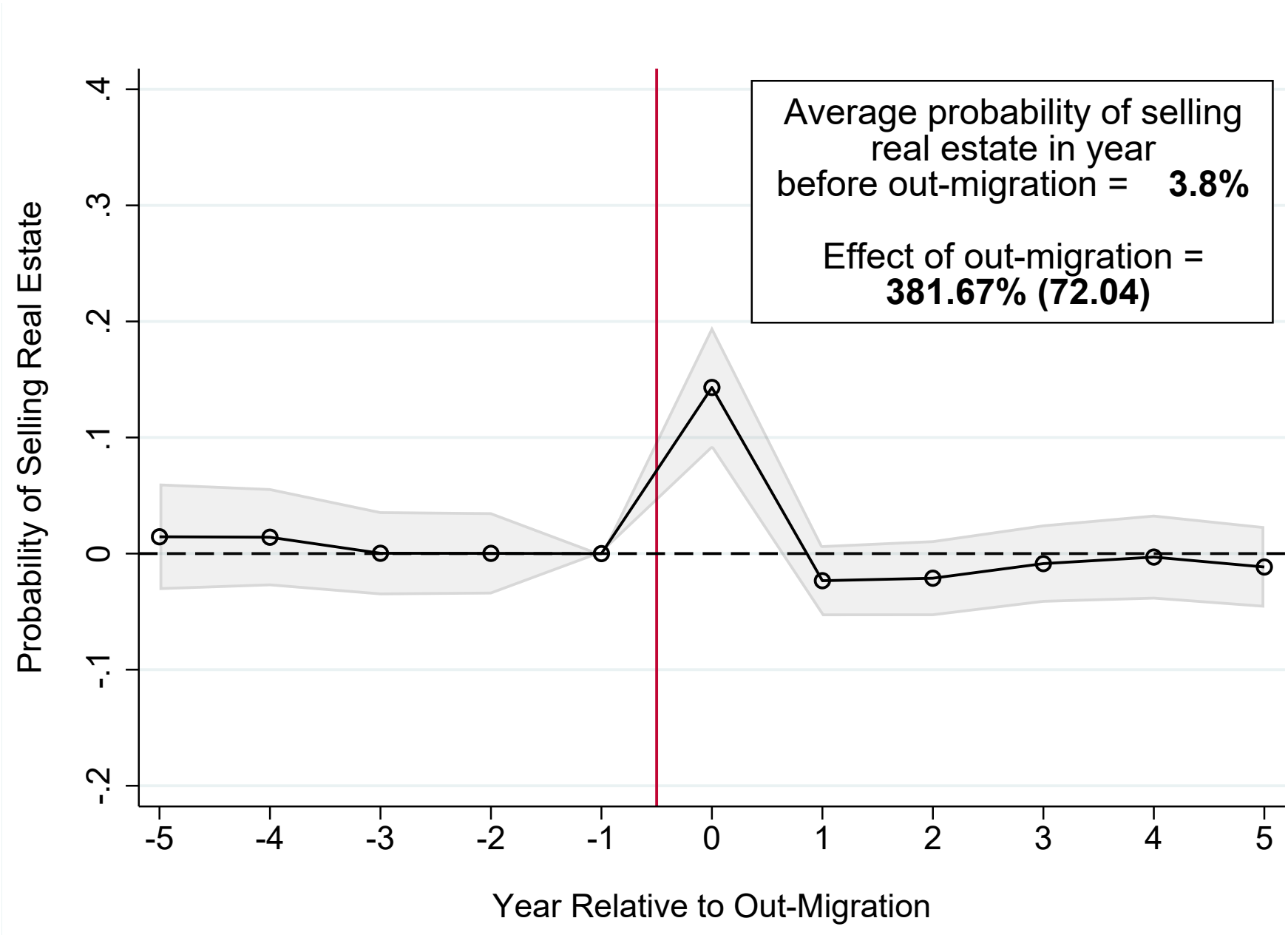
- Focus on *all* out-migration events of wealth taxpayers (1999-2006)
- Compare individual-level outcomes before and after out-migration
  - Control group: wealthy subject to the wealth tax staying in Sweden
  - Random allocation of placebo out-migration dates (no matching)
- Dynamic self-selection into out-migration? What happens after?

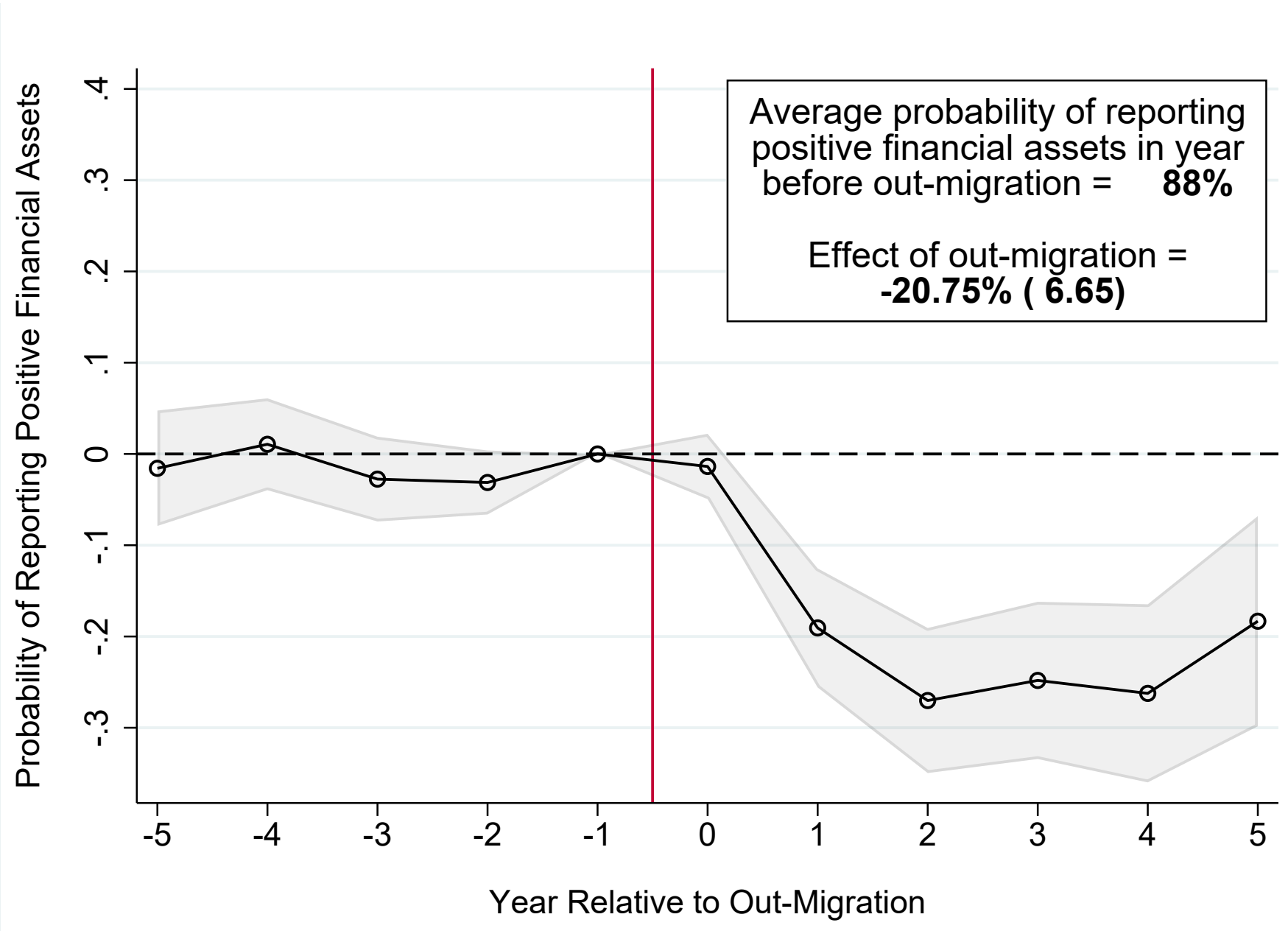
$$y_{it} = \alpha + \sum_{j=\underline{T}}^{\bar{T}} \beta_j \times \text{Emigrant}_i \times 1(t = j) + \sum_{j=\underline{T}}^{\bar{T}} \delta_j \times 1(t = j) + \varepsilon_{it}$$


Average wealth tax payments in year before out-migration = SEK 18,834
Effect of out-migration = -34.16% (13.36)
Wealth Tax Payments (SEK)
20,000
10,000
0
-10,000
-20,000
-5
-4
-3
-2
-1
0
1
2
3
4
5
Year Relative to Out-Migration

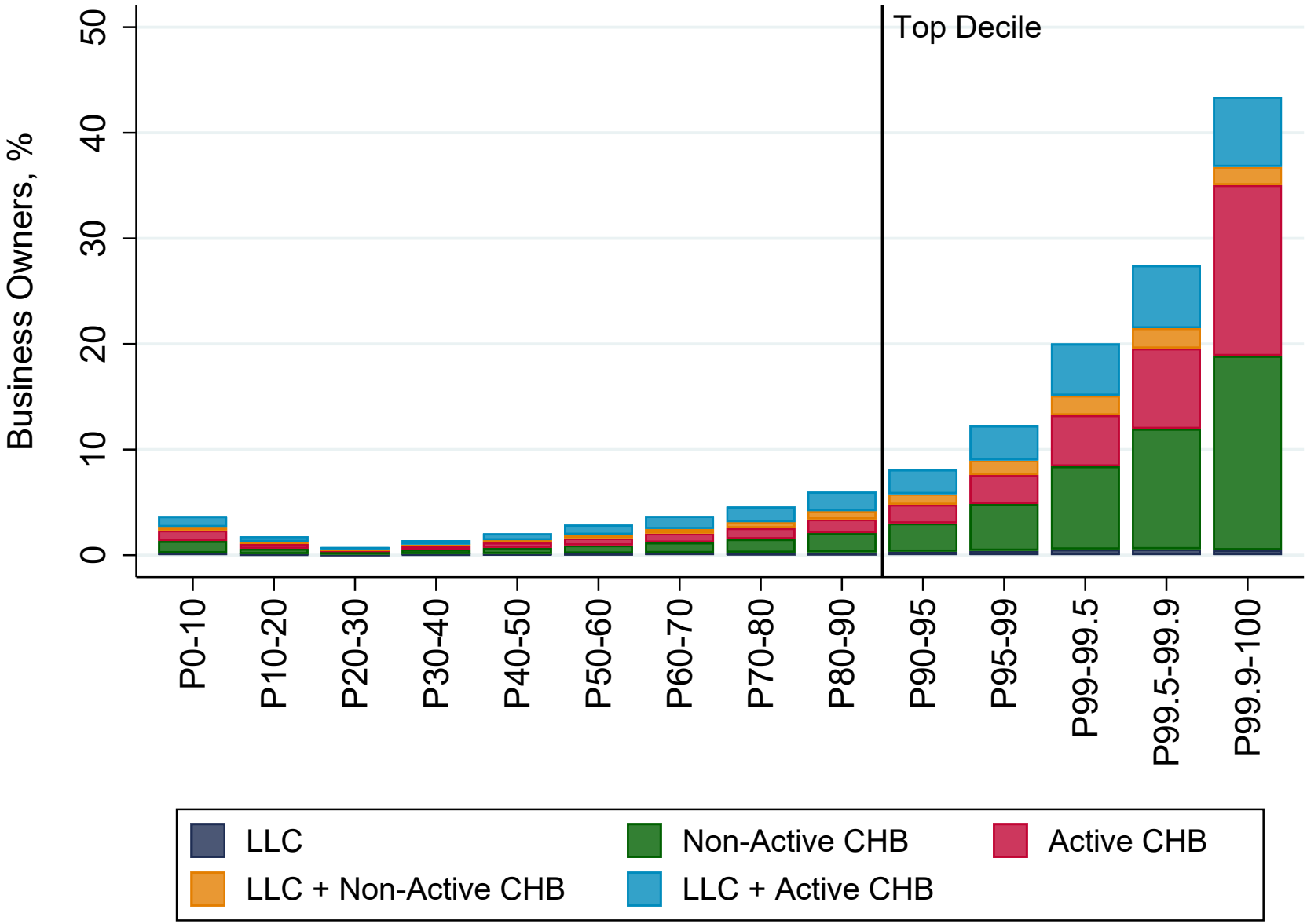

Average income tax payments in year before out-migration = SEK 39,382
Effect of out-migration = -35.13% (13.12)
Income Tax Payments (SEK)
40,000
20,000
0
-20,000
-40,000
-5
-4
-3
-2
-1
0
1
2
3
4
5
Year Relative to Out-Migration


Average total tax payments
in year before out-migration =
SEK 269,395
Effect of out-migration =
-39.89% (9.03)
Total Tax Payments (SEK)
250,000
125,000
0
-125,000
-250,000
-5
-4
-3
-2
-1
0
1
2
3
4
5
Year Relative to Out-Migration


Average probability of selling real estate in year before out-migration = 3.8%
Effect of out-migration = 381.67% (72.04)
Probability of Selling Real Estate
-.2
-.1
0
.1
.2
.3
.4
-5
-4
-3
-2
-1
0
1
2
3
4
5
Year Relative to Out-Migration


Average probability of reporting positive financial assets in year before out-migration = 88%
Effect of out-migration = -20.75% (6.65)
Probability of Reporting Positive Financial Assets
-.3
-.2
-.1
0
.1
.2
.3
.4
-5
-4
-3
-2
-1
0
1
2
3
4
5
Year Relative to Out-Migration

Wealthy Entrepreneurs in Sweden



Closely-Held Businesses Owned by Wealthy Taxpayers

Smallish firms, but bigger than average unlisted firm

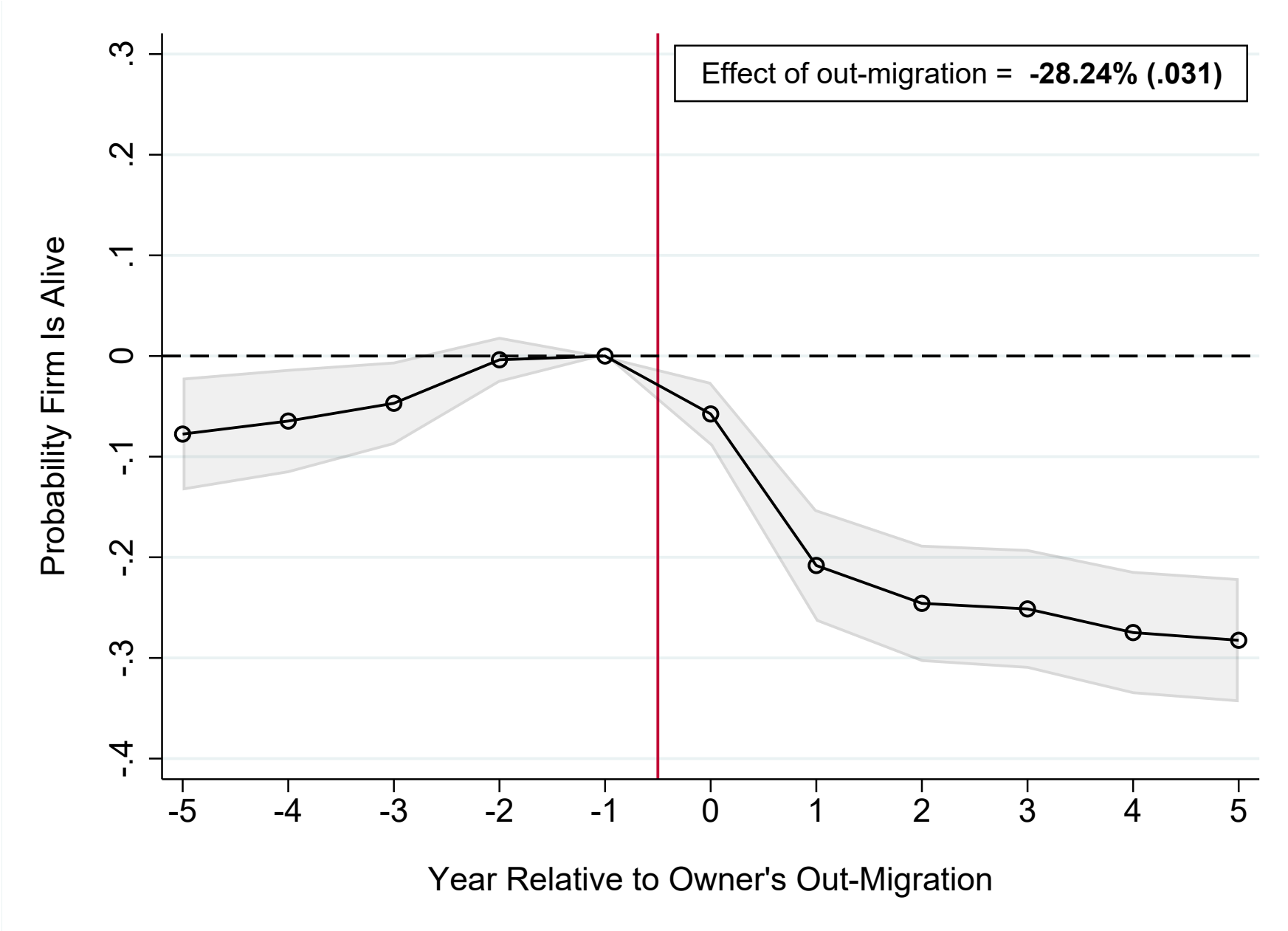
Variable	Mean	Median	Std. Dev.	Obs.	% of Swedish Aggregates	% of Active CHBs
Panel A. All Active CHBs						
Nr. of Owners	1.78	1	7.05	589,788		
Nr. of Employees	8.03	3	40.49	589,788	13.53%	100%
Value Added	3,398	1,518	30,859	541,097	21.84%	100%
Net Turnover	10,610	3,878	61,029	541,097	17.68%	100%
Tax Payments	138	21	4,708	541,097	27.64%	100%
Gross Investments	534	55	4,661	541,097	17.88%	100%
Panel B. Active CHBs with at least one owner in the top 2.5% of net worth						
Nr. of Owners	2.38	2	17.04	98,818		
Nr. of Employees	13.51	4	78.44	98,818	3.79%	28.00%
Value Added	6,609	2,179	45,655	91,291	7.26%	33.22%
Net Turnover	22,035	5,907	102,877	91,291	6.45%	36.50%
Tax Payments	353	54	2,564	91,291	10.98%	39.72%
Gross Investments	1,190	100	9,392	91,291	6.74%	37.72%

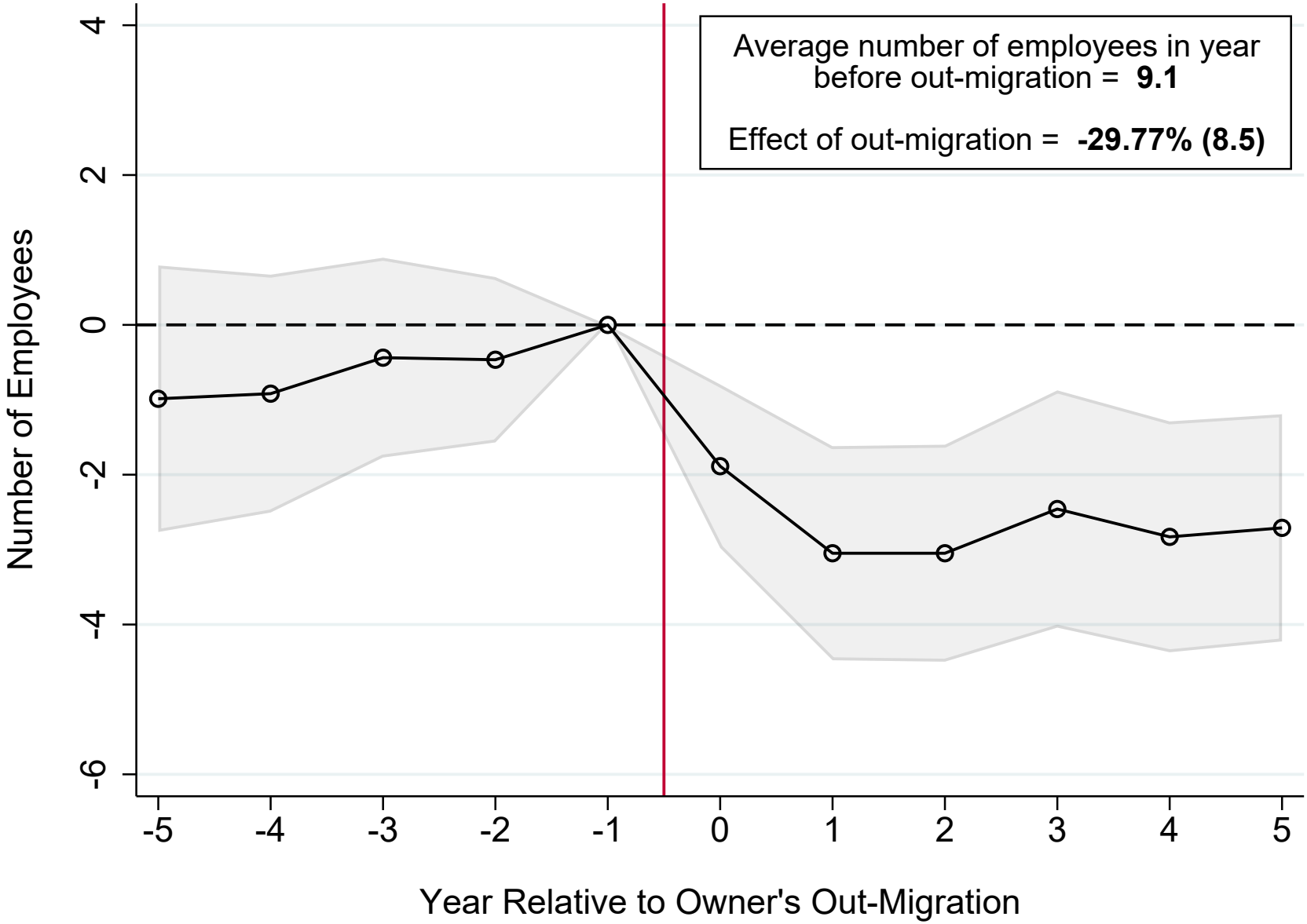
Effects of Out-Migration on Firm-Level Outcomes

Quantifying effects on firm-level outcomes

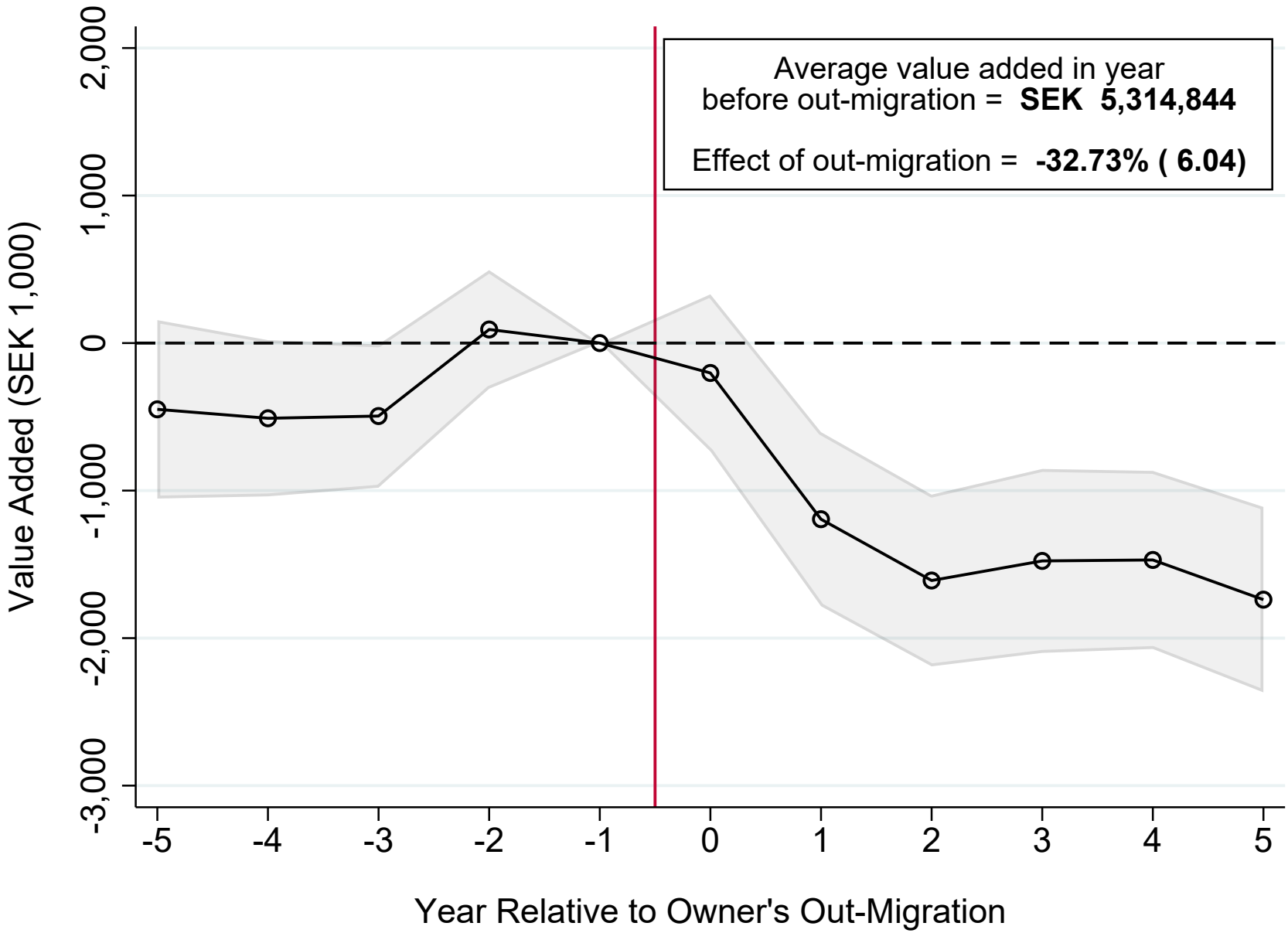
- Focus on *all* out-migration events of wealth taxpayers (1999-2006)
- Compare firm outcomes before and after out-migration of owners
  - Control group: firms held by wealthy taxpayers staying in Sweden
  - Random allocation of placebo out-migration dates (no matching)
- Dynamic self-selection into out-migration? What happens after?

$$y_{f(i)t} = \alpha + \sum_{j=\underline{T}}^{\bar{T}} \beta_j \cdot \text{Emig Owner}_{f(i)} \times 1(t = j) + \sum_{j=\underline{T}}^{\bar{T}} \delta_j \cdot 1(t = j) + \varepsilon_{i,t}$$


Effect of out-migration = -28.24% (.031)
Probability Firm Is Alive
.3
.2
.1
0
-.1
-.2
-.3
-.4
-5
-4
-3
-2
-1
0
1
2
3
4
5
Year Relative to Owner's Out-Migration



▸ Intensive Margin?



▸ Intensive Margin?

Summing-up effects on Closely-Held Businesses

- **Upper bounds** for negative spillovers of wealth-tax avoidance
  - Firms could be sold/merged
  - Reallocation in the labor market (next step, unemployment outcomes)
  - Not all migration events are driven by the wealth tax!
- Useful to quantify an upper bound for economic effects
  - One additional move at the top $\approx$ -3 jobs
  - Aggregate effects of out-migration $\approx$ 0.02% of Swedish employment
- What share is causally affected by the wealth tax?
  - Next step: migration responses to wealth tax reforms

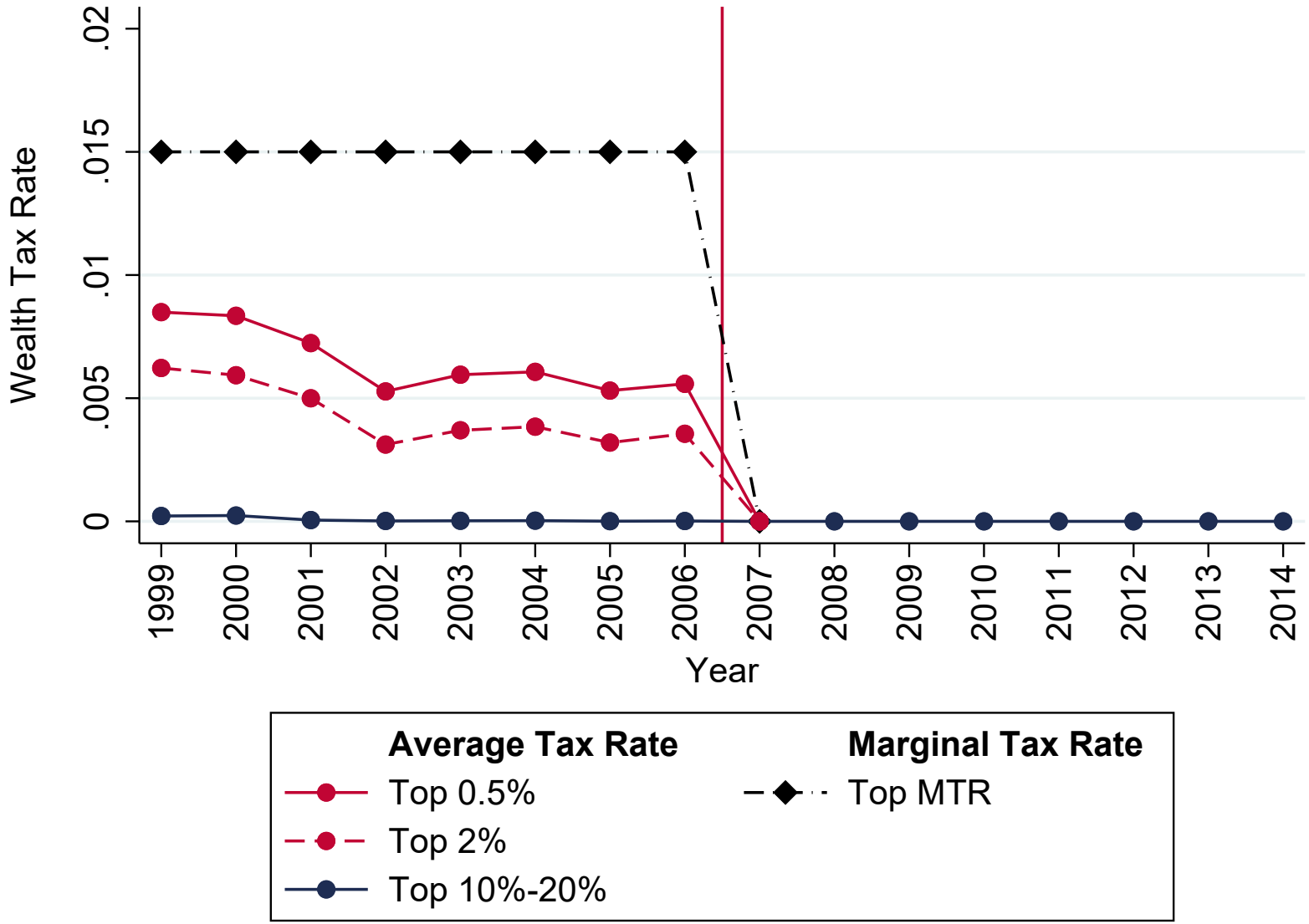
Large Wealth Tax Reforms

First evidence of international migration responses to wealth taxes

- We exploit three large wealth tax reforms in Scandinavia
- Sweden:
  1. 2007: Abolition of wealth tax
     - Sharp and large decrease in MTR from 1.5% to 0.
     - Followed win of the right wing coalition at the 2006 elections
- Denmark: (not today)
  1. 1988: Large wealth tax decrease
     - Large but gradual decrease in MTR from 2.2% to 1%
  2. 1996: Abolition of wealth tax

Wealth Tax Rates in Sweden

Exposure to the Reform by Distance to the Exemption Threshold



Wealth Tax Rates in Sweden

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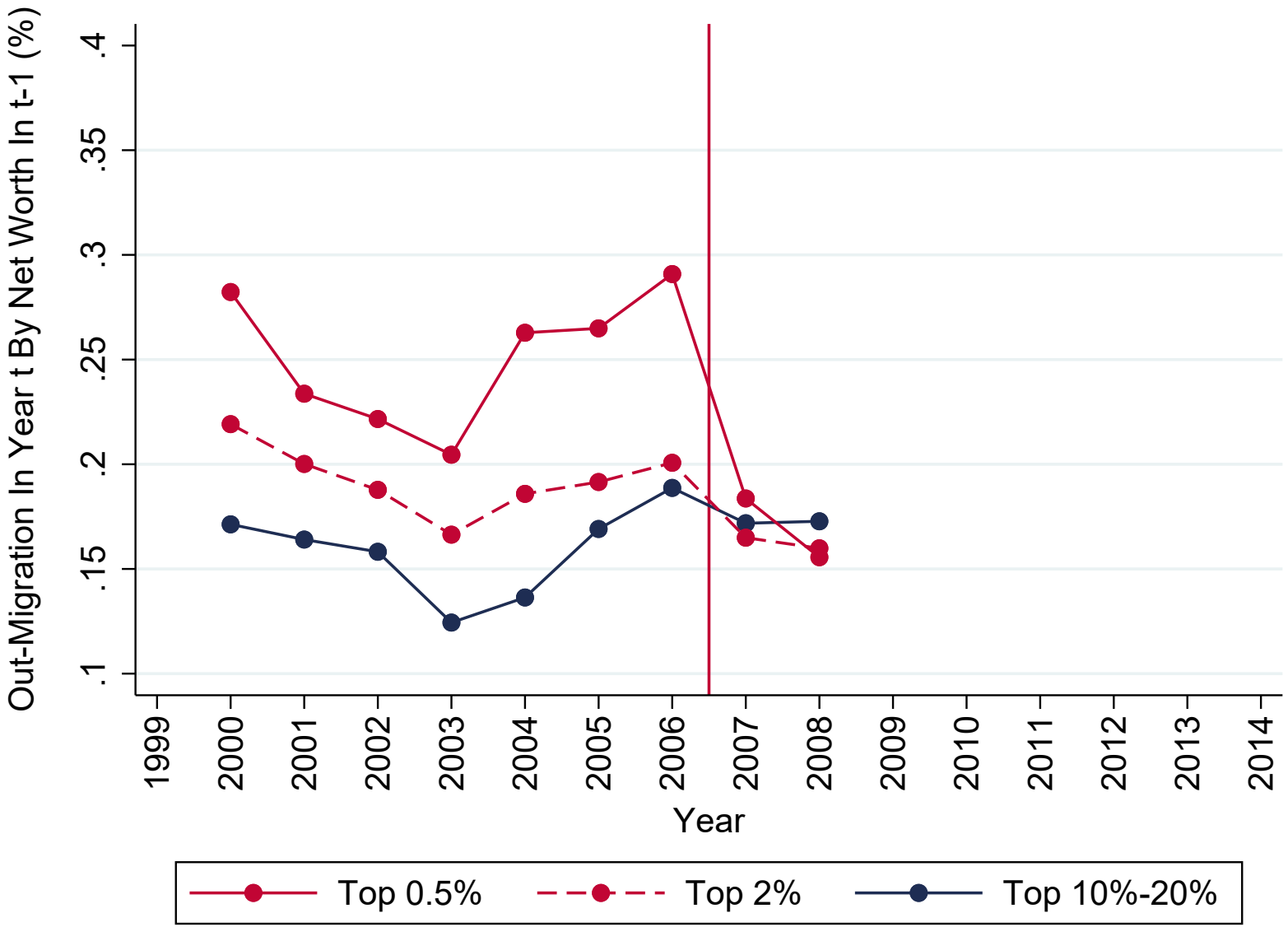


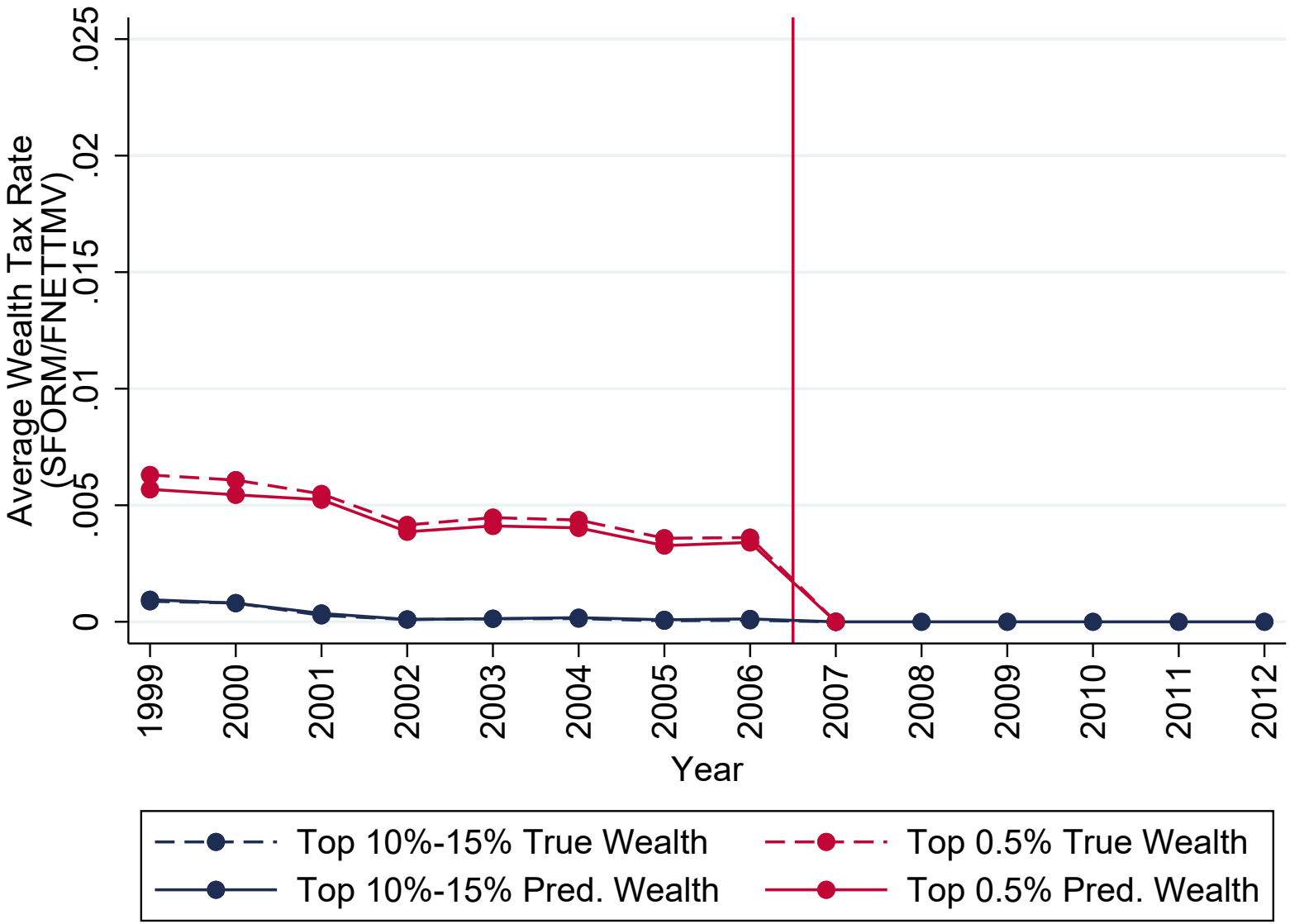
A Prediction Model of Current Wealth

- Two issues
  - No wealth data after 2008: persistence?
  - Current wealth level=intensive margin=endogeneous
- Build ensemble classification model to **predict wealth**
- Exploit identity of budget constraint $\rightarrow$ law of motion of wealth
- Predict current wealth group based on rich info on:
  - Past wealth,
  - Parental wealth + demographics
  - Sum of past earnings & capital income
- Train random-forests on 10% random sample of Swedish pop.
- Classify pop in groups of predicted net wealth:
  - E.g. top 2% of distrib., below top 10%, etc.

▸ Details of Prediction Model

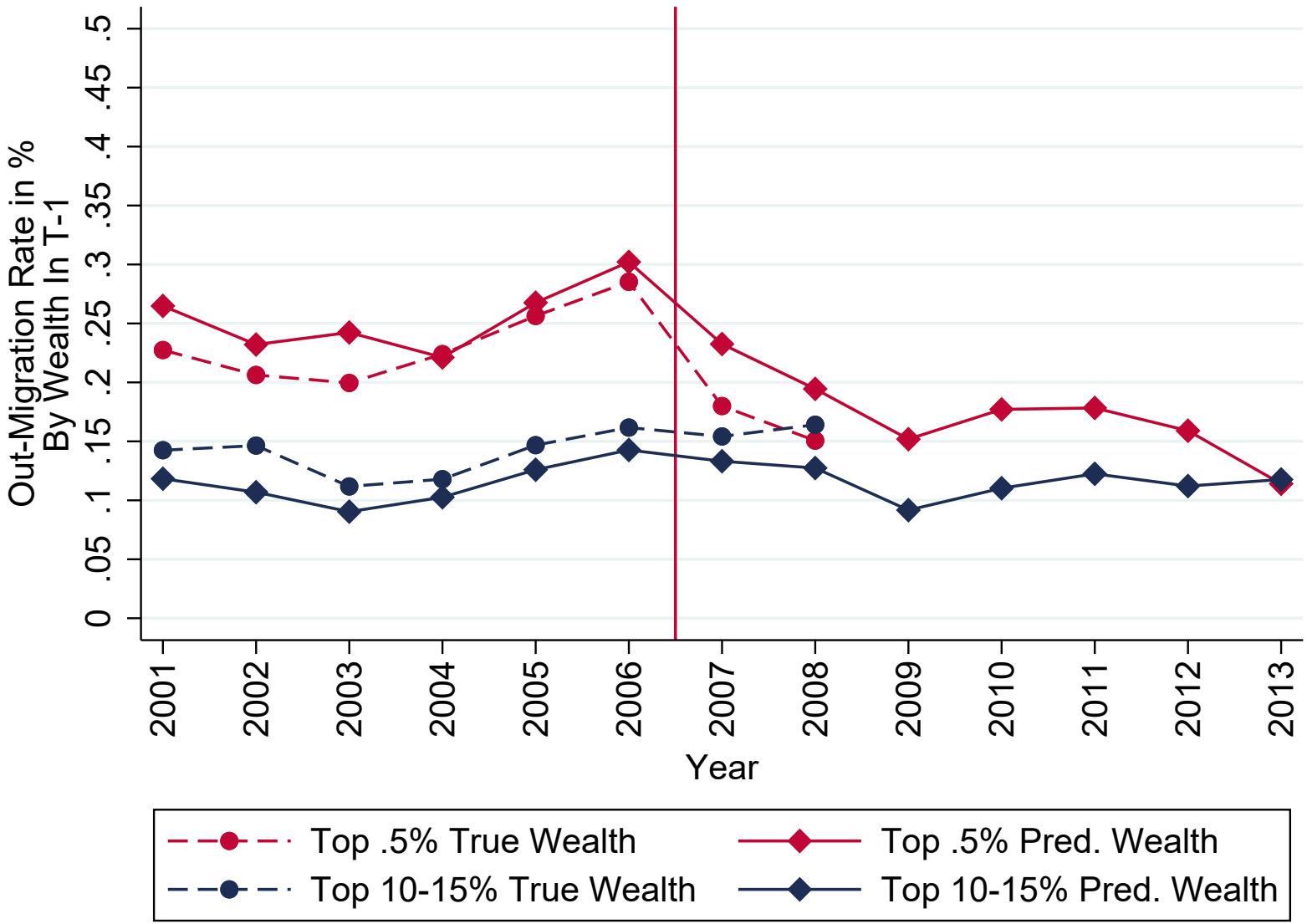
Effective Wealth Tax Rates

Exposure to the Reform by Predicted Distance to the Exemption Threshold



Out-Migration Rates

Exposure to the Reform by Predicted Distance to the Exemption Threshold



Difference-in-Differences Specification

Out-Migration Probability decreased by 0.08pp (-30% relative to pre-reform)

Estimating Semi-Elasticities of Migration

- Compute semi-elasticity of migration from IV using DD as instrument

$$Y_{it} = \alpha_0 + \varepsilon \ln(1-\tau)_{it}$$

$$\ln(1-\tau)_{it} = \beta_0 + \beta_1 T + \beta_2 Post + \beta_3 T \cdot Post$$

- Y_{it}: out-, in- or net migration rate of group $i = \{T, C\}$ in year t
- For Denmark, use 3 periods and their interaction with treated grp

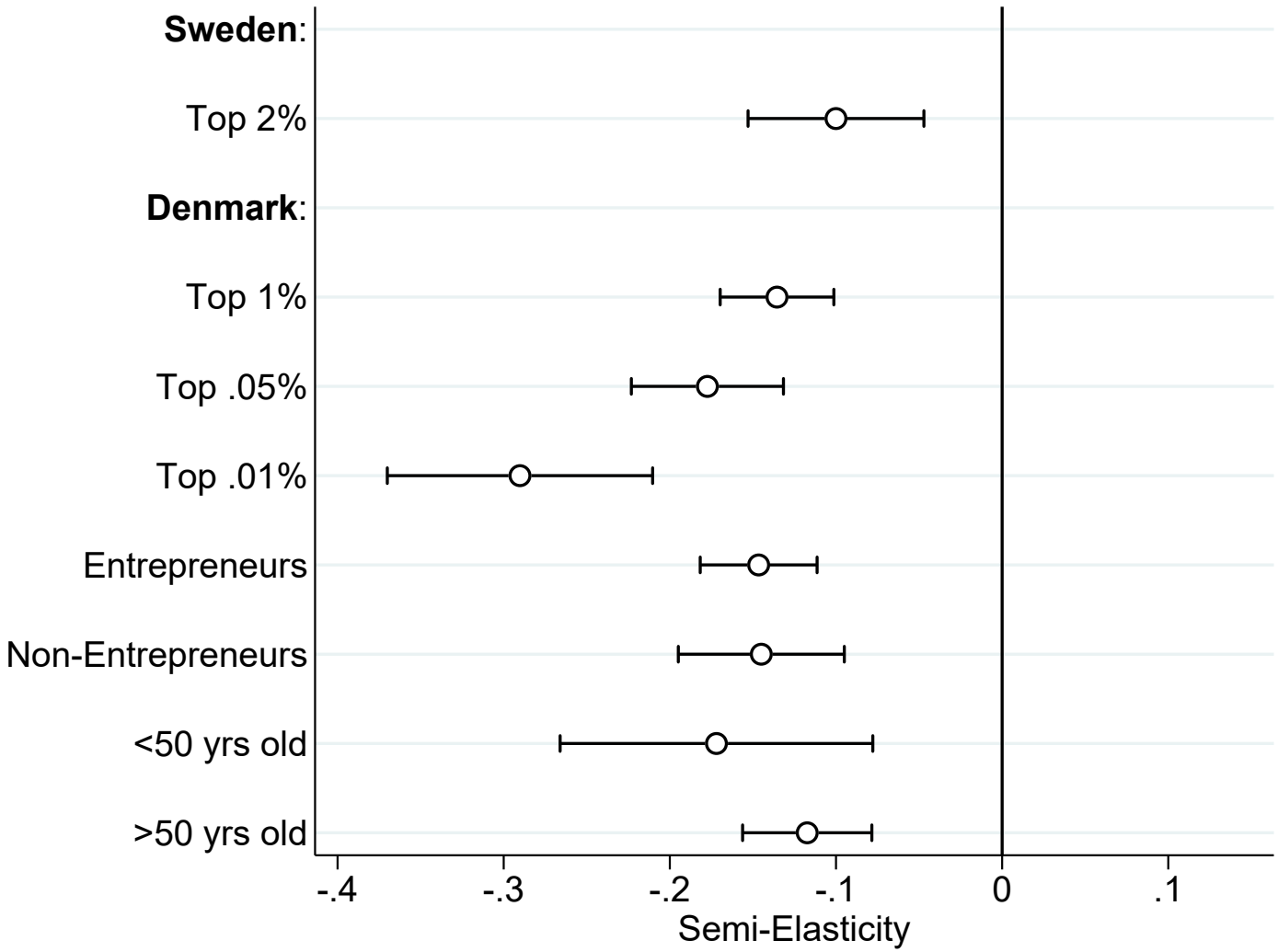
▸ Danish DD Evidence

- Inference: collapse data at year X wealth group level
- Because τ small, ε has simple interpretation:

  τ increases by 1 pct point $\Rightarrow$ migration rate increases by ε pct point

Estimating Semi-Elasticities of Migration

Estimated Semi-elasticities of **Out-Migration**



Interpreting the Magnitude: Stock Elasticity

- Elasticity of steady state population size N w.r.t $1-\tau$:

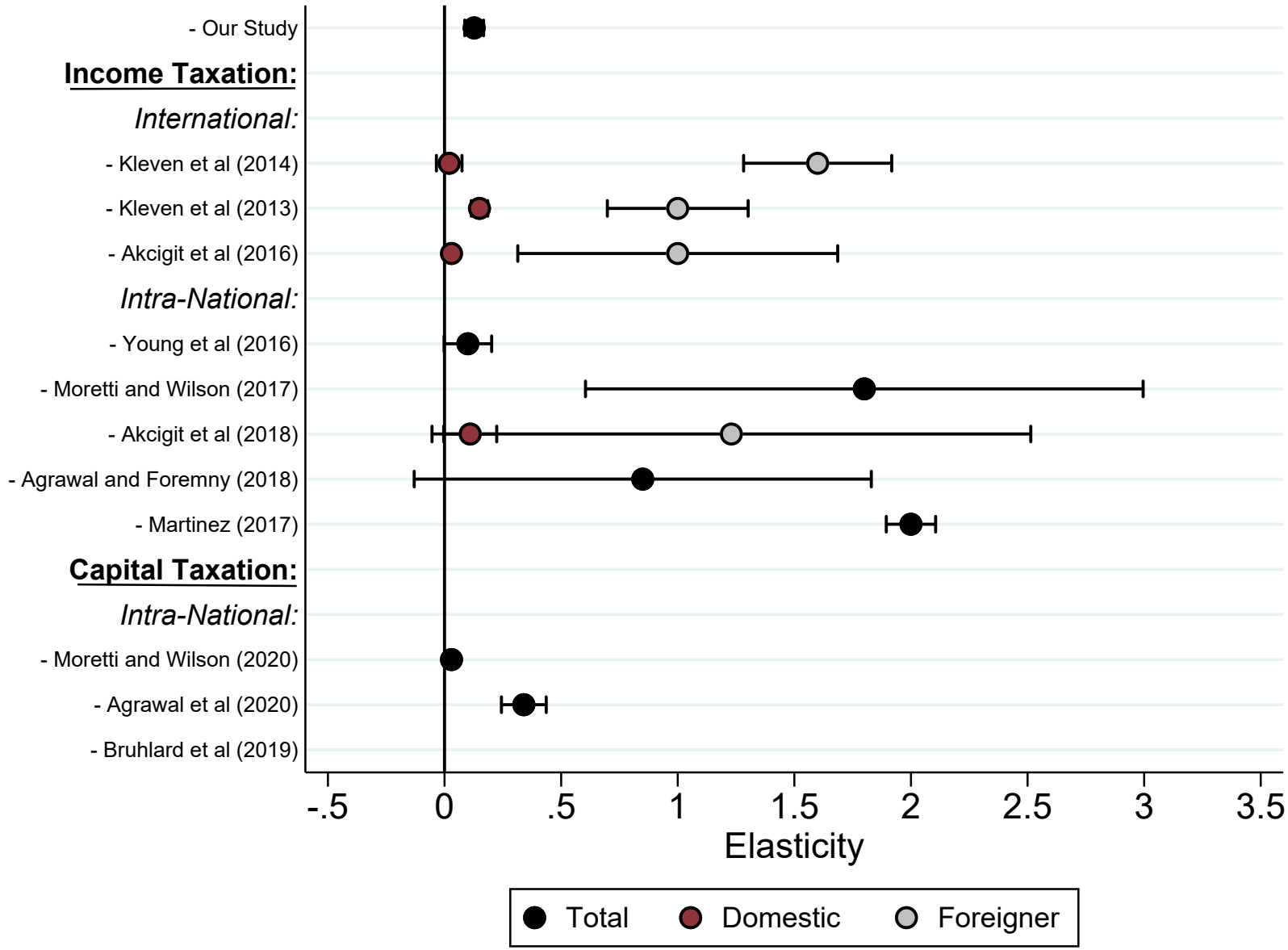
▸ Methodology ▸ Intuition

$$\Rightarrow \varepsilon_{N,1-\tau} \approx 2.16$$

- Comparison with migration elasticities in the income tax literature?
- Transform estimate into elasticity w.r.t $1-t$
  - Where $t \approx \frac{\tau}{r}$: avg tax on K income
  - Over period of interest, we find: $r = .042$, and $\tau \approx .006 \Rightarrow t = 14.3\%$

$$\varepsilon_{N,1-t} = \varepsilon_{N,1-\tau} \cdot \frac{d\ln(1-\tau)}{d\ln(1-t)} \approx .078 \quad (.013)$$

Comparison to Migration Elasticities in the Literature



Next Steps: Quantification and Policy Implications

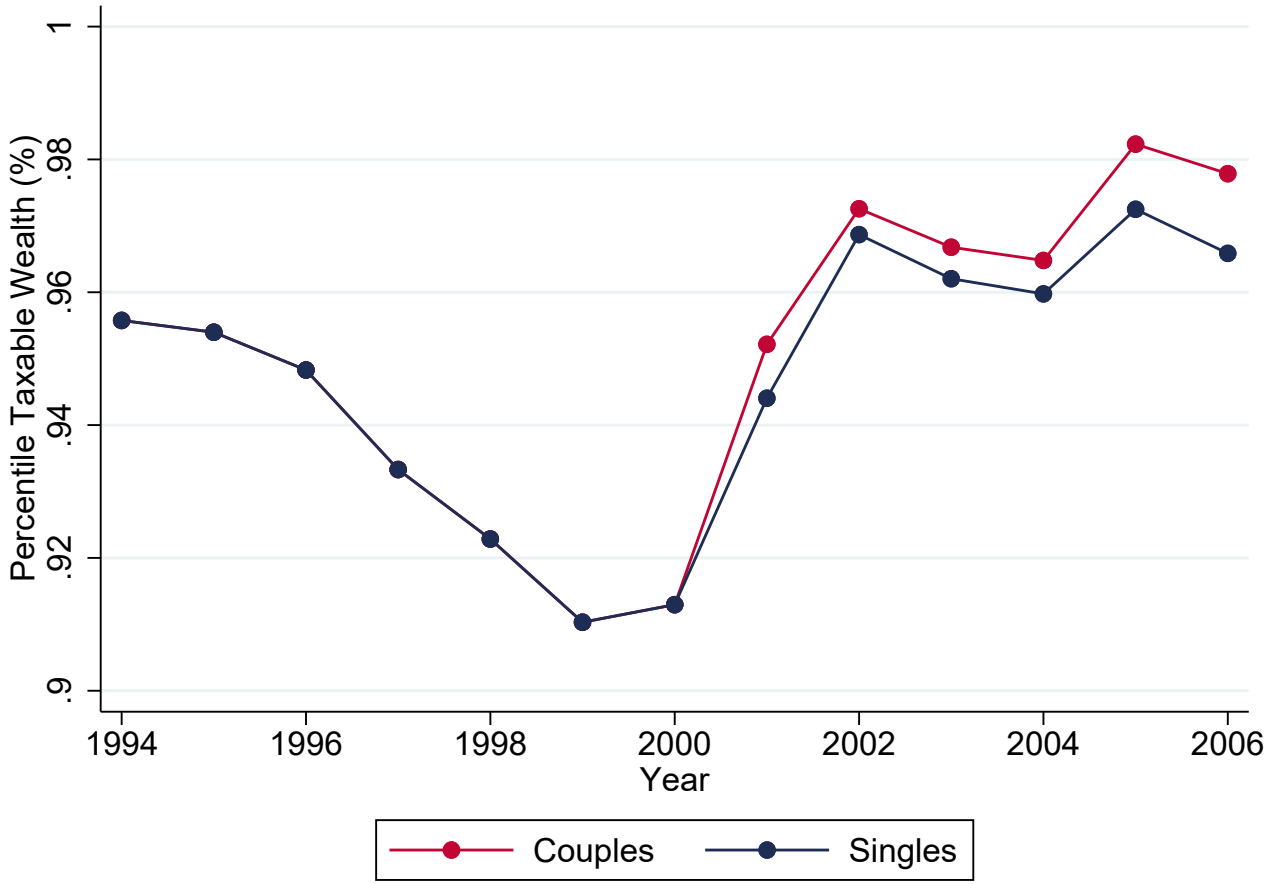
- Simple optimal taxation model with spillovers

$$\tau^* = \frac{1 - e.\varepsilon}{1 + \varepsilon} \tag{1}$$

  - We have causally estimated ε
  - e is the marginal externality effect of out-migration (in gov. revenue terms)
- Prelim results with upper bounds: $\tau_{Sweden/Denmark} << \tau^*$
- Working on Extension: anticipation effects (empirics+theory)
- Important: externality only matters in uncoordinated settings!

APPENDIX SLIDES

Figure: Evolution of Wealth Tax Threshold - Sweden



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The Swedish Wealth Tax Schedule

Figure: Institutional Details on Swedish Wealth Tax

TABLE 1—THE SWEDISH WEALTH TAX, 2000–2006

Year	Tax revenue percent	Tax payers percent	Threshold, singles (SEK/USD)	Threshold, couples (SEK/USD)
2000	1.0	7.7	900/129	900/129
2001	0.8	5.3	1,000/143	1,500/214
2002	0.5	2.3	1,500/214	2,000/286
2003	0.7	3.5	1,500/214	2,000/286
2004	0.7	3.6	1,500/214	2,000/286
2005	0.6	2.5	1,500/214	3,000/429
2006	0.7	3.0	1,500/214	3,000/429

Notes: The table shows aggregate statistics of the wealth tax for the period studied. Tax revenue is presented as a percentage of total tax revenue. Monetary values are presented in 1,000 SEK and 1,000 USD.

Source: Statistics Sweden and the Swedish National Financial Management Authority

Figure: Fraction of Total Net Wealth Subject to Wealth Tax- Sweden

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Figure: Countries of Destination: Top 2% of Wealth Holders in Sweden

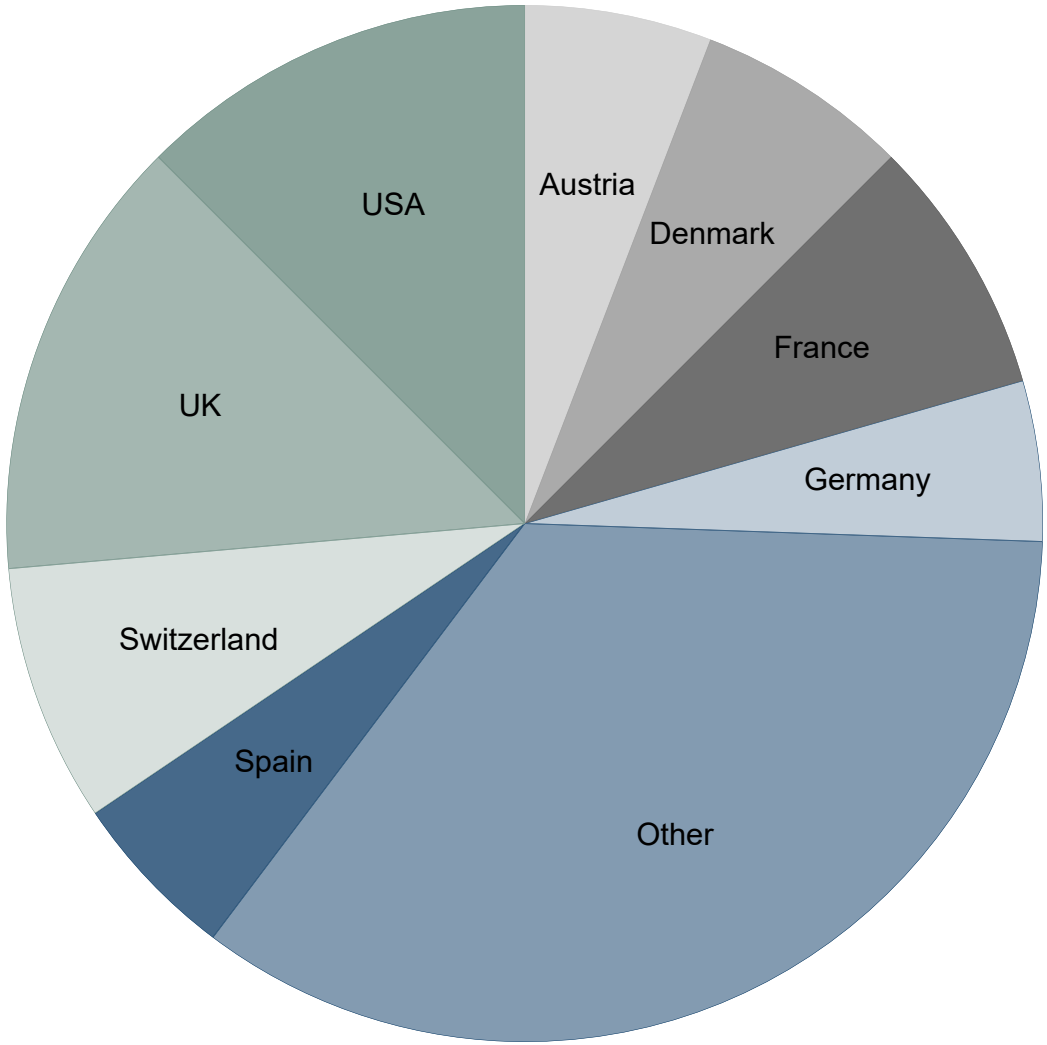

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Figure: Countries of Destination: Top 20% to 10% of Wealth Holders in Sweden

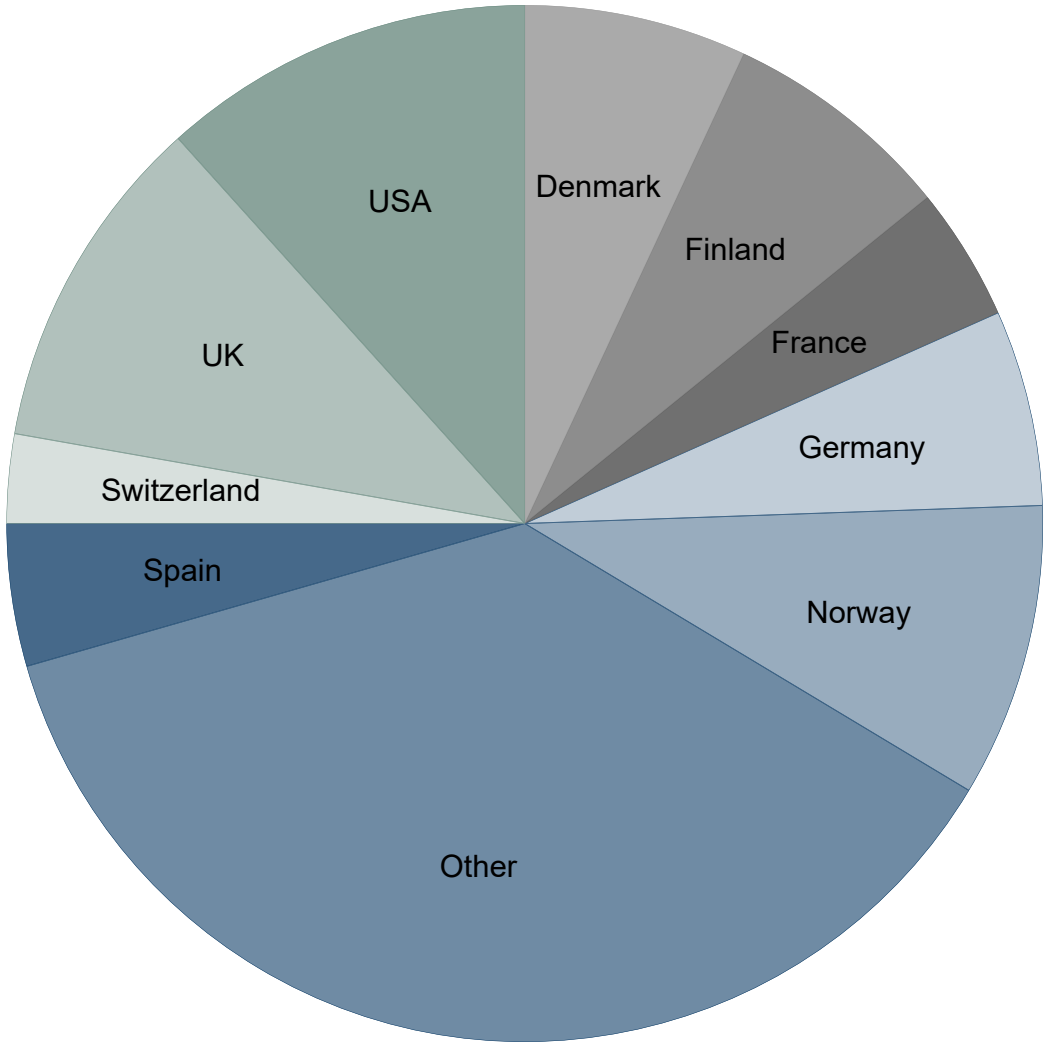

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Figure: Probability to Spend $>$ 185 Days in Sweden From Migration Register

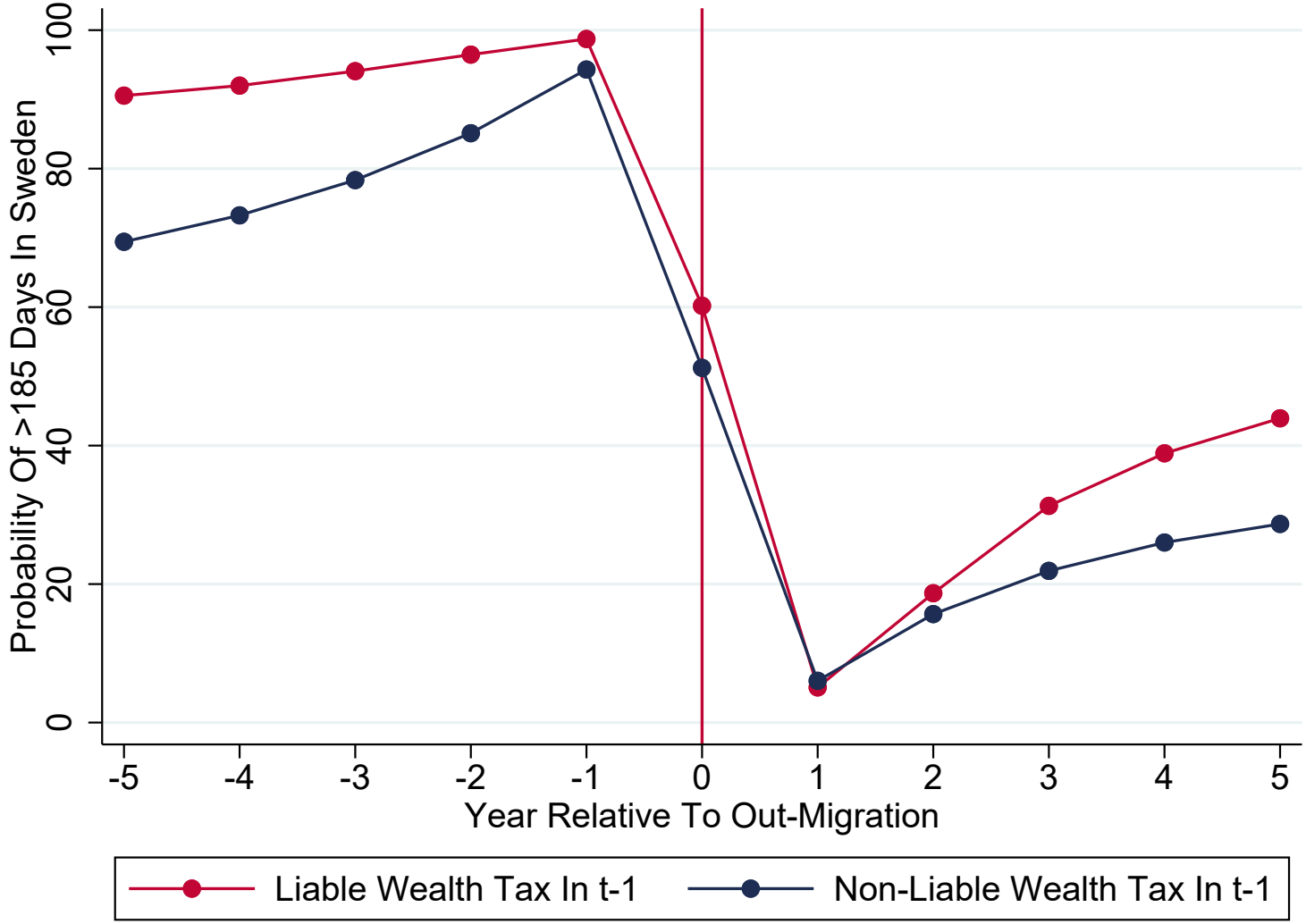

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Figure: Median Total Tax Payments, Sweden

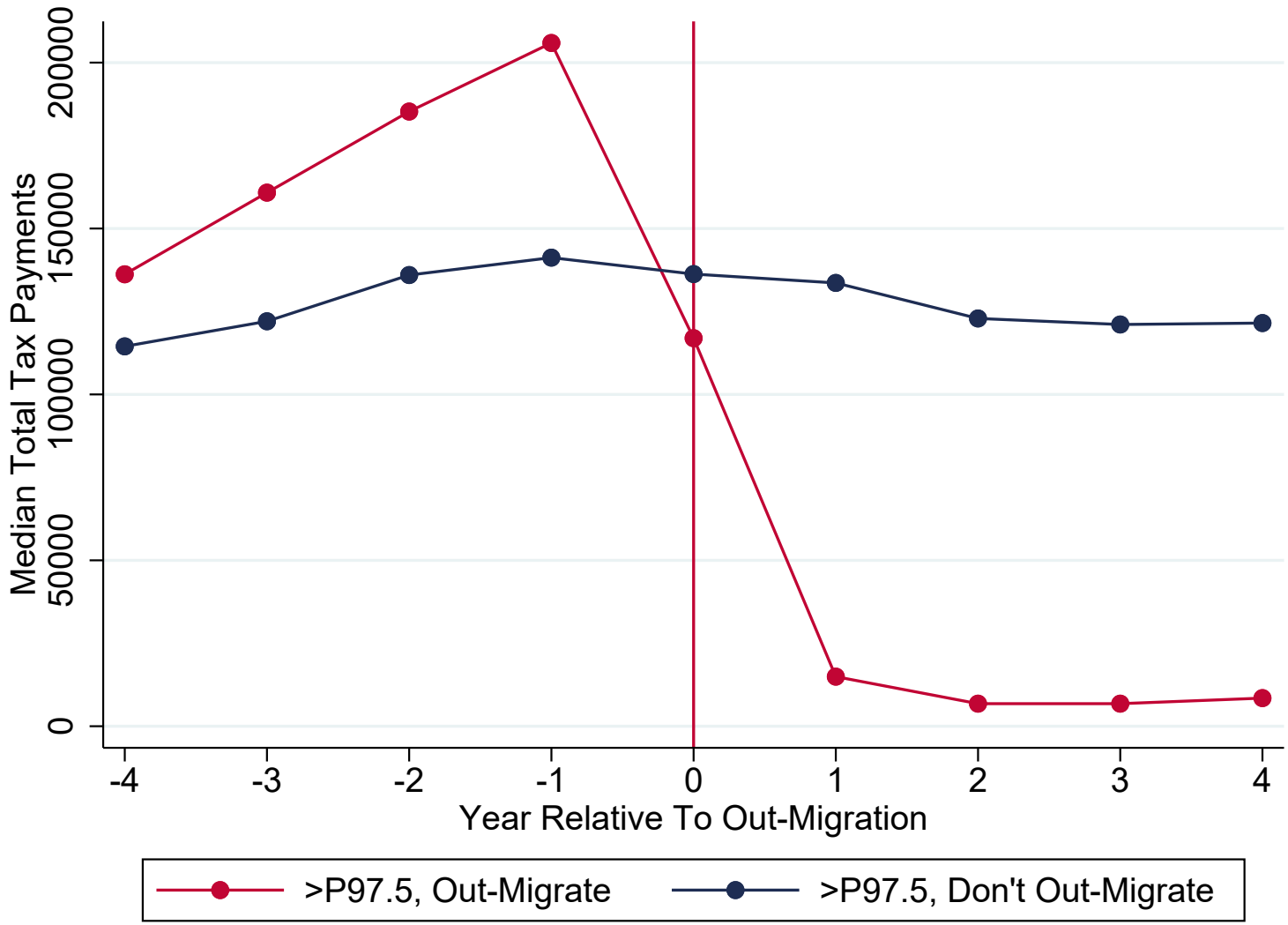

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Figure: Probability Selling Real Estate

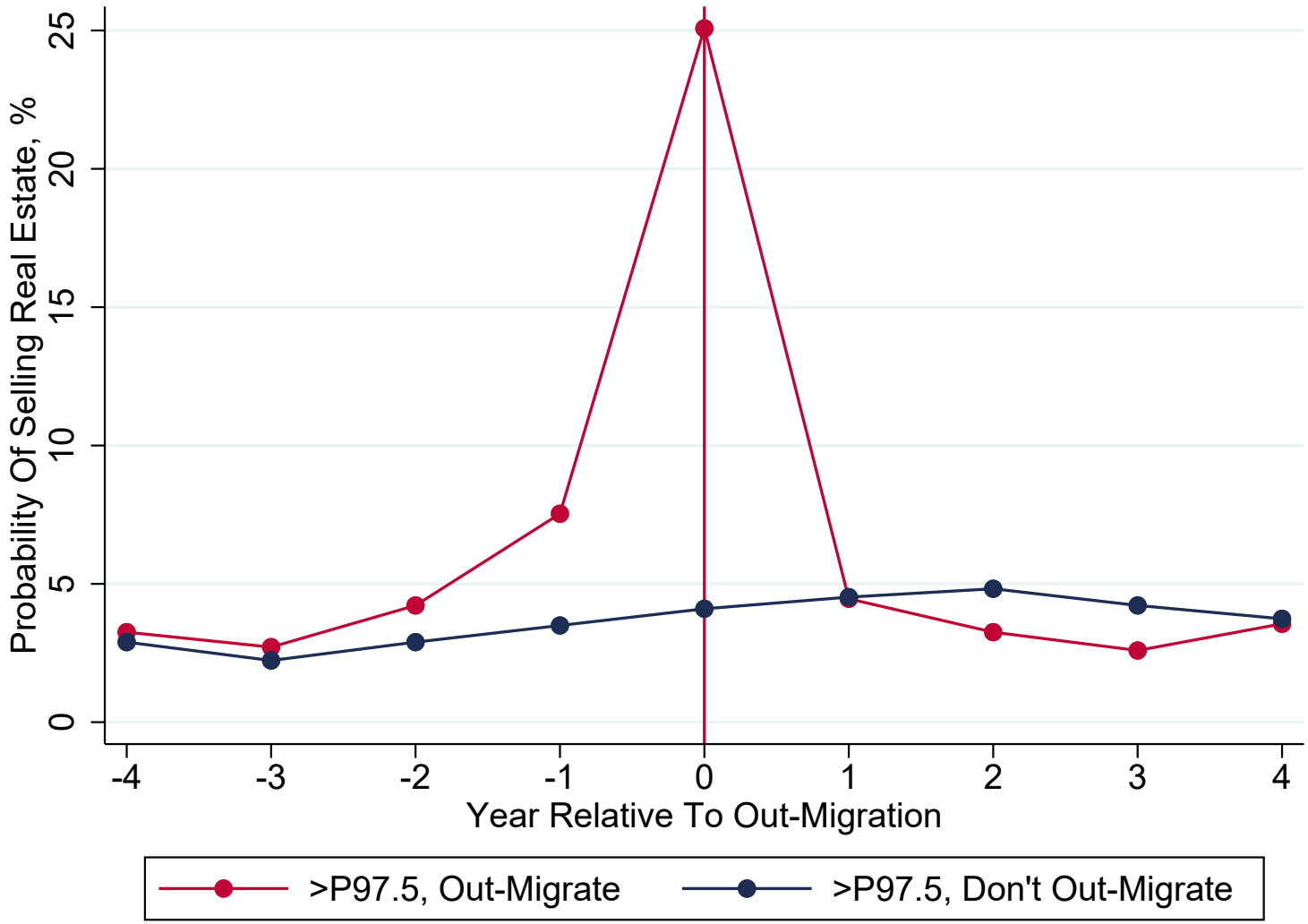

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Figure: Probability to Own a LLC

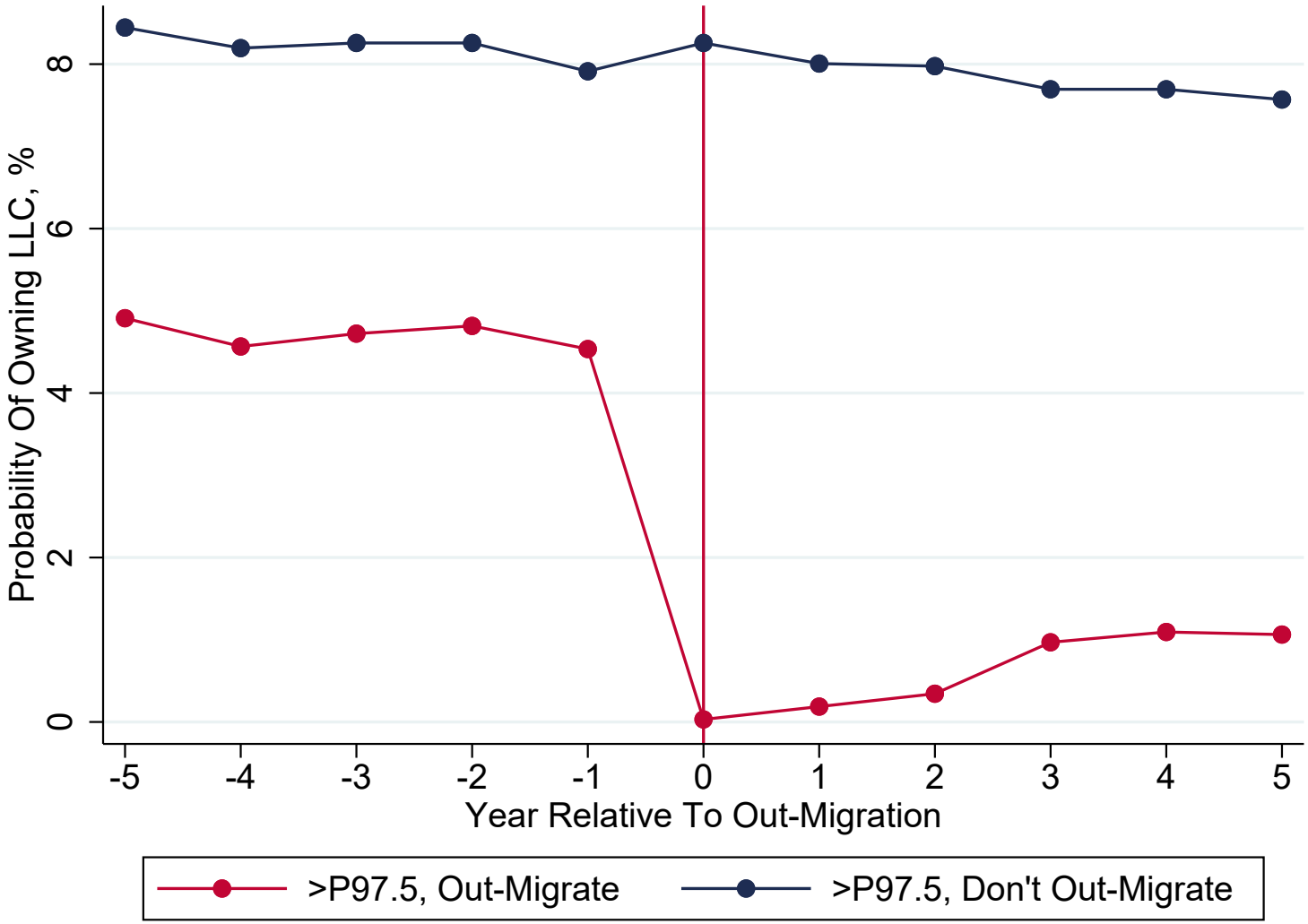

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Figure: Average Number of Employees

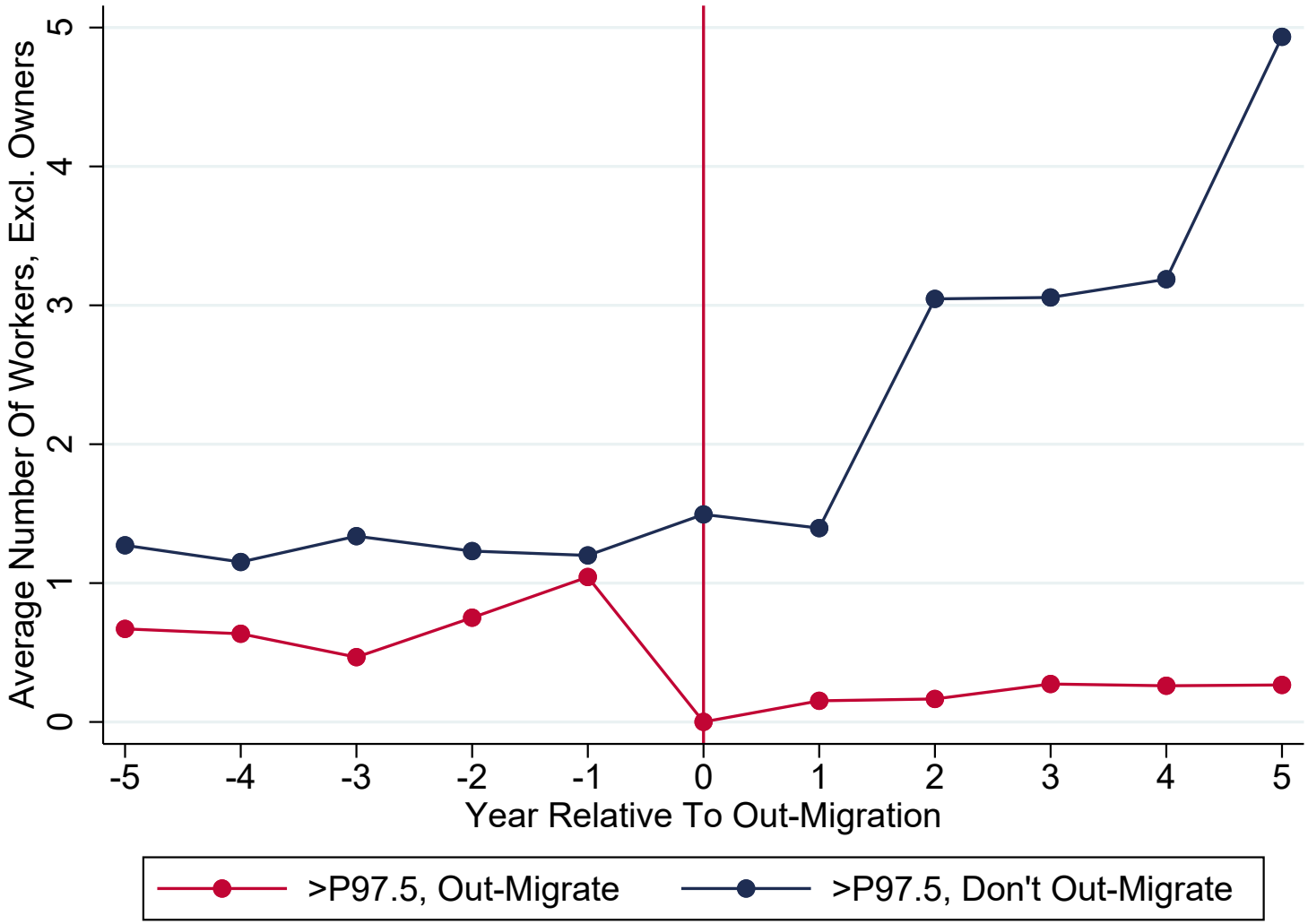

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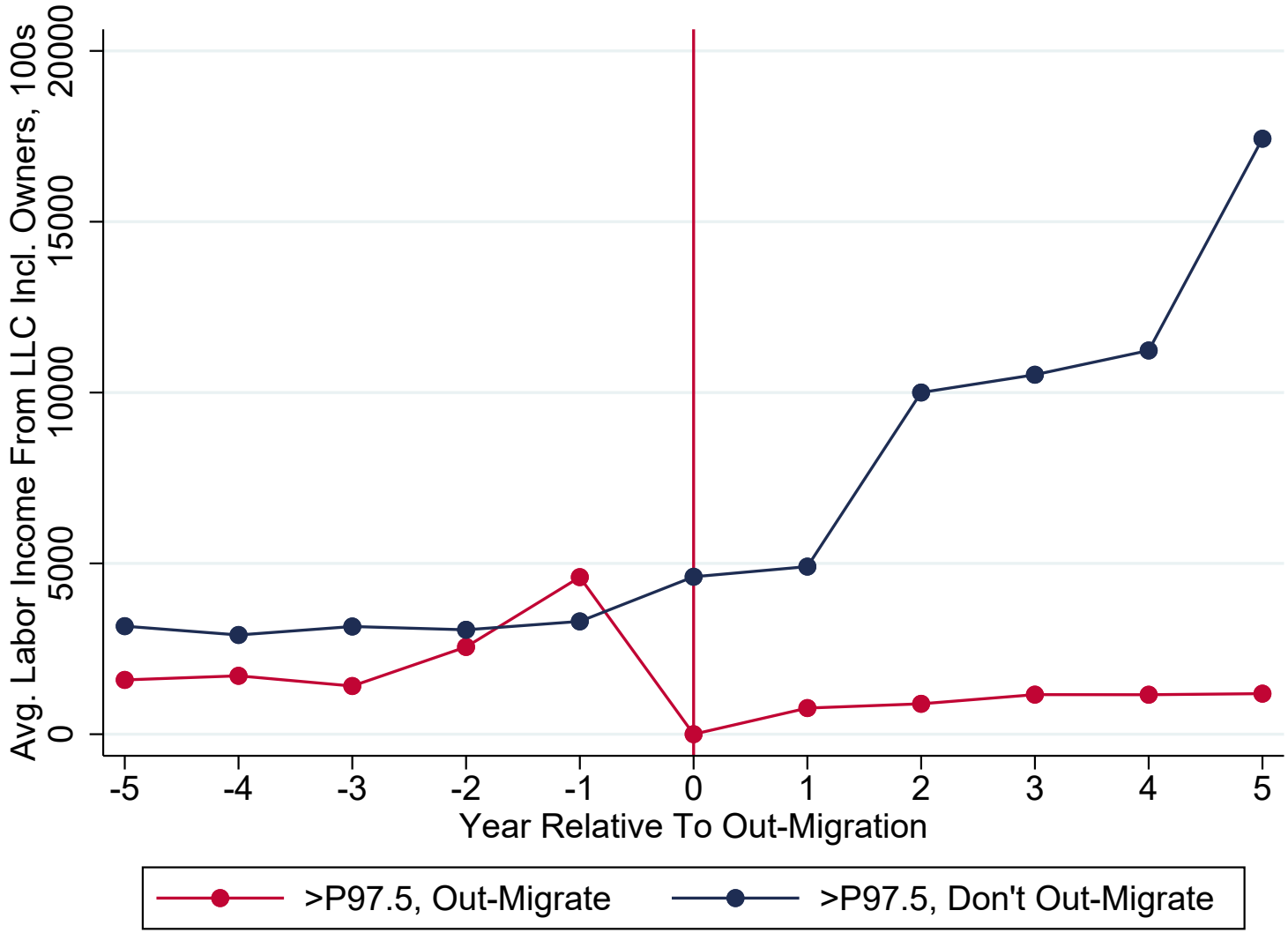
Figure: Total Wage Bill



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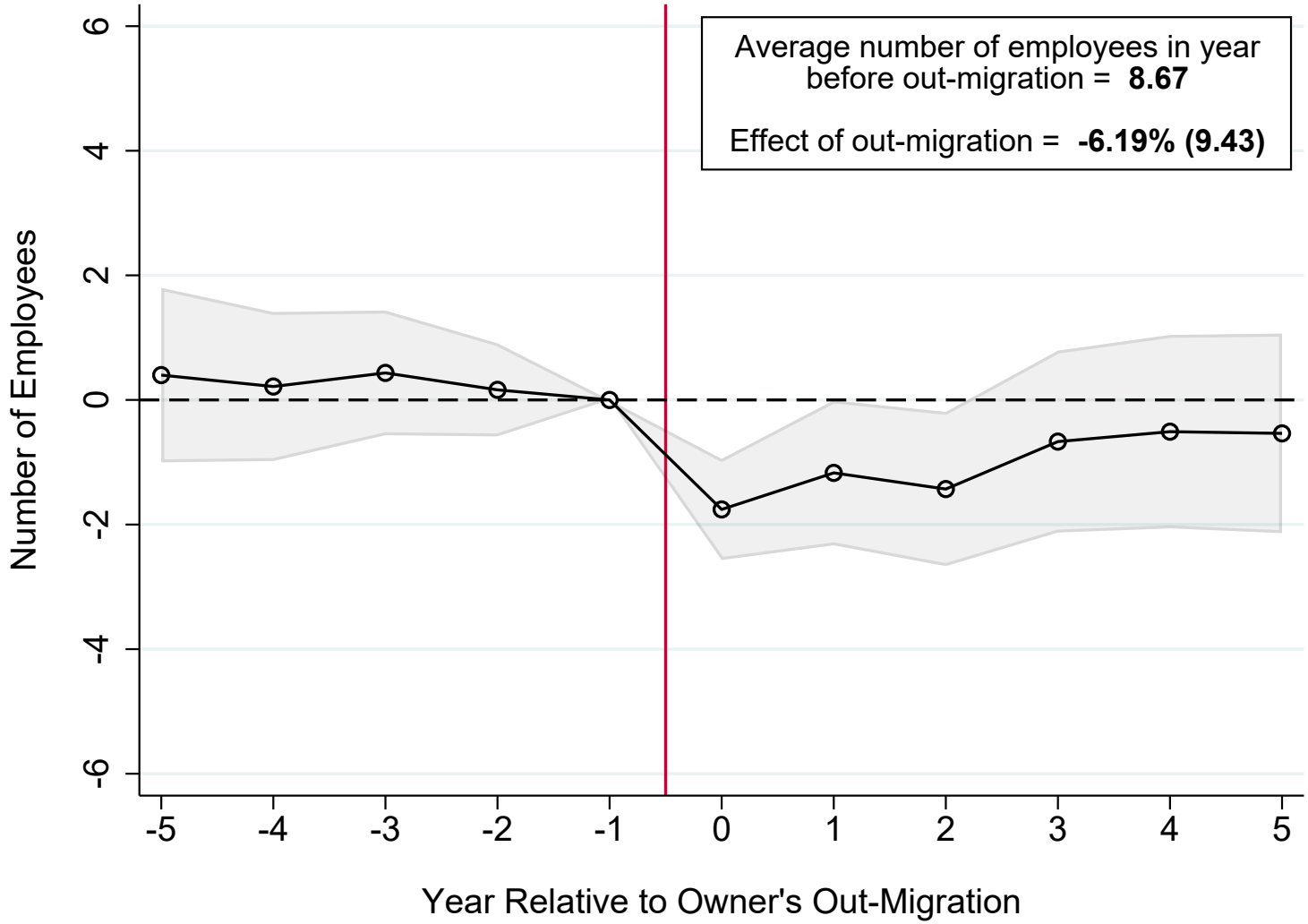
Average number of employees in year before out-migration = 8.67
Effect of out-migration = -6.19% (9.43)
Number of Employees
6
4
2
0
-2
-4
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
Year Relative to Owner's Out-Migration

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Prediction Model: Details

Start with law of motion of wealth: Wealth $= W$, Return $= r$, Capital Income $= rW$, consumption$=C$, Earnings$=E$, Inheritance$=I$

$$W_t = (1 + r_t) W_{t-1} + E_t + I_t - C_t$$

Interesting point = for individuals observed after end of wealth tax, we can use rich information about their observed past wealth to predict wealth forward this means we have one model to predict wealth in t+5 or t+10 say, based on wealth in t
By iteration we get, for instance after X iterations

$$W_t = W_{t-X} \prod_{j=t-X}^{t} (1 + r_j) + \sum_{k=t-X}^{t} (E_k + I_k - C_k) \prod_{j=k+1}^{t} (1 + r_j)$$

What predictors?

Above decomposition shows that difference and capital income stem from:

1. Past wealth (which we observe!)
2. Past earnings/consumption (or past savings behaviour) (life-cycle wealth)
3. Differences in net of returns r_t
4. Inheritance received (inherited wealth)

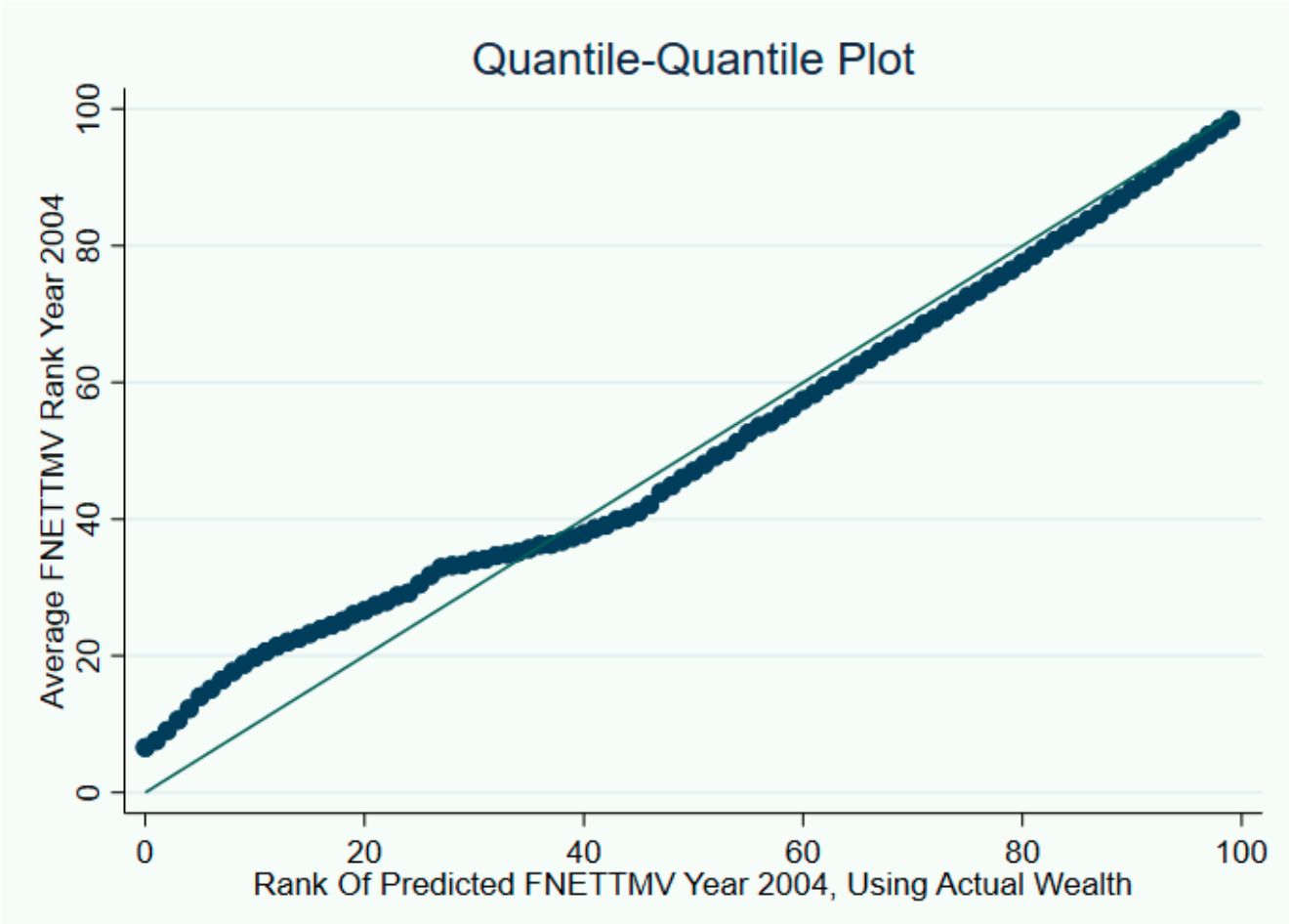
But good thing is, law of motion is an identity, and we observe a lot of elements of this identity!

What predictors?

1. From IOT: use past wealth construct average taxable wealth X years back using FBESK variable we have this info from 1993 to 2007 take X=7 for instance, this should enable us to predict wealth from 2000 to 2017
2. Past earnings: LISA: 1990-2017 cumulate past earnings - taxes and transfers over the last X years (use HH disposable income variables to account for all potential sources of income)
3. What about consumption: In LISA: 1990-2017 could use age, family structure, number of children, place of residence, etc, which are proxies for consumption dynamics also what about using car registers for the years we have it?
4. Capturing returns? use cumulated capital income over past X yrs, from LISA 1990-2017 one issue: only realized Kgains (but cumulated over time, reduces variance in realized Kgains, and better captures overall returns, although clearly unrealized Kgains still an issue...could also use structure of wealth / portfolio What about using additional info from wealth register, KURU, Real estate transaction registers
5. Capturing inheritances: use parental wealth X years ago (and maybe also today)...and age of parents this predicts how much you are likely to have received in inheritances over the past X years... If parents are dead already we have missing values but this should be turned into 0 (it means you can no longer receive additional I from them) Could also use inheritance registry data, etc for the 2 years we have it?

Assessing Quality of Prediction Model

Figure: Prediction Model - Fit



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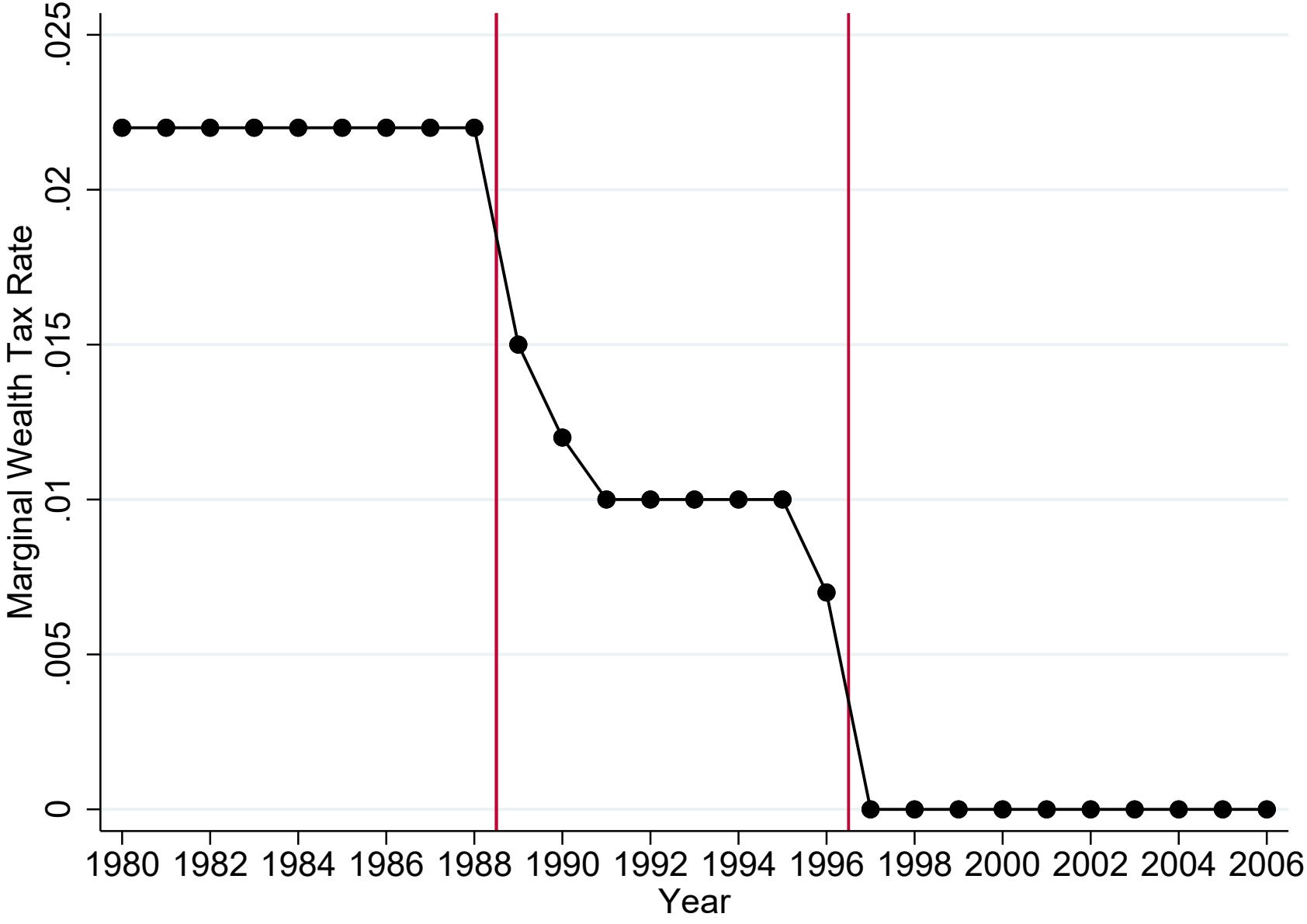
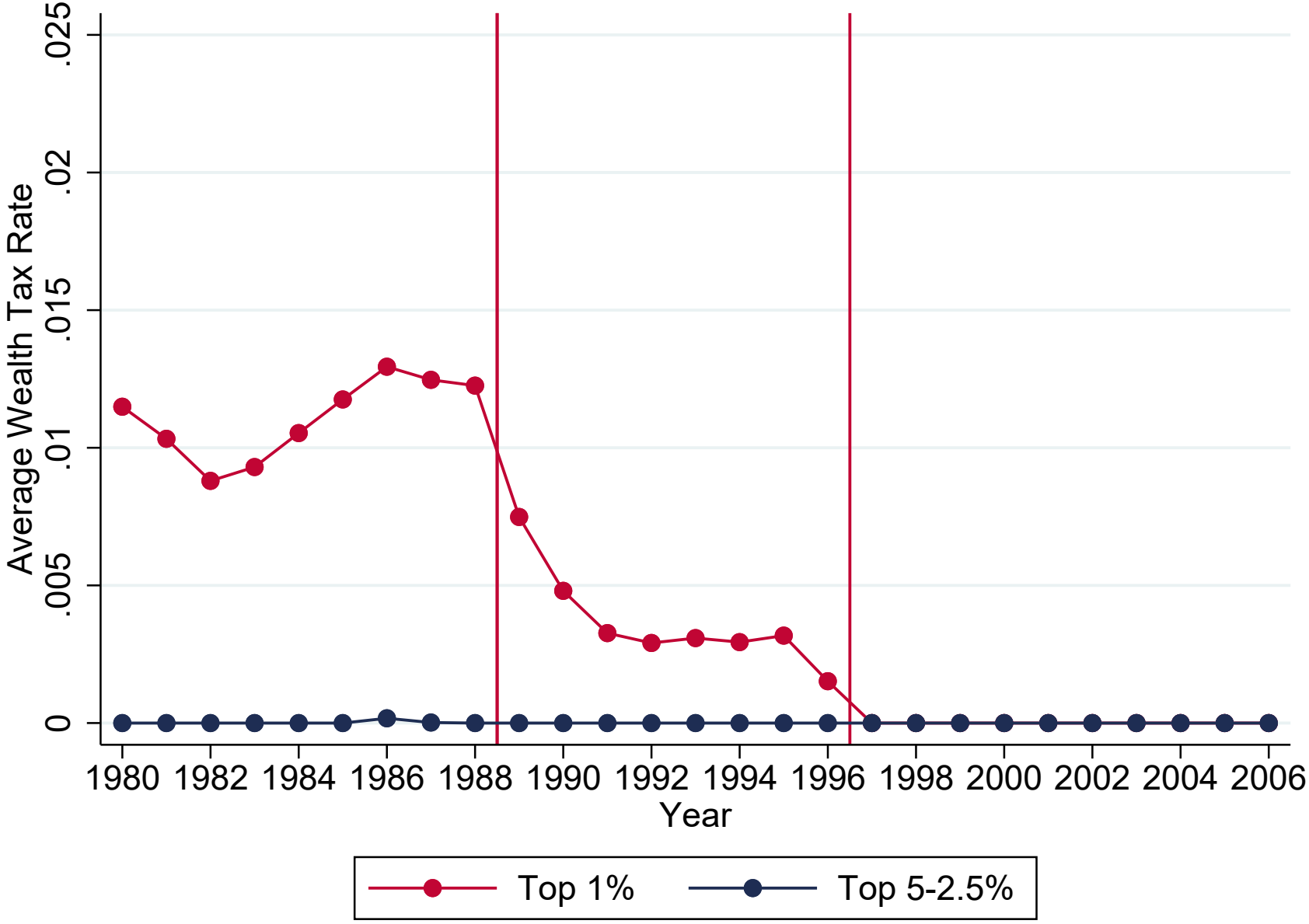
Statutory Wealth MTR - Denmark

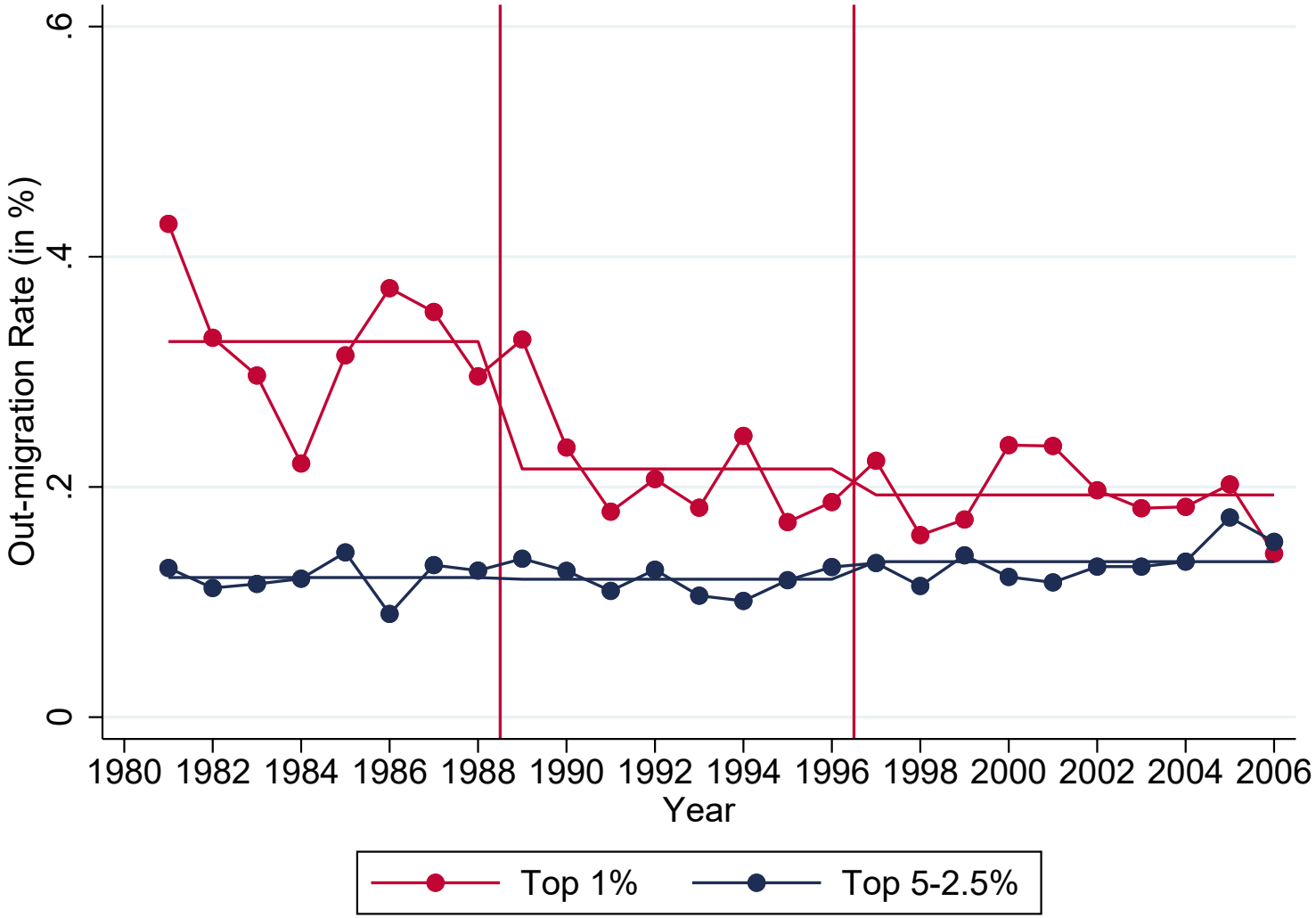


Top Wealth ATR - Denmark



Danish Reforms: Migration Effects

Top 1%: Out Migration Rates



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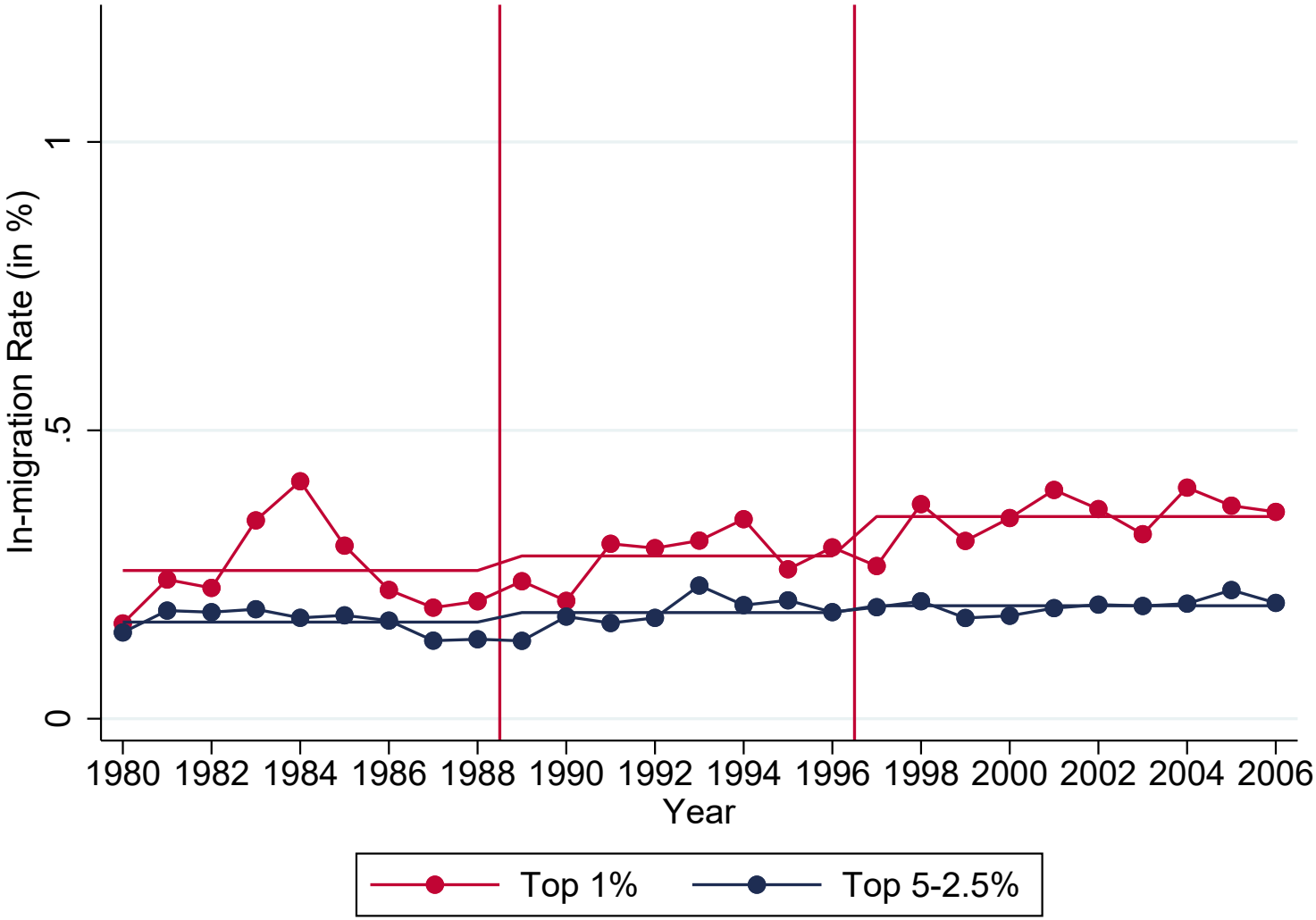
Danish Reforms: Migration Effects

Top 1%: In Migration Rates



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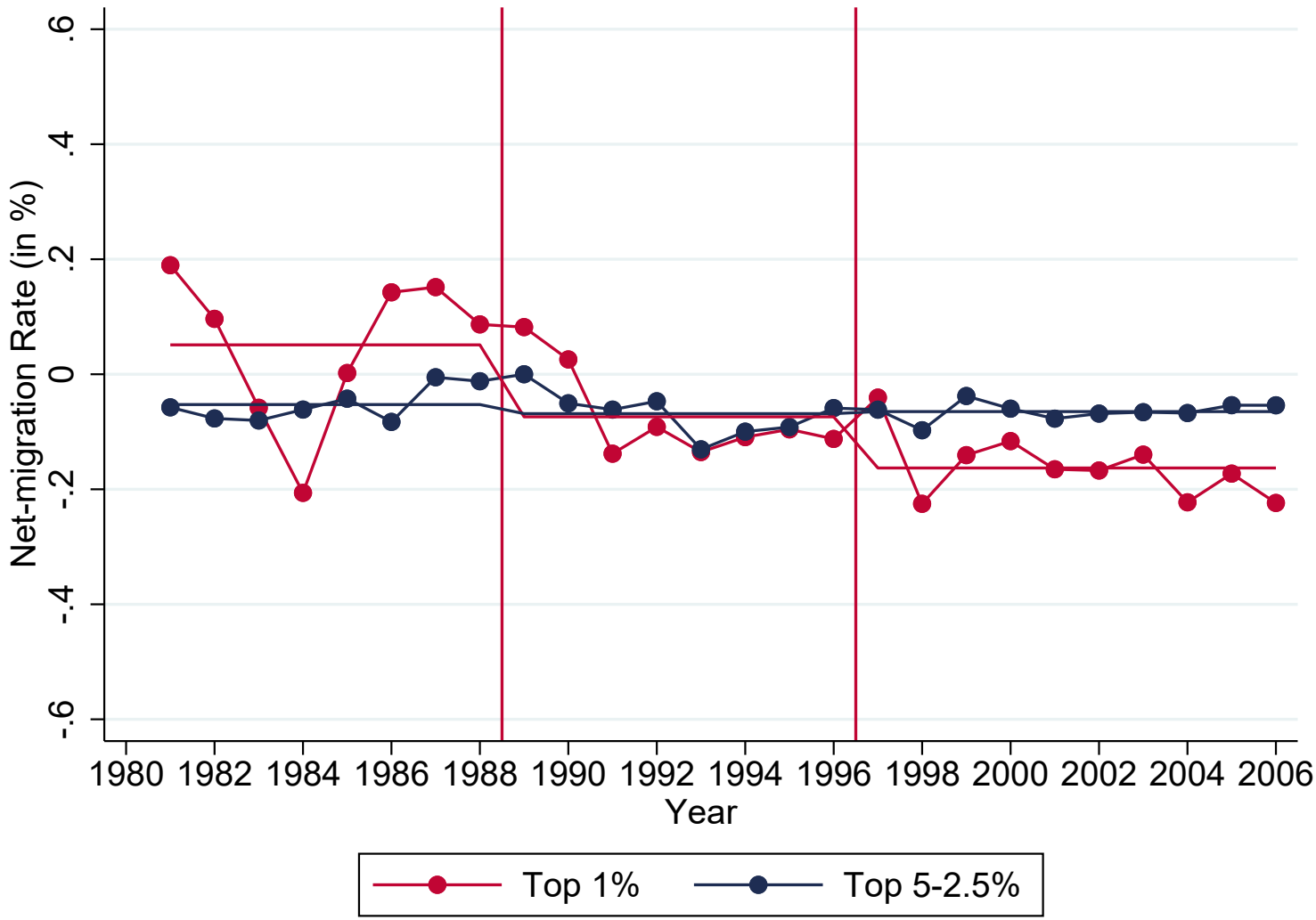
Danish Reforms: Migration Effects

Top 1%: Net Migration Rates



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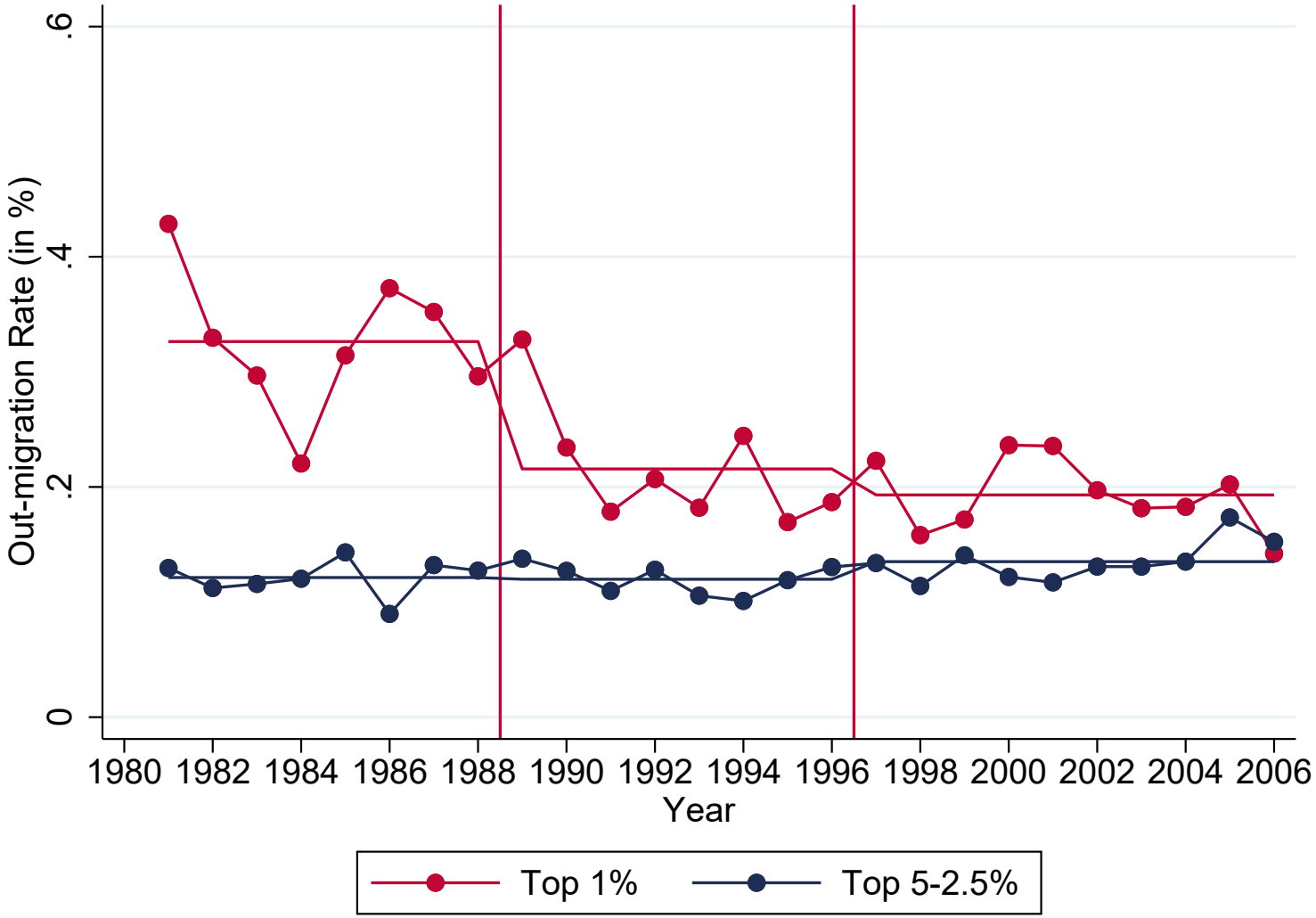
Danish Reforms: Migration Effects

Top .05%: Out Migration Rates



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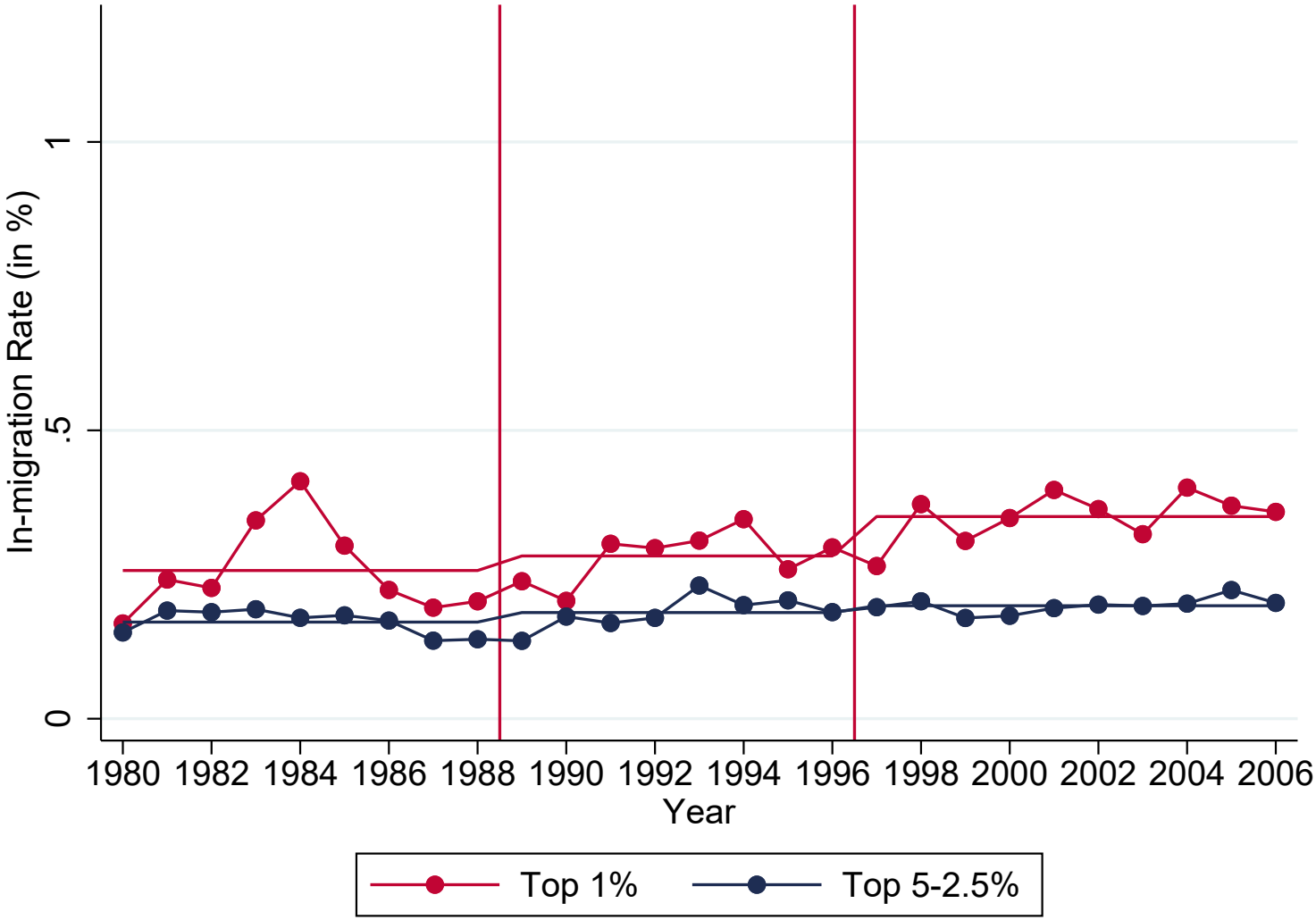
Danish Reforms: Migration Effects

Top .05%: In Migration Rates



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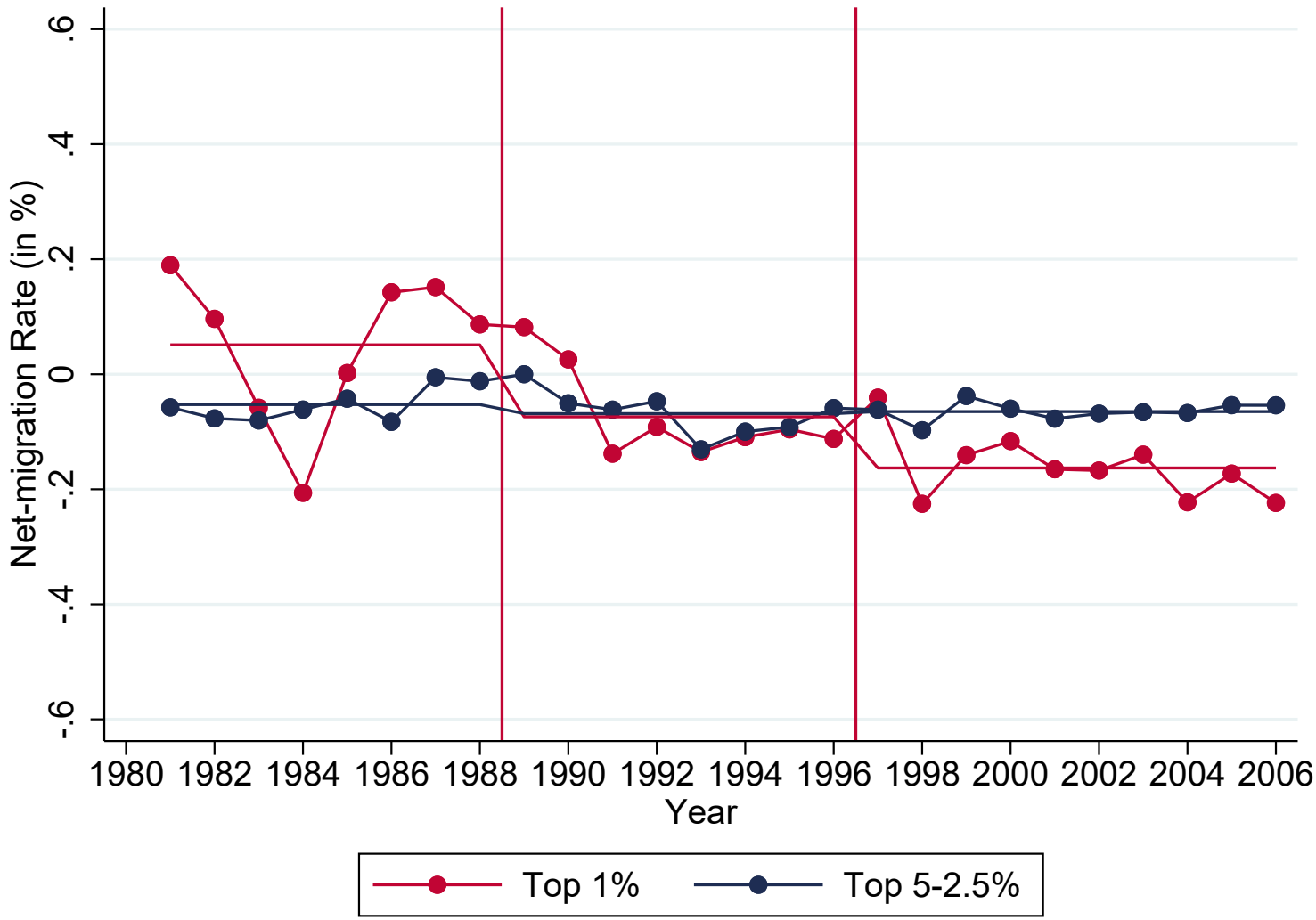
Danish Reforms: Migration Effects

Top .05%: Net Migration Rates



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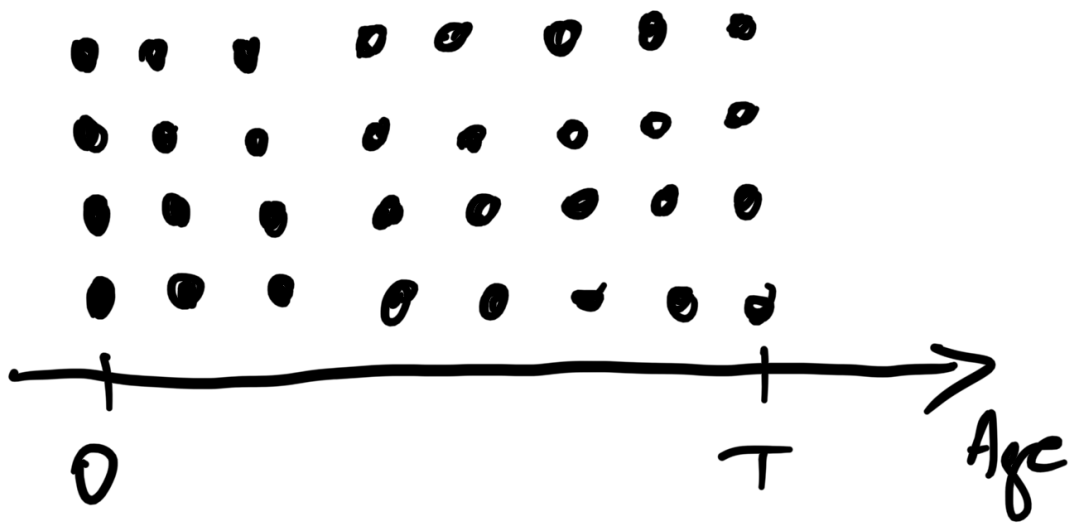
Interpreting the Magnitude: From Flows to Stock

- Population size at time t = sum of pop. of all ages k at t

$$N_t = \sum_k N_t^k$$



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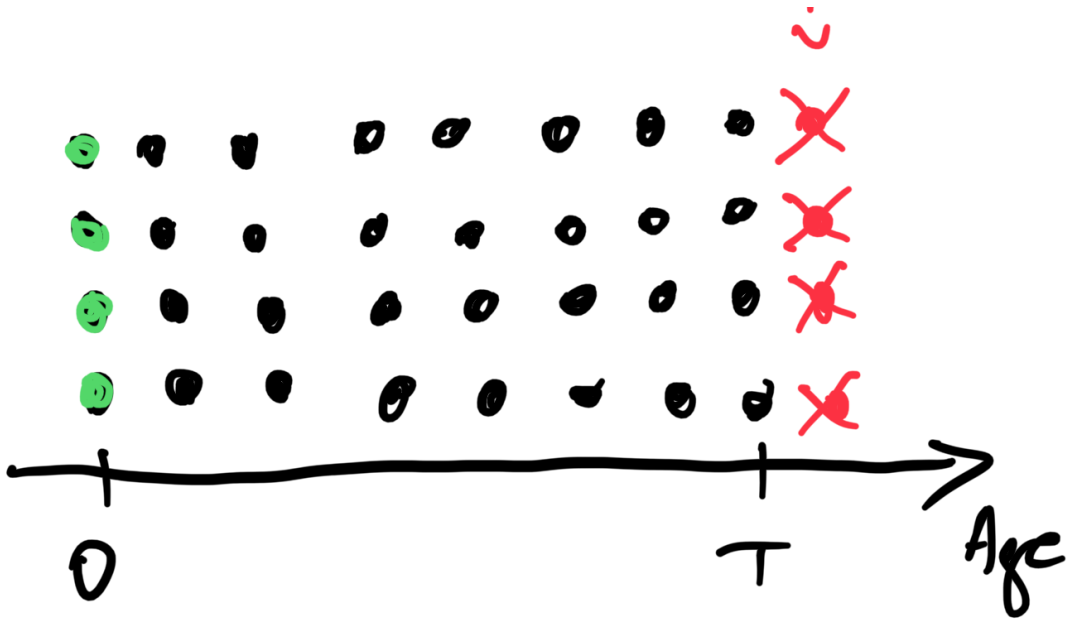

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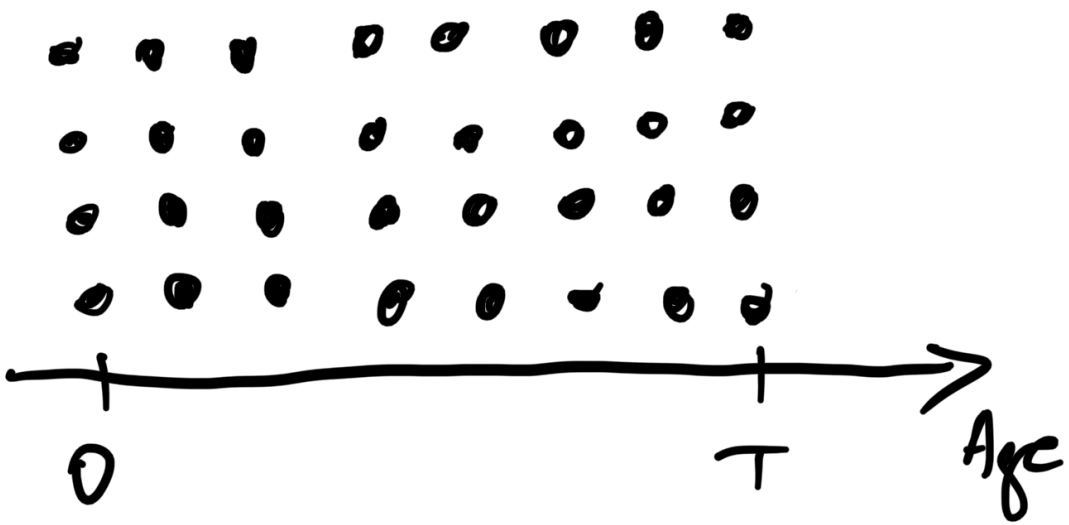

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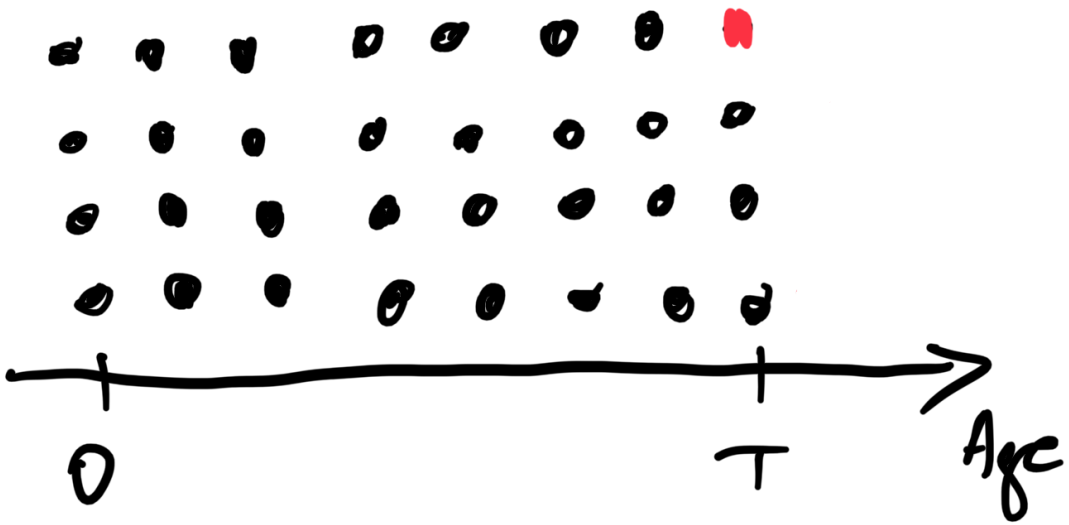

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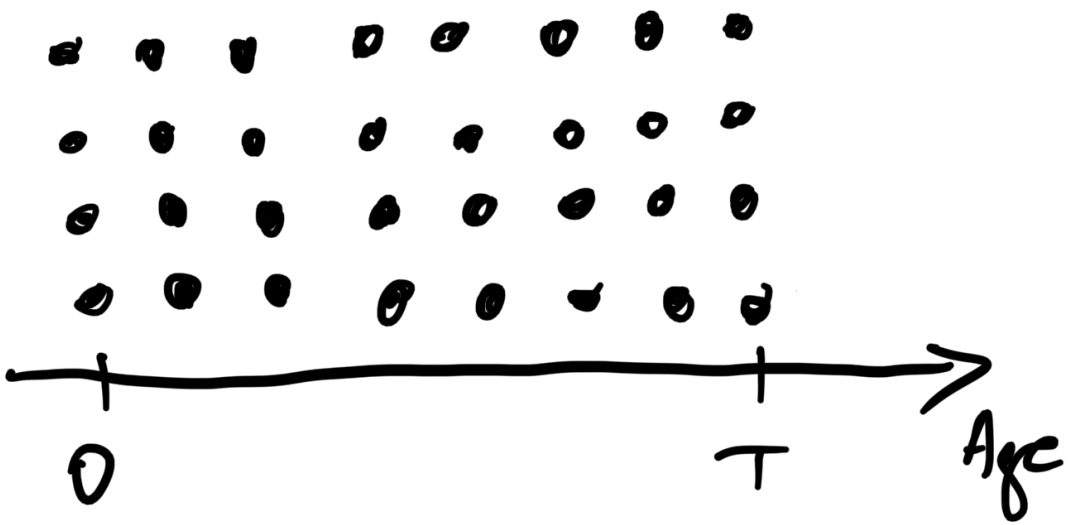

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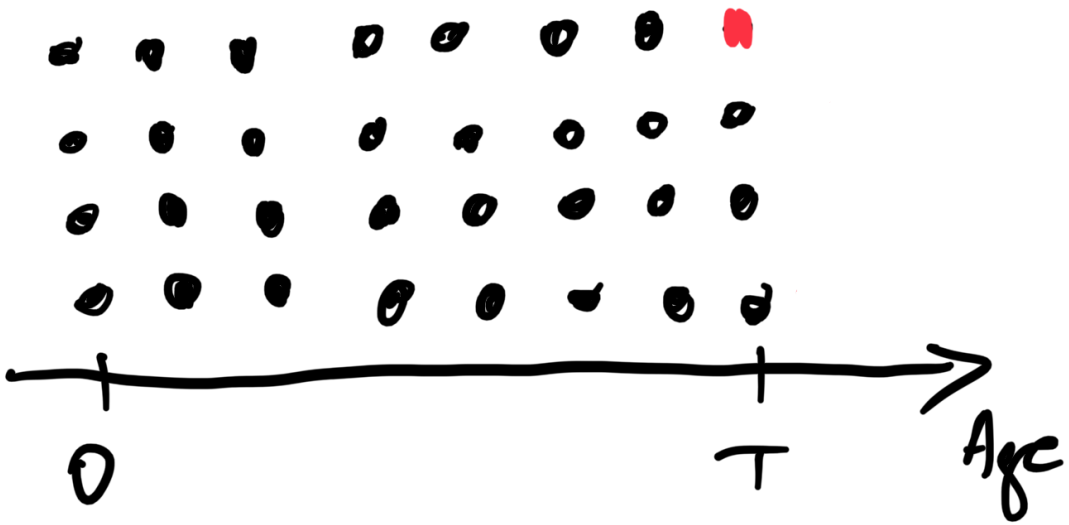

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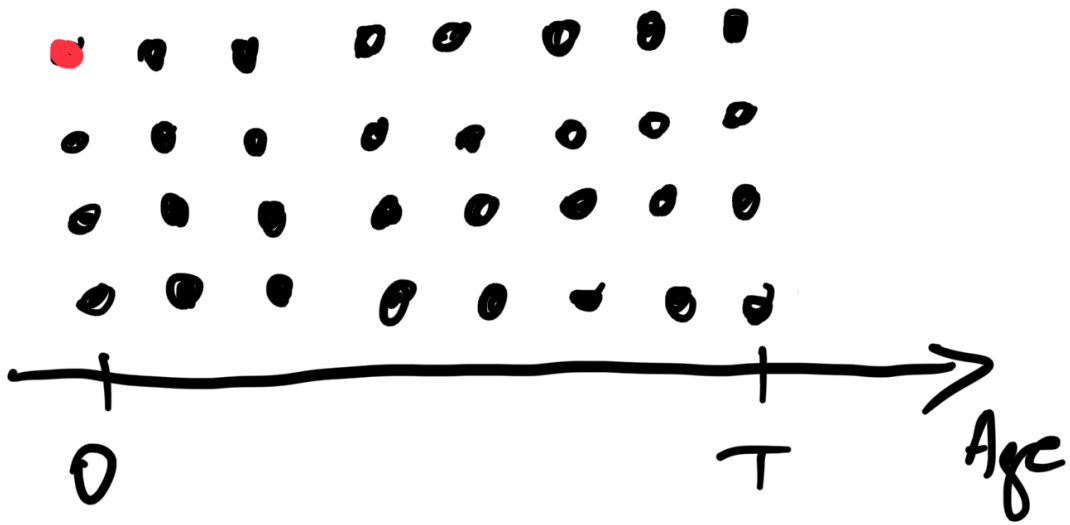

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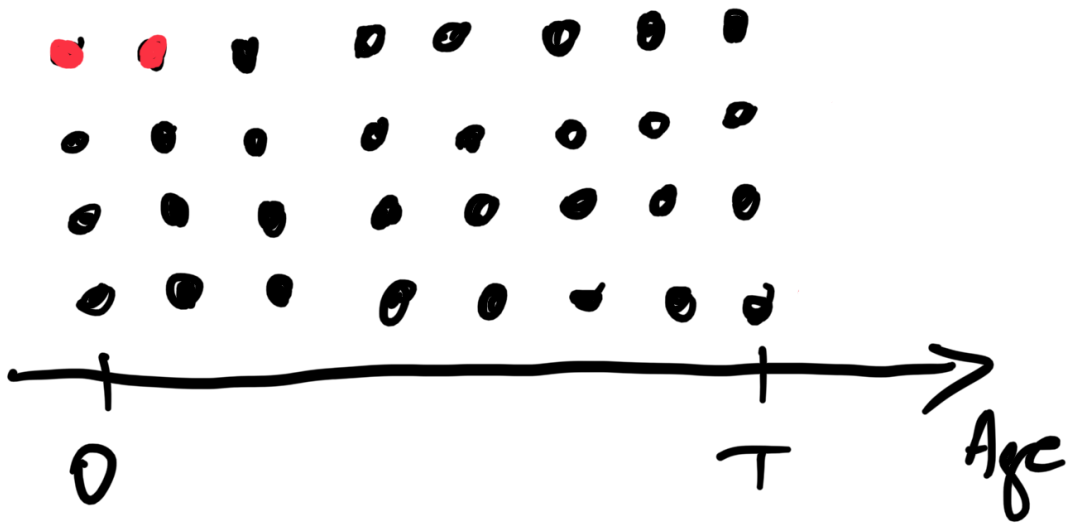

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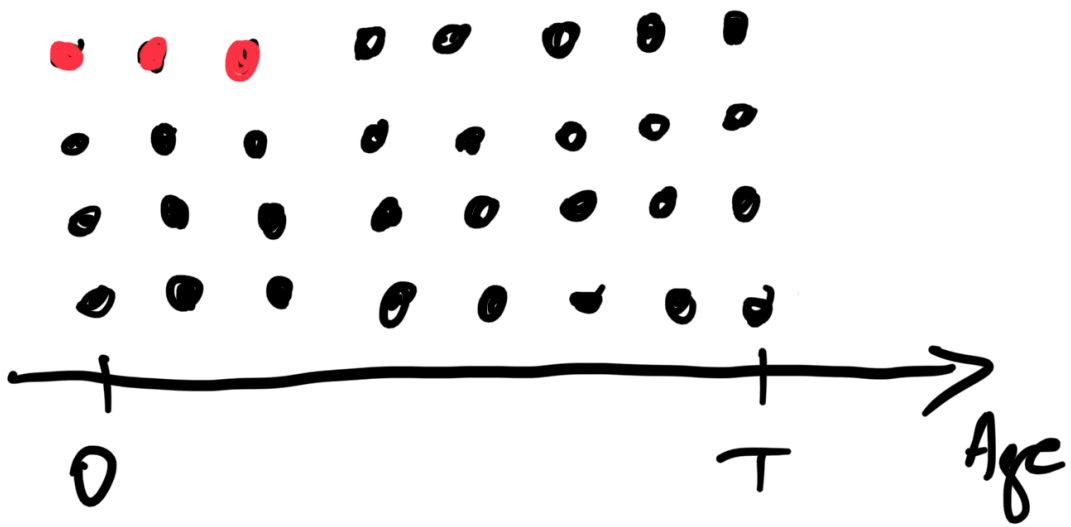

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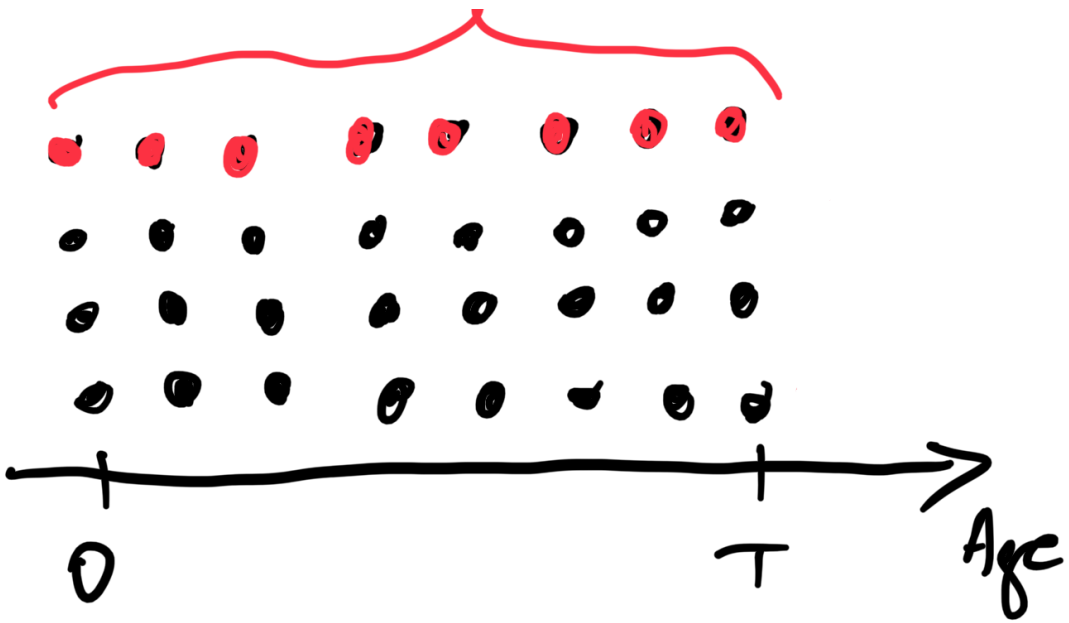

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Interpreting the Magnitude: From Flows to Stock

- Well identified estimate of the effects on migration flows
- Translate into effect on pop. size (stock) using simple OLG model
- Population size at time t = sum of pop. of all ages k at t

$$N_t = \sum_k N_t^k$$

- At each age $k = 1, ..., T$ population size at time t is

$$\begin{aligned} N_t^1 &= B_t \\ N_t^2 &= (1 - \alpha_t^1) N_{t-1}^1 = (1 - \alpha_t^1) B_{t-1} \\ N_t^3 &= (1 - \alpha_t^2) N_{t-1}^2 = (1 - \alpha_t^2)(1 - \alpha_{t-1}^1) B_{t-2}, \textit{Etc.} \end{aligned}$$

- B_t: number of "births"
- α_t^k: net migration rate of population of age k at time t

Interpreting the Magnitude: Stock Elasticity

- At steady state: $B_t = B_{t-1}, \forall t$ and $\alpha_t^k = \alpha_{t-1}^k, \forall t, k$

$$N_t = B_t \sum_{k=0}^{T} \Pi_{j=0}^{k} (1 - \alpha^{k-j})$$

- Elasticity of steady state population size w.r.t $1 - \tau$:
  - Assume (for simplicity) marginal effect of reform on α^k same $\forall k$

$$\varepsilon_{N,1-\tau} \approx -\frac{d\overline{\alpha}}{d\ln(1-\tau)} \cdot \frac{T+1}{2}$$

- Average number of years spent in top 1%: T=24 yrs

$$\Rightarrow \varepsilon_{N,1-\tau} \approx 2.16$$

- **Conservative upper-bound** with anticipation effects (T=50 yrs):

$$\Rightarrow \varepsilon_{N,1-\tau} \approx 4.32$$

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