The Effects of Foreclosures on Homeowners, Tenants, and Landlords

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How Costly is Foreclosure?

- Six million homes lost to foreclosure 2007-2017
  - Banks seize collateral through foreclosure to recoup some losses on unpaid debt by homeowners
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- 2010 HUD estimate of social costs of a foreclosure:

Item	Cost
Costs to Lender (Property Damage, Transaction Costs)	$26,230
Agg Reduction in Neighboring Home Values	$14,531
Costs to Household (Moving, Legal Fees, Admin Charges)	$10,300
Total	$51,061

How Costly is Foreclosure?

- Magnitude of non-pecuniary costs is crucial for foreclosure policy and models of default
  - Evidence that loan modifications reduce default, but how to value avoided foreclosures?
  - Need large default costs to rationalize low strategic default

    Bhutta et al., 2017; Gerardi et al, 2017; Ganong and Noel, 2019; Foote et al., 2008

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- Current studies follow owners after foreclosure *start* using OLS

  Brevoort and Cooper, 2013; Molloy and Shan, 2013; Piskorski and Seru, 2018
- OLS potentially problematic: Not causal, omitted variables

New Evidence From Cook County, IL

- **Data**: Combine foreclosure and other court records, address history with neighborhood characteristics, credit reports
- **Identification**: Two complementary strategies
  1. **Random judge assignment IV**

     Munroe and Wilse-Samson (2013)
     - Judges have discretion in marginal cases; true random assignment
     - Compare households who get strict relative to lenient judge
     - IV provides LATE for compliers
  2. **Propensity score matching (PSM)**
     - Stronger identification assumptions but more powerful
     - Provides ATE for full population
- Compare outcomes for **homeowners**, **landlords**, and **renters**
  - Foreclosure combines eviction with financial / credit effects
  - Looking at groups separately helps tease apart mechanisms

Foreclosures Are More Costly Than We Thought

- **Significant costs of foreclosure for homeowners**:
  - For all households (IV and PSM):
    - Housing instability, multiple moves
    - Increased financial fragility (1.5 more unpaid collections), but small reduction in credit score

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    - Worse neighborhoods in income (16%) and school quality
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- Negative outcomes **largely absent for renters**, **only negative financial outcomes for landlords**
  - Suggests combination of eviction and financial hardship explains non-financial results

Related Literature

- **Costs of foreclosure**

  Brevoort and Cooper (2013), Currie and Tekin (2015), Molloy and Shan (2013), Piskorski and Seru (2018)

- **Causal Effects of Eviction**

  Humphries, Mader, Tannenbaum, and Van Dijk (2018), Collinson and Reed (2018)

- **Localized Foreclosure Externalities**:

  .5-1% price decline and 0.3-0.6 additional foreclosures within 0.1 miles.

  Immergluck and Smith (2006), Campbell, Giglio and Pathak (2009), Harding, Rosenblatt, and Yao (2009), Munroe and Wilse-Samson (2013), Anenberg and Kung (2014), Gupta (2018)

- **Market-Level Foreclosure Impacts**

  Non-foreclosure prices and consumption fall, price-foreclosure spiral.

  Mian, Sufi Trebbi (2015), Guren and McQuade (2018)

- **Foreclosure Discounts** About 25%.

  Sumell 2009; Campbell, Giglio, Pathak 2009; Pennington-Cross 2006

- **Judge Instruments**

  Kling (2006); Dobbie and Song (2015); Kolesar (2013); Bhuller et al, (2018); Dobbie et al, (2018)

Outline

1. Data
2. Empirical Strategy
3. Results: Homeowners
4. Results: Landlords and Renters

Data Sources

We combine data from several main sources:

1. **Cook County Court**: Scrape administrative case records for case ID, judgments, judge, calendar
2. **Record Information Services (RIS)**: Foreclosure, property, crime, bankruptcy, and divorce records for Chicago
    - Supplement with CoreLogic and DataQuick deeds data (ownership history, mailing address for identifying landlords)
3. **Infutor**: Individual address histories, age, gender
4. **Credit Reports**: TransUnion annual snapshots
5. **Neighborhood Characteristics**: Census, IRS, Illinois Board of Education, City of Chicago, Opportunity Insights

Data Construction

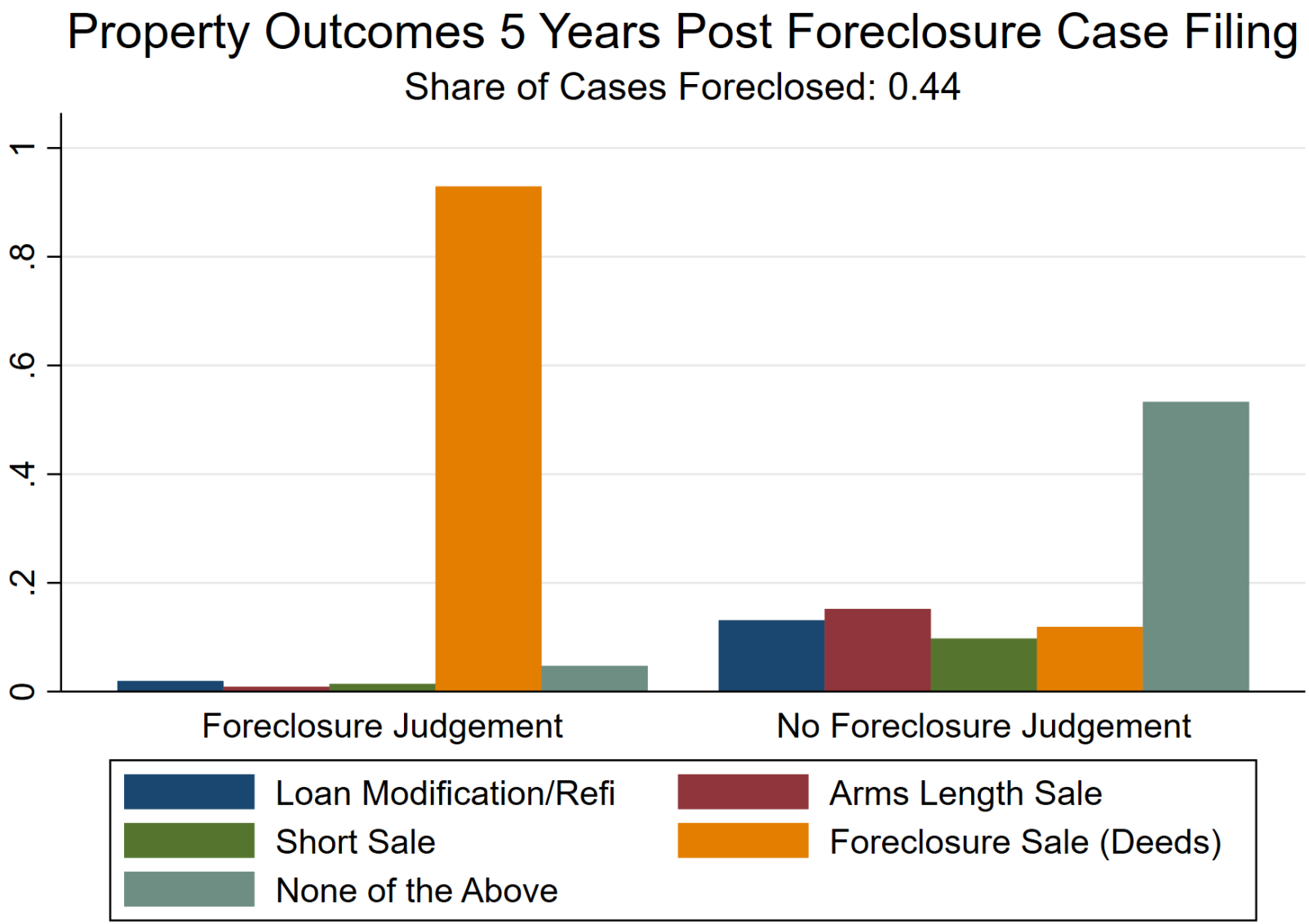
1. Link court records, public records at **case-property level**
    - Main Outcome: Indicator for foreclosure within 3 years using court records
2. **Identify owners, renters, landlords** in Infutor to create **person-level** data set
    - Strict definitions to avoid misclassification, drop unclassified:
        - **Owners**: Name matches defendant's, live at case address at foreclosure. Also include spouses
        - **Landlords**: Used to occupy property, address matches deeds mailing address, or unique match to defendant name
        - **Renters**: Identify landlord in Infutor and live at address at time of foreclosure. Restrict to apartments/condos
3. To ensure 5 years of post-foreclosure outcomes, use cases that start in 2005-2012, outcomes through 2016

Analysis Samples

- From 275,401 foreclosure cases 2005-2012, end up with 183,494 in final sample
  - **Owners**: 124,951 cases with 248,494 case-people
  - **Renters**: 15,850 cases with 80,132 case-people
  - **Landlords**: 54,237 cases with 60,051 case-people
- Half of dropped cases due to non-residential, multiple property case, unclear case outcome, or nobody in Infutor
- Other half because cannot classify as owner, renter, or landlord or non-condo renter
- Show no selection using placebo test
- Credit Report Subsample: 174,388 cases with 316,514 case-people matched to credit reports

The Foreclosure Process

1. After delinquent $\geq$ 90 days, lender can initiate foreclosure
2. Borrower notified, can contest lender's case, cure, or apply for loan modification
    - Can drag on for years
3. If judge approves foreclosure: Property sold at auction, owner can be evicted 30 days after confirmation of sale
4. Case dismissed: Settlement (loan mod, repayment) or lender did not follow foreclosure law
    - Lender can refile case


Property Outcomes 5 Years Post Foreclosure Case Filing
Share of Cases Foreclosed: 0.44
0
.2
.4
.6
.8
1
Foreclosure Judgement
No Foreclosure Judgement
Loan Modification/Refi
Arms Length Sale
Short Sale
Foreclosure Sale (Deeds)
None of the Above

Identifying the Effects of Foreclosure: Issues With OLS

1. May conflate effects of foreclosure with omitted variables
   - Financial shocks might cause foreclosure $\rightarrow$ upward bias
   - Borrowers with most to lose fight foreclosure $\rightarrow$ downward bias
   - Lenders make more effort to foreclose on larger mortgages
2. Dismissed foreclosure cases not good control group
   - Households in process of selling who stop making payments
3. OLS treats all non-foreclosure outcomes the same
   - Some look like foreclosure (short sale), others do not (mod)

Two Complementary Empirical Approaches

1. IV: random judge assignment as instrument for foreclosure
    - True random assignment, but low power for smaller sub-samples
    - IV identifies local average treatment effect of getting a more lenient judge
2. Propensity score matching
    - Helps deal with bad control group, different non-foreclosure outcomes but still requires strong assumptions
    - In practice, reduces pre-trends
    - Identifies average treatment effect for population, significantly more power

Two-Stage Least Squares Framework

- Second stage: For each $s \in -5, ..., 5$

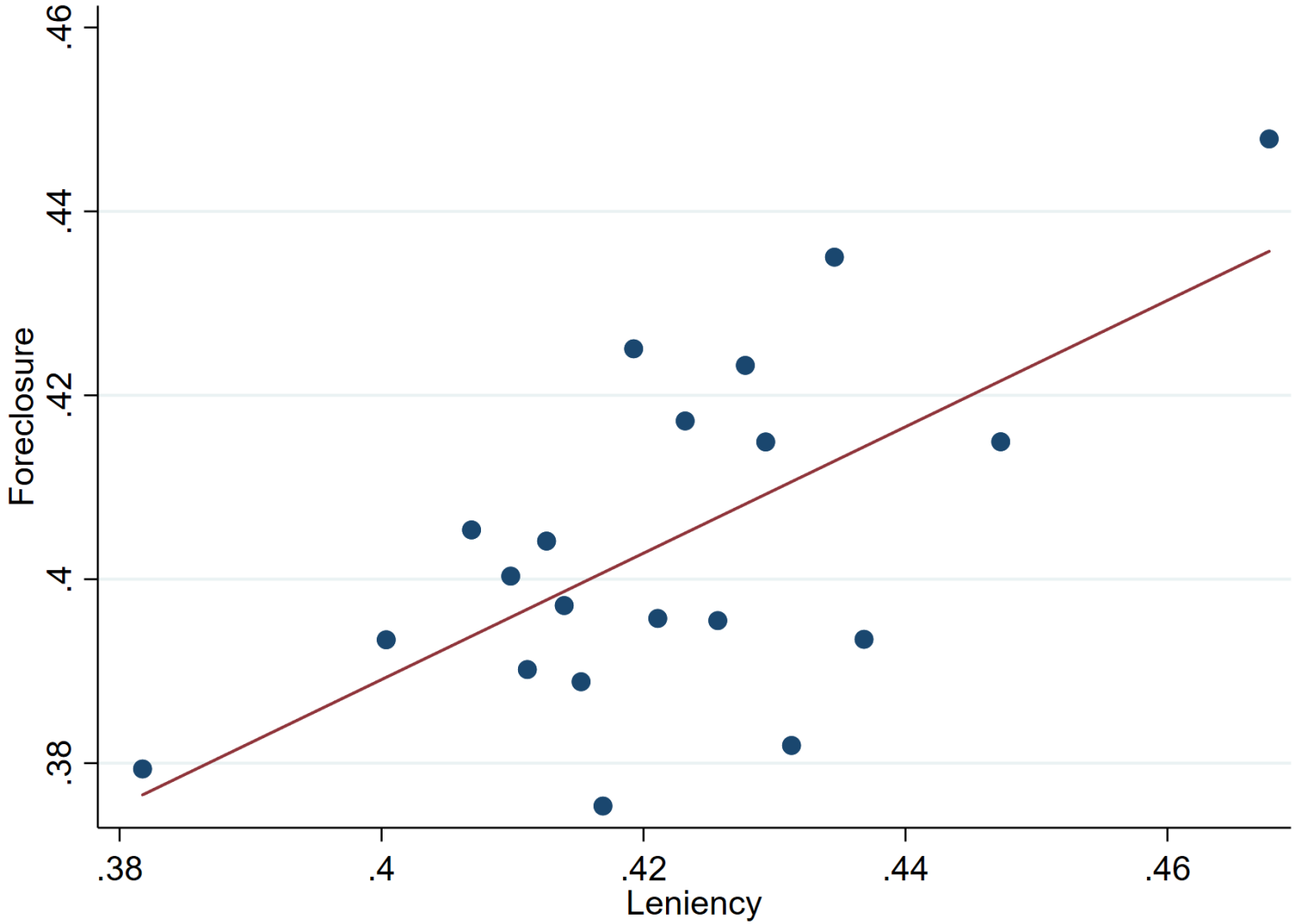
$$Y_{i,k,s,t} = \beta_s F_k + \gamma_s X_i + \xi_{m(k),s} + \phi_{z(k),s,t} + \varepsilon_{i,k,s,t}$$

- First stage:

$$F_k = \Gamma Z_{k,c,t} + \alpha X_i + \zeta_{m(k)} + \varphi_{z(k),t} + e_{i,k,t}$$

- IV Z is simple leave-out mean of foreclosure prob for each calendar-year
- Identifying assumptions:
  1. Relevance: $\Gamma \neq 0$
  2. Validity: $Z_{k,c,t} \perp \varepsilon_{i,z,m,t}$, satisfied with random calendar assignment
- Person-level regression, cluster at case k level

First Stage



Verifying Random Assignment: Placebo Tests

- Is instrument independent of household characteristics?

	Case Level			
Dependent Variable	In Sample	Owner	Renter	Landlord
Judge Leniency	-0.007	0.024	0.005	-0.004
	(0.044)	(0.054)	(0.033)	(0.053)
N	244,831	183,494	183,494	183,494
	Case-Person Level			
Dependent Variable	Age	Male	TU Match	
Judge Leniency	2.239	0.008	-0.047	
	(1.672)	(0.048)	(0.032)	
N	290,369	388,648	388,648	

Propensity Score Matching Framework

- For each $s \in -5, ..., 5$

$$Y_{i,k,s,t,p} = \beta_s F_k + \gamma_s X_i + \xi_{m(k),s,p} + \phi_{z,s,t,p} + \varepsilon_{i,k,s,t,p}$$

- p indexes propensity score decile created by running:

$$F_k = \alpha X_{i,s-3} + \zeta_{m(k)} + \phi_{z(k),t} + e_{i,k,t}$$

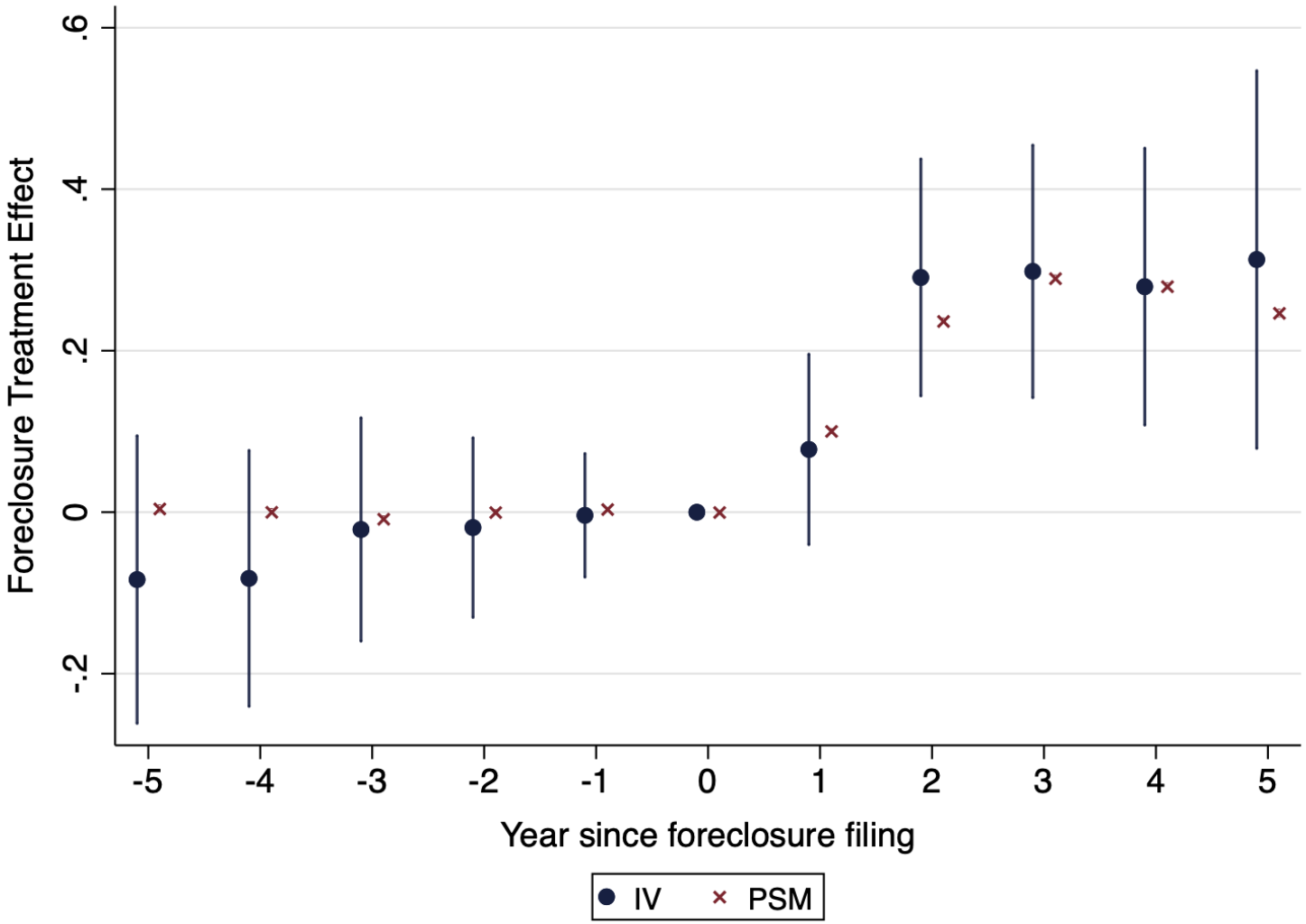
  and using predicted values $\hat{\alpha} X_{i,s-3}$ as propensity score

- Identifying assumptions:
  1. Parallel trends conditional on the propensity score FE
  2. No other omitted shocks that occur at the time of foreclosure
- Select 5 lagged observables with most explanatory power for predicting foreclosure
- Person-level regression, cluster at case k level

Owners

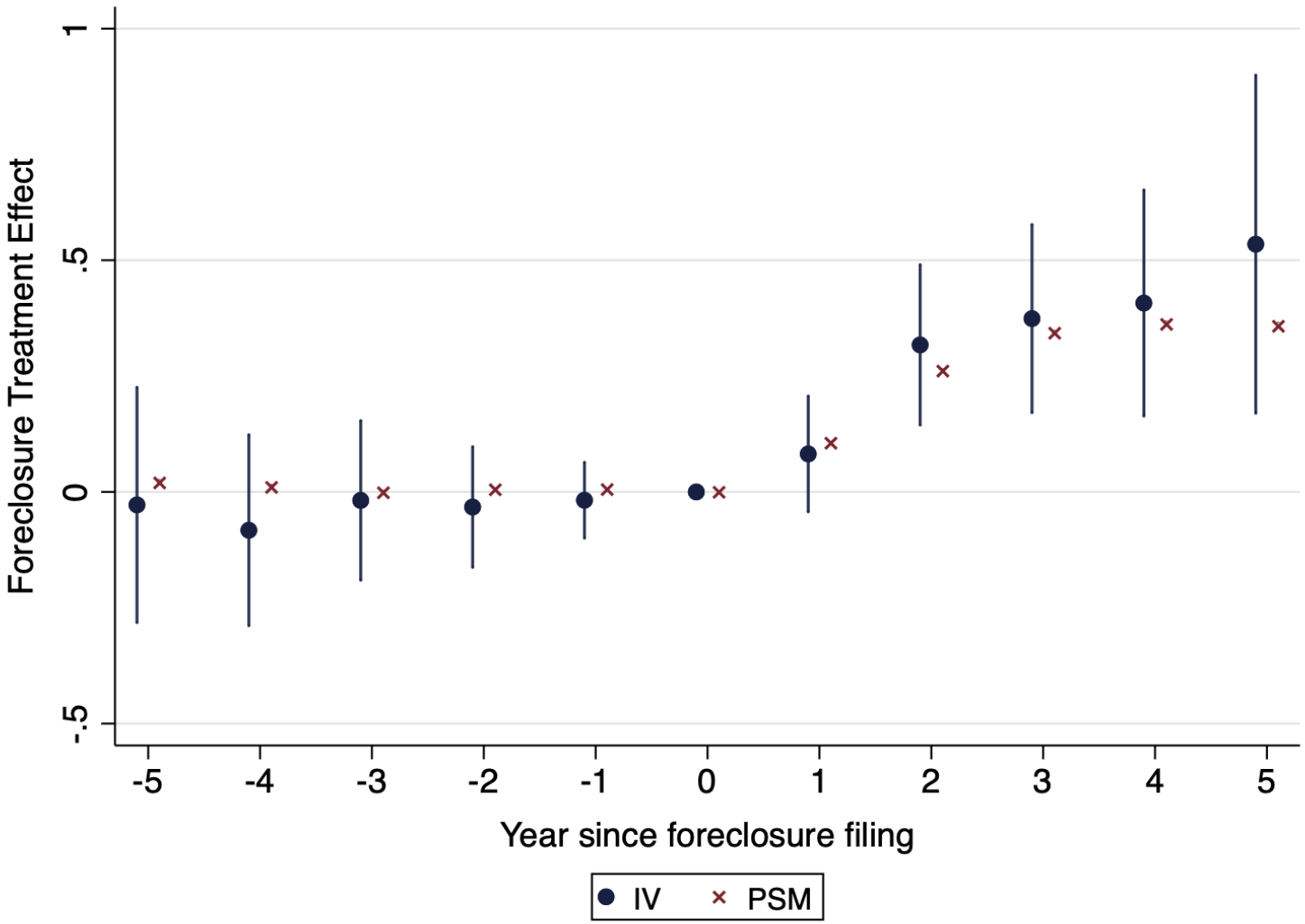
Moved From Foreclosure Address

Foreclosure causes forced moves (29% increase by years 3-4)



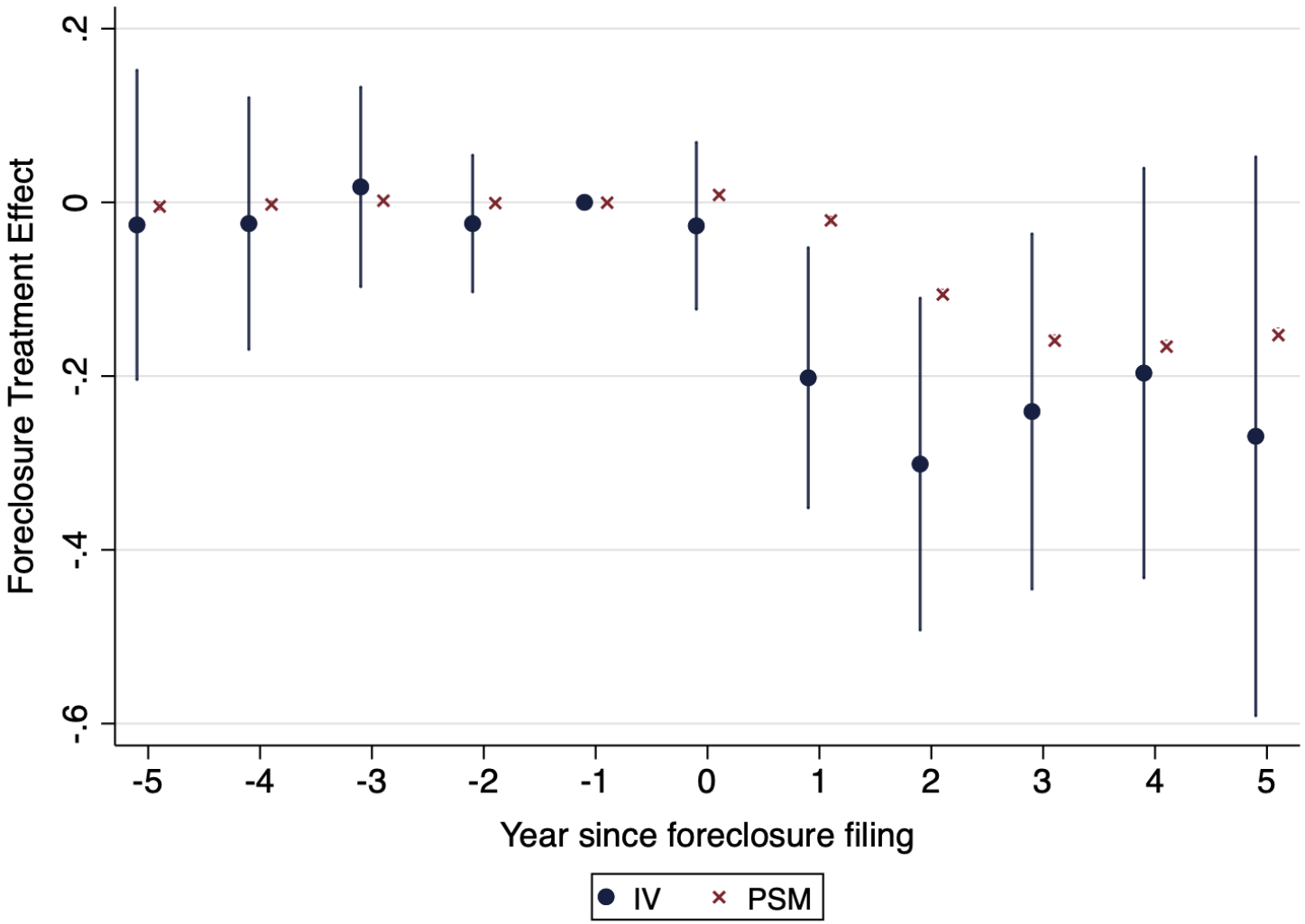
Cumulative Number of Moves

Housing Instability: Foreclosure causes 0.54 extra moves by year 5



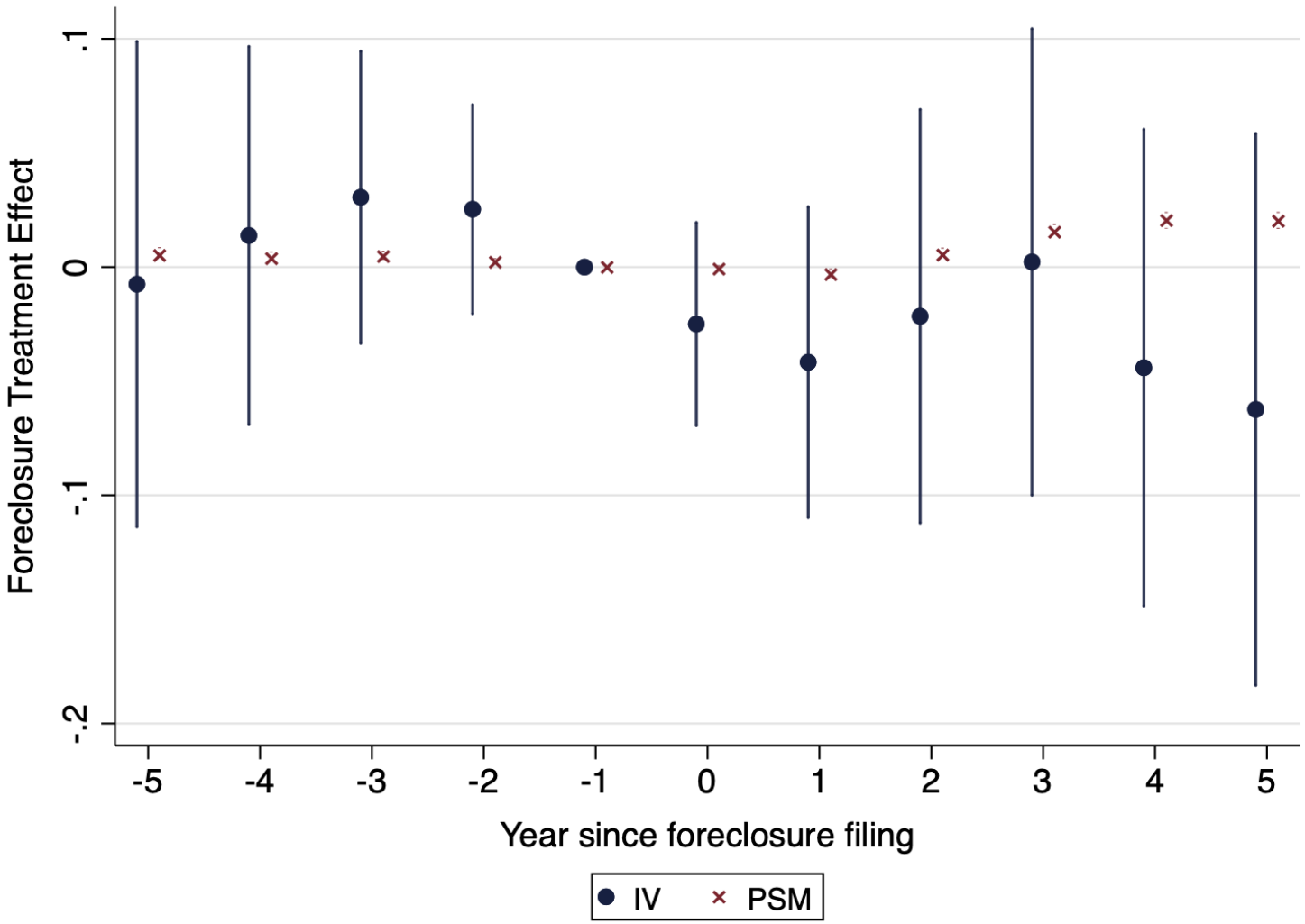
Own Primary Residence

Probability own home falls 22% by years 3-4 for IV, 17% for PSM



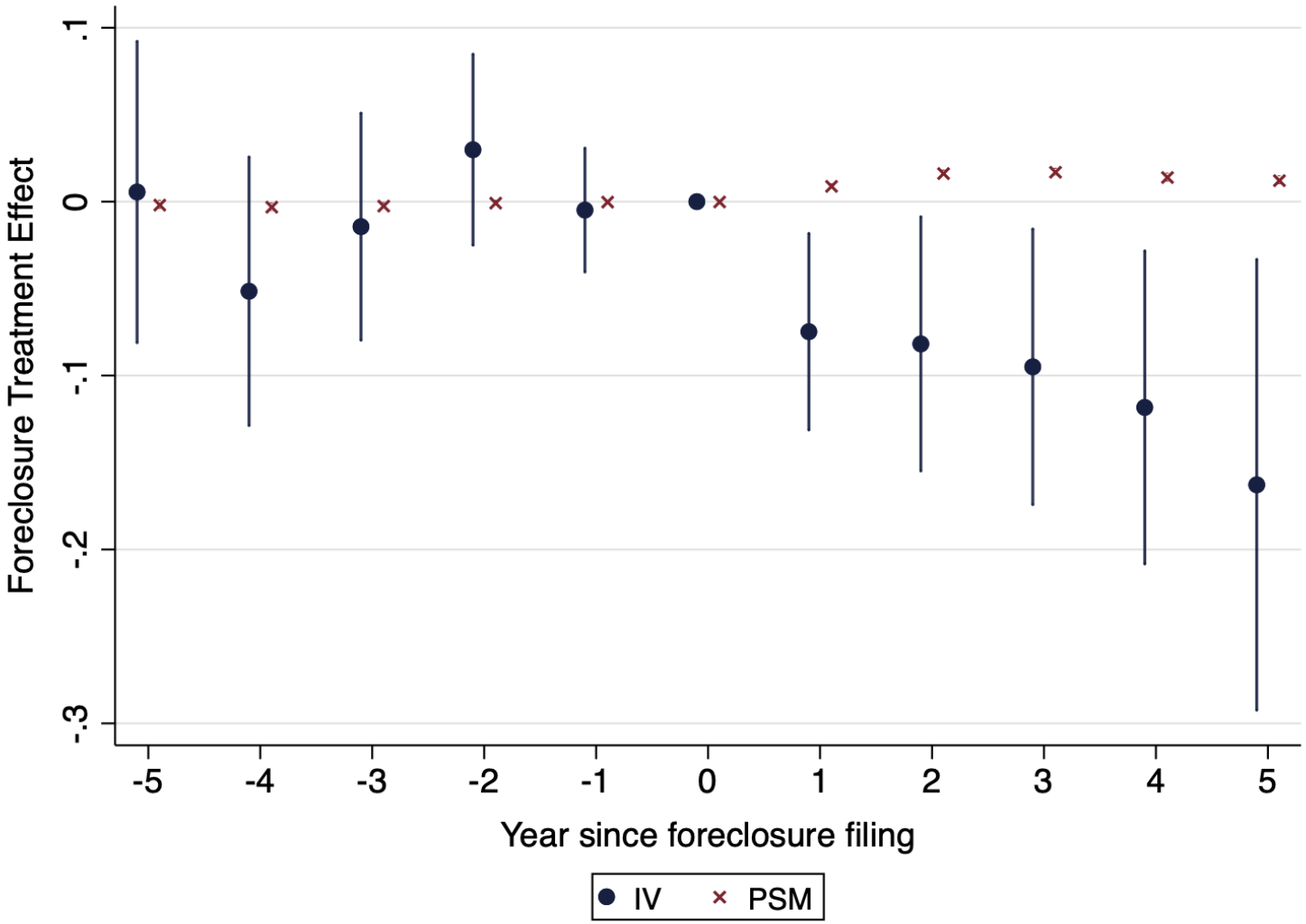
Log of Square Footage of Residence Living Area

No effect on home size



Log ZIP Code Average Income

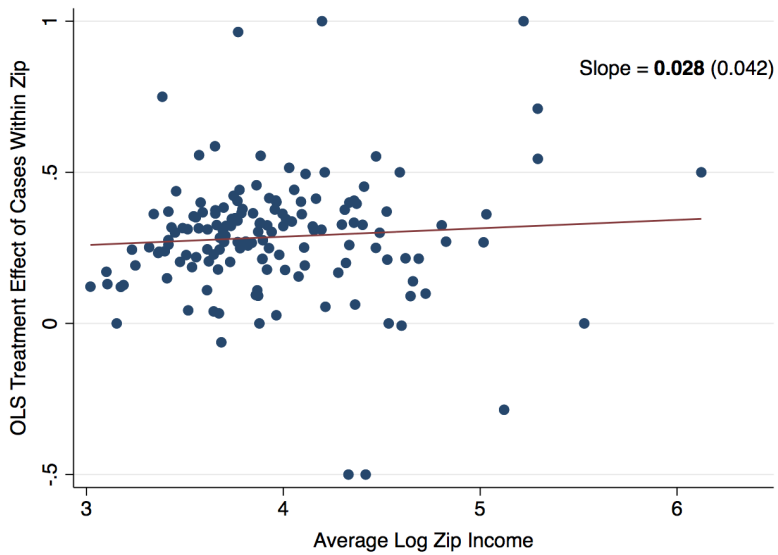
IV: income drops 16% by year 5. Slightly positive for PSM



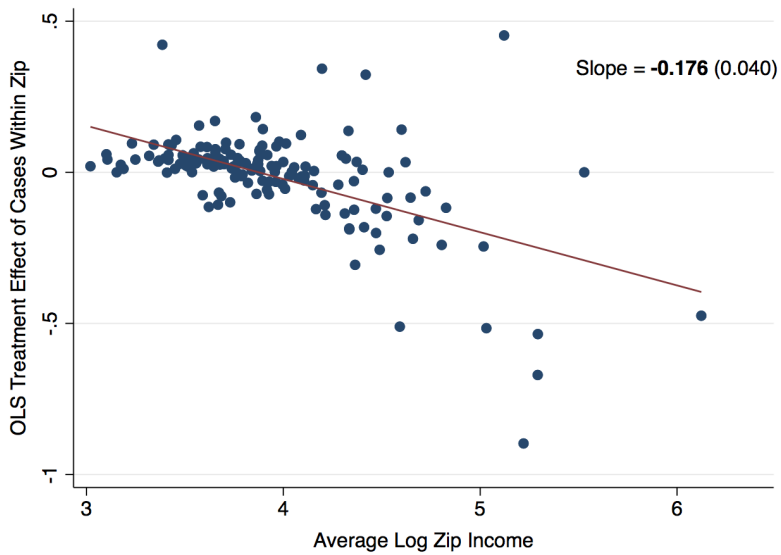
IV vs. PSM: Heterogeneous Treatment Effects

- Treatment effect heterogeneity explains why IV looks similar to PSM for some outcomes, different for others
- Estimate OLS separately by ZIP, examine effect after 3 years: Use OLS for power.

Moved From Foreclosure Address

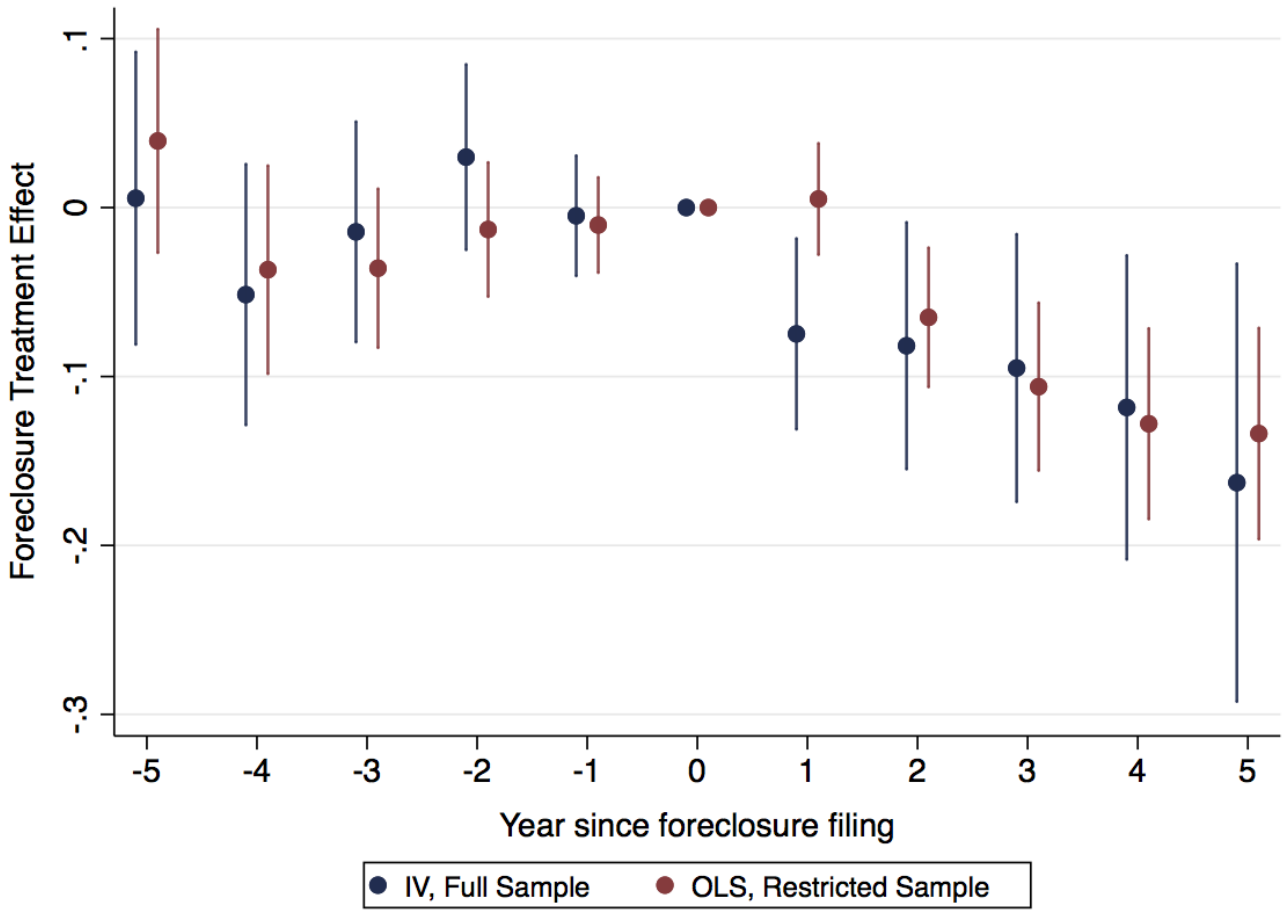


Log ZIP Average Income



IV vs. PSM: Log ZIP Code Average Income

IV for population similar to OLS for high-value homes in high-income ZIPs



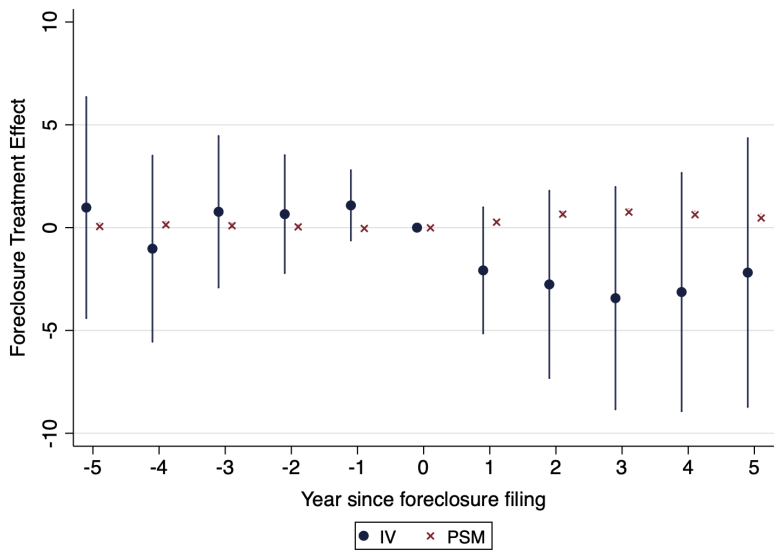
IV vs. PSM: Marginal vs. Average

- At first blush, IV and PSM appear to conflict for some outcomes.
- But heterogeneity reveals they complement one another.
- Interpretation: Marginal households have more to lose
  - Have to go to court, challenge ruling
- Neighborhood quality results consistent with quality ladder
  - Marginal cases have far to fall
  - Average case is in bad neighborhood, moves to on-average better neighborhood through simple mean reversion
- Heterogeneity important for interpretation of results
  - Marginal households: Relevant for policies that affect small group of marginal owners who take costly action to be treated
  - Average households: Relevant for more sweeping policies; marginal results still important concave SWF

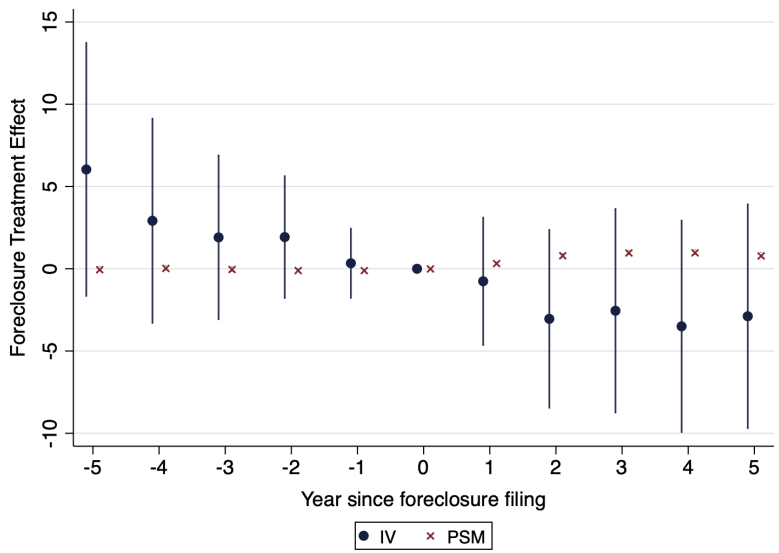
School Quality

Lower school quality for IV, not PSM

Elementary School Test Scores

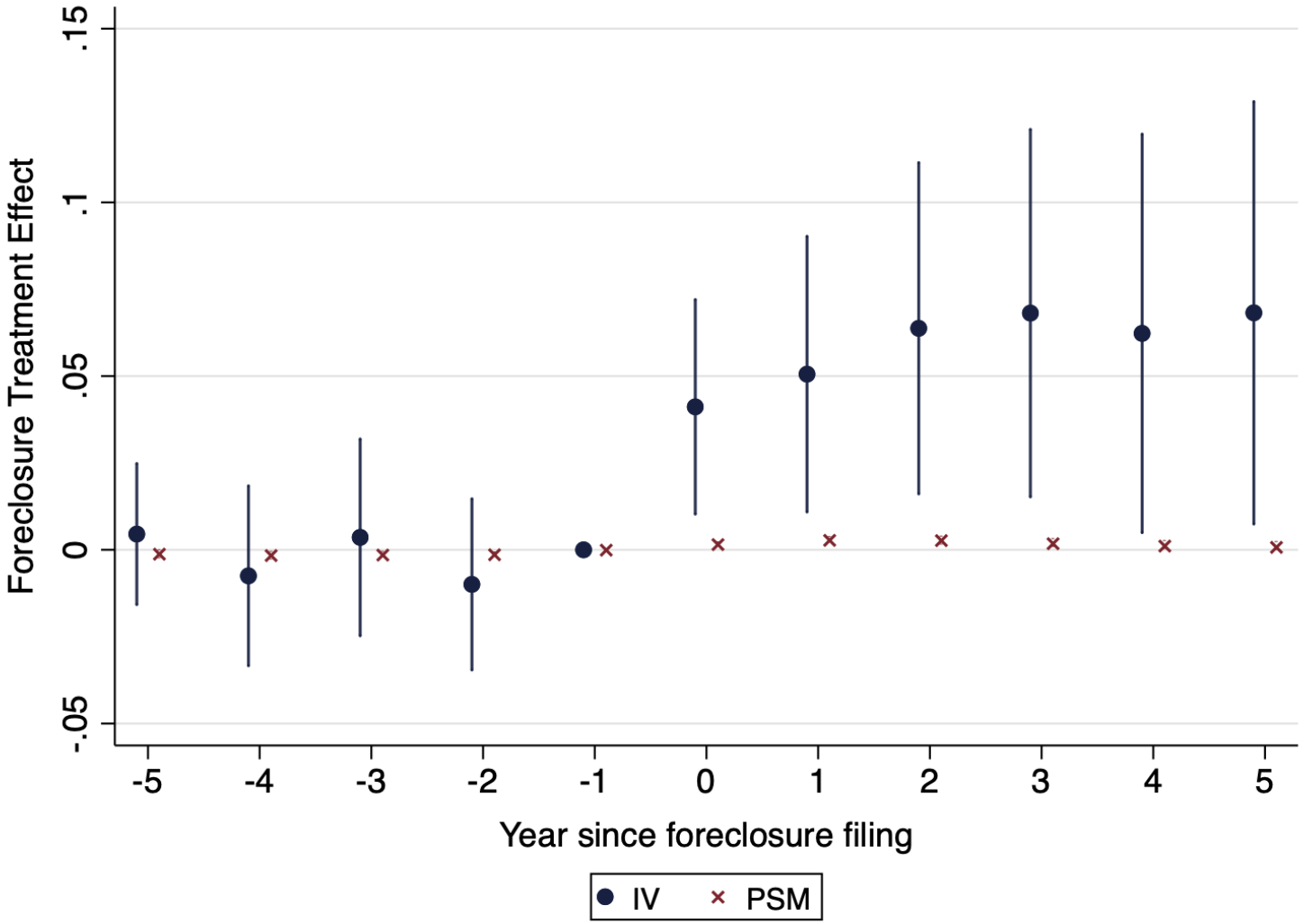


Middle School Test Scores



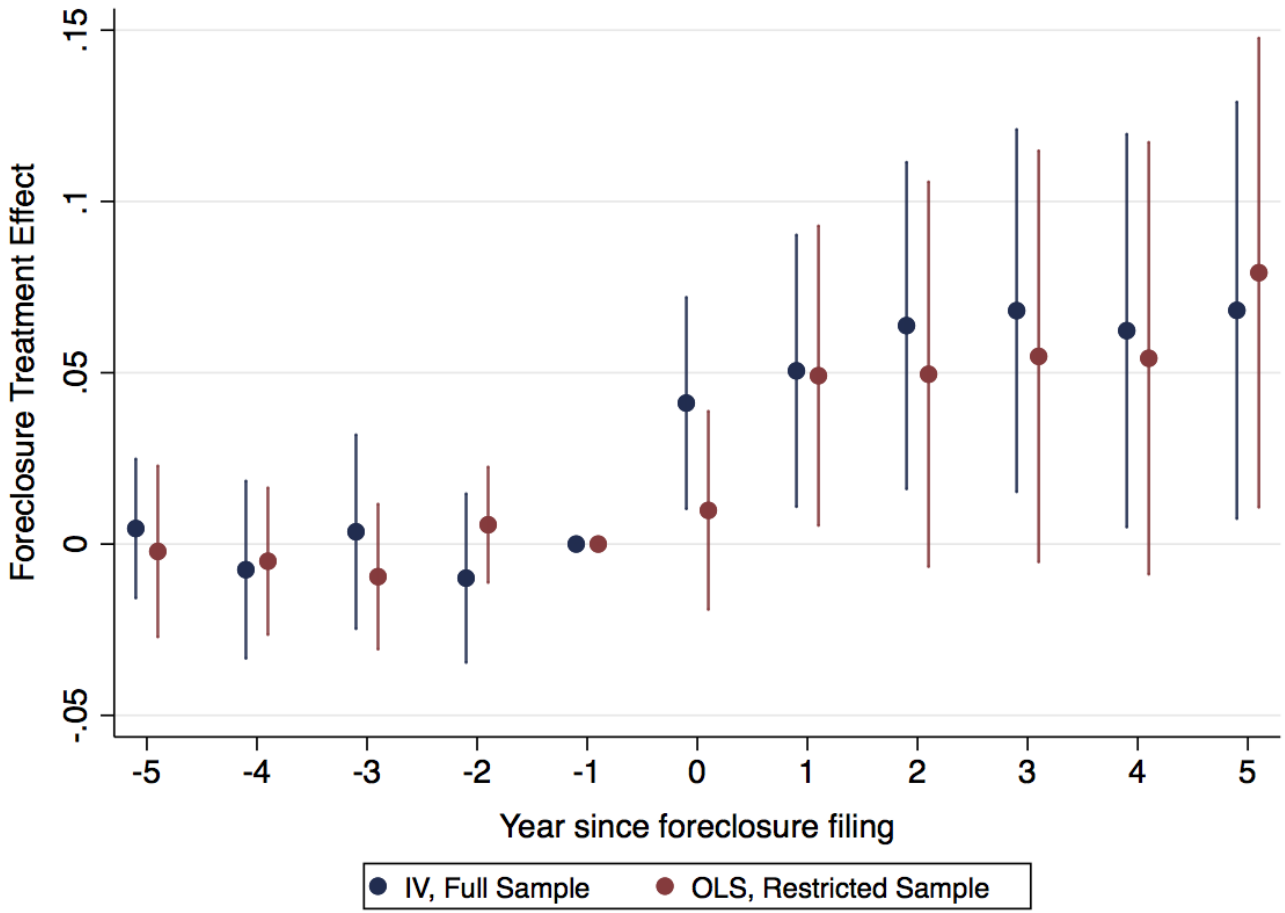
Cumulative Number of Divorces

6.5 pp increase in divorced by years 3-4 for IV; nothing for PSM)
(Similar to Charles and Stephens (2004) for job loss)



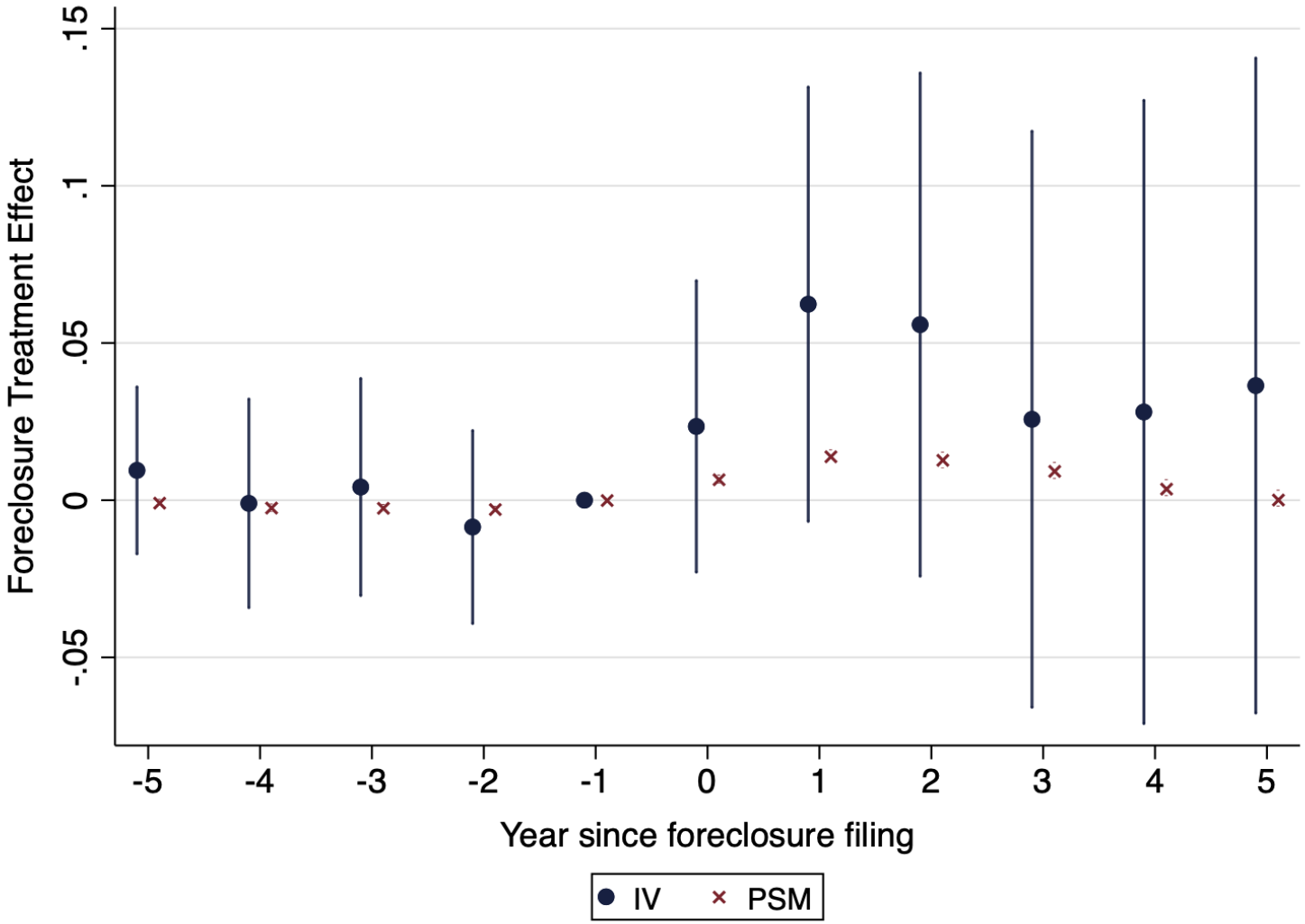
IV vs. PSM: Cumulative Number of Divorces

IV for population similar to OLS for couples in high-value homes and high-income ZIPs



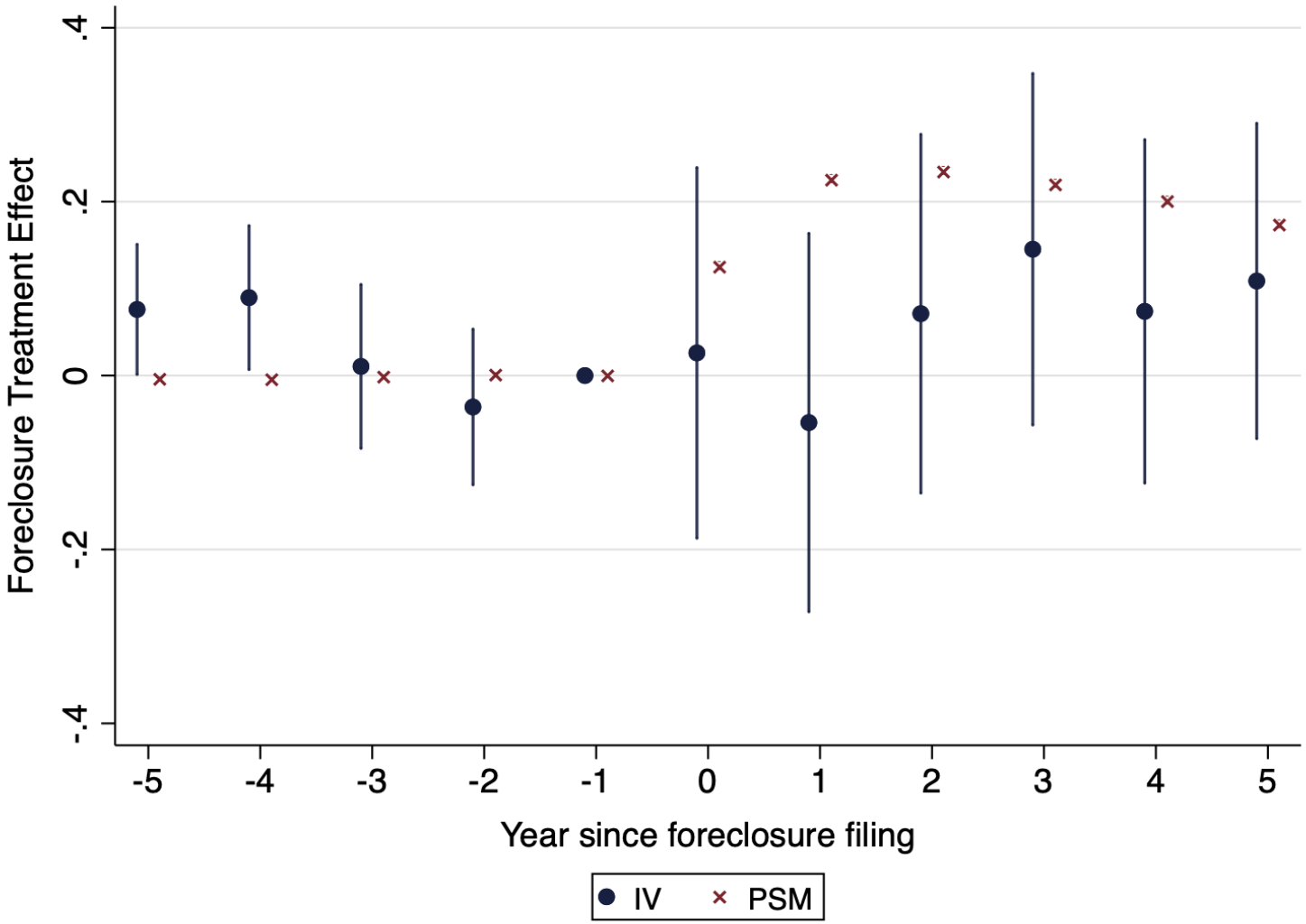
Cumulative Number of Bankruptcies

Some evidence foreclosure pulls forward bankruptcy



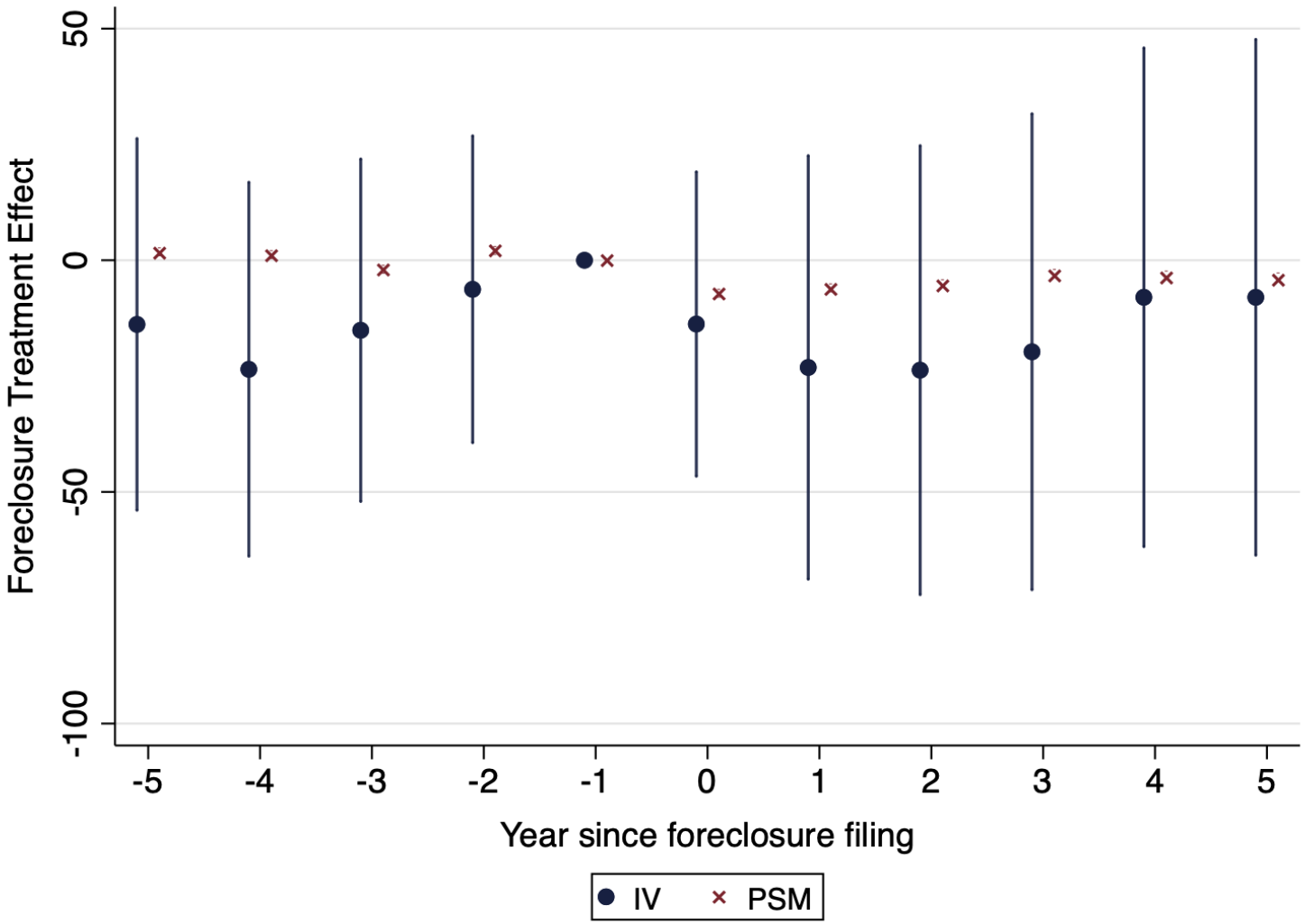
Credit Data: Foreclosure

Effect for PSM not IV; credit report flag only loosely correlated with actual foreclosure



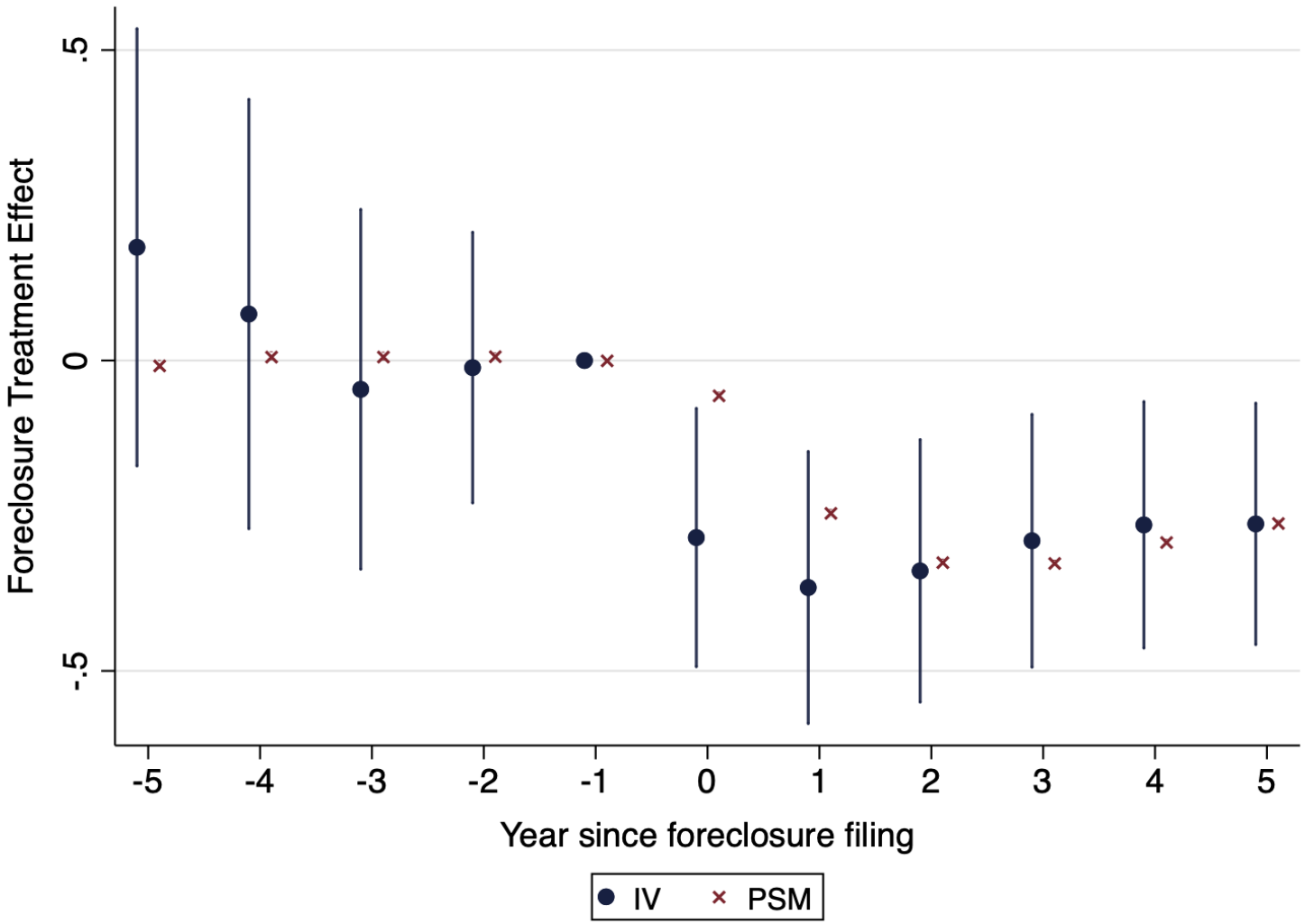
Credit Data: Credit Score

No sizable effect on credit score



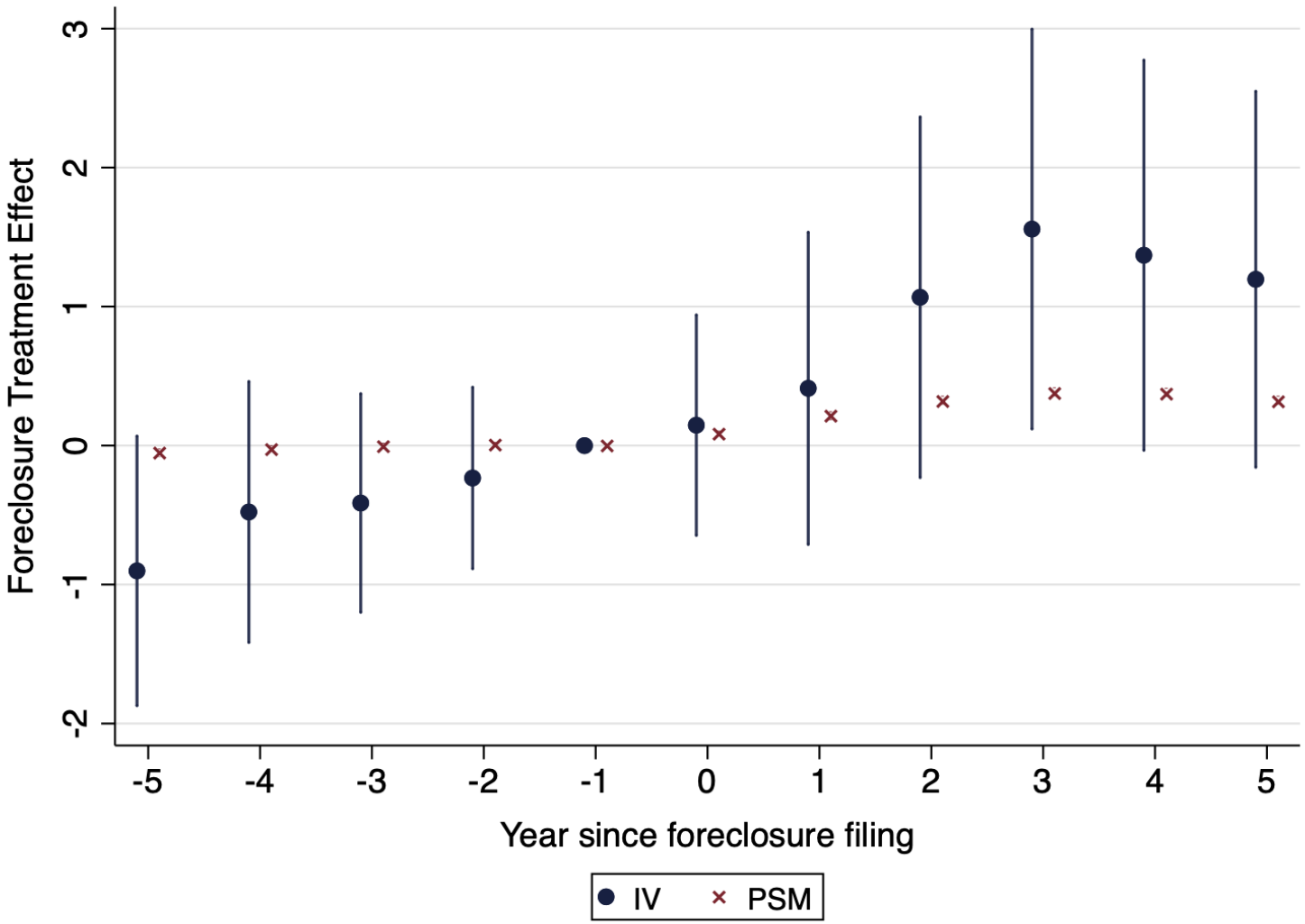
Credit Data: Number of Mortgages

See 0.3 fewer outstanding mortgages by years 3-4



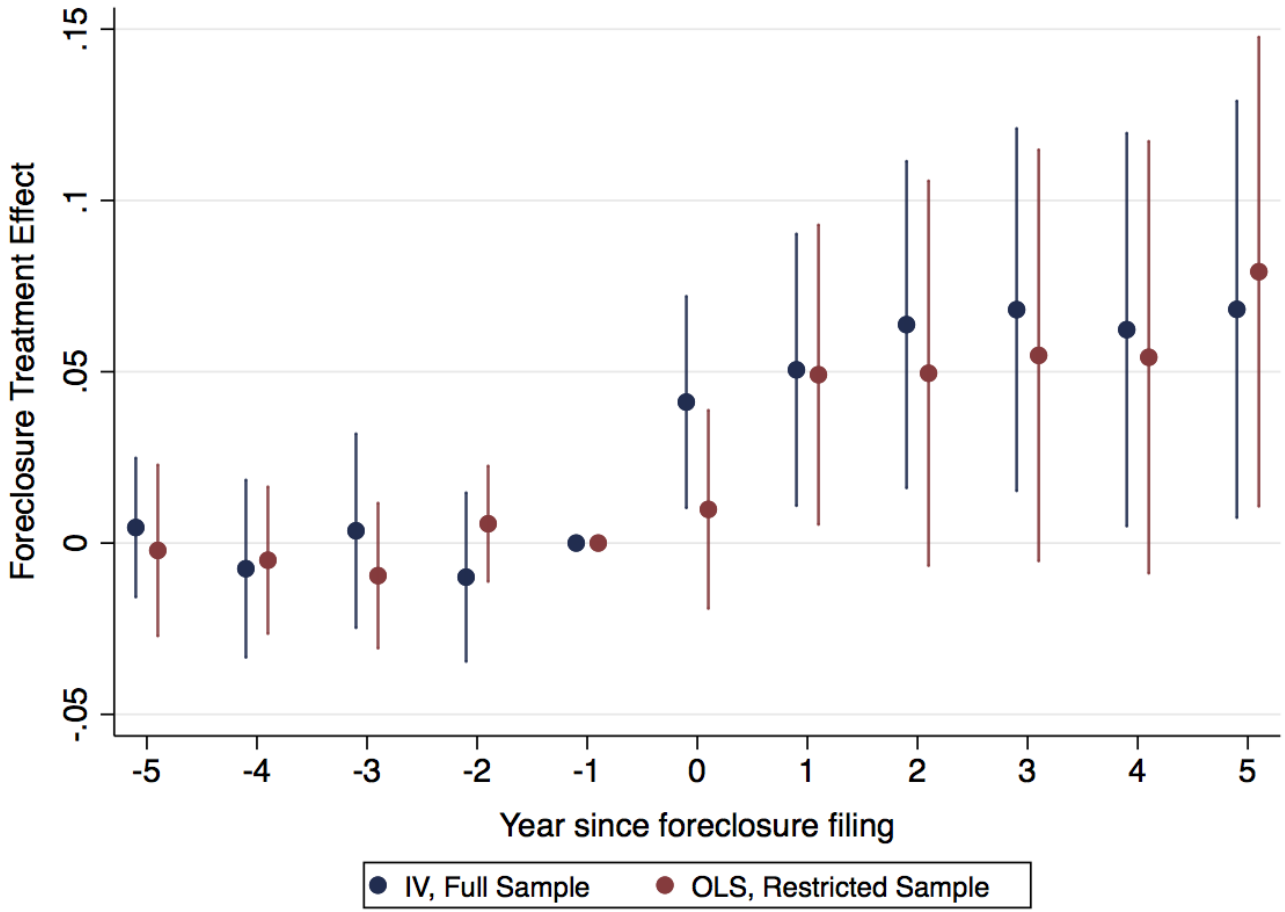
Credit Data: Number of Unpaid Collections

Default on non-collateralized loans; suggests greater financial distress



IV vs. PSM: Number of Unpaid Collections

IV for population similar to OLS for low credit score, mortgage size, ZIP income



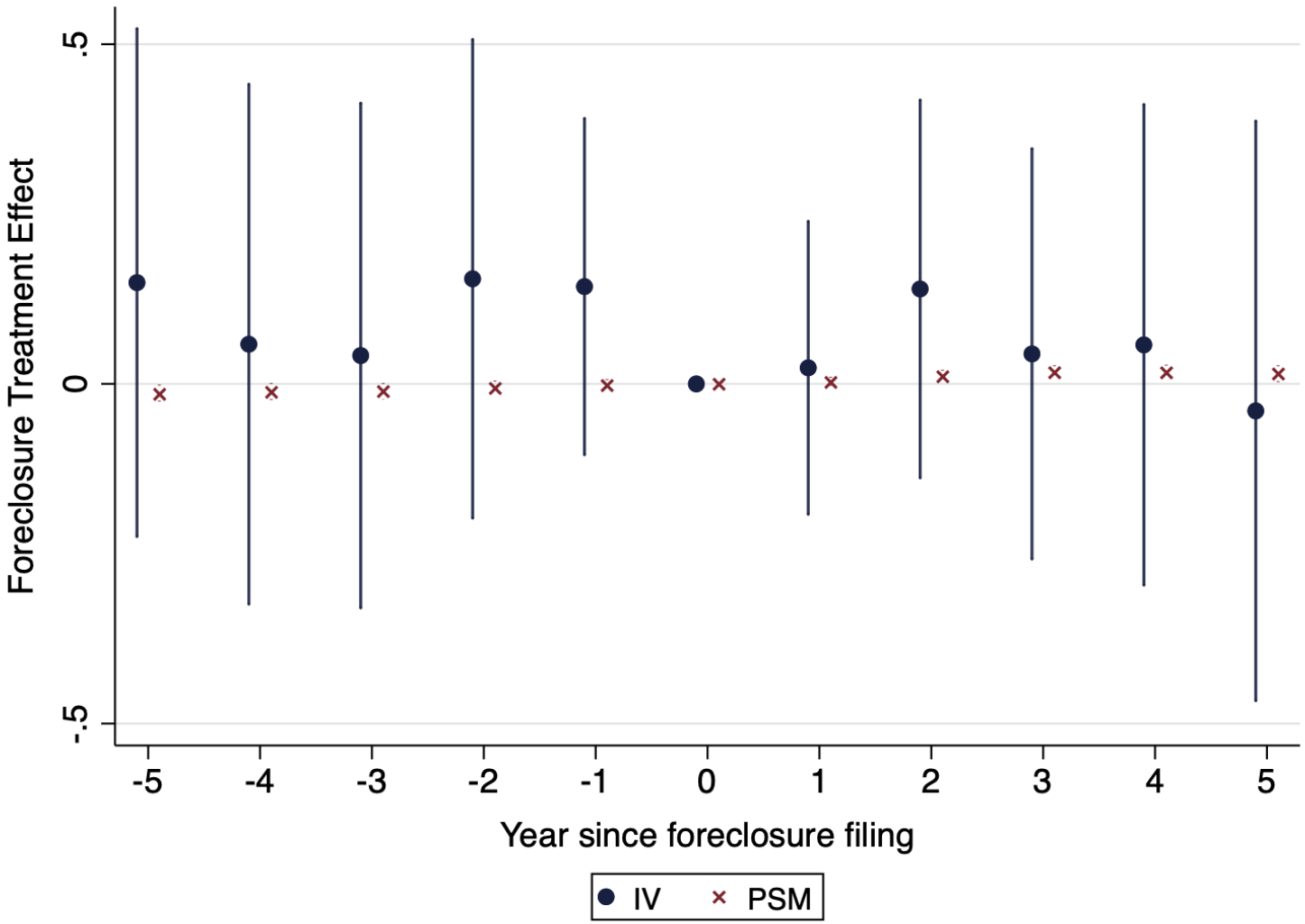
Owners: Summary

- Significant non-pecuniary costs of foreclosure for owners
- Marginal and average owners (IV and PSM) move, move to less stable housing, less likely to own, increased financial stability, but no smaller homes
- Marginal owners (IV) move to worse neighborhoods and have higher divorce rates
    - IV and PSM differences due to treatment effect heterogeneity

Landlords

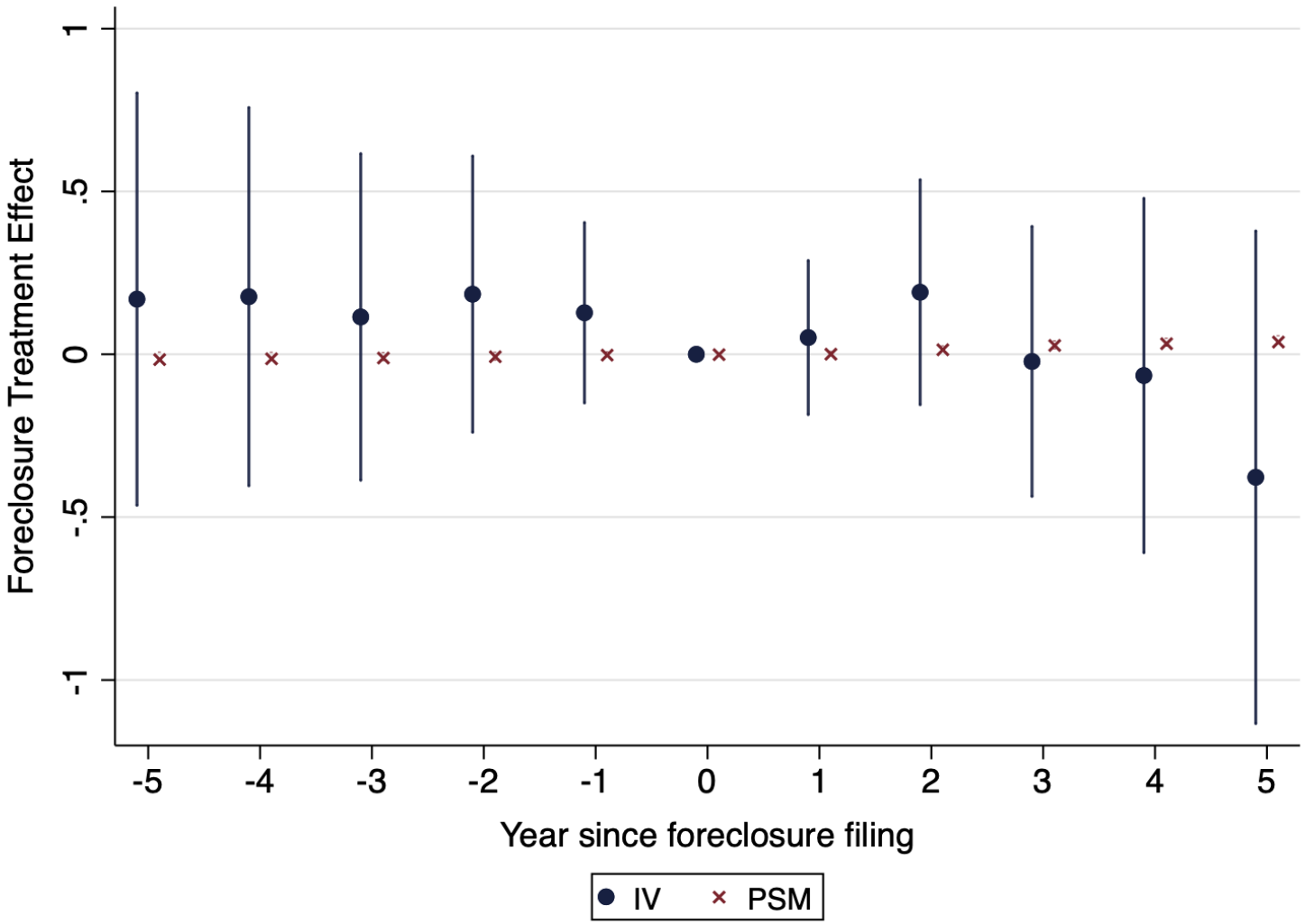
Moved From Foreclosure Address

Landlords not more likely to move



Neighborhood Average Income

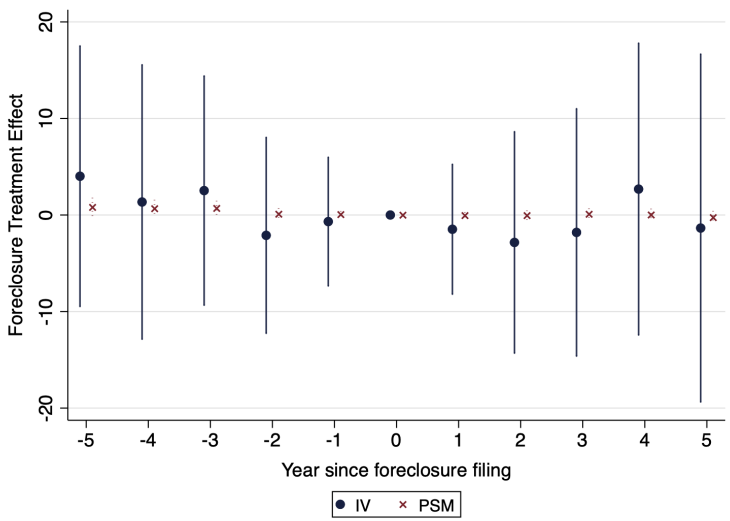
Very little



School Quality

Modestly middle school quality for IV

Elementary School Test Scores



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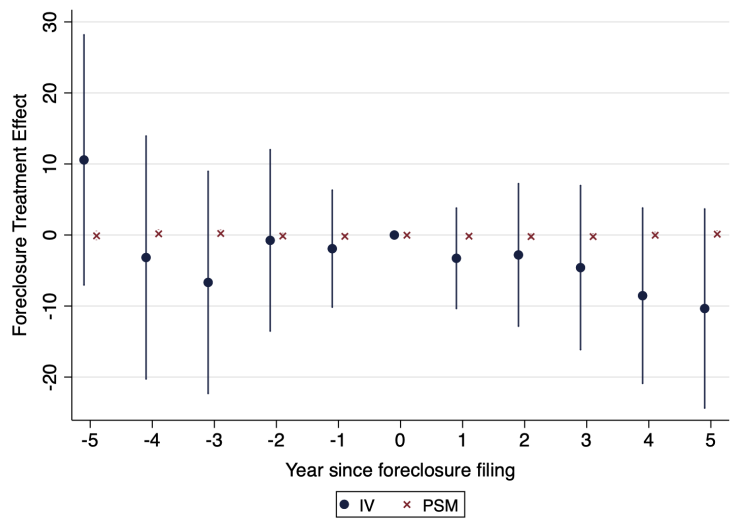
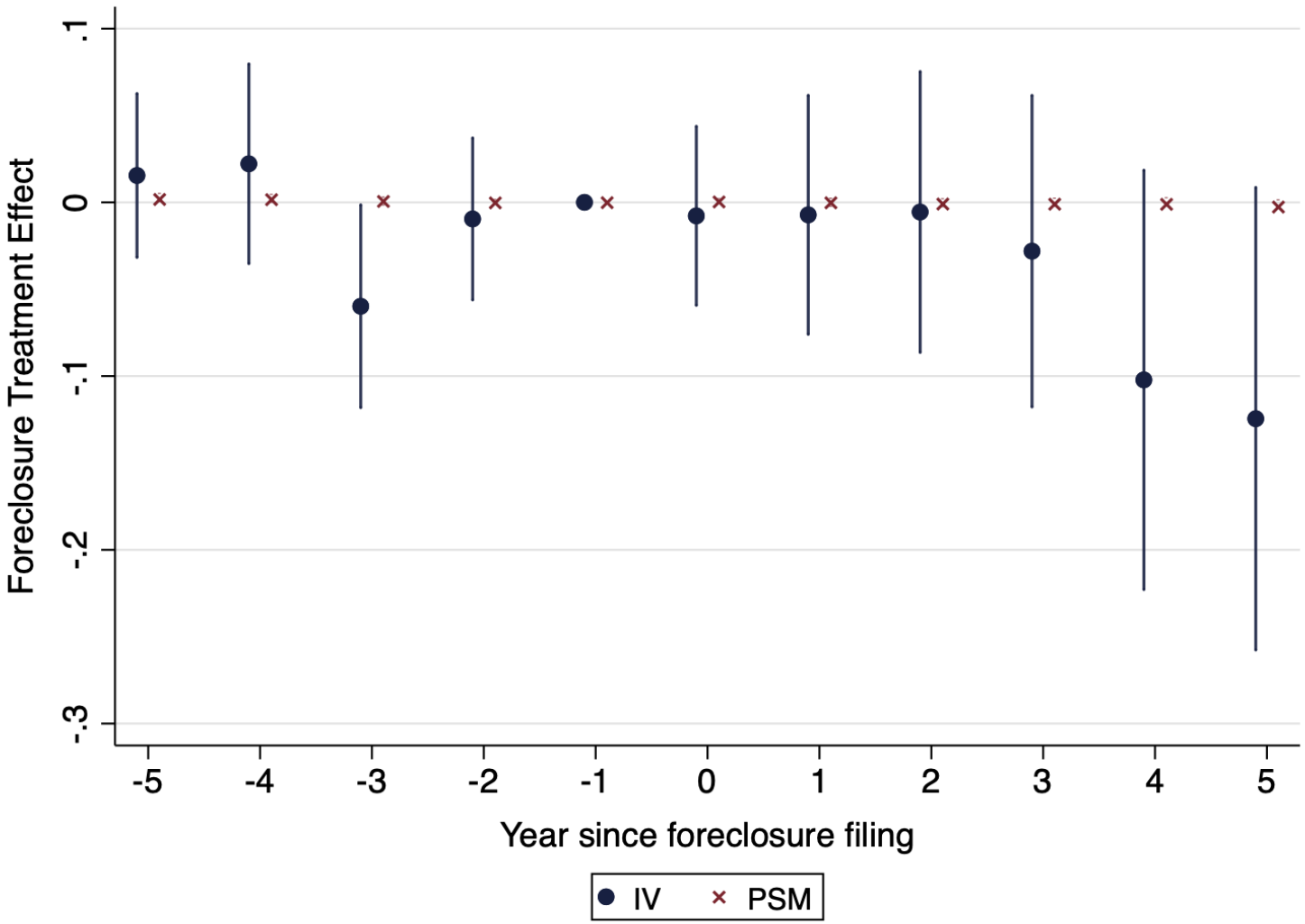


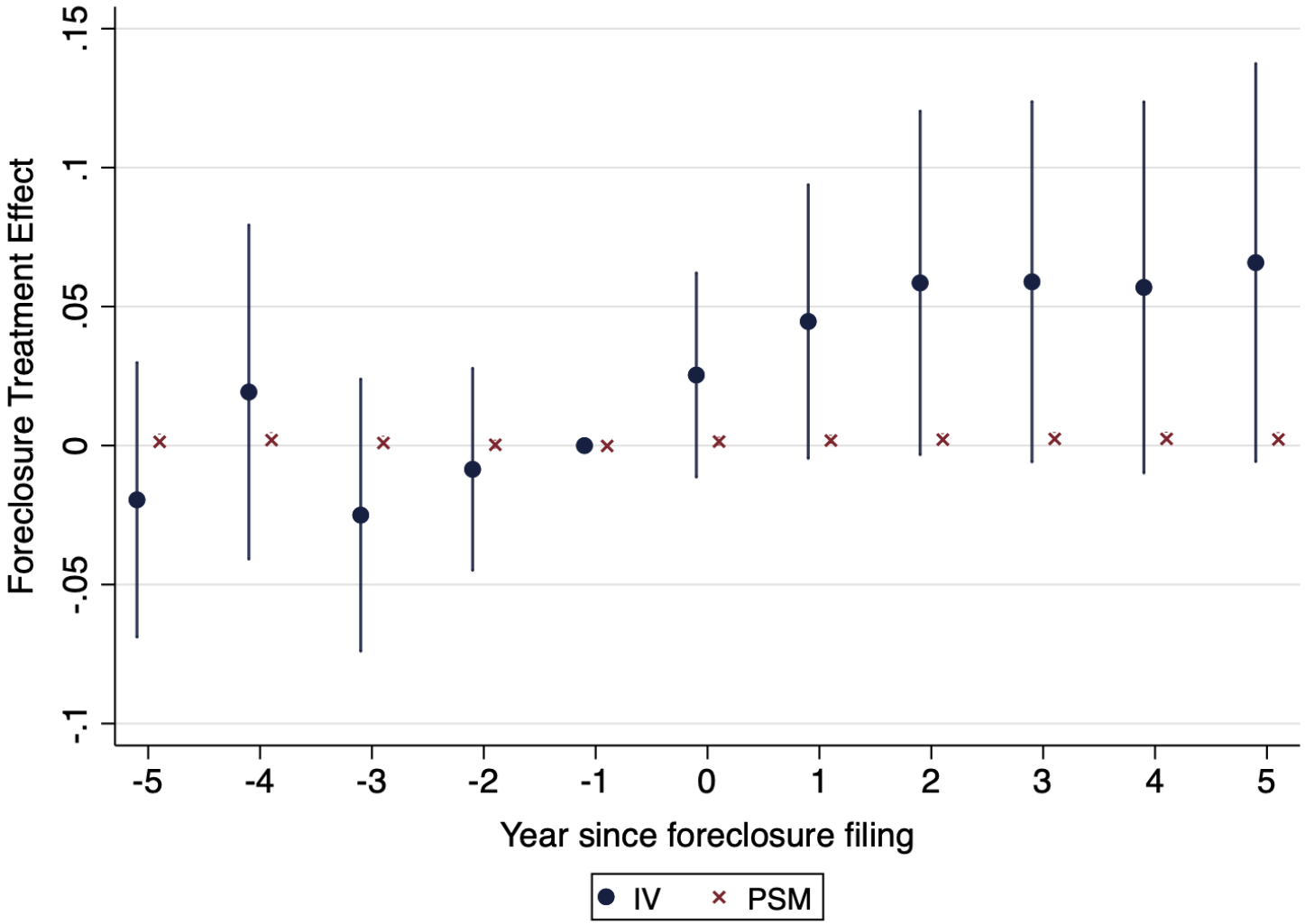
Cumulative Number of Divorces

Fewer IV divorces for landlords, nothing for PSM



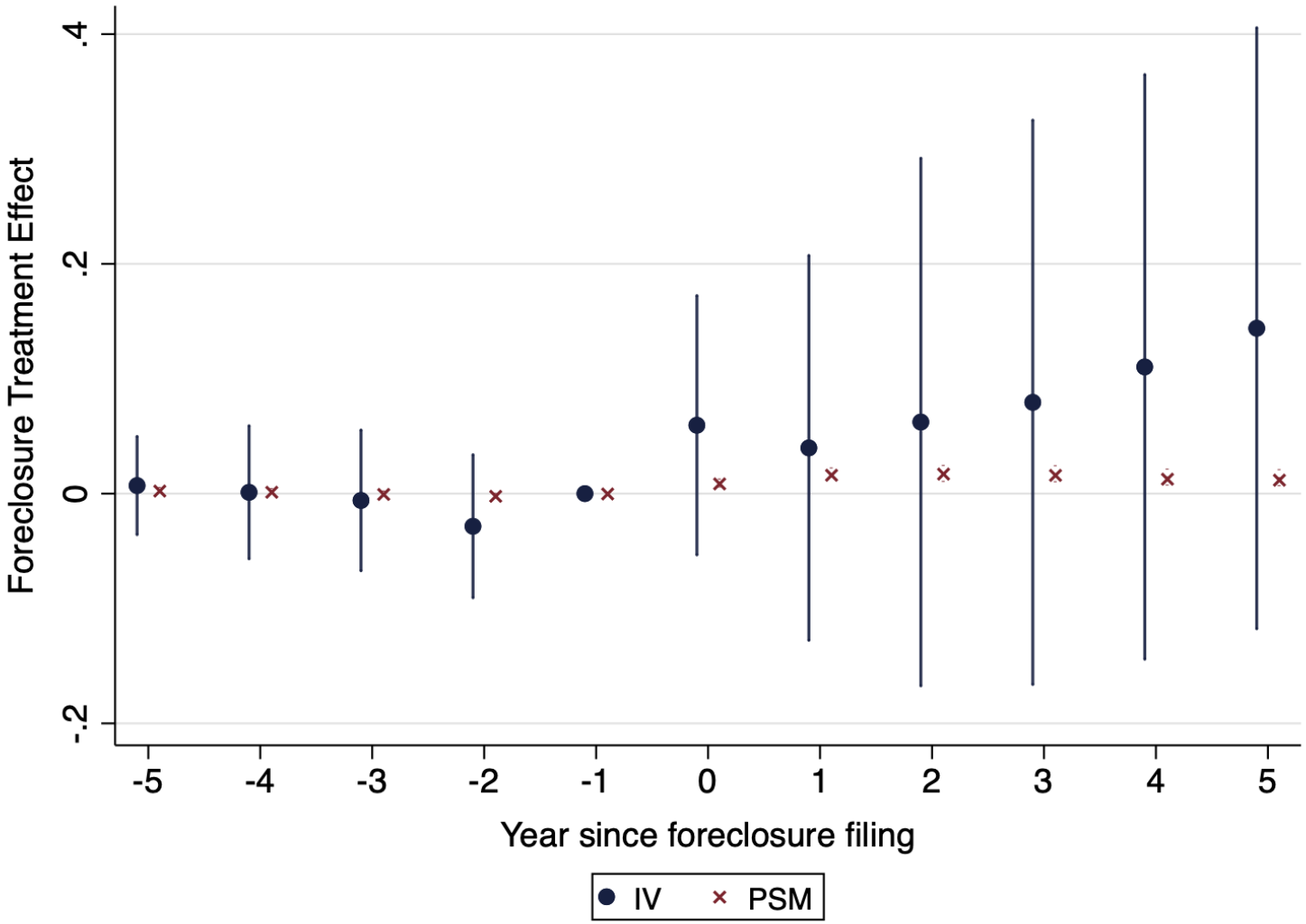
Cumulative Number of DUIs

Do see landlords being convicted of DUIs



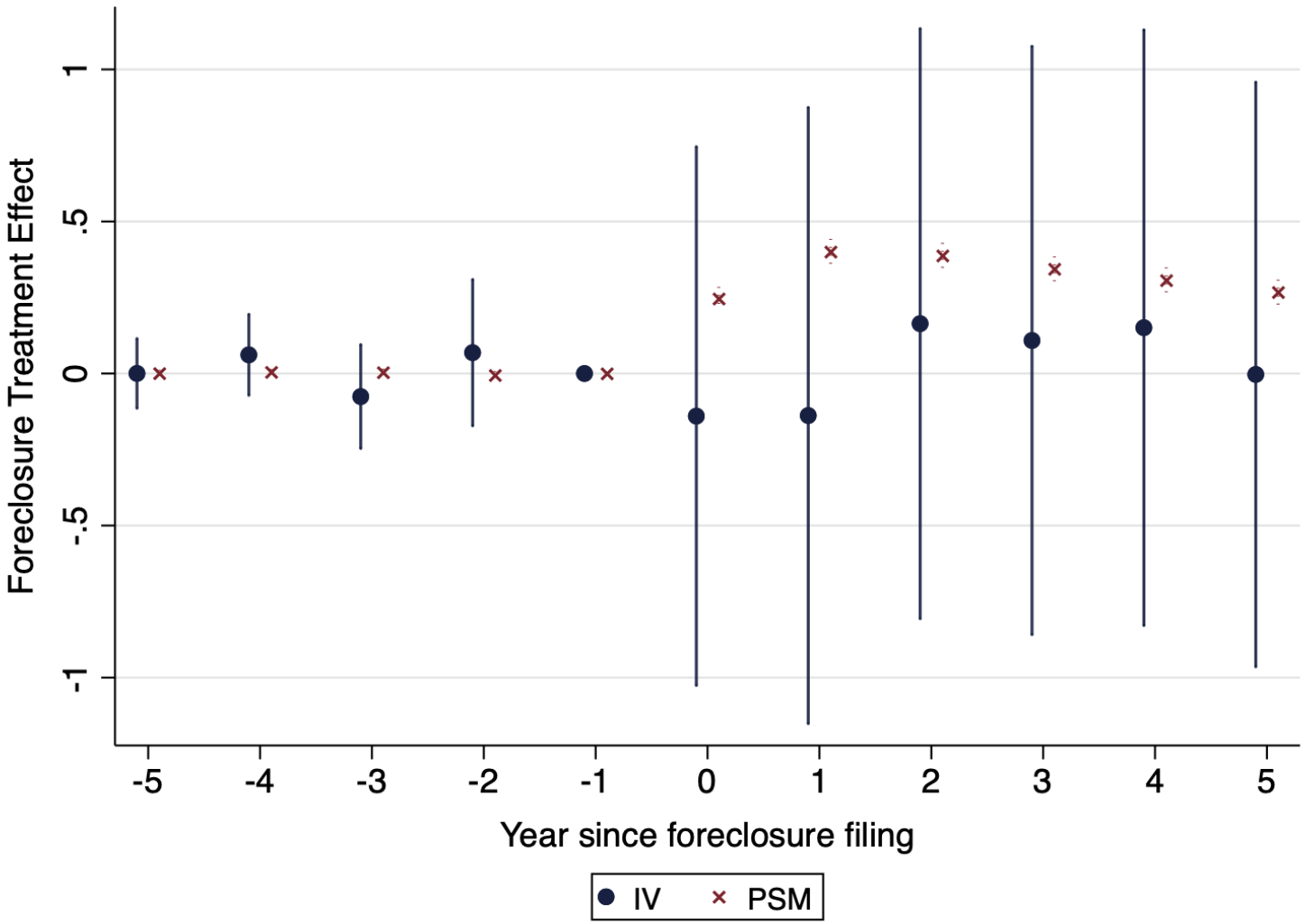
Cumulative Number of Bankruptcies

Landlords have more bankruptcies, but insignificant



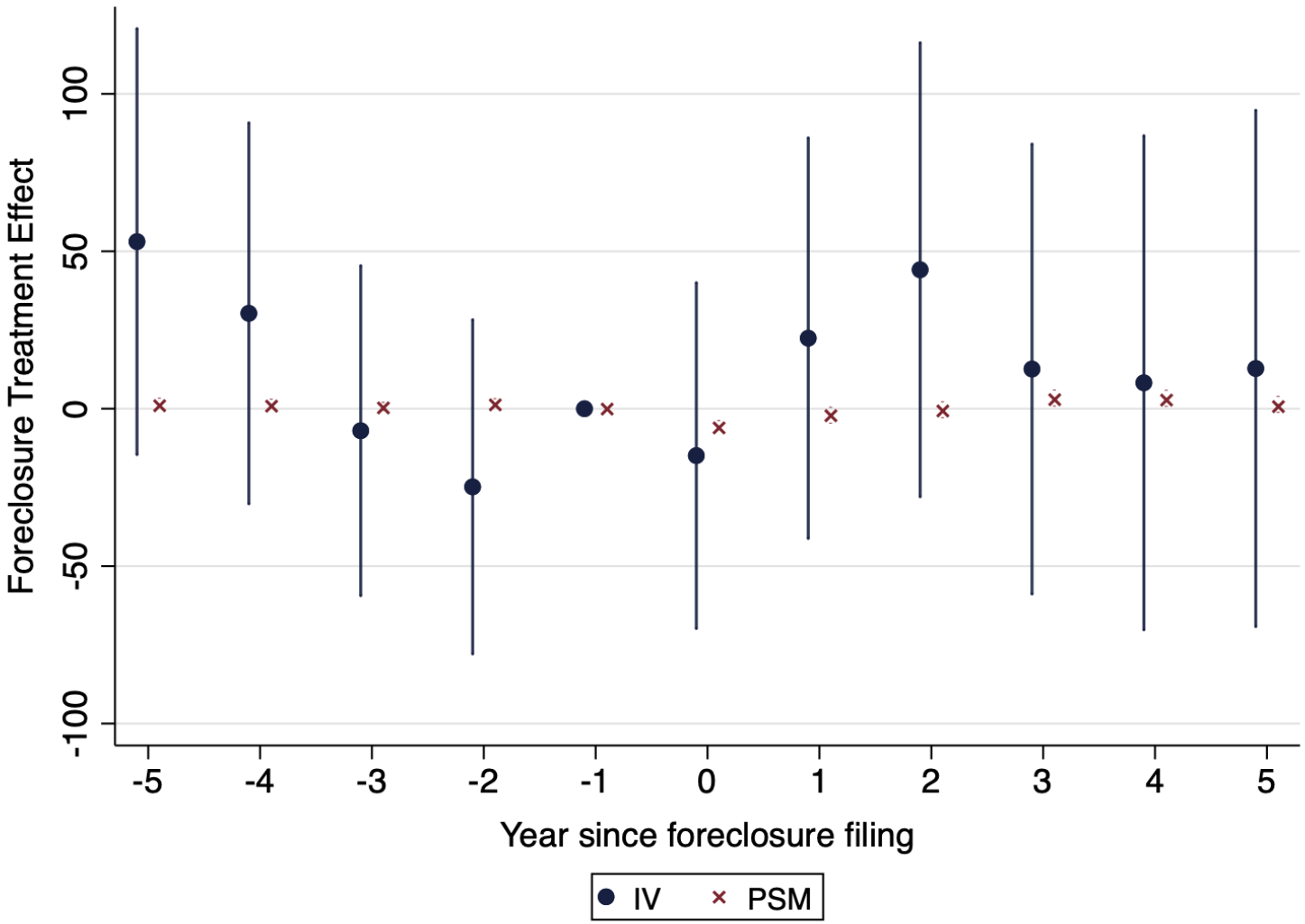
Credit Data: Foreclosure

Similar effect for owners



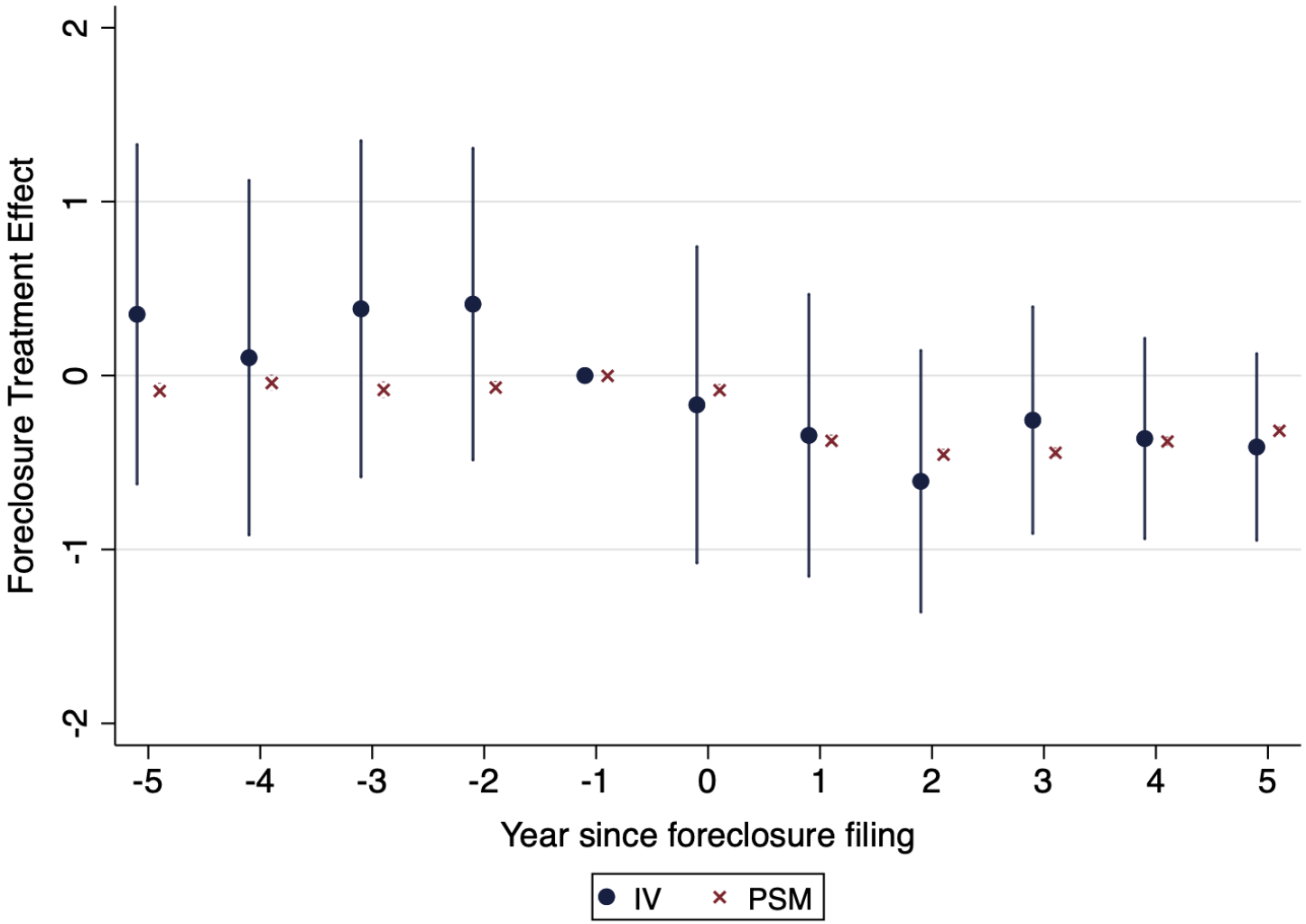
Credit Data: Credit Score

No effect on credit score



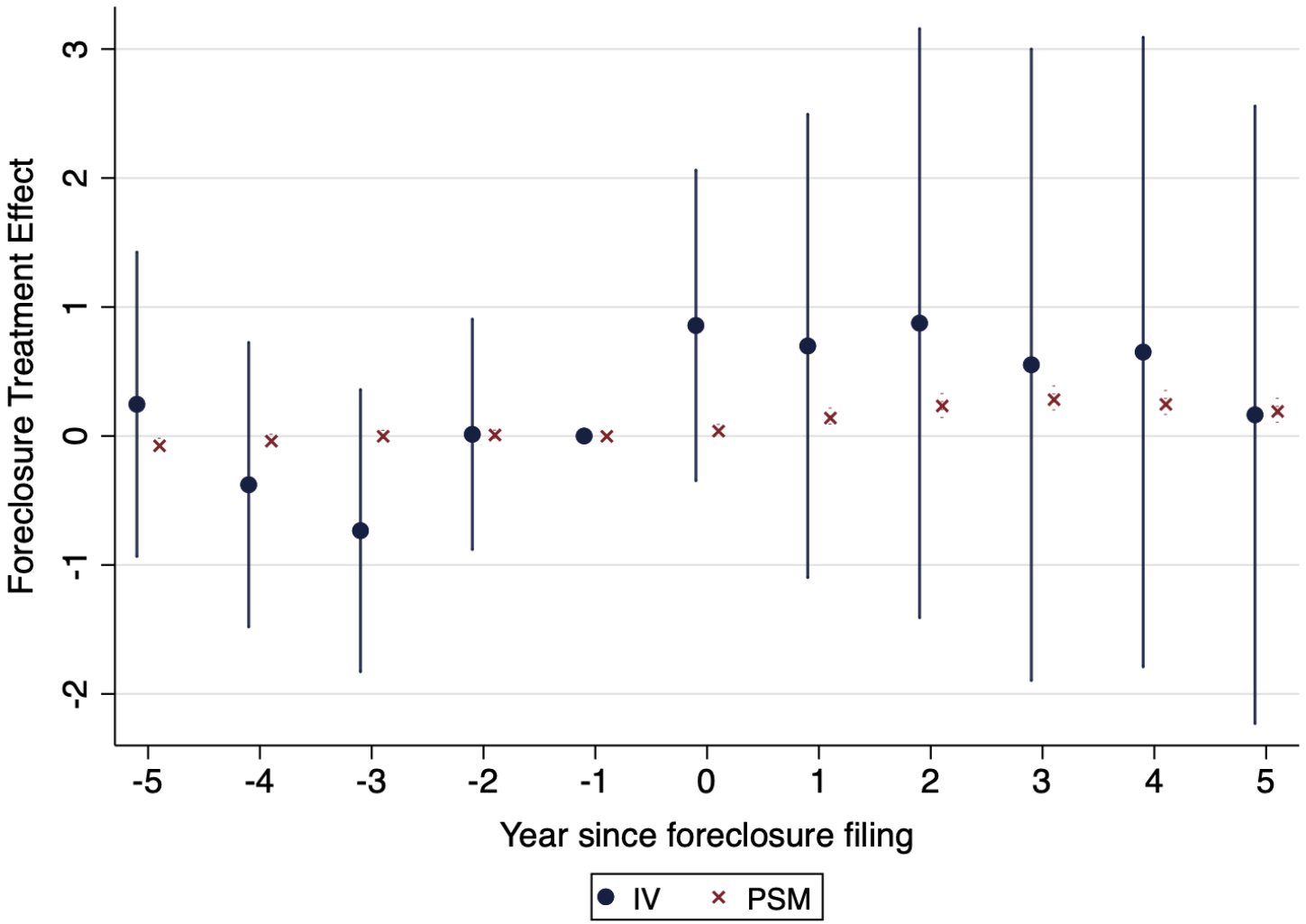
Credit Data: Number of Mortgages

Larger PSM effect than for owners; suggests multiple foreclosures



Credit Data: Number of Unpaid Collections

Smaller rise than for owners for PSM, IV noisy



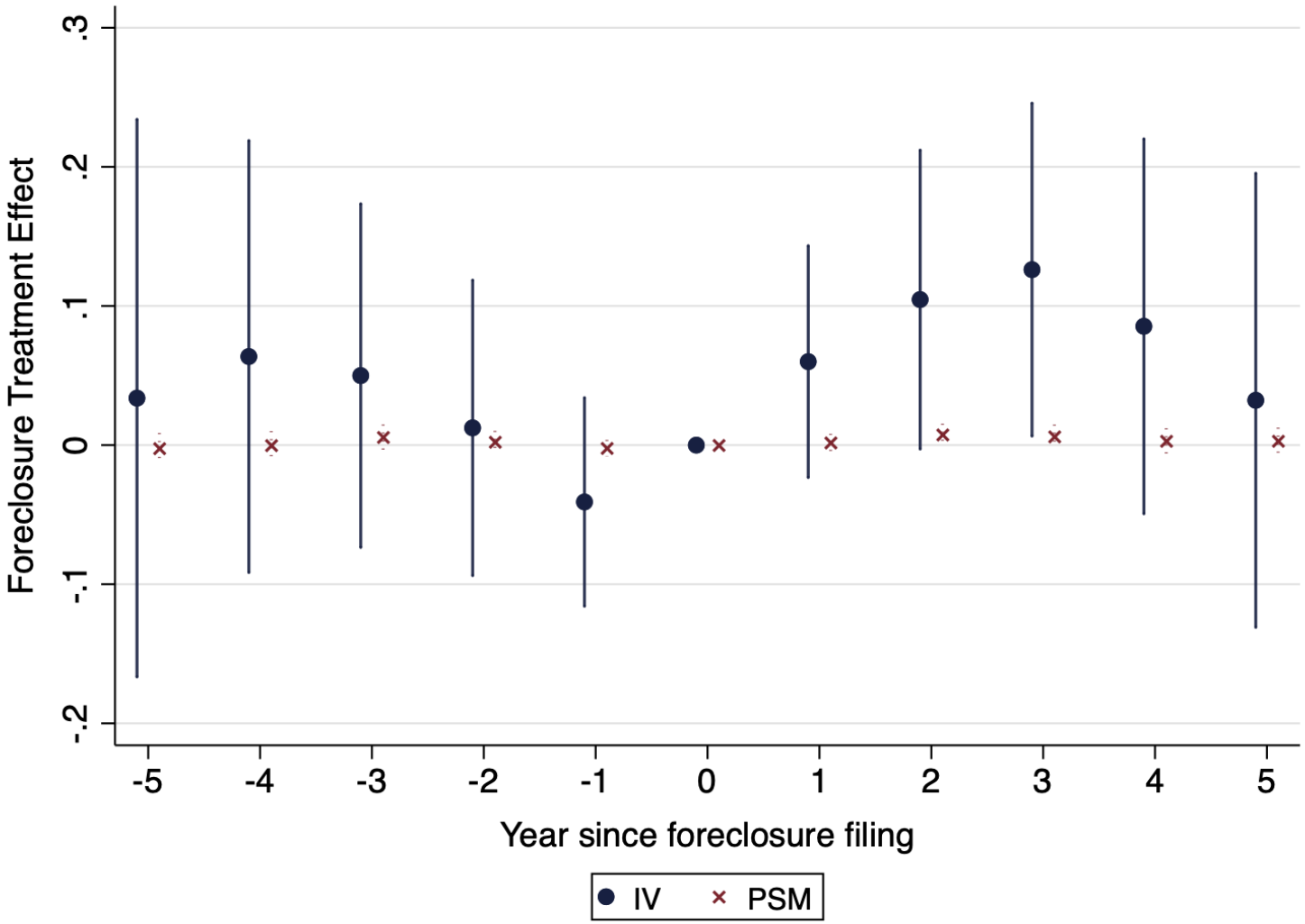
Landlords: Summary

- More benign effects than for owners except for financial outcomes
- Points to mechanisms
  - Owners and landlords both experience financial loss and possible credit loss (though not through credit score)
  - Suggests negative financial outcomes for owners is due to financial/credit loss, but not not non-financial outcomes

Renters

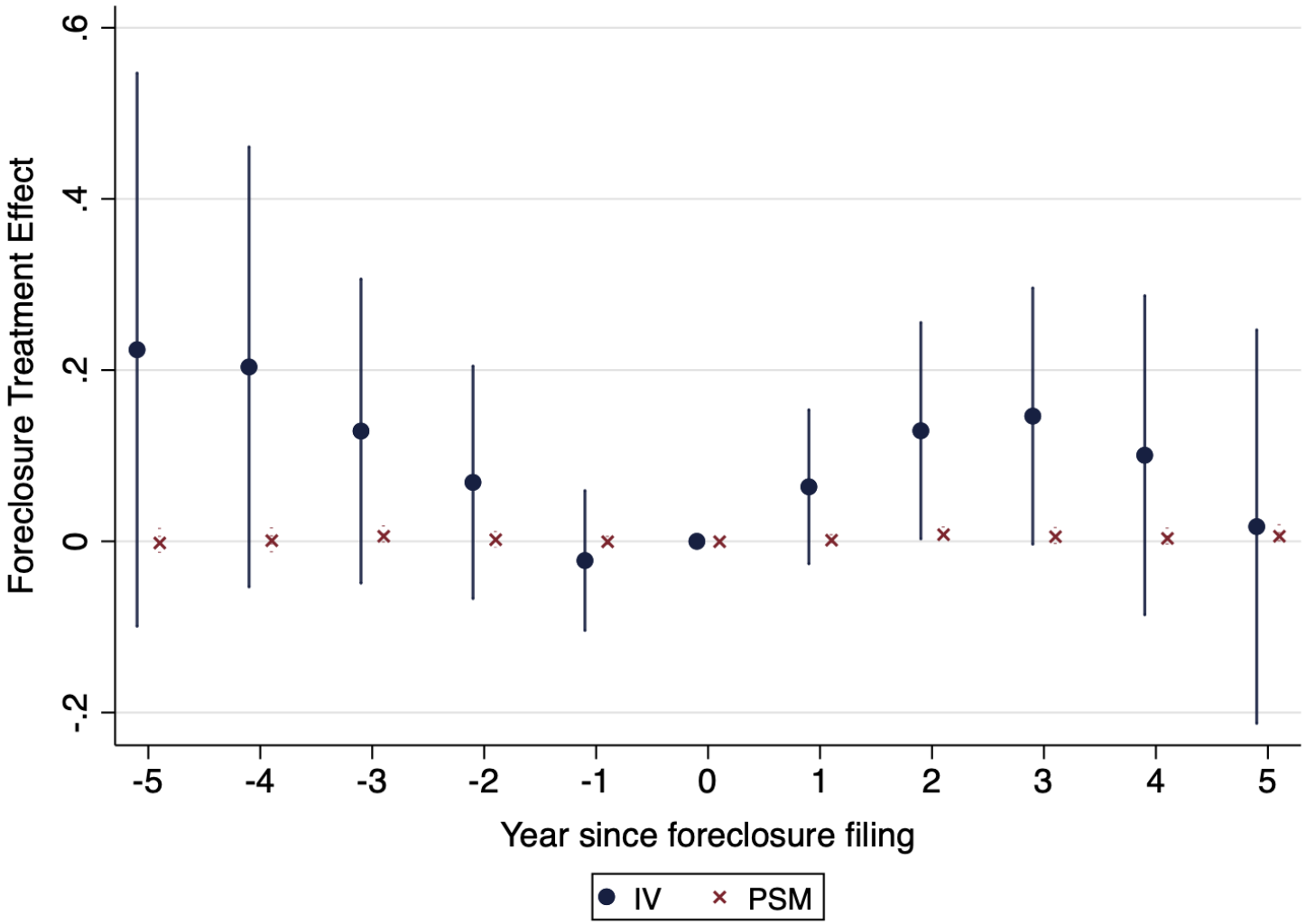
Moved from Foreclosure Address

FC causes smaller eviction effect (12.6%) for IV, not OLS; appears landlords less likely to evict in marginal cases if avoid FC



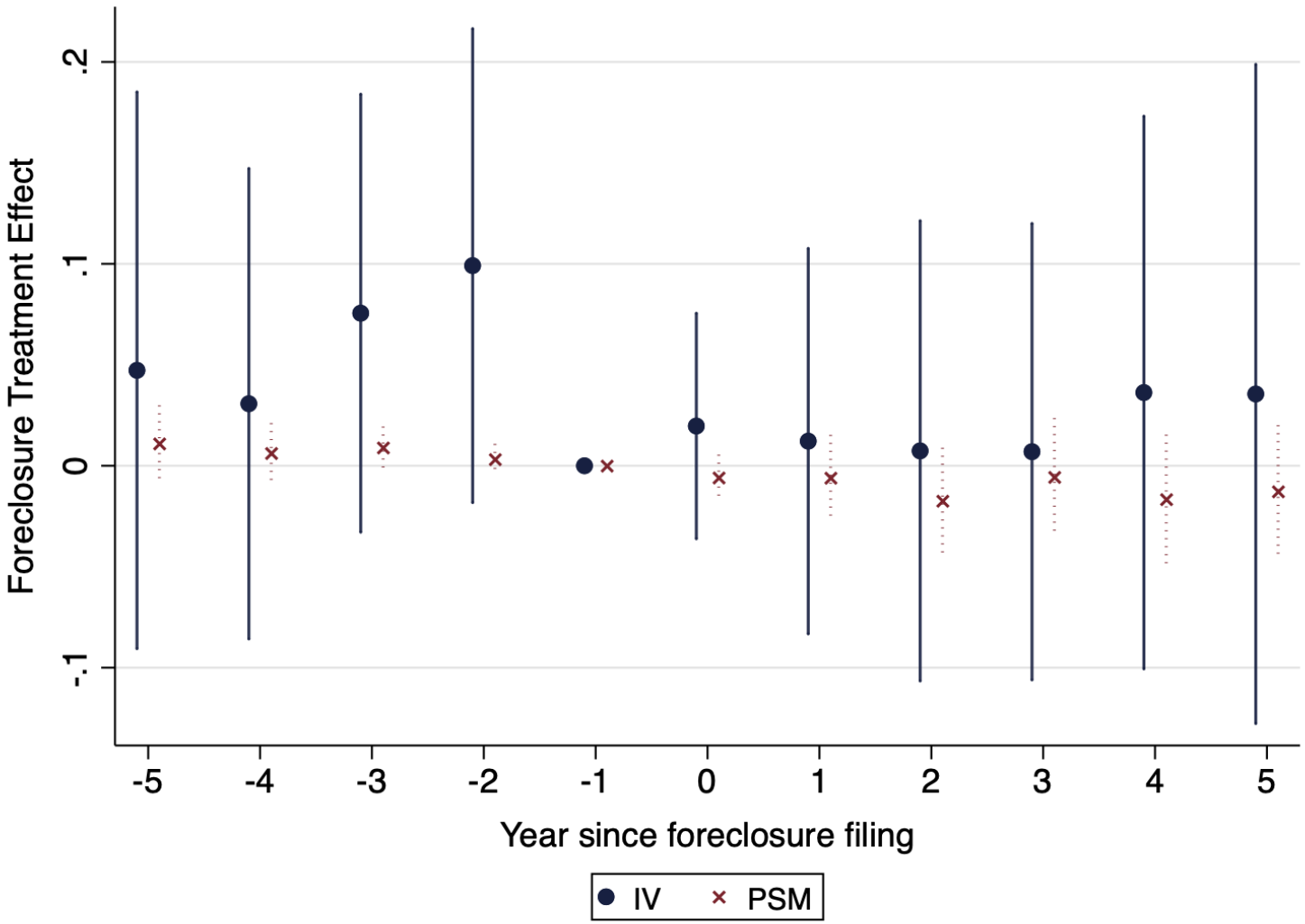
Cumulative Number of Moves

Not significantly different from moves → less instability



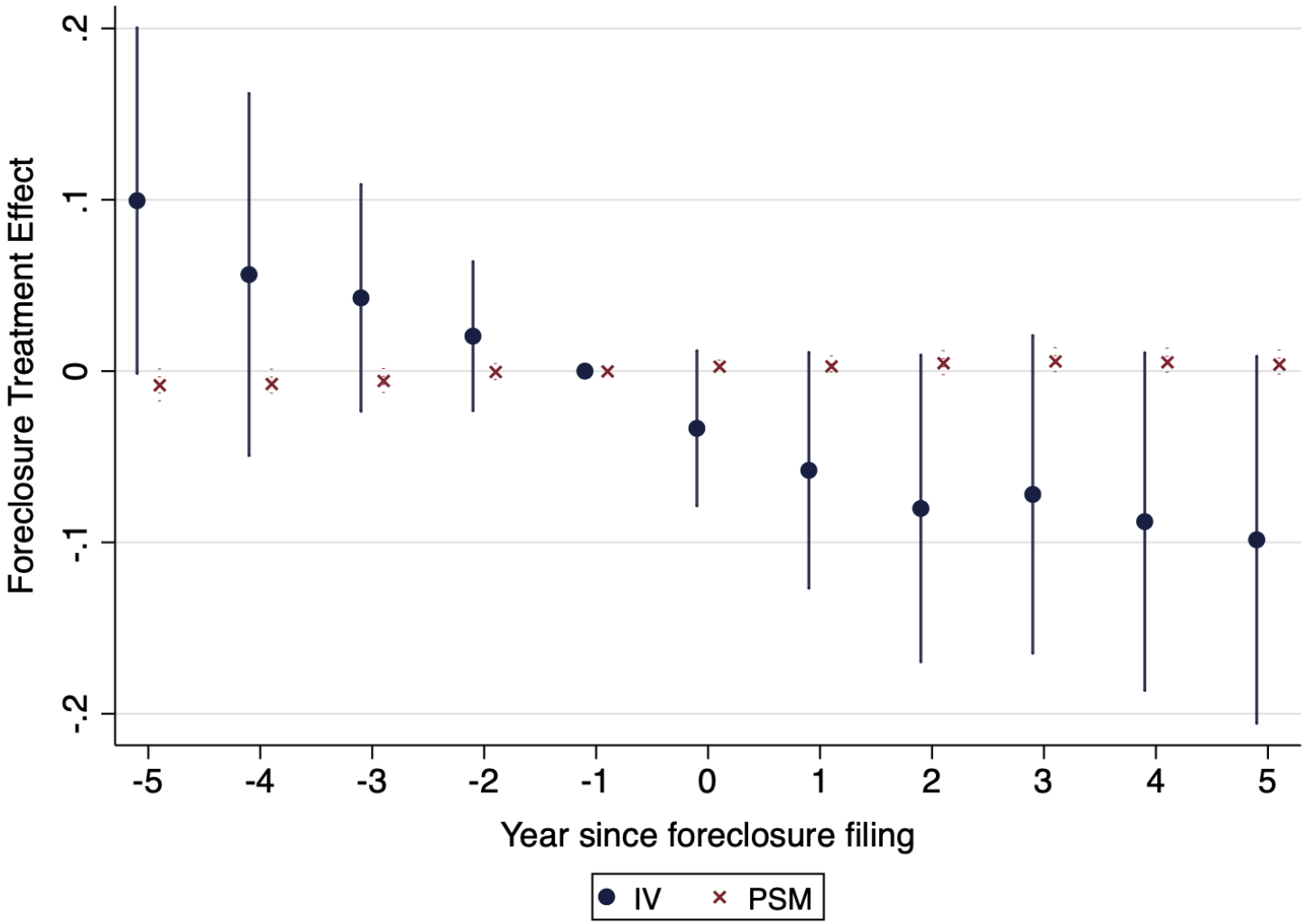
Owns Home

No effect on homeownership



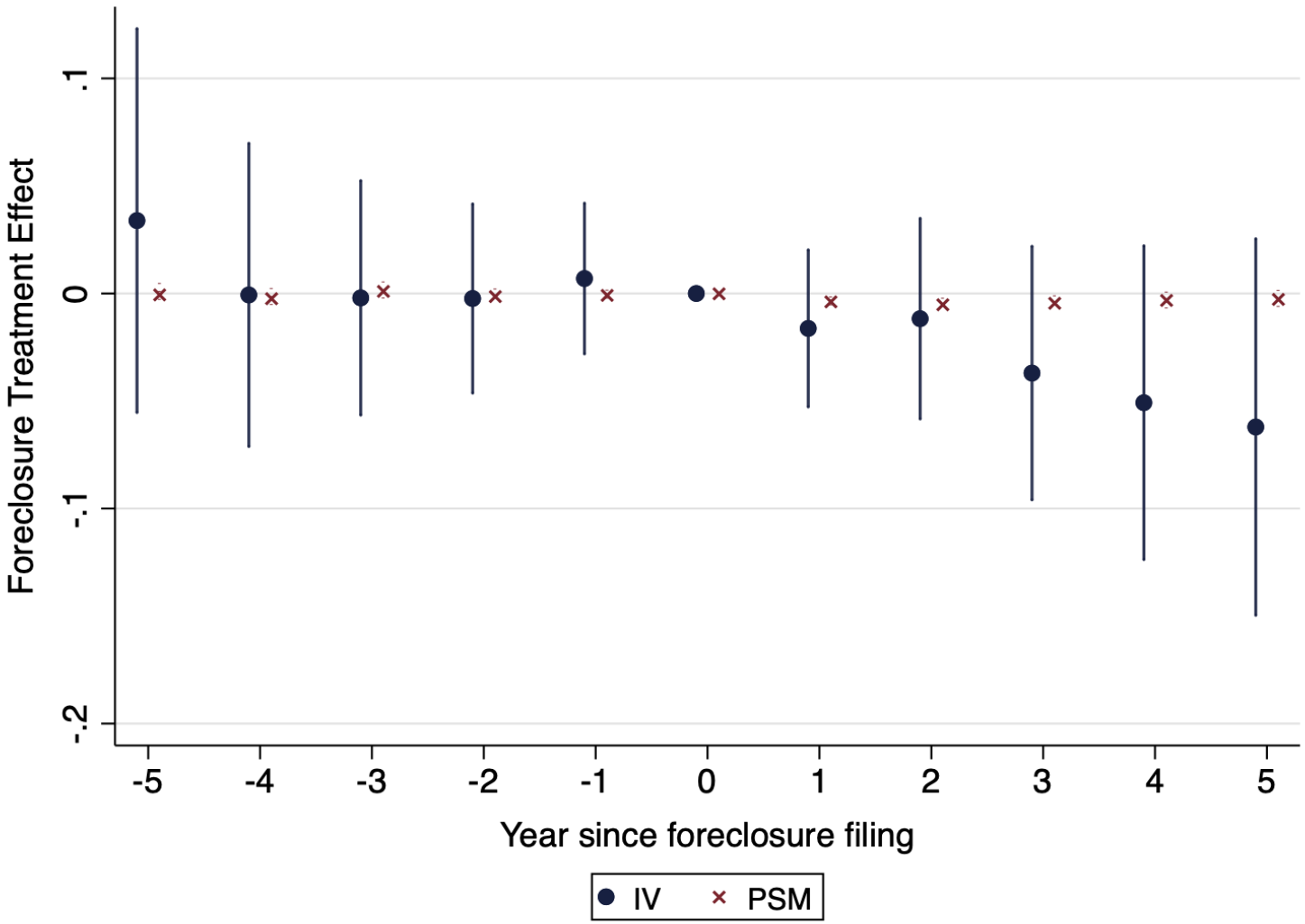
Log Square Footage of Residence

No effect on square footage



Neighborhood Average Income

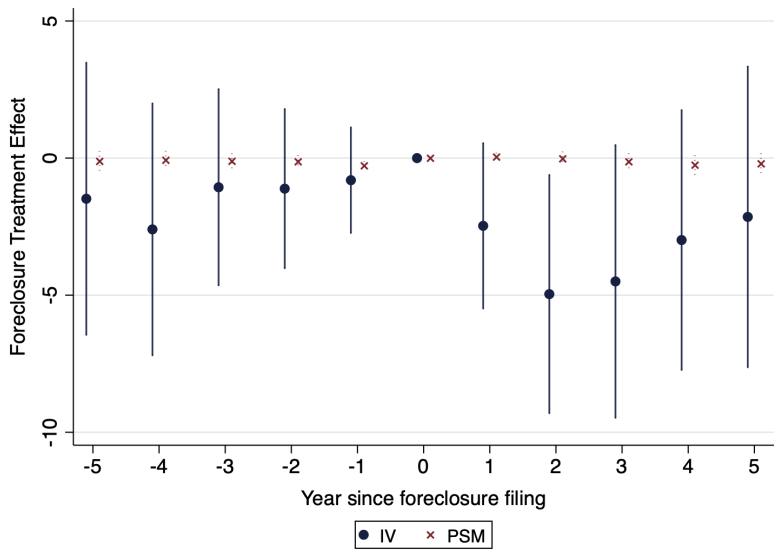
Smaller and insignificant IV effect on neighborhood income



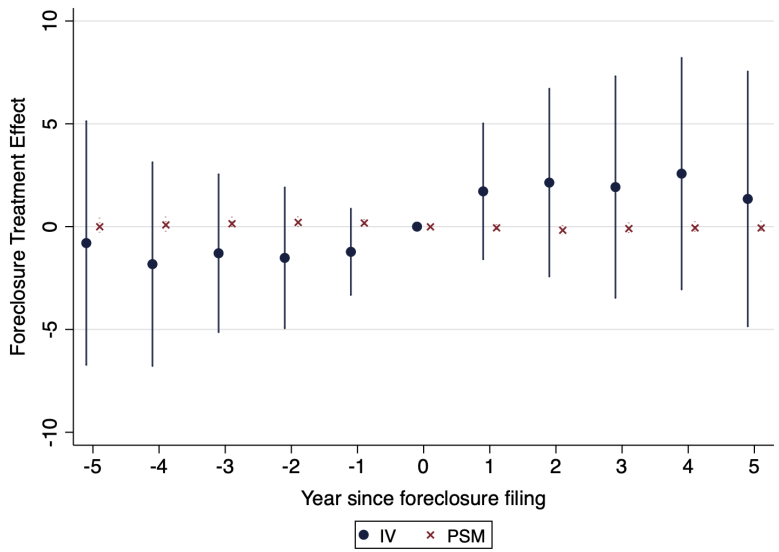
School Quality

Do see worse elementary schools in short term for IV not PSM

Elementary School Test Scores

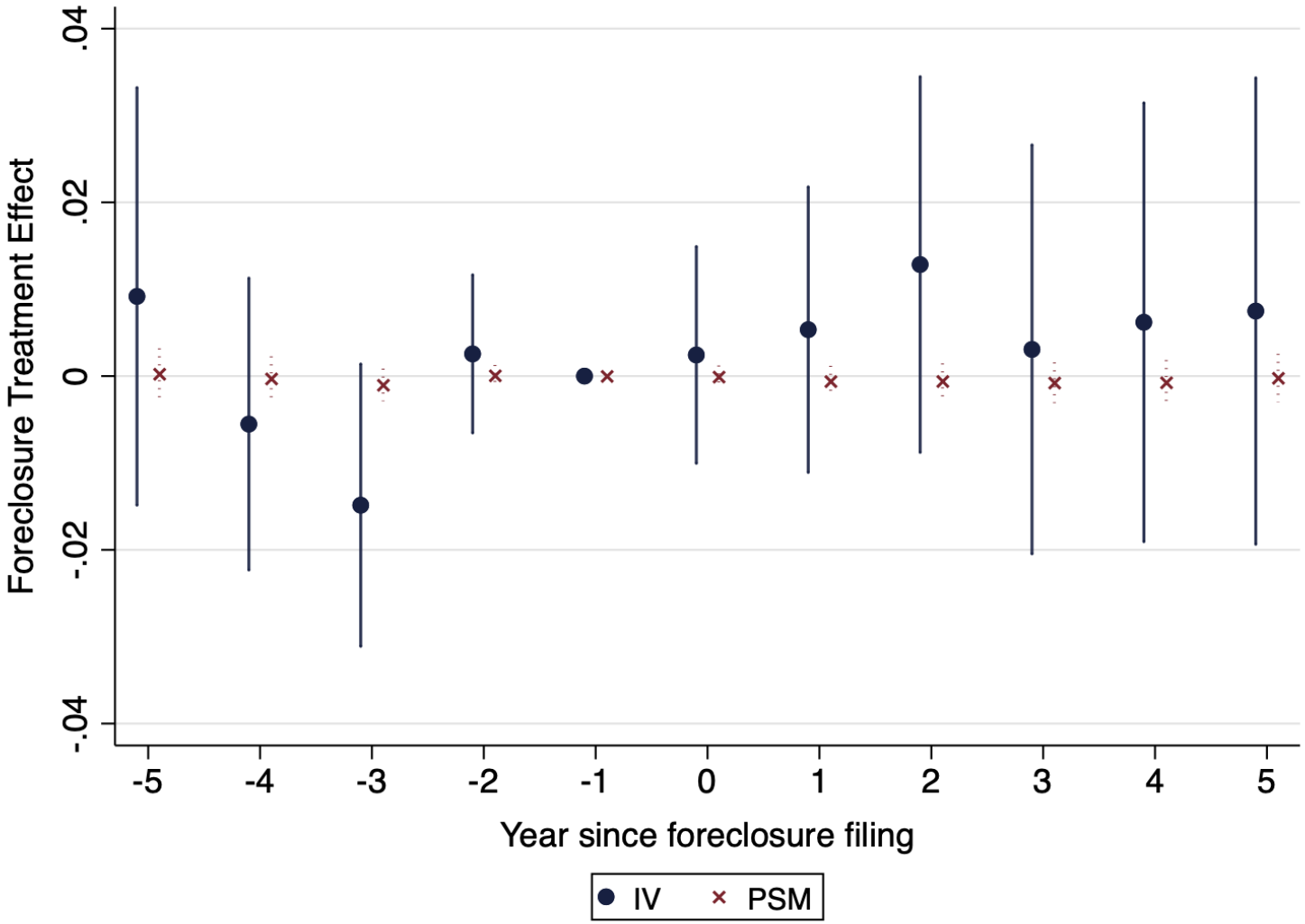


Middle School Test Scores

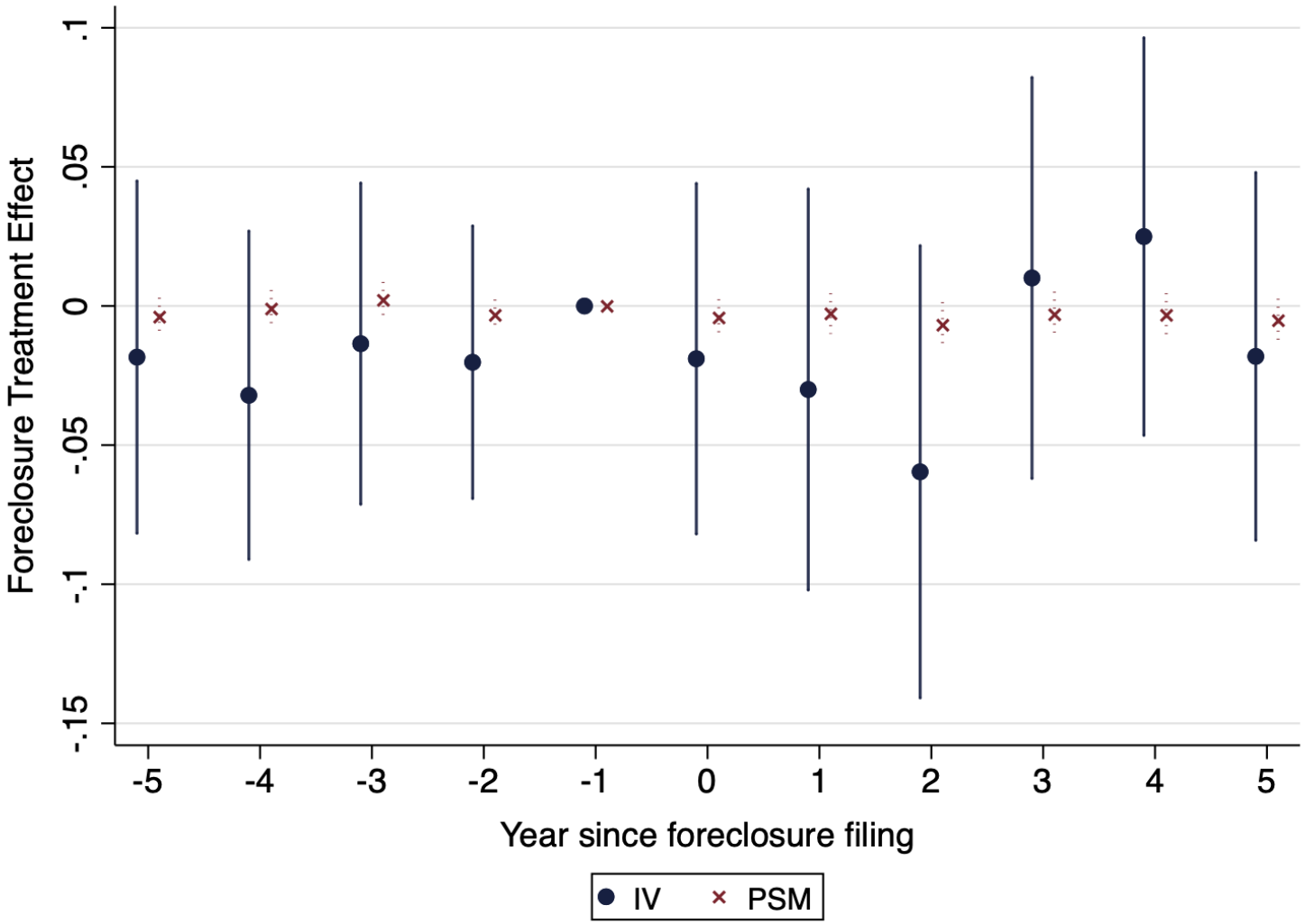


Cumulative Number of Divorces

No divorce effect

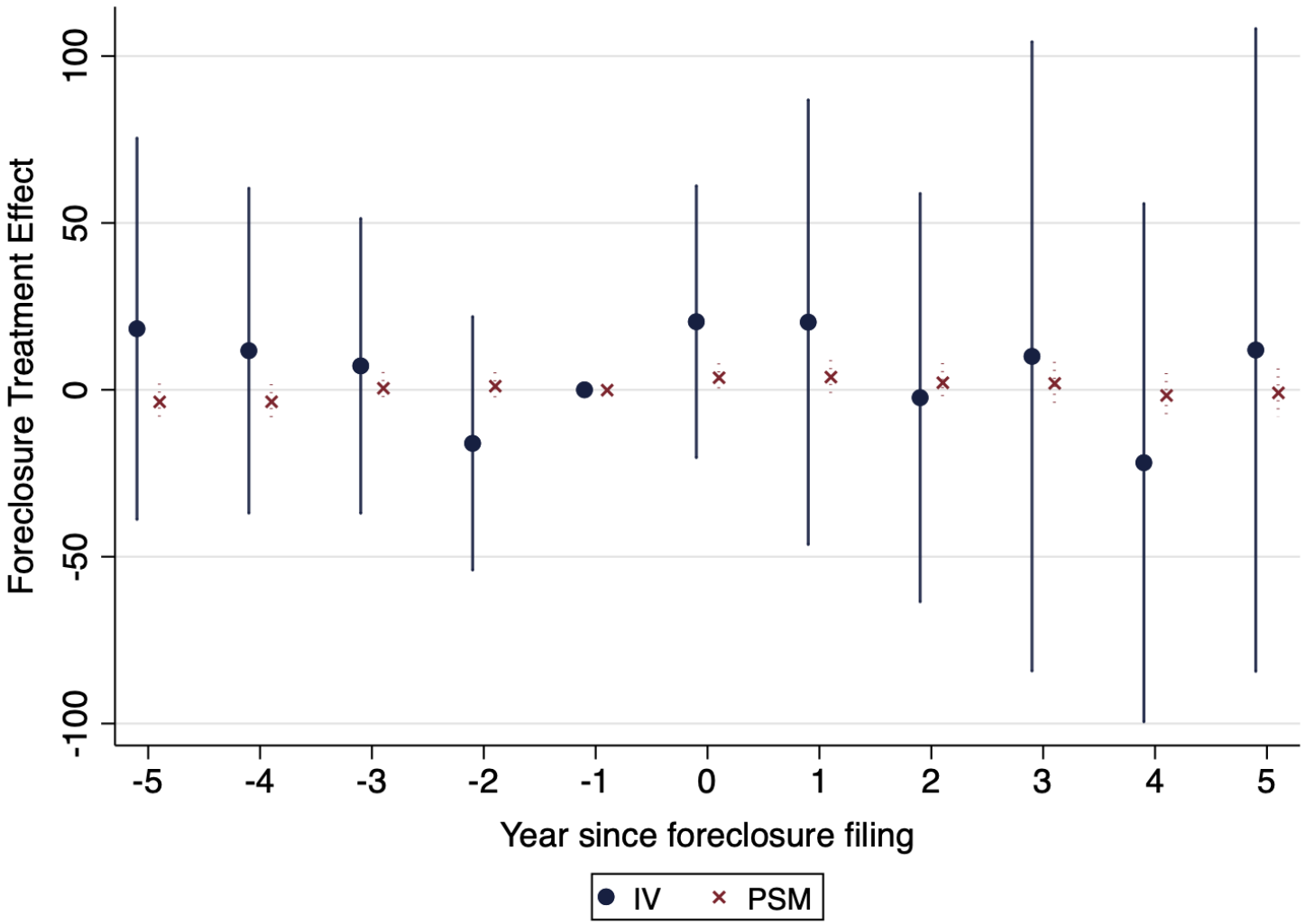


Credit Data: Foreclosure

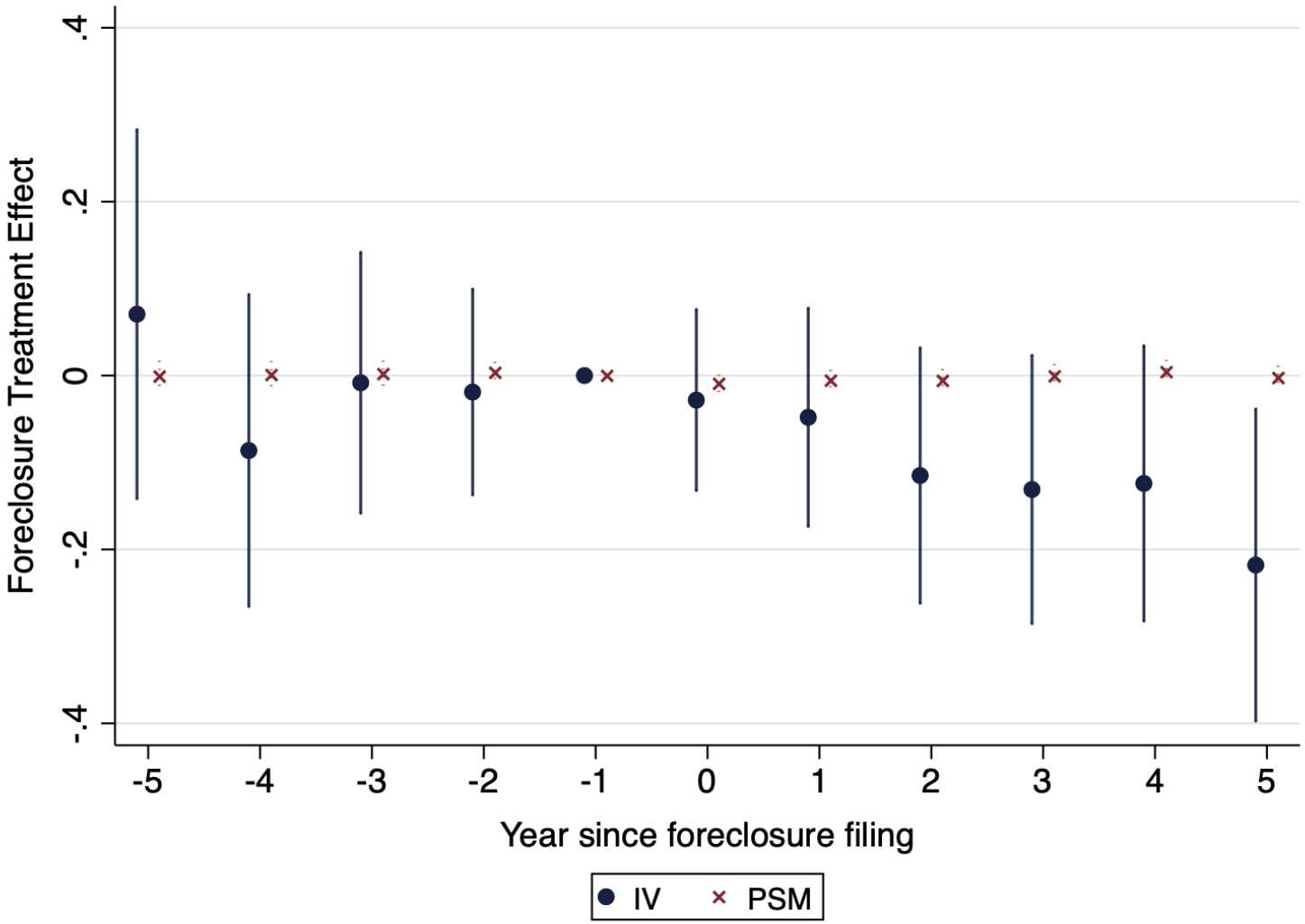


Credit Data: Credit Score

Small positive effect in year 1, nothing beyond

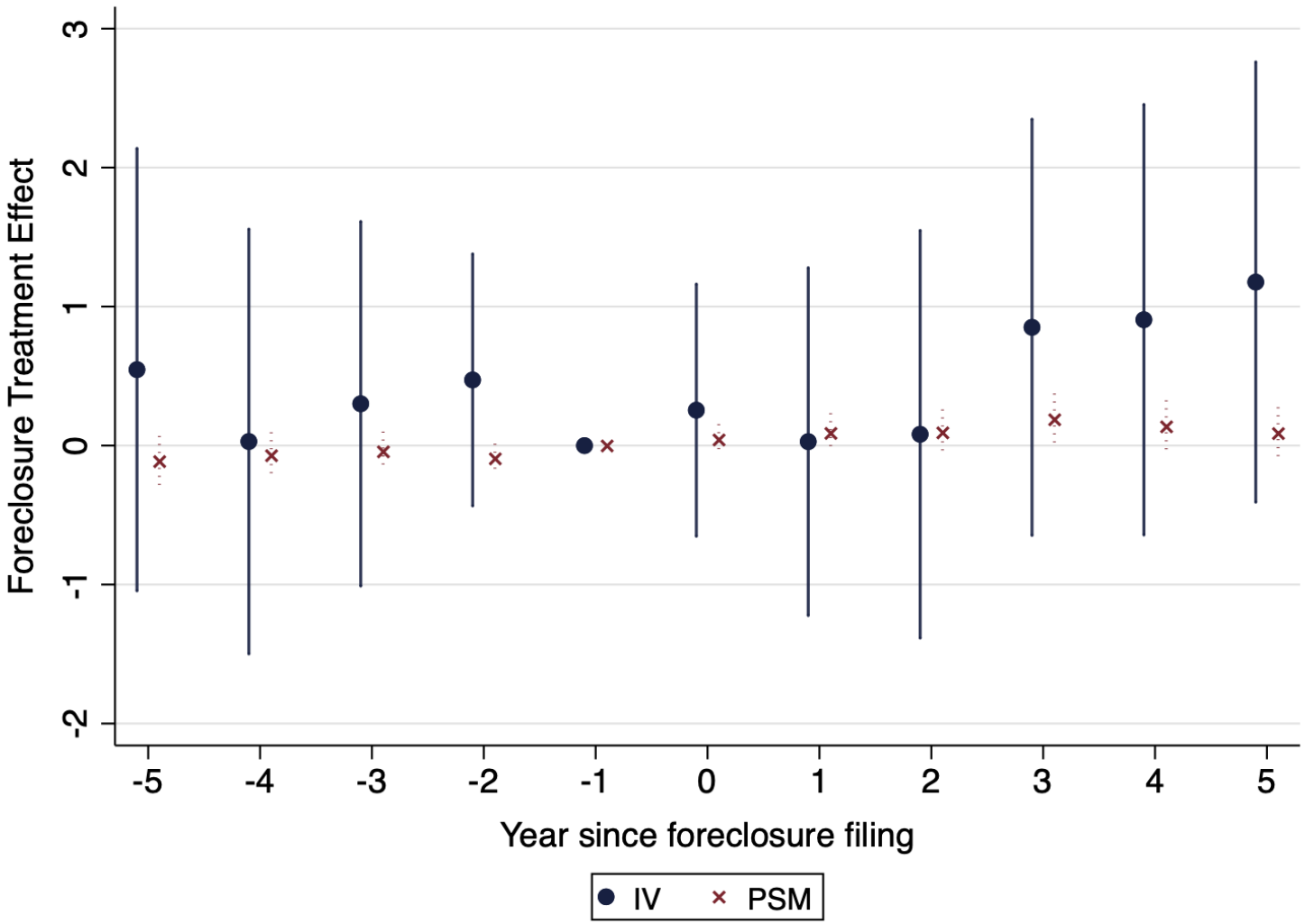


Credit Data: Number of Mortgages



Credit Data: Number of Unpaid Collections

Do not see rise saw for owners



Renters: Summary

- Limited effects, although much less power and not as clear-cut as for owners
- But can reject large negative effects we see for owners and in line with modest effects of renter eviction (Humphries et al., 2019; Collinson and Reed, 2019)
- Points to mechanism
  - Owners and renters both experience eviction, so this cannot explain on its own
  - Suggests *combination* of eviction and financial/credit loss explains non-financial outcomes for owners

Conclusions and Future Work

- **Policy-makers under-estimated costs of foreclosure in Great Recession**
  - Large *non-pecuniary* costs for homeowners
    - All: Housing instability, multiple moves, lower ownership, financial instability
    - Marginal: Worse neighborhoods; increased divorce
  - Potentially large costs for children
  - Helps explain limited amount of strategic default
- **Far more limited costs for renters and landlords**
  - Somewhat consistent with causal estimates of eviction

    Humphries, Mader, Tannenbaum, and Van Dijk (2018) Collinson and Reed (2018)
  - Mechanisms:
    - Financial outcomes: financial/credit loss
    - Non-financial: Eviction in a state of financial distress