Stimulating Housing Markets

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Motivating Questions

1. **What is the effect of fiscal stimulus on durables?**

   Hall and Jorgenson (1967); Abel (1982); Auerbach and Hassett (1992); Cummins, Hassett, and Hubbard (1994, 1996); Adda and Cooper (2000); Desai and Goolsbee (2004); Johnson, Parker, and Souleles (2006); Agarwal, Liu, and Souleles (2007); House and Shapiro (2008); Mian and Sufi (2012); Dynan, Gayer, and Plotkin (2013); Floetotto, Kirker, and Stroebel (2014); Best and Kleven (2015); Zwick and Mahon (2016)

MOTIVATING QUESTIONS

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2. **How should policy respond to capital overhang?**

   Hayek (1931); Fisher (1933); Keynes (1936); Shleifer and Vishny (1992); Kiyotaki and Moore (1997); Bolton and Rosenthal (2002); Lorenzoni (2008); Hall (2009); Ramey and Shapiro (2001); Eisfeldt and Rampini (2006); Shleifer and Vishny (2010); Correia, Farhi, Nicolini, and Teles (2012); Eggertsson and Krugman (2012); AABCPS (2012); AACPSY (2015); Mian and Sufi (2015); Rognlie, Shleifer, and Simsek (2015)

MOTIVATING QUESTIONS

1. What is the effect of fiscal stimulus on durables?

   Temporary housing credits + New data

2. How should policy respond to capital overhang?

   For the policy we study, the effect on quantities
   - **is large,**
   - **does not immediately revert,**
   - **is concentrated among existing assets,**
   - **likely enables stable reallocation from low value sellers to high value buyers,**
   - **stabilized house prices.**

1. Policy Setting, Data & Research Design

First-Time Homebuyer Tax Credit

1. Temporary fiscal stimulus with three iterations

   - V1 (April 2008–June 2009): Interest-free loan up to $7.5K for first-time homebuyers
   - V2 (Feb 2009–Nov 2009): Refundable tax credit of $8K for first-time homebuyers
   - V3 (Nov 2009–May 2010): Extended V2 and expanded to long-time homebuyers

   We focus on V2 and V3 (refundable tax credit).

First-Time Homebuyer Tax Credit

1. Temporary fiscal stimulus with three iterations

2. Maximum $8K credit for FTHC, $6.5K for LTHC
   - Claimed on federal tax return and delivered by refund
   - Could be applied to prior return to accelerate payment
   - Bridge loans administered by state FHAs and pvt lenders; could be applied to down payment or closing costs

First-Time Homebuyer Tax Credit

1. Temporary fiscal stimulus with three iterations

2. Maximum $8K credit for FTHC, $6.5K for LTHC

3. Eligibility requirements
   - For FTHC, must not own during 3-year period preceding purchase date
   - For LTHC, must have owned and used home for 5-year period in last 8 years
   - Must earn less than 75K-95K (single) or 150-170K (joint)
   - Must buy during policy window

First-Time Homebuyer Tax Credit

1. Temporary fiscal stimulus with three iterations

2. Maximum $8K credit for FTHC, $6.5K for LTHC

3. Eligibility requirements

4. Big number? Why this policy?
   - 5-6X size of CARS (Mian and Sufi 2012), $16B estimated
     - Did not destroy existing capital
     - Though wasn't exclusive to new home sales
   - Capital overhang in housing markets
     - Extraordinary distress and inventory levels
     - High leverage and tight credit for buyers in bust
     - Negative spillovers of foreclosures

RESEARCH DESIGN

1. Measure geographic variation in ex ante exposure to FTHC
   - First-time homebuyer share in 2000

2. Confirm places with higher ex ante exposure saw more people claim the credit

3. Estimate policy effect with a generalized diff-in-diffs design using ex ante exposure as the instrument
   - Existing home sales
   - New home sales
   - Prices

4. Explore reallocation with detailed information on sellers and buyers during the policy period

DATA SOURCES

1. **US Dept of Treasury tax files (de-identified)**
   - Homeownership from itemized deductions (1040 Sch A), interest payments (Info Return 1098)
   - Credit claiming (Form 5405)
   - Use to construct exposure measures

2. **Housing sales**
   - Monthly from Dataquick deeds records (2004-2013m6)
   - Can use zip, county, and CBSA level counts

3. **Origination loan characteristics**
   - Dataquick transactions and concurrent loan records
   - Fannie/Freddie/Ginnie MBS loan pools (HMDA)

4. **House prices**
   - Corelogic
   - FHFA
   - Dataquick

5. **Demographics**
   - Use Census/ACS for covariates, housing stock, Equifax

GOOGLE SEARCH DATA
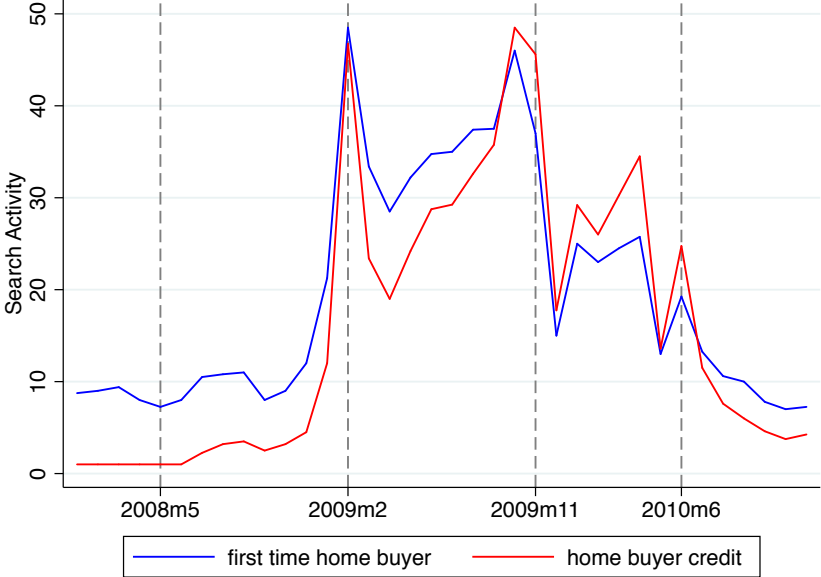
AGGREGATE TIME SERIES
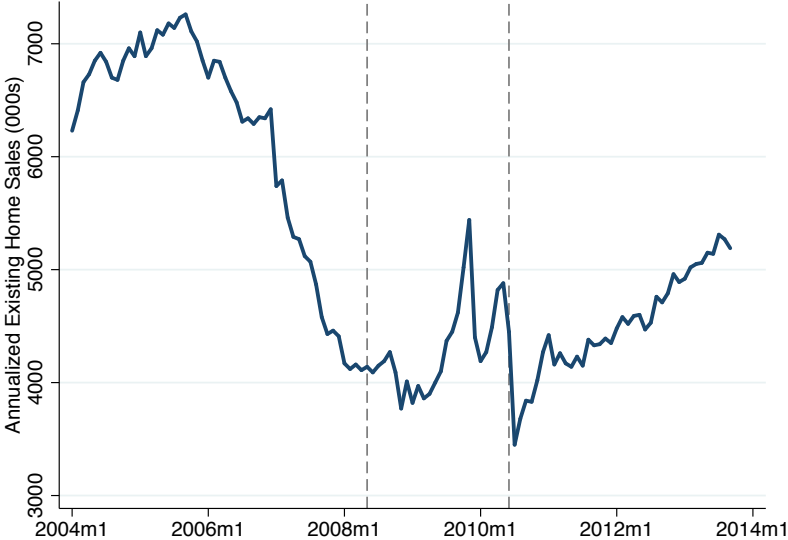
AGGREGATE TIME SERIES

TOTAL CLAIMS
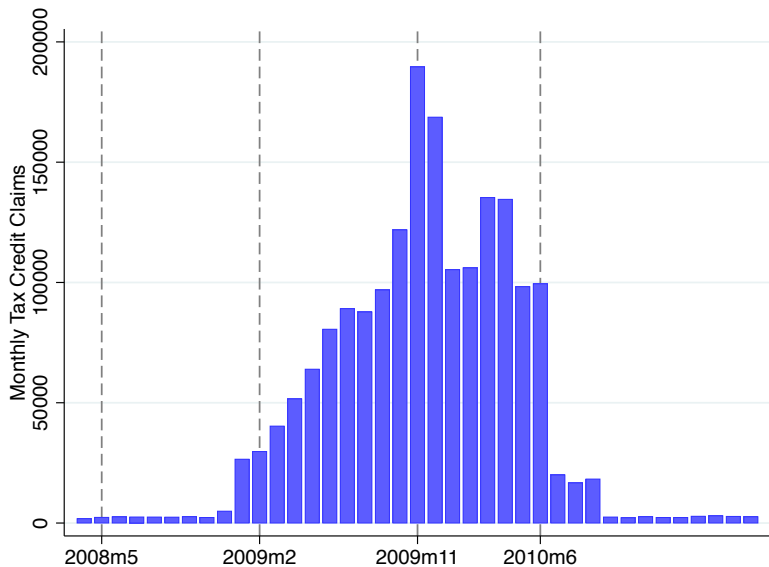
Total Claims: 1.8M for V2 and V3 (∼250K LTHBC)

Measuring Place-Based Exposure

Exposure: Fraction of residents in 2000 who were first-time buyers

1. Itemize tax return with property tax or mortgage interest deduction (Form 1040 Schedule A)
2. Receive information return from lender (Form 1098)
3. First-time buyers were not owners in $t-1$ and $t-2$

Pros

1. Analysis at the ZIP code level with CBSA-time effects
2. Measured prior to the policy and subprime expansion

Cons

1. Miss those who own homes outright
2. Places may change over time
3. Not exogenous
   - Test parallel trends graphically, with controls, subsamples, placebo test, extra diff, age distribution

GEOGRAPHIC VARIATION IN EXPOSURE
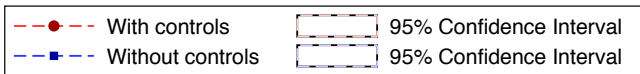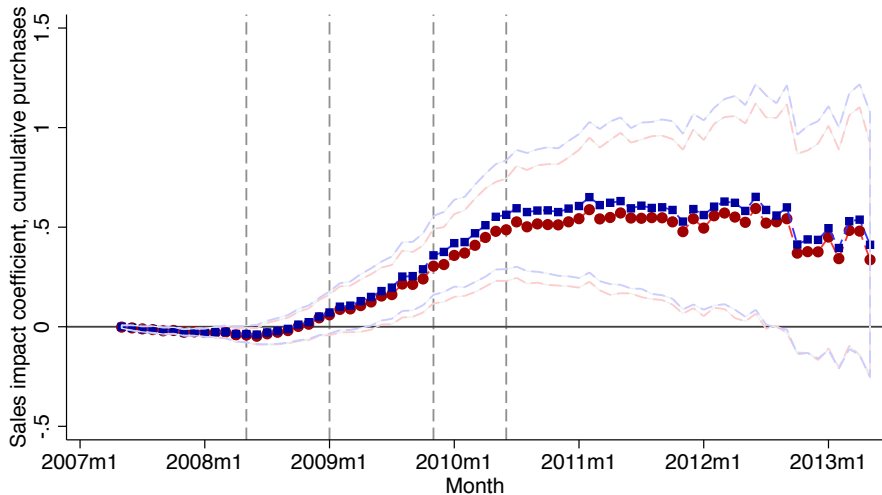

Chicagoland

Boston
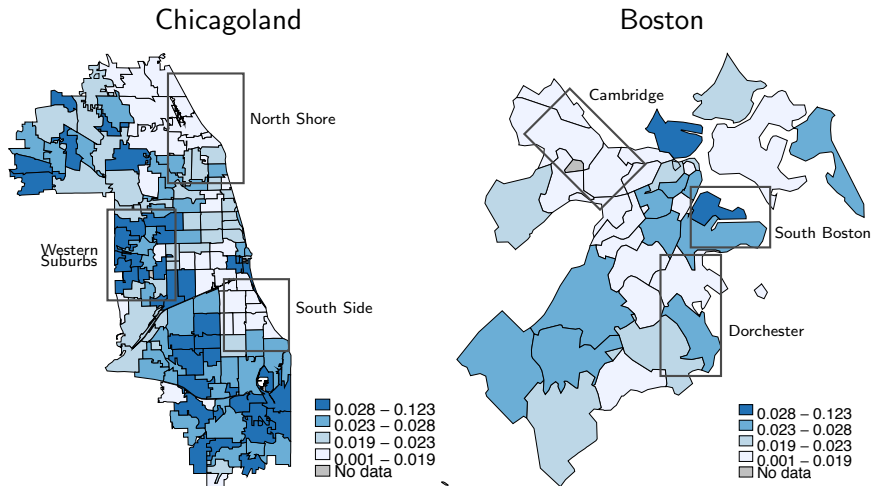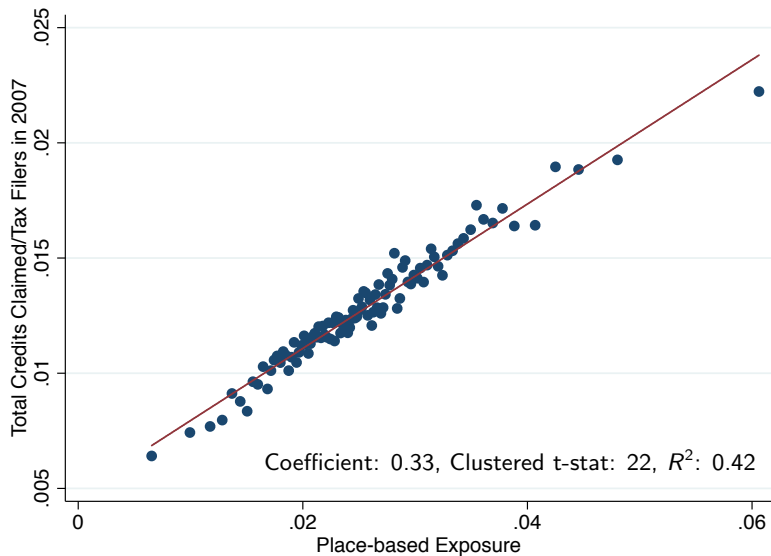
Claims and Exposure Over Time
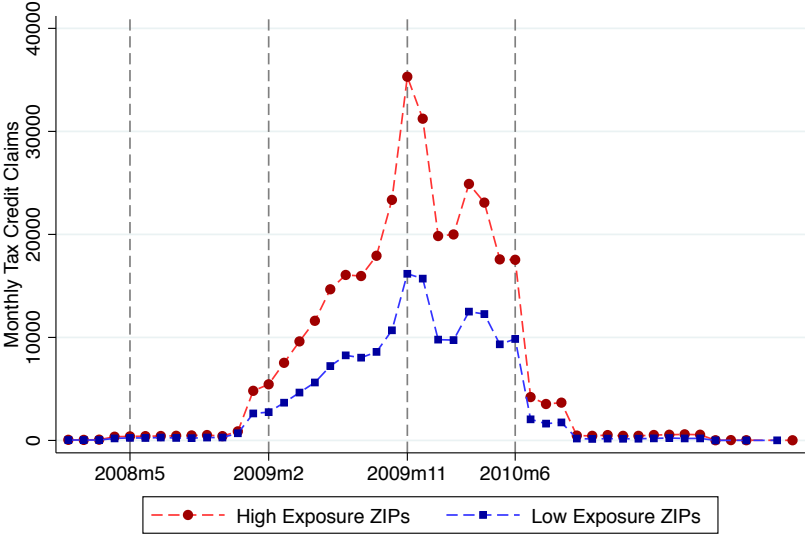
2. The Effect of FTHC on Sales

MONTHLY REGRESSIONS: ZIP W/CBSA FEs
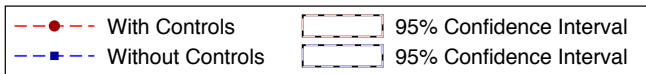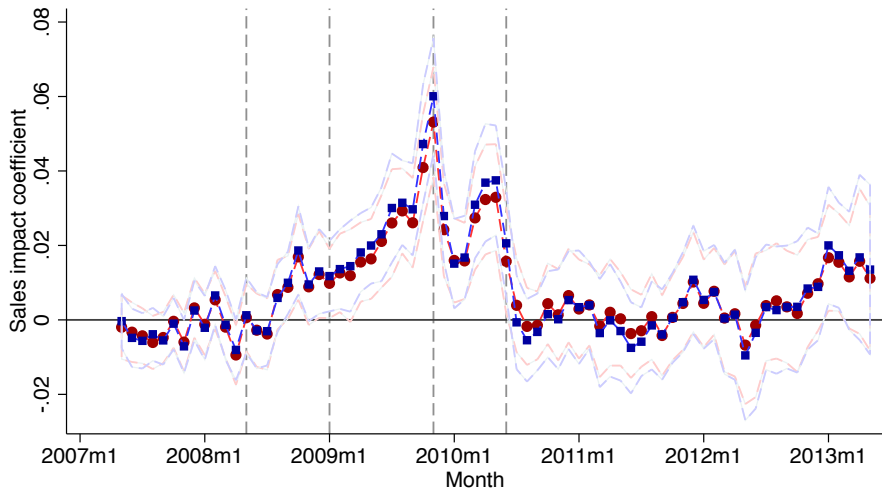
CUMULATIVE REGRESSIONS: ZIP W/CBSA FEs

$$\frac{\overline{\text{Sales}}_{i,t\rightarrow T}}{\text{Sales}_{i,2007}} = \alpha + \beta\text{Exposure}_i + \gamma X_i + \varepsilon_i$$

|	(1) No Controls	(2) Controls	(3) CBSA FE	(4) Logs	(5) No wgts	(6) Ex sand
Pre-policy 2007m9-2009m1	0.001 (0.005)	0.001 (0.005)	0.002 (0.003)	0.005 (0.004)	0.002 (0.003)	0.001 (0.003)
Policy 2009m2-2010m6	0.025** (0.01)	0.024* (0.01)	0.024** (0.005)	0.031** (0.007)	0.03** (0.008)	0.02** (0.005)
Post-policy 2010m7-2011m11	0.014 (0.011)	0.019 (0.012)	0.002 (0.005)	-0.005 (0.008)	0.009 (0.008)	-0.003 (0.004)
Early policy 2009m2-2009m9	0.013 (0.008)	0.012 (0.008)	0.017** (0.005)	0.029** (0.008)	0.022** (0.007)	0.014** (0.005)
Spike 1 2009m10-2009m12	0.046** (0.012)	0.043** (0.013)	0.04** (0.007)	0.042** (0.007)	0.047** (0.009)	0.036** (0.007)
Spike 2 2010m4-2010m6	0.033** (0.01)	0.031** (0.011)	0.032** (0.007)	0.041** (0.008)	0.037** (0.009)	0.028** (0.007)
Controls	No	Yes	Yes	Yes	Yes	Yes
CBSA FE	No	No	Yes	Yes	Yes	Yes

(a) 1-3 Bedrooms, ZIP		
	(1) No Controls	(2) CBSA FE
Pre-policy 2007m9-2009m1	0.01 (0.008)	0.012* (0.005)
Policy 2009m2-2010m6	0.018 (0.011)	0.025** (0.006)
Post-policy 2010m7-2011m11	0.009 (0.012)	0.01+ (0.005)
Early policy 2009m2-2009m9	0.008 (0.009)	0.019** (0.005)
Spike 1 2009m10-2009m12	0.033* (0.014)	0.037** (0.008)
Spike 2 2010m4-2010m6	0.024* (0.012)	0.031** (0.006)
Controls	No	Yes
CBSA FE	No	Yes

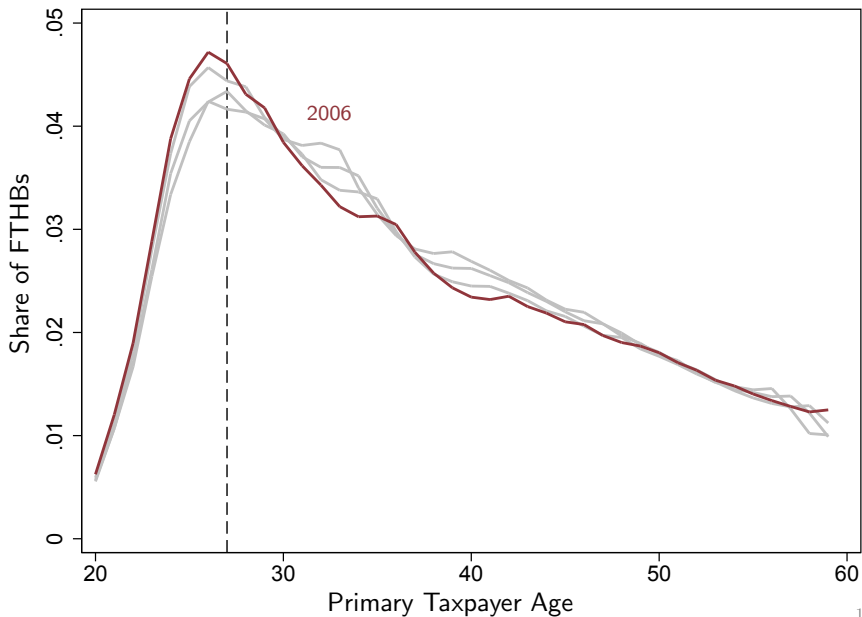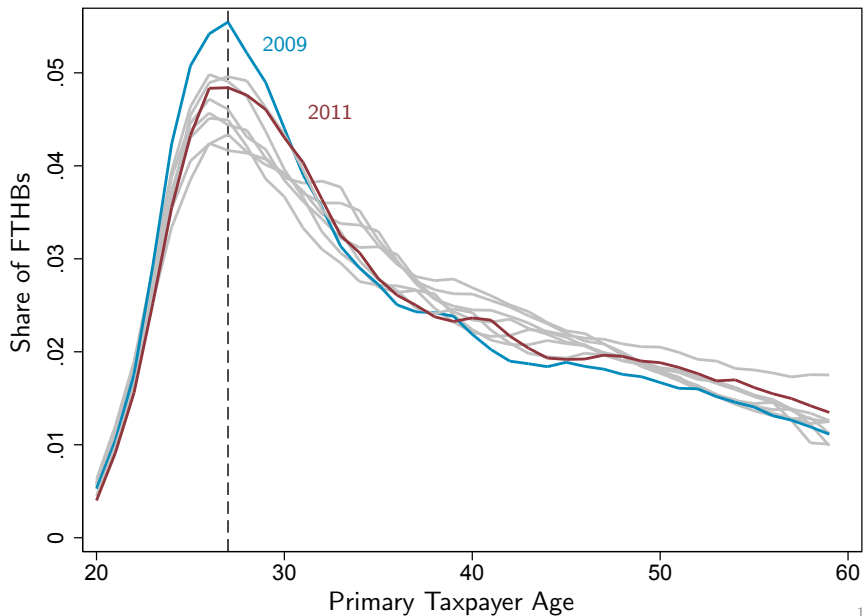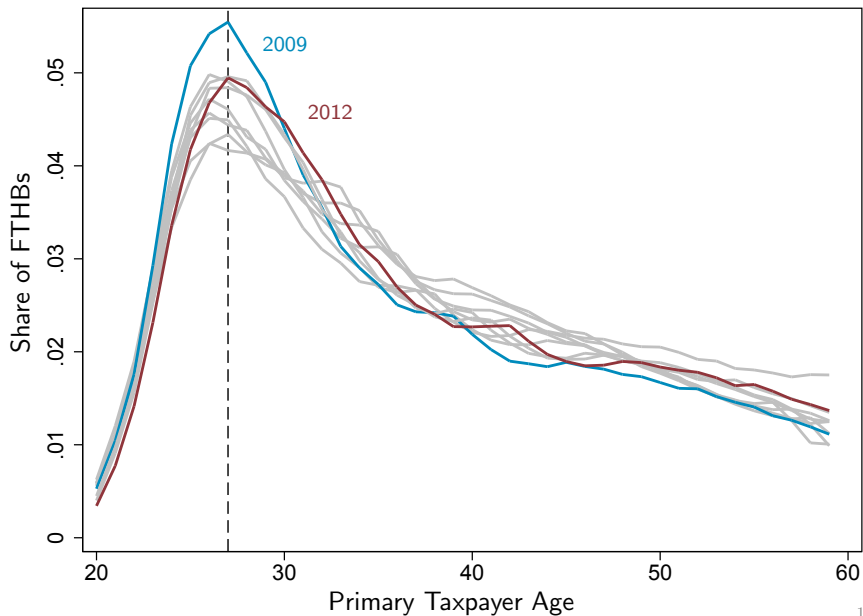| (b) 4+ Bedrooms, ZIP		
	(1) No Controls	(2) CBSA FE
Pre-policy 2007m9-2009m1	-0.008 (0.007)	-0.003 (0.006)
Policy 2009m2-2010m6	-0.003 (0.008)	0.006 (0.006)
Post-policy 2010m7-2011m11	-0.007 (0.008)	-0.0 (0.006)
Early policy 2009m2-2009m9	-0.006 (0.007)	0.004 (0.005)
Spike 1 2009m10-2009m12	0.0 (0.009)	0.01 (0.007)
Spike 2 2010m4-2010m6	-0.0 (0.009)	0.008 (0.008)
Controls	No	Yes
CBSA FE	No	Yes

Heterogeneity by Initial Price Level
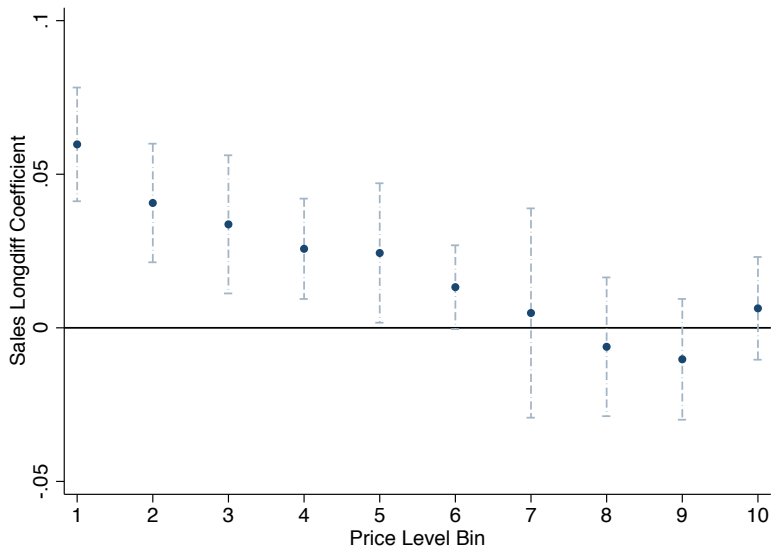
DISTRIBUTION OF FIRST-TIME HOMEBUYERS BY AGE
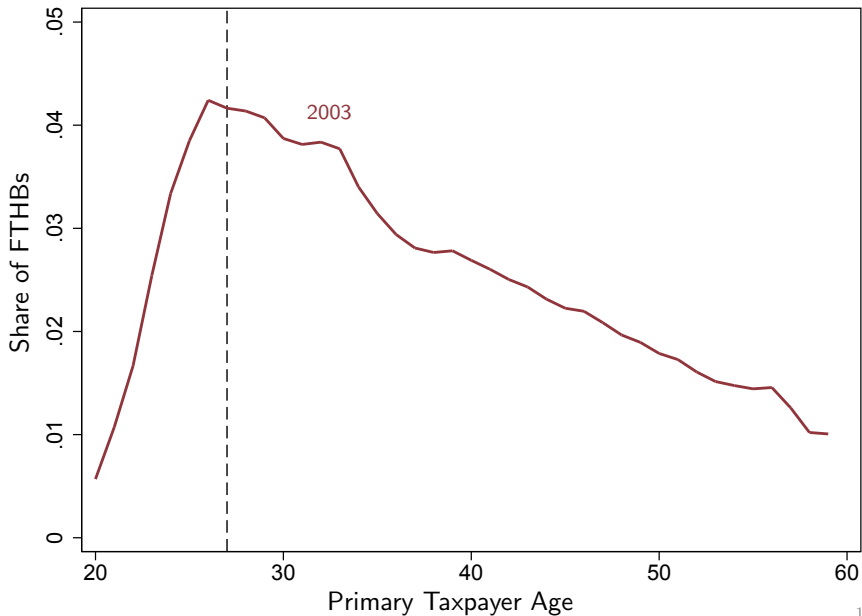
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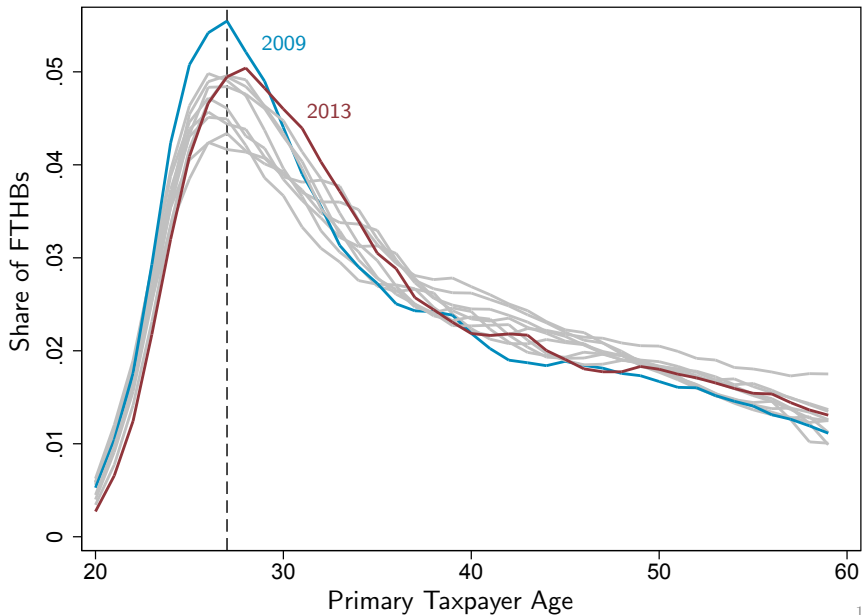
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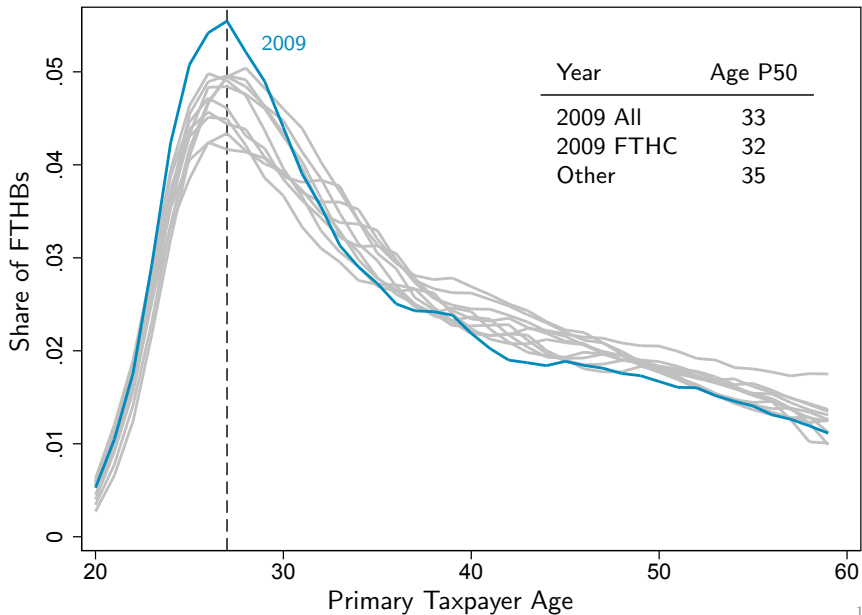
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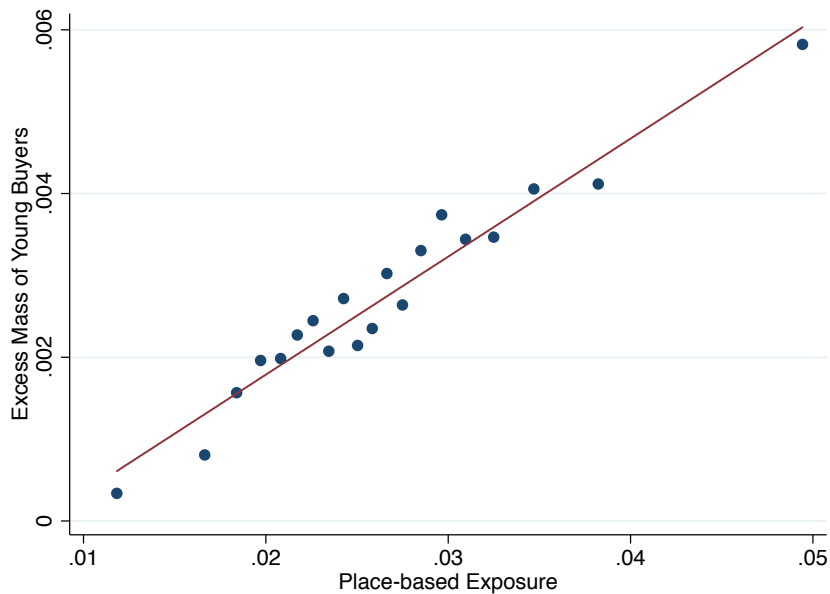
DISTRIBUTION OF FIRST-TIME HOMEBUYERS BY AGE

DISTRIBUTION OF FIRST-TIME HOMEBUYERS BY AGE

Year	Age P50
2009 All	33
2009 FTHC	32
Other	35
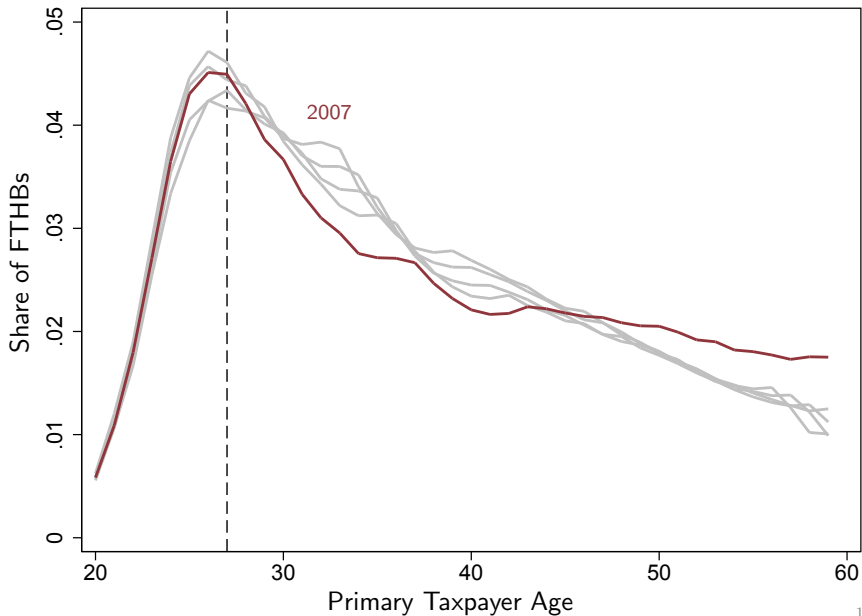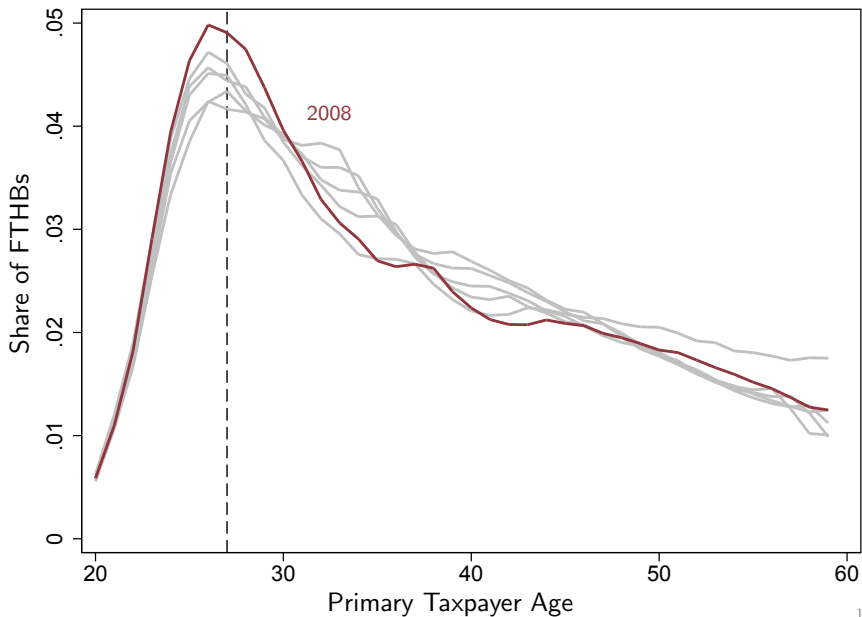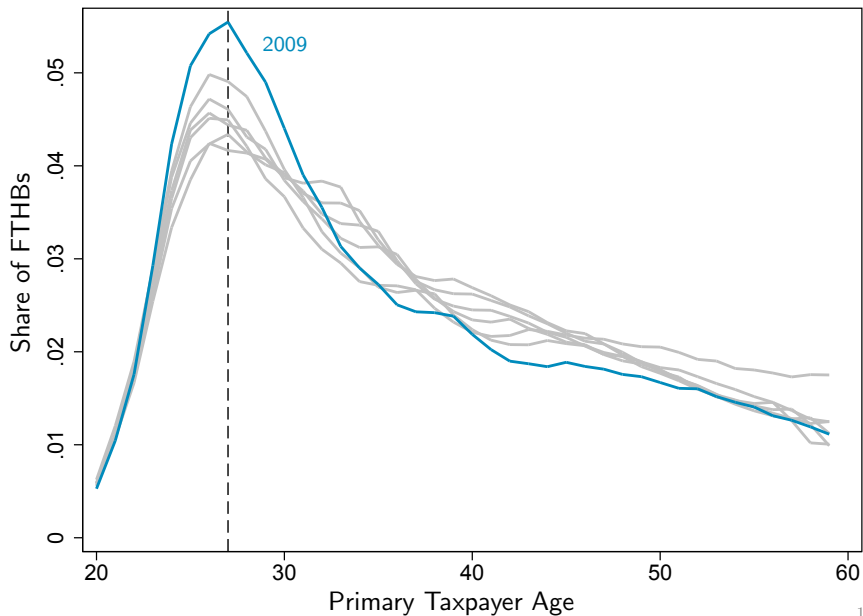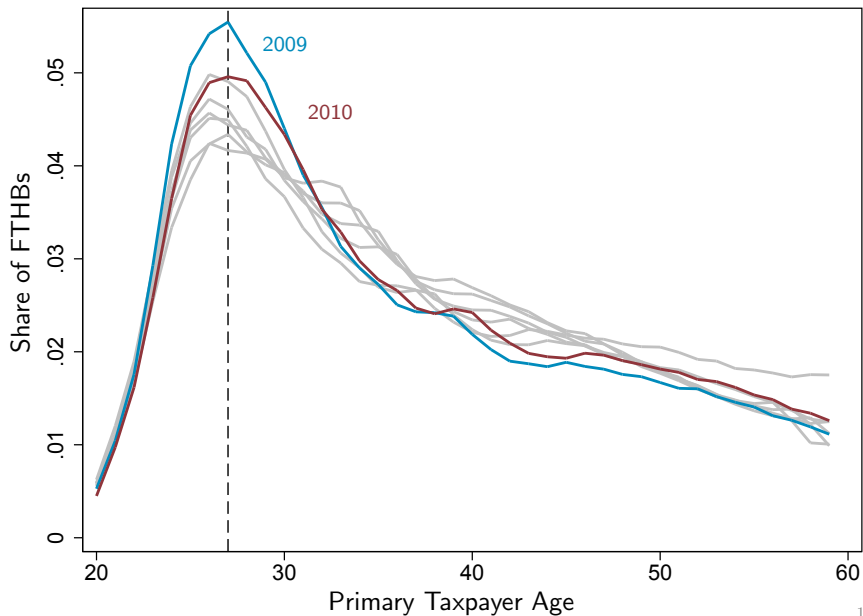
Age Distribution Shift vs. Exposure

The Effect Persists

- 1 SD of exposure $\implies$ 50-60% more sales cumulatively

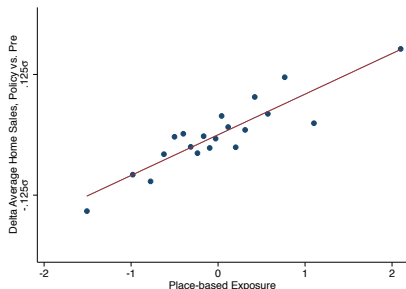- Induced sales relative to bottom quantile of 169K (8.1%)

$$\Delta\text{Sales}_g = 17 \times \beta \times (e_g - e_{g,low}) \times s_{g,2007}$$

  - 412K if similar effect in uncovered areas
  - Compare to 2.7M FTHC claims during this time
  - Lower bound if lowest exposure group also responds
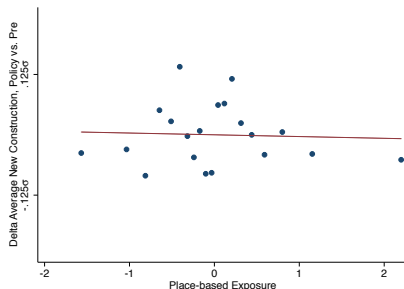 - If $e_{g,low} = 0$, then aggregate is 568K (11.2%)

Key Results: Significant response and slow post-policy reversal

Change in Existing Sales

Change in New Sales
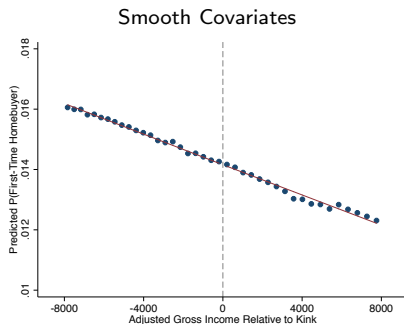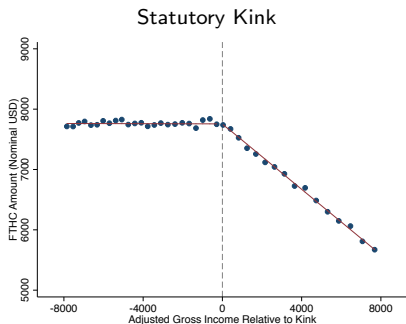
Key Result: GDP effects likely second order or indirect

- Fees: $(5\%) \times$ (412K Sales) $\times$ ($190K price) = \$3.9B
- Furniture: $(1.9\%) \times$ (412K) $\times$ ($190K) = \$1.5B
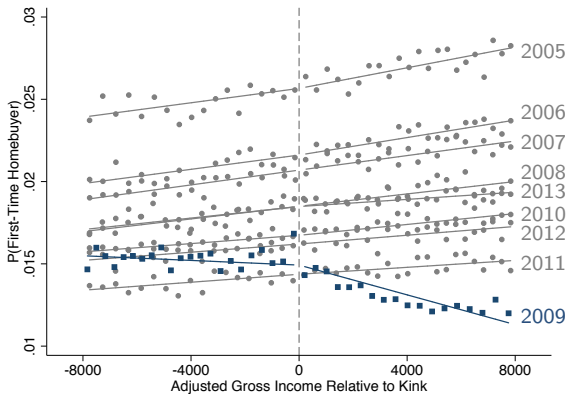- Cost: $\sim$\$20B for FTHC

Regression Kink Design

Goal: Micro-elasticity to complement market-level design

- ▶ Pool single (at 75K) and joint filers (at 150K)
- ▶ Covariates include linear AGI, age, children, ZIP dummies

Regression Kink Results

Key Result: $8K of FTHC → P(FTHB) increase 0.76 ppts

- Increases baseline rate by 53 percent
- Placebo tests of single at joint kink and vice-versa
- Aggregate effect is 520K-610K induced transitions

3. The Effect of FTHC on Reallocation

FTHC as a Market Stabilizer

Policy Problem: Extraordinary distress in housing market

- ▶ Vacancies, short sales, and foreclosures depress house prices
- ▶ Widespread concern fire sale dynamics would continue because many distressed sellers and contrained buyers
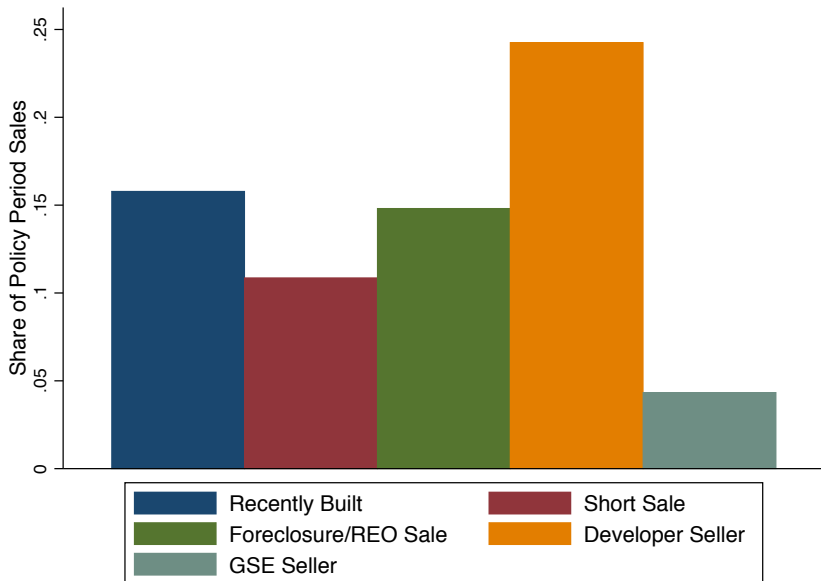
Policy Rationale: Correct market failures due to distress

1. Pecuniary externality
   - ▶ Foreclosures/short sales affect prices nearby
2. Credit market failure due to constrained buyers and elevated vacancies
   - ▶ MC of delivering house < MB of unit being occupied
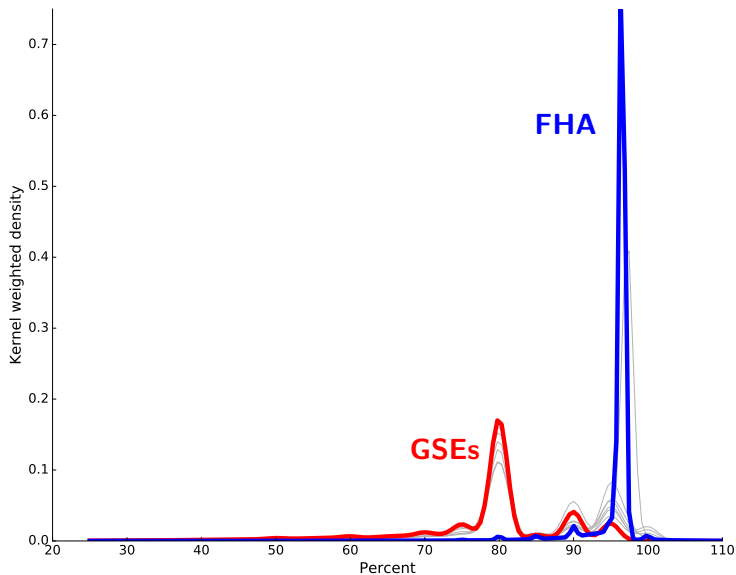   - ▶ Vacant homes depreciate faster, enable crime

The Evidence for Reallocation

1. Many transactions involve **low value or distressed sellers**
   - Inventories of builders and developers
   - Portfolios of banks and government-sponsored entities
   - Foreclosures and short sales

2. **High value, constrained buyers** induced to enter
   - Large share of buyers down payment constrained
   - Constraints relaxed by FTHC

3. The **reallocation strengthened the market** and was **stable**
   - Quantity response does not reverse
   - Low subsequent defaults by buyers
   - Large fraction of purchased homes previously vacant
   - Positive house price effects
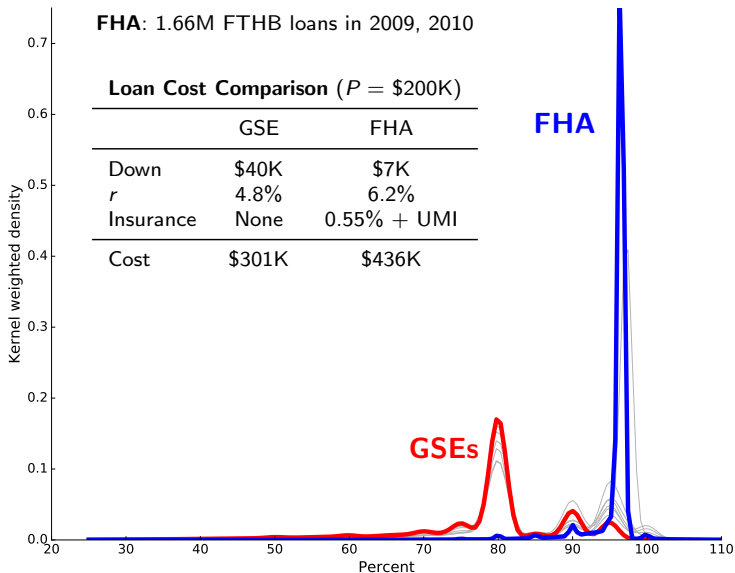
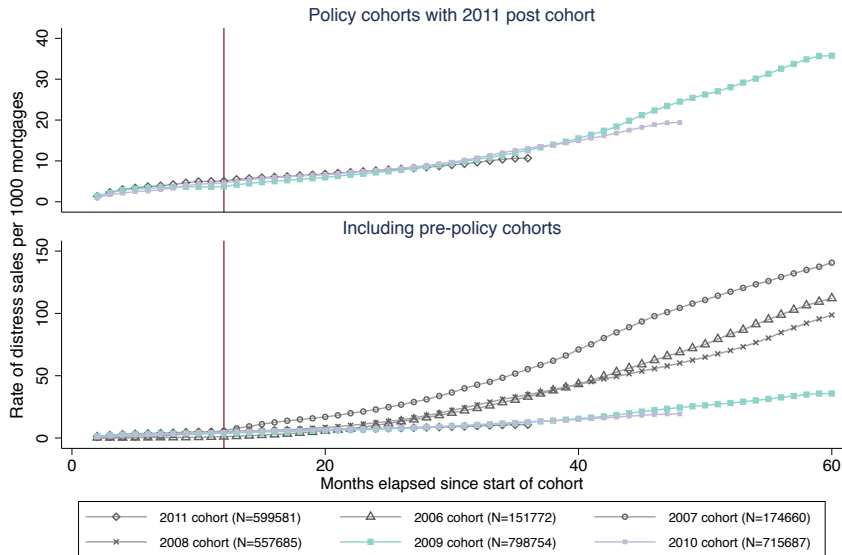# LOW VALUE SELLERS

FEDERAL LOAN ORIGINATION LTVS IN 2009

FEDERAL LOAN ORIGINATION LTVS IN 2009

FHA: 1.66M FTHB loans in 2009, 2010

Loan Cost Comparison ($P = \$200K$)

	GSE	FHA
Down	$40K	$7K
r	4.8%	6.2%
Insurance	None	0.55% + UMI
Cost	$301K	$436K

FTHC Cohorts Default at Low Rates

Denominator is a running sum of new sales in each month up to the gray line,
after which it remains constant.

Vacant Homes and Household Formation

Questions:

1. Do FTHC claimers move into previously vacant homes?
2. Do FTHC claimers move from multi to single family homes?

Answers:

1. 42% of FTHCs file at addresses with no filers in 2007
   - At ZIP level, vacancy share of claims correlated with foreclosure/short sale share of transactions
   - Not driven by new construction
2. 33.1% of FTHCs transition from multi to single filer address
   - Relative to 30.5% in other years

PRICE EFFECTS
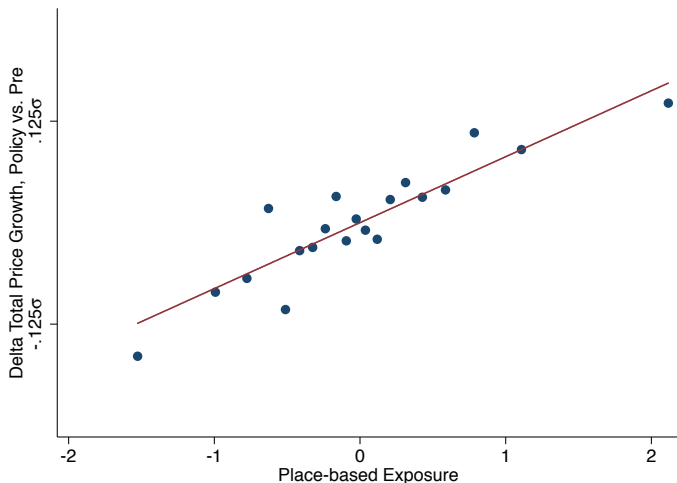
$1\ \sigma$ in exposure $\implies \Delta p \approx 77$ bps (\$1,720 at median p_0)

PRICE EFFECTS
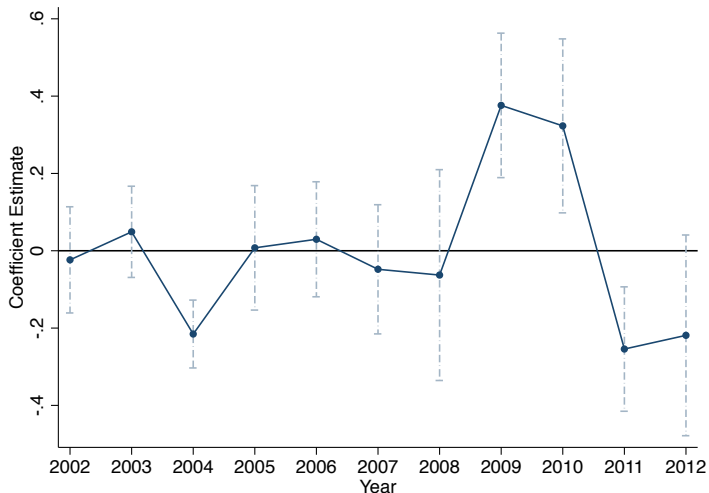
Key Result: Potentially large indirect GDP effects
- $23B if $MPC = 0.1$, all housing stock affected
- $12B if only 1-3 bedroom homes

Conclusion

Bottom Line

1. The effect on quantities is large, does not immediately revert, and is concentrated among existing assets.

2. Enabled a stable reallocation from low value sellers to high value buyers, stabilized house prices.

Policy Appraisal

- ▶ Useful policy during deep recessions since demand boost arrests fire sales
- ▶ Less clear rationale during normal times

Thanks!