

DYNAMICS OF HOUSING DEBT IN THE RECENT BOOM AND BUST

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Motivation

- Lasting impact of the 2008 mortgage crisis on US the economy
 - Households significantly increased their stock of mortgage debt over the boom period
 - Once the housing market slowed down, large increases in defaults particularly for prime borrowers
 - These losses impaired banks and the shadow banking system, and led to the Great Recession
- **Key question: What led to an increase in mortgage debt?**

What drove credit expansion?

Subprime view

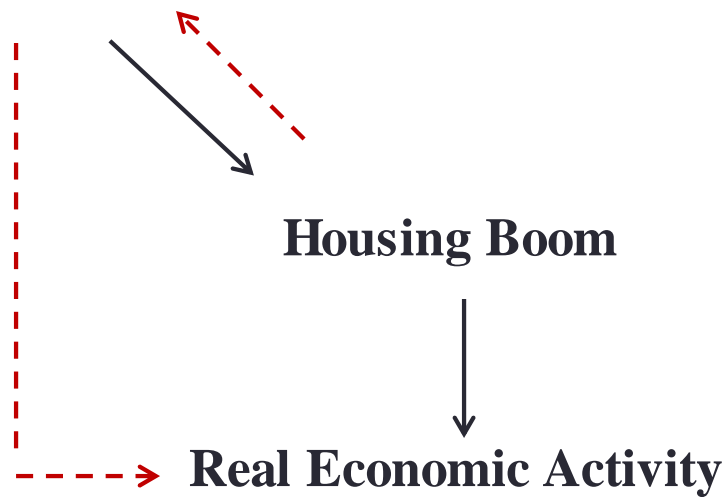
- Financial innovation and deregulation created perverse incentives in the financial sector, which provided unsustainable credit, especially to low income, low credit score borrowers
- These distorted credit flows led to higher house prices and mortgage crisis (e.g., Mian and Sufi, 2009, 2016)

Expectations view

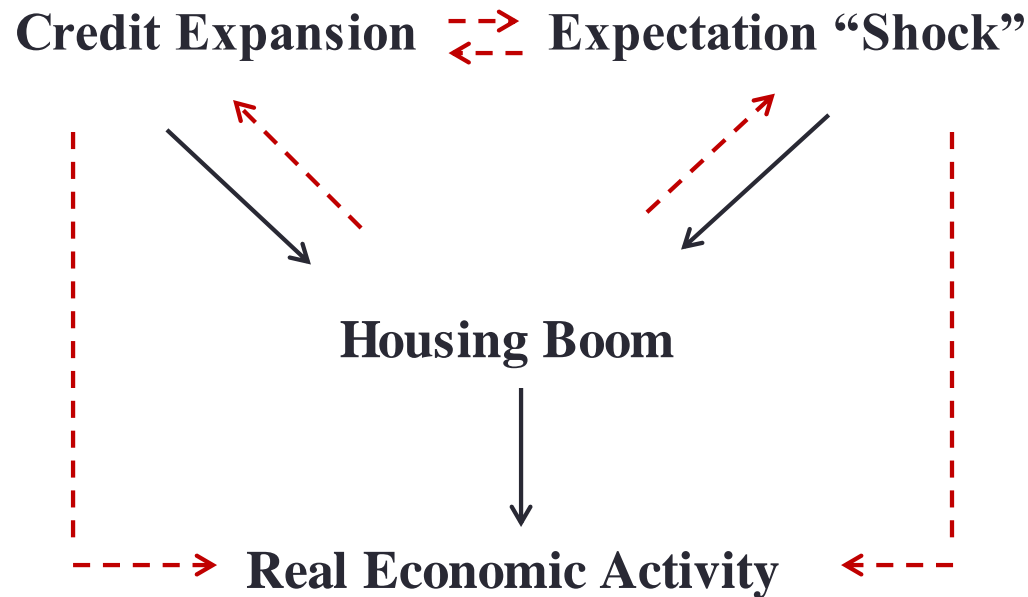
- Inflated house prices (expectations) led banks to underestimate the potential for losses. Banks lent against high house values
- Borrowers increase demand for housing, exploit increased supply
- Savings glut and lower interest rates might be triggers for original increase in house prices

CREDIT EXPANSION

Credit Expansion



MULTIPLE CHANNELS OF CREDIT EXPANSION



- Credit expansions and expectations are endogenous variables

Empirical Challenge

- Difficulty in testing the two views:
 - Explanations are not mutually exclusive, may reinforce each other
 - Credit screening might go down *as a result* of high house price expectations, since lenders feel protected by increased prices. But more access to credit can then feed into higher prices
- Proper diagnosis of the origins of the mortgage crisis has different implications for policy
 - Fixing incentives and monitoring in banks vs. macro-prudential regulation

Summary of Results I

- House price expectations and increased collateral values played an important role in the credit expansion
 - *Flow* (new purchase mortgages) and *stock* of credit increased across all income groups over the boom → no cross sectional dislocation of credit flows towards poor households
 - Credit expansion was significantly larger in areas with high house price growth
 - CLTVs stayed stable over the boom = lending against “V”

Summary of Results II

- Quicker buying and selling of homes in the boom
 - Attempt of households to buy into increasing house prices
 - Stock of mortgage debt “resets up” when household buys new home
- Homeownership rates increase during boom for all households except for the poorest
 - Credit did not expand to allow poor borrowers to become homeowners
- Large increase in cost of owning relative to renting during the boom
- Share of defaults by middle income and middle credit score borrowers increases in the bust.

Data

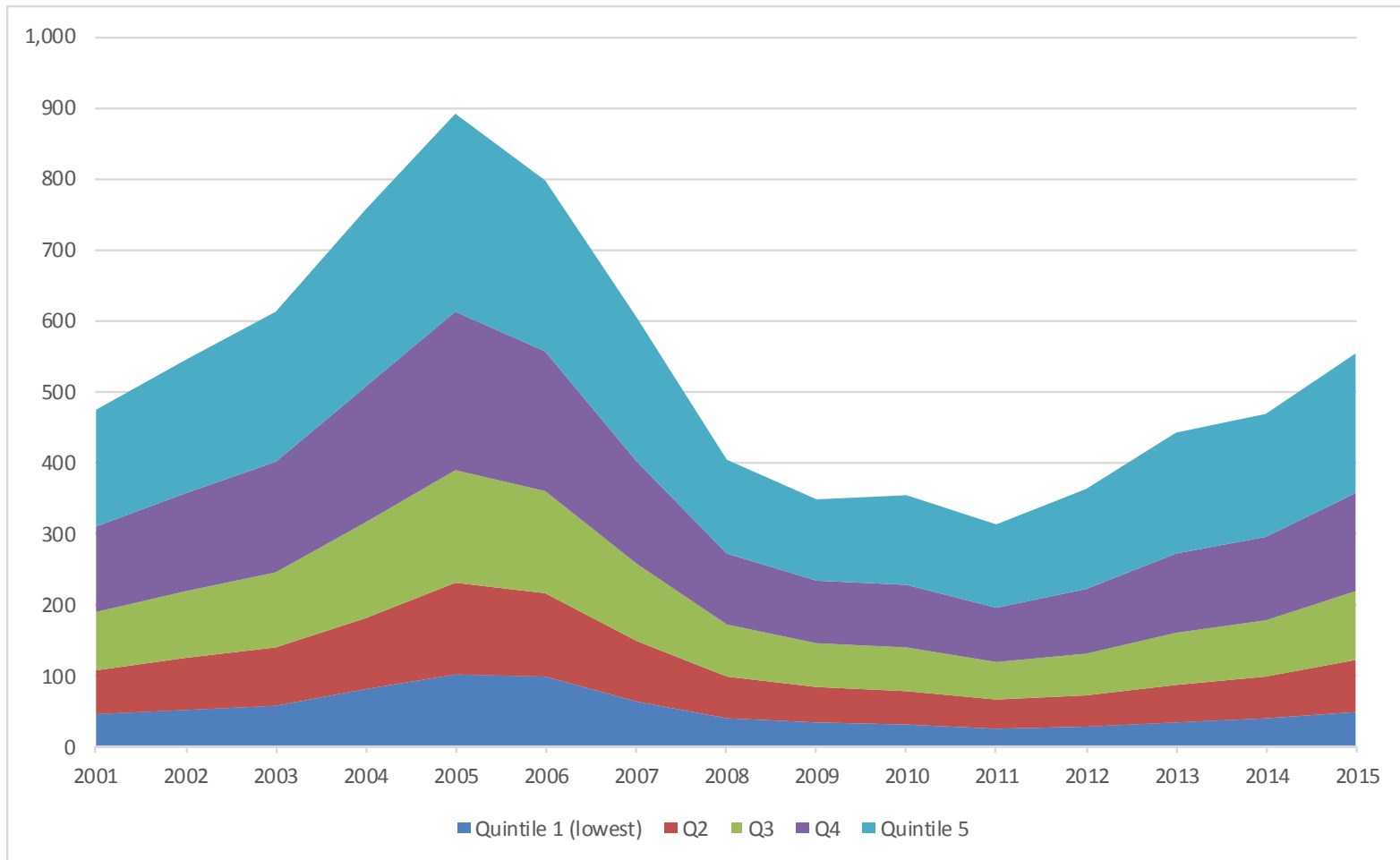
- Household-level survey data from American Community Survey (public use microdata sample)
 - Housing costs for owners and renters
 - Homeownership (confirmed with data from American Housing Survey and Current Population Survey)
 - Value-to-income
- Home Mortgage Disclosure Act (HMDA)
 - Balance and location of individual mortgages originated in the US
- Corelogic (formerly Dataquick)
 - Ownership transfers of residential properties from deeds and assessors records (1996-2012)
 - Allows us to compute LTVs
- Mortgage performance from LPS (formerly McDash)
 - 5% random sample
- IRS income at the zip code level.
- House prices from Zillow.

Credit Flows, Stock, and DTI

- No significant cross-sectional dislocations in credit flows or stock of household debt across income or FICO bins
 - Flow of (purchase) mortgages increases across all income groups (HMDA data)
 - Stock of mortgage debt also increases proportionally (SCF data)
 - Cost of owning a house increases predominantly in areas with high house price growth (ACS data)
- Cost of owning relative to renting goes up dramatically in the boom and collapses after the crisis, especially in boom states

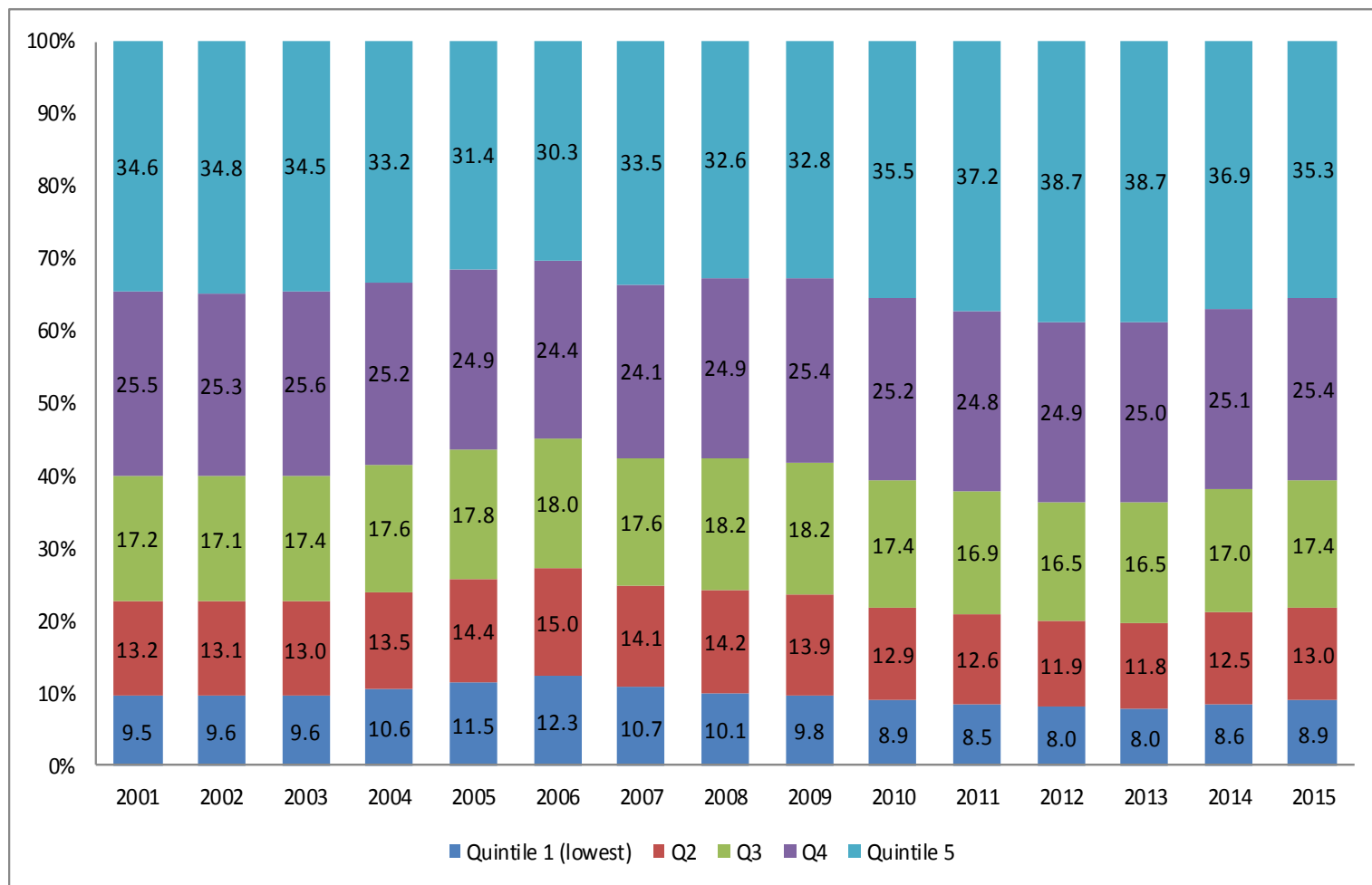
Flow of new purchase mortgages

\$ bn, HMDA data, IRS income quintiles



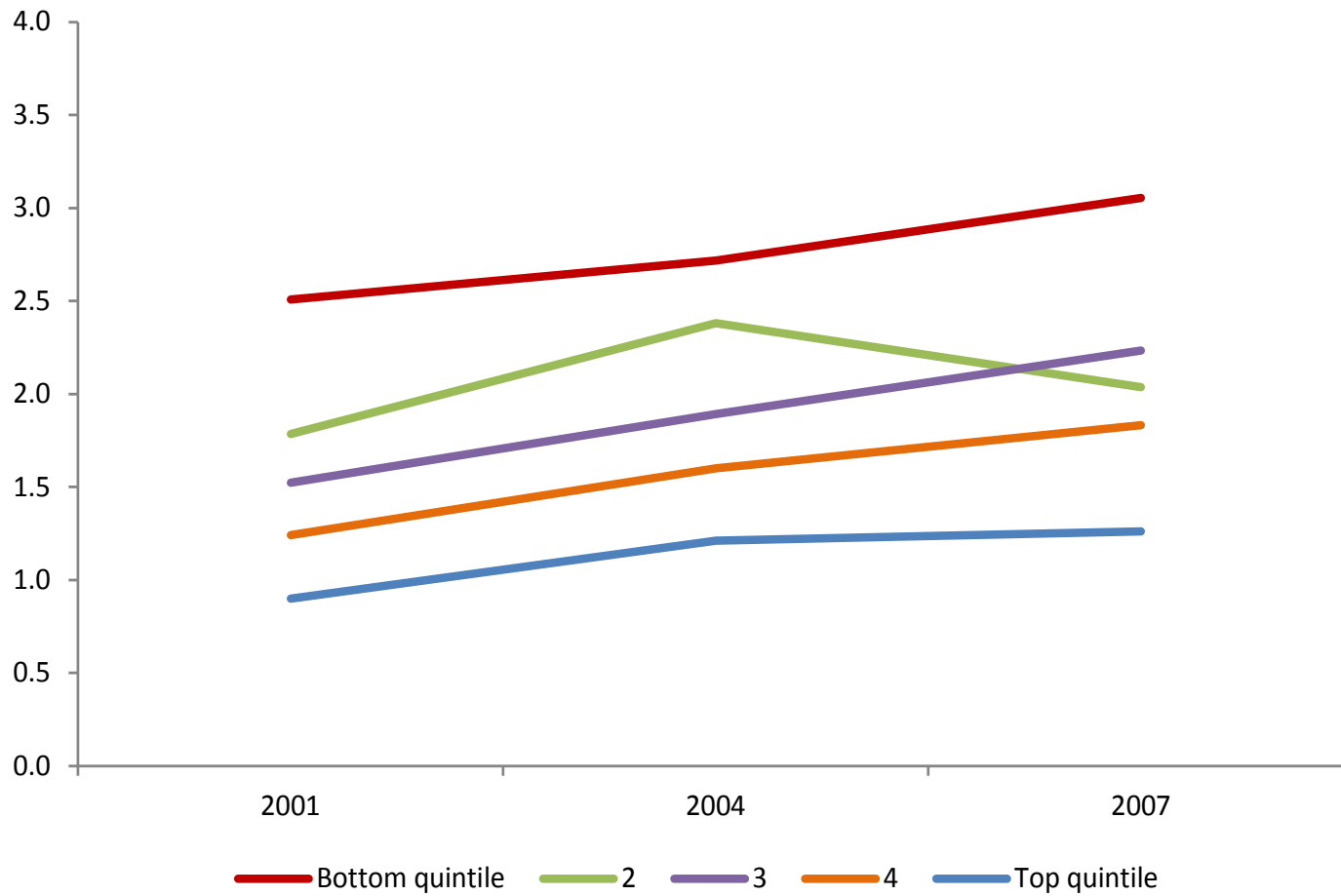
Flow of new purchase mortgages

Shares by quintile, HMDA data, IRS income quintiles



Debt-to-income

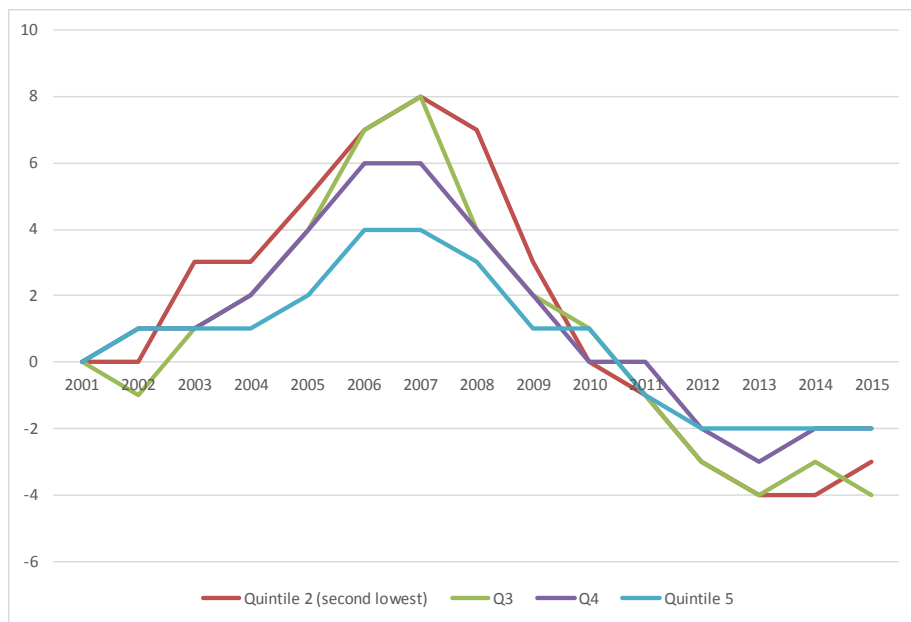
Owners with positive debt, SCF data



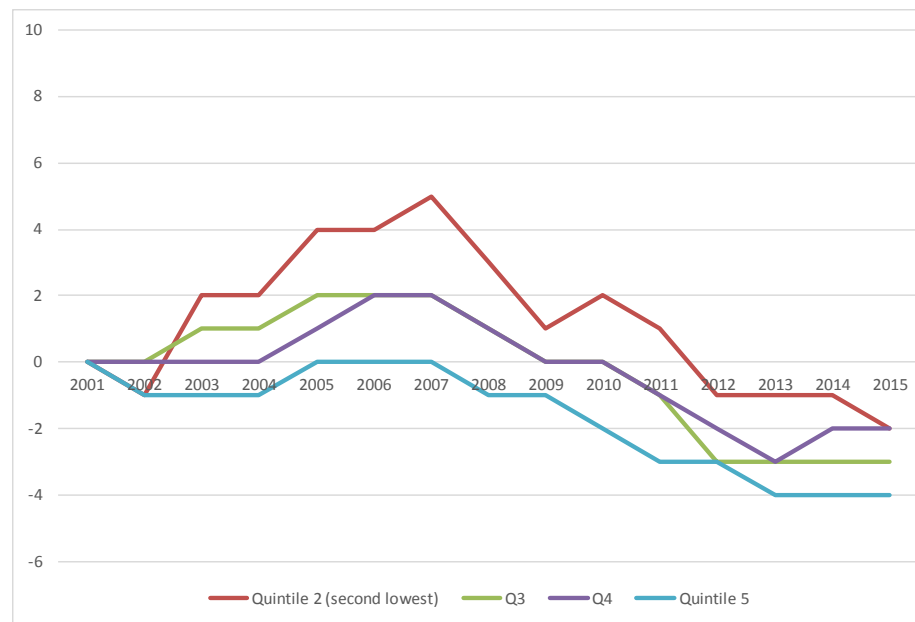
Cost of owning, boom and non-boom states

Recent movers, ACS data

Boom states (above median HPA)



Non-boom states



Difference between cost of owning and renting

Recent movers, ACS data

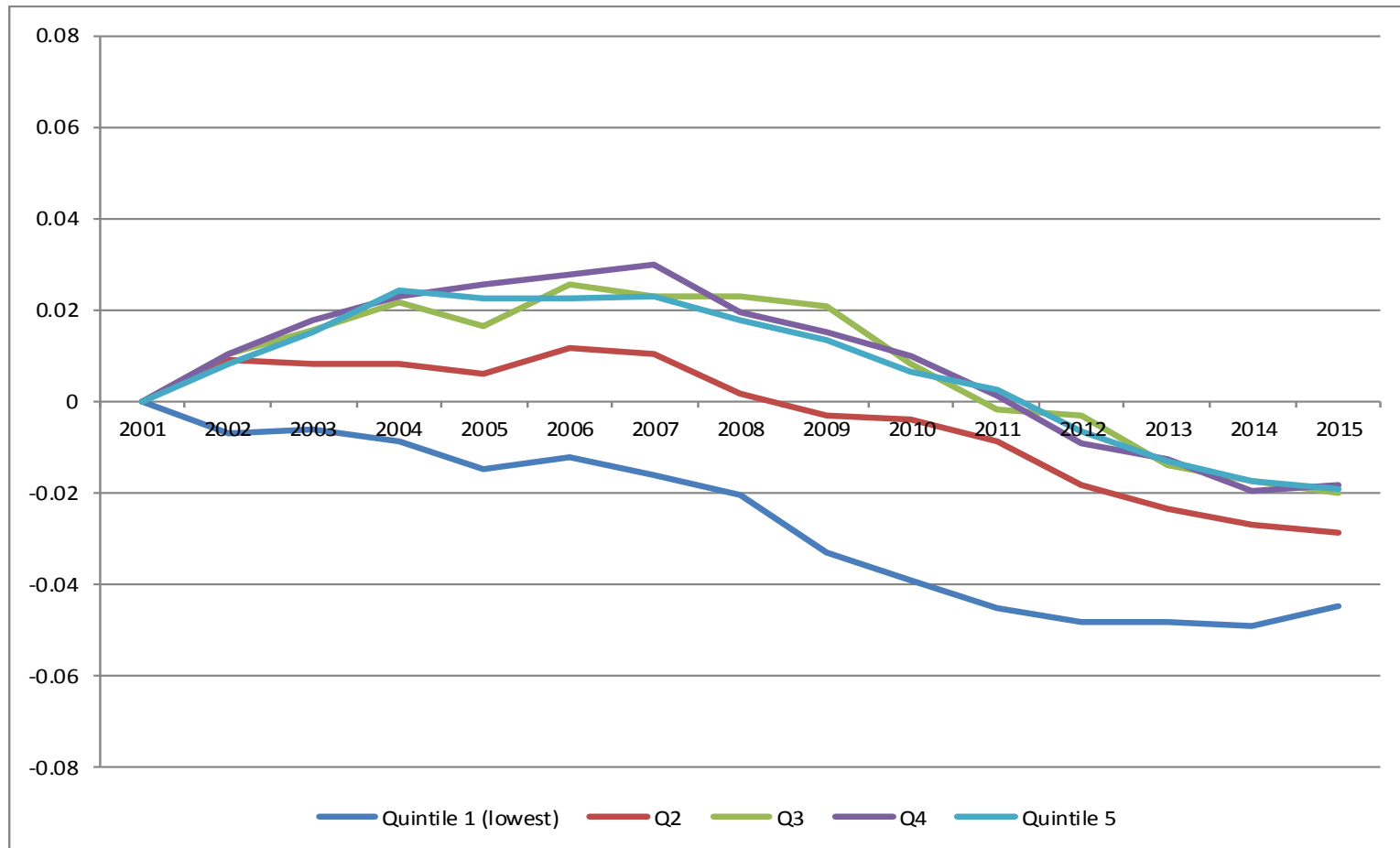


Homeownership rates

- Increases in homeownership for all except the lowest income households, ACS data
 - Confirm the fact with other Census sources (AHS, CPS)
- Similar pattern holds across high and low house price states

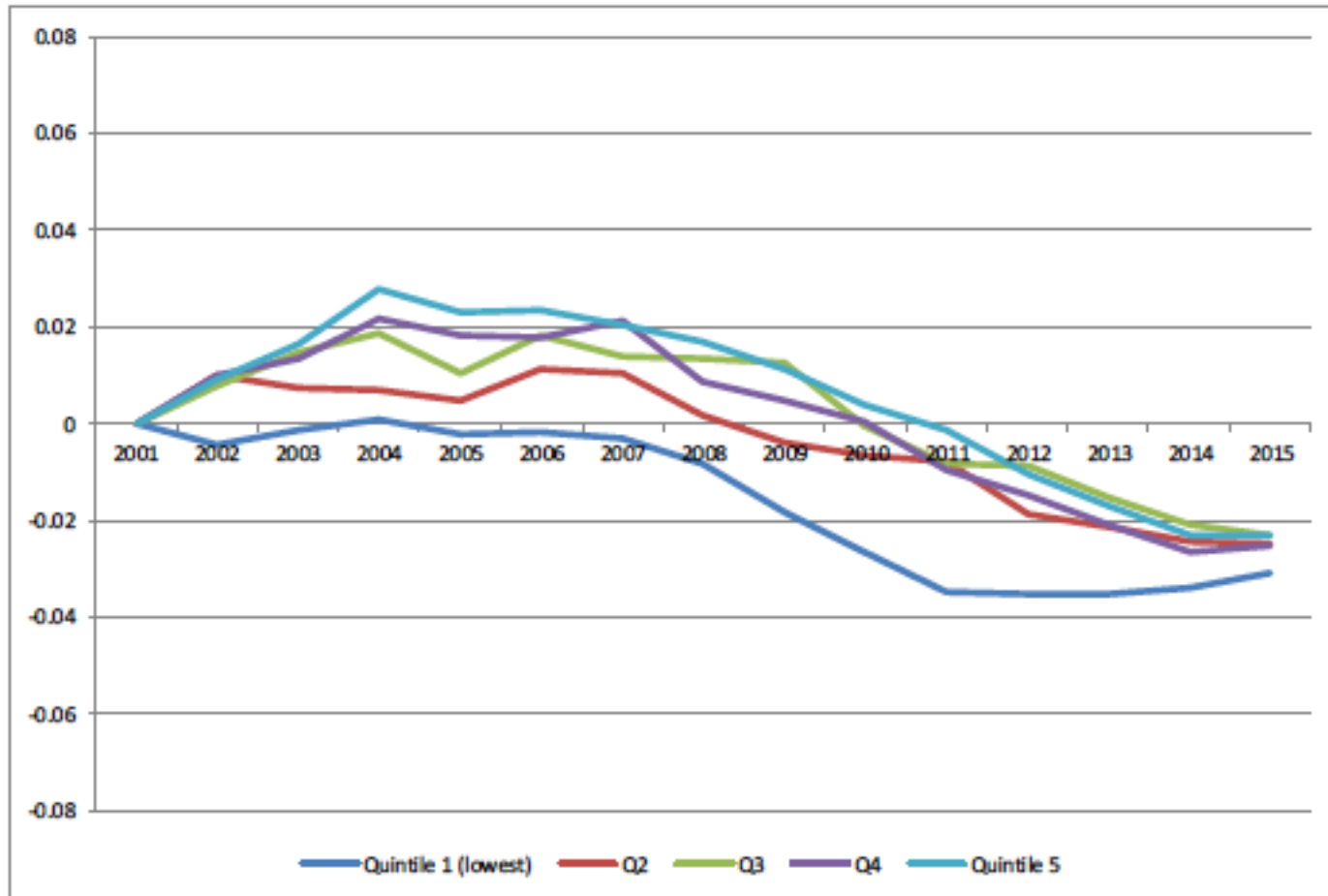
Homeownership Rates (all states)

ACS data



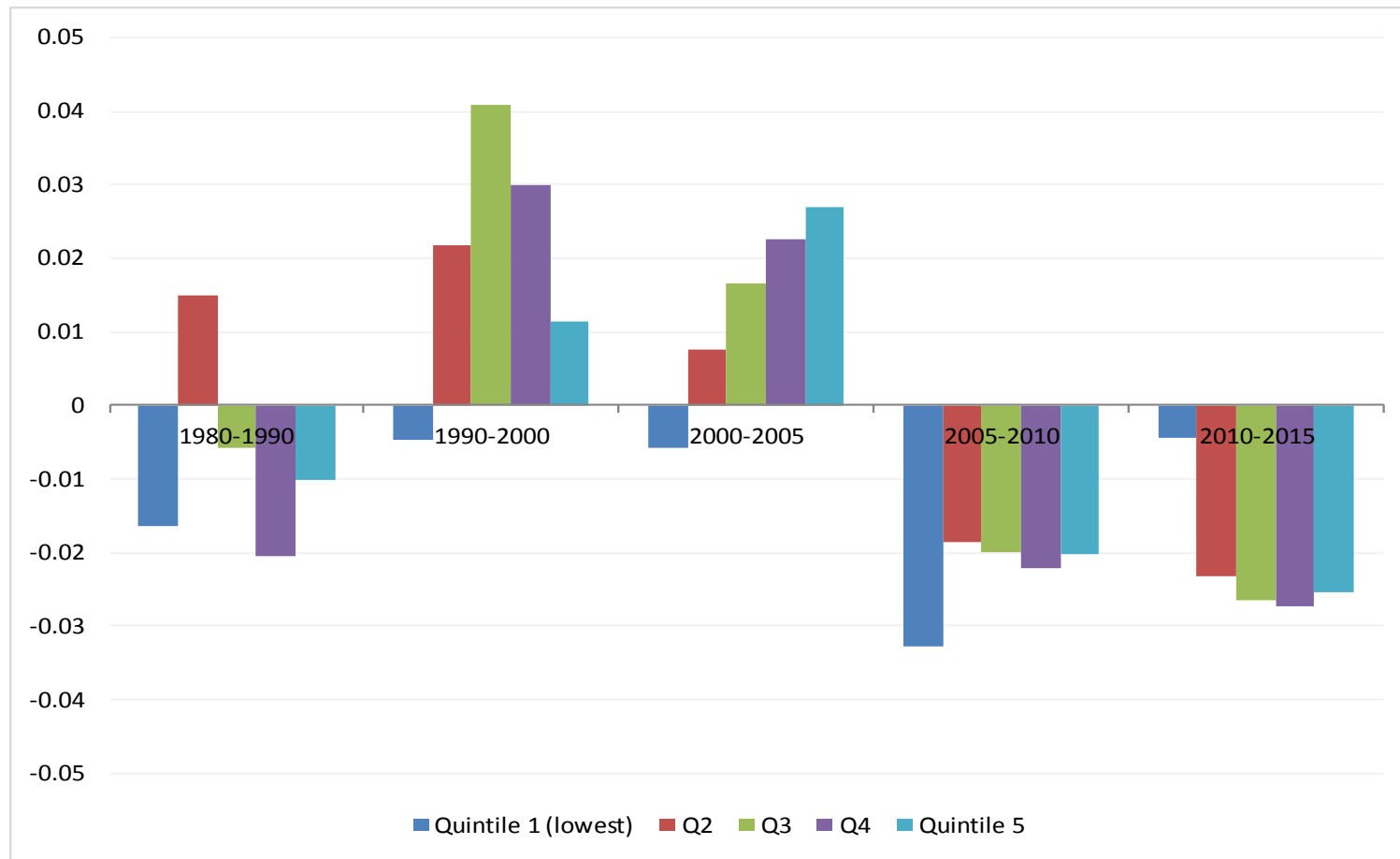
Homeownership Rates (“Boom states”)

ACS data



Homeownership rate (historical)

Census and ACS data

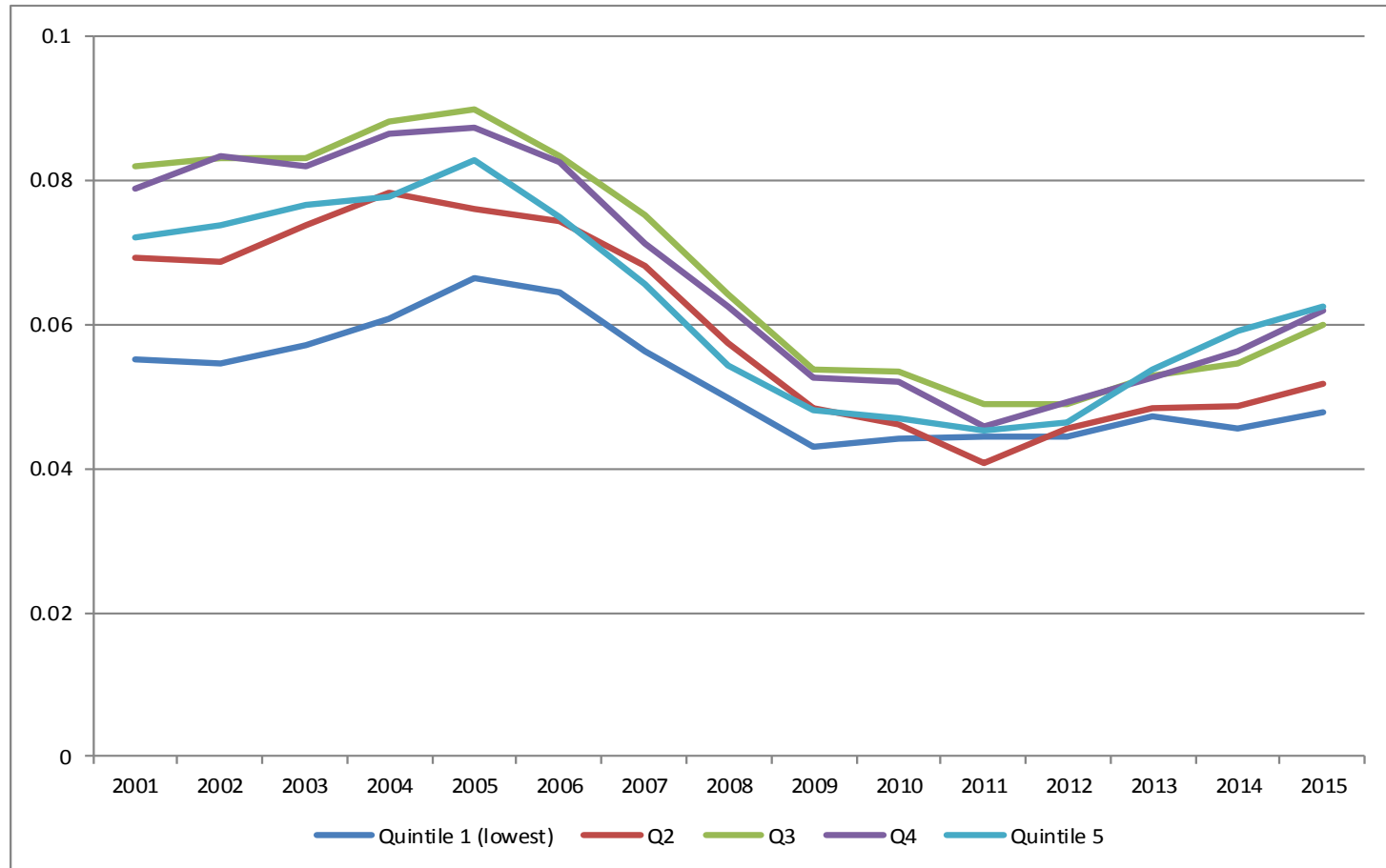


Speed of Flipping Homes (Churn)

- Speed at which homeowners sold and bought homes
 - Was high in early 2000s and peaked in 2006: Approximately 8% of homeowners had bought their home in the previous 12 months
 - Rate drops to 4% in the crisis, only increases after 2012
 - Churn rates are higher for high and middle vs. low income households

Churn

Share of owners moving in last 12 months, ACS data

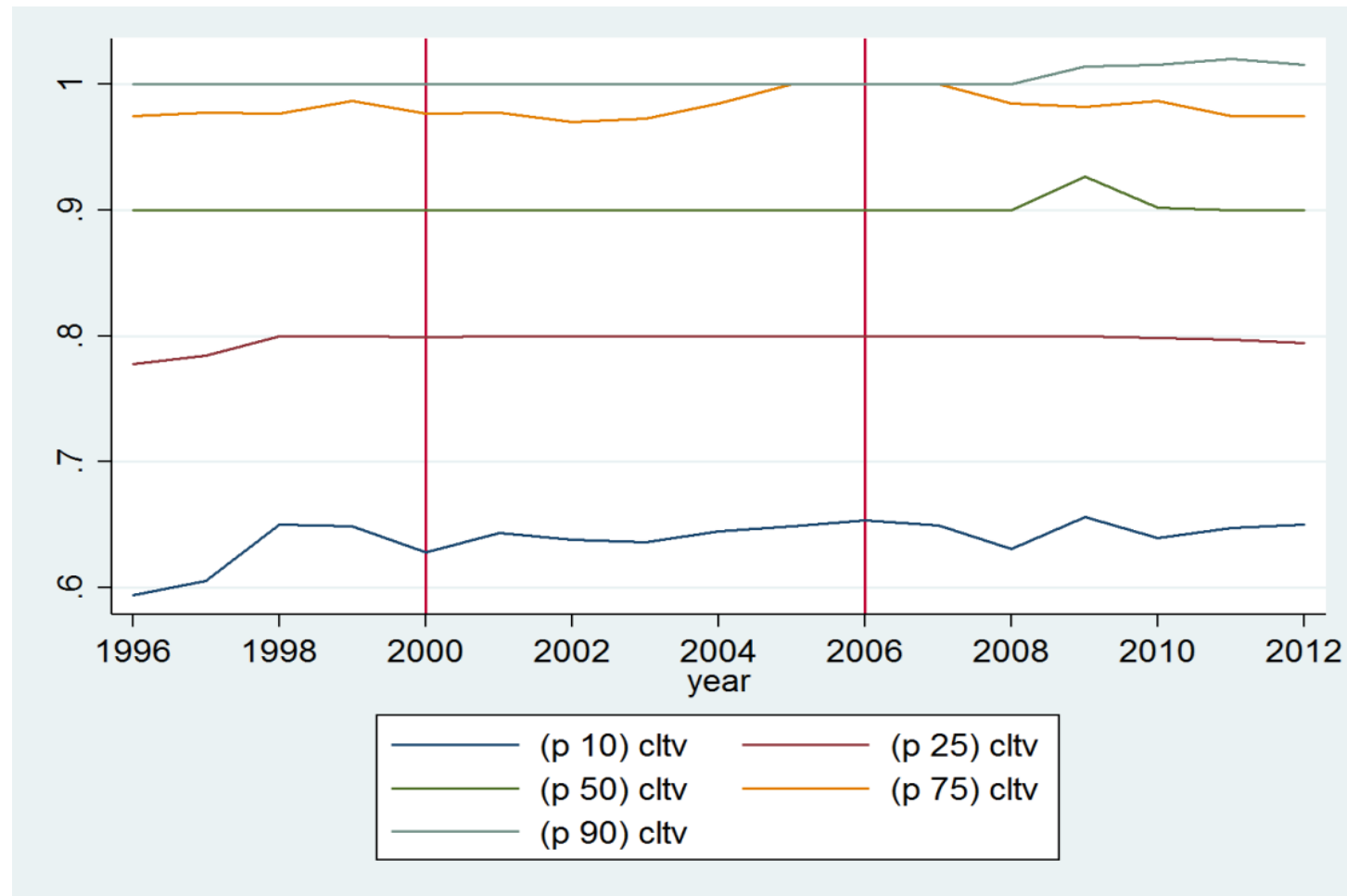


Loan-to-value

- Distribution of Combined LTV at origination
 - Very stable over the boom period, even when we condition on mortgage size.
 - No pronounced differences in areas with high and low house price growth.

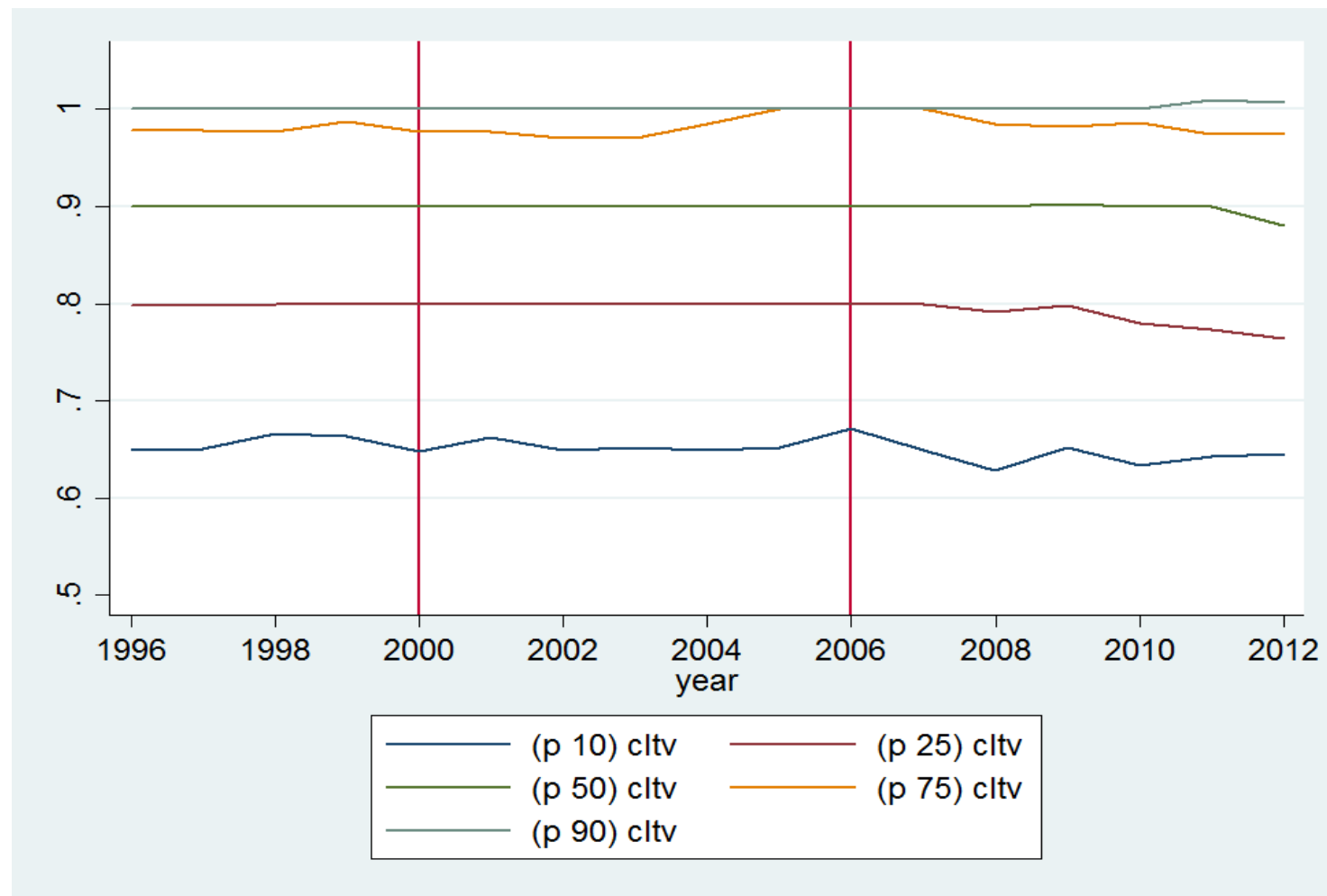
Loan-to-value

New home purchases, Corelogic (formerly Dataquick)



Loan-to-value in boom states

New home purchases, Corelogic (formerly Dataquick)

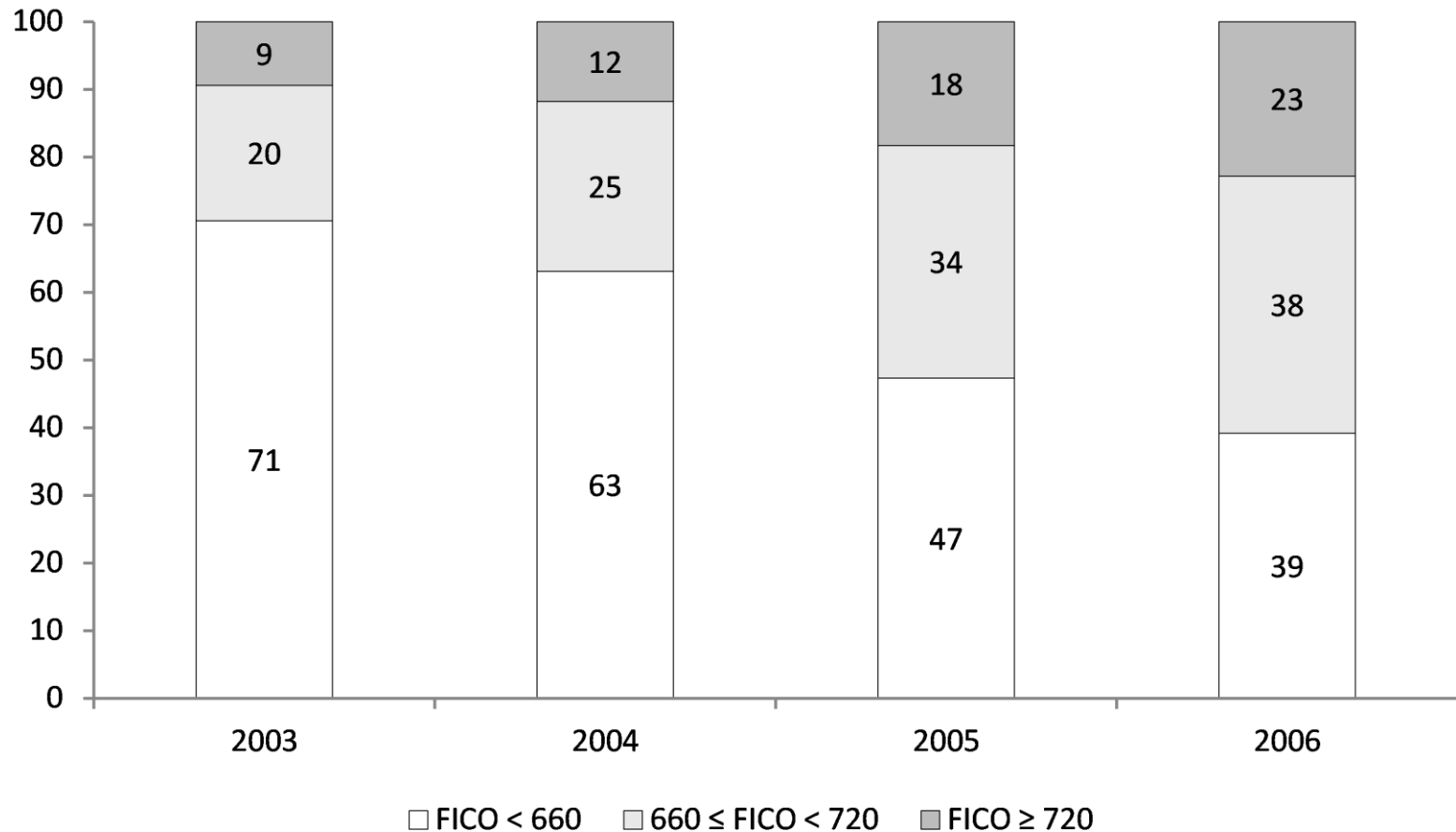


Defaults

- Middle-income and prime borrowers sharply increase their share of total delinquencies in the crisis
 - Particularly in areas with large house price increases and subsequent drops

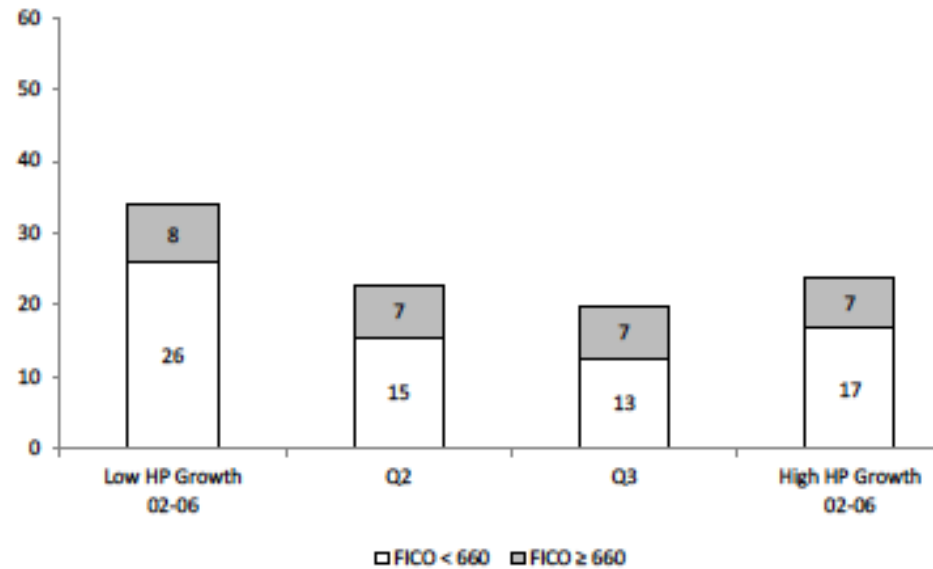
Share of Delinquent Mortgages

3 Years Out, by Cohort – Value Weighted, LPS data

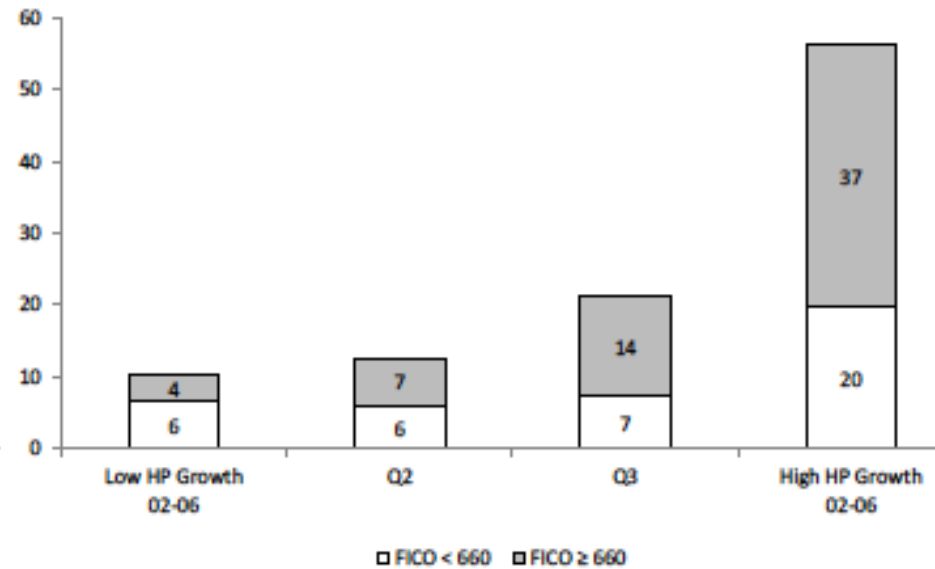


Share of Delinquent Mortgages

3 Years Out, by house price growth in 2002-06



2003 mortgage cohort

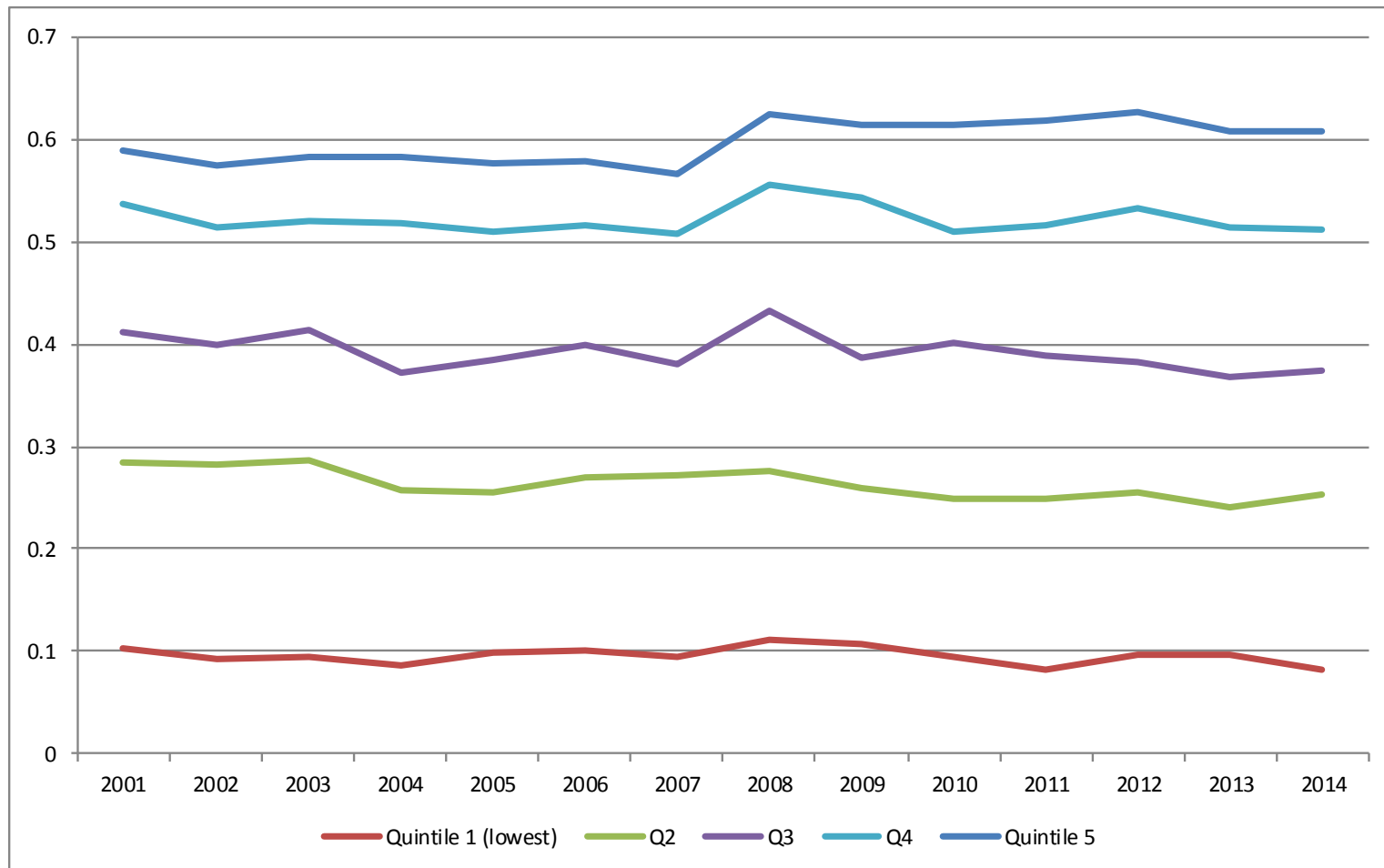


2006 mortgage cohort

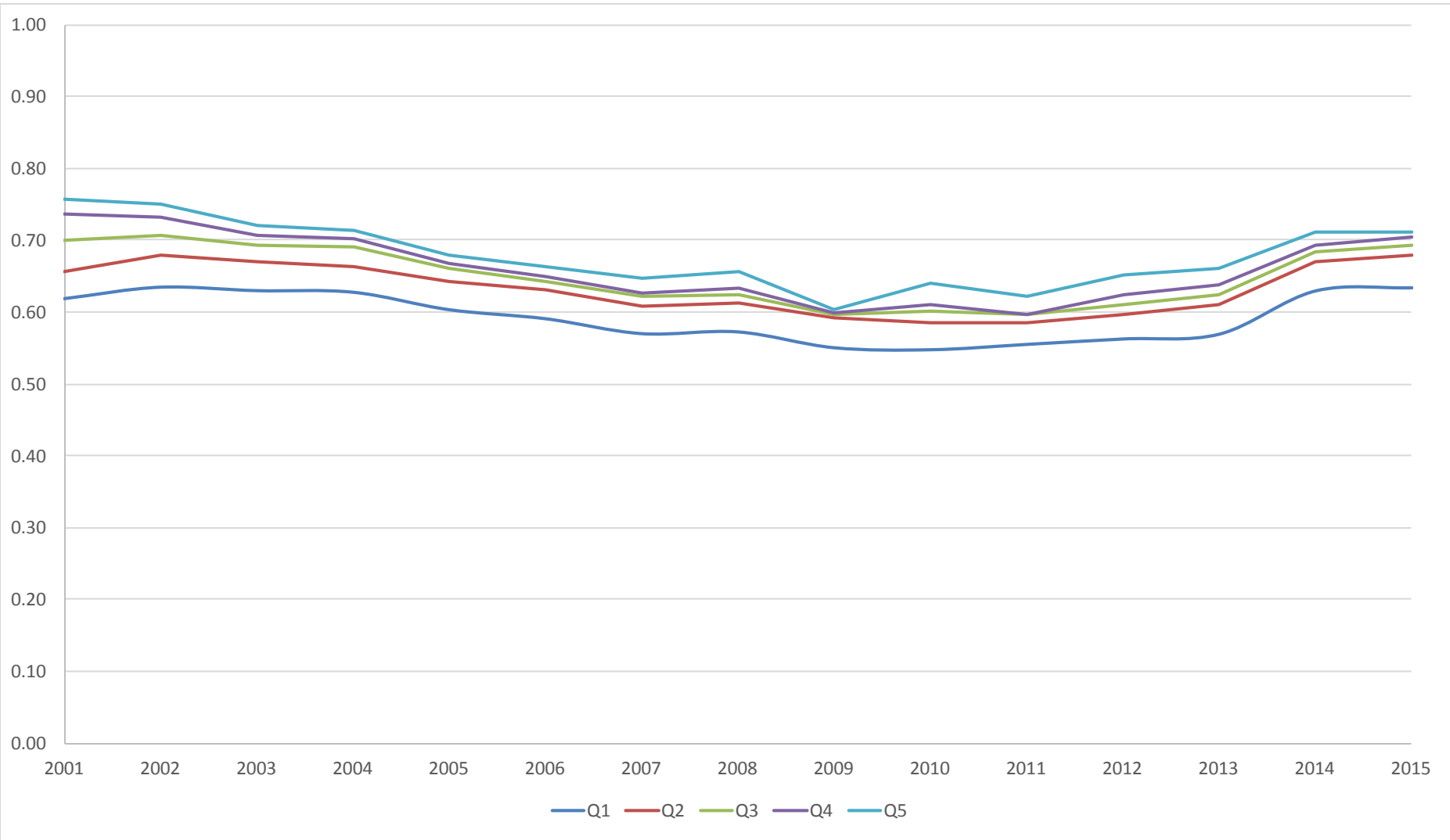
Who are the “marginal borrowers”?

Stability of employment

Households with full-time employment, ACS data



Loan Approval Rates



Conclusion

- House prices played a major role in the expansion of credit and delinquencies
 - Credit expansion and subsequent defaults significantly stronger in areas with high house price growth
 - Stable CLTV levels at origination over the boom suggest lenders lent “mechanically” against increasing house price values (V).
- Post crisis policy response
 - Mortgage credit and homeownership rates to lower income borrowers drops dramatically after the crisis
 - Changes in policy targeted at lower income households may have prevented them buying when prices were low, without improving the stability of the mortgage market.