

Regional Heterogeneity and Monetary Policy

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Summary

- ▶ Main question: how did QE1 differentially impact regions of US with different housing market experiences?
- ▶ Empirical results: QE1 had smallest effects on mortgage issuance and spending in regions with largest house price/employment declines.
 - Increases regional consumption inequality.
 - Explanation: limited extractable home equity made refinancing less sensitive to interest rates in depressed regions.
- ▶ Heterogeneous agent model: reproduce empirical findings, but show that result specific to circumstances of QE1.
 - With more favorable equity distribution, cutting mortgage rates can both stimulate economy and reduce consumption inequality.

Evaluation

- ▶ Paper highlights important and intuitive mechanism.
- ▶ Main limitation: exogenous house prices.
 - Equity extraction decision depends both on interest rate incentives and amount of extractable equity.
 - Evidence that house prices move strongly with rates (e.g., Aladangady (2014)) \implies QE1 could act through house prices, credit limits.

- ▶ House prices one of the main targets of QE1:

*This action is being taken to reduce the cost and increase the availability of credit for the purchase of houses, **which in turn should support housing markets and foster improved conditions in financial markets more generally.***

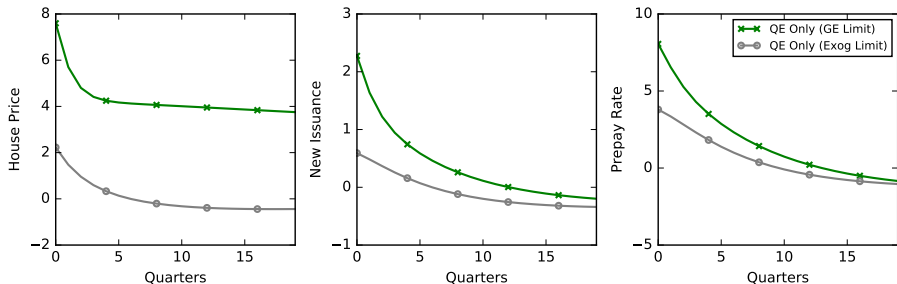
- ▶ This discussion: evaluate house price effects using Greenwald (2016).
 - Important for quantitative strength of QE.
 - But authors' mechanism confirmed (likely stronger).

Greenwald (2016) Model

- ▶ Limited heterogeneity: representative borrower, saver.
- ▶ Endogenous house prices.
- ▶ New borrowing limited by both loan-to-value (LTV) and payment-to-income (PTI) constraints.
 - Strong transmission from interest rates to house prices.
- ▶ Mortgage contract: long-term prepayable FRMs.
 - Heterogeneity in prepayment decision \implies Transaction cost shocks.
- ▶ Monetary policy: shocks to trend inflation move mortgage rates.
- ▶ Closed economy, endogenous labor supply, sticky prices.

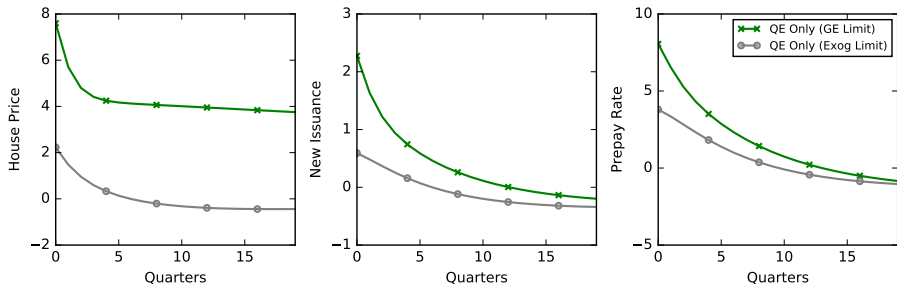
QE vs. Exogenous Debt Limits

- ▶ QE experiment (normal times): near-permanent 100bp fall in nominal rates. Computation: nonlinear deterministic transitions.



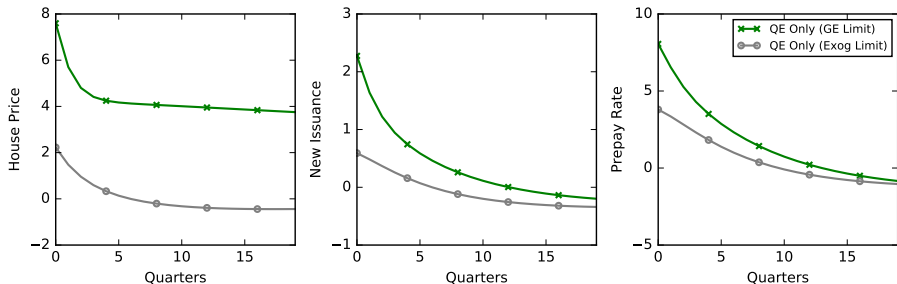
GE vs. Exogenous Debt Limits

- ▶ Model with endogenous house prices (GE Limit) delivers much stronger responses than economy with fixed debt limit (Exog Limit).



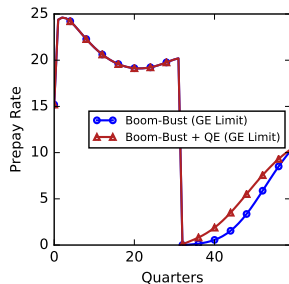
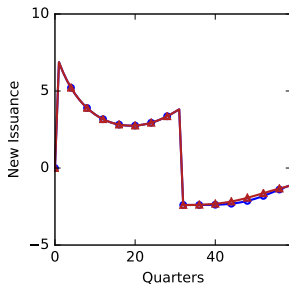
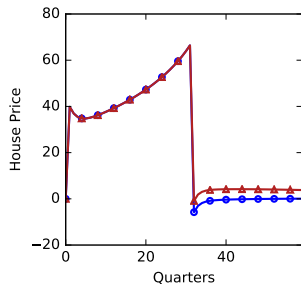
QE vs. Exogenous Debt Limits

- ▶ BFHV model excludes house price effects, may understate impact.



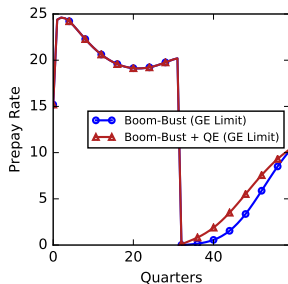
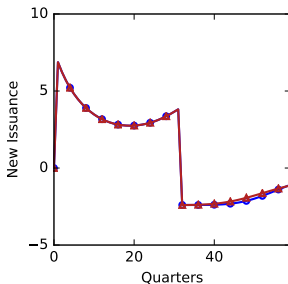
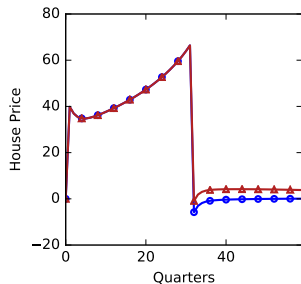
Boom-Bust Experiment

- ▶ Previous results start at steady state. What about the housing crash?



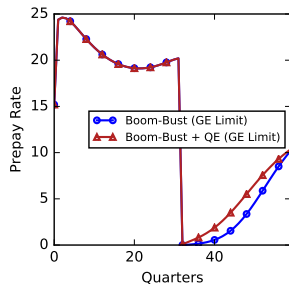
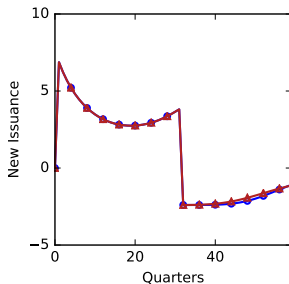
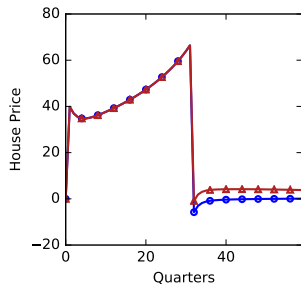
Boom-Bust Experiment

- ▶ Simulate housing boom-bust using relaxation of PTI limits, unrealized house price expectations. Experiment: apply QE at start of bust.



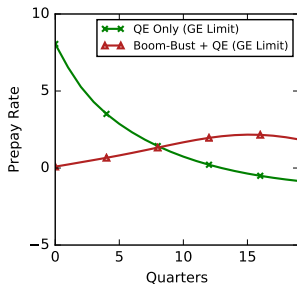
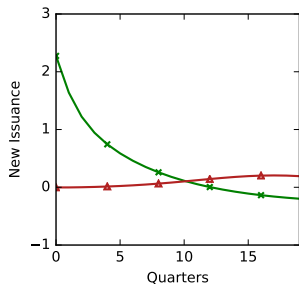
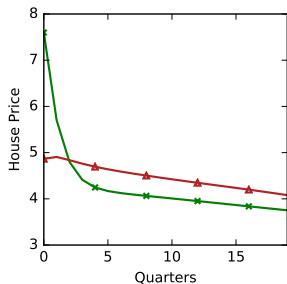
Boom-Bust Experiment

- ▶ Take difference between the two as QE response in housing bust.



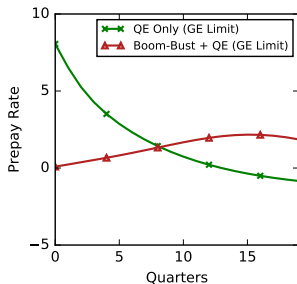
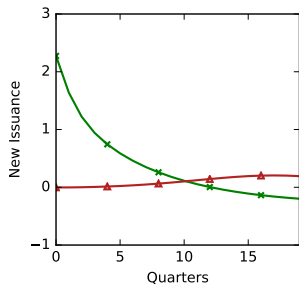
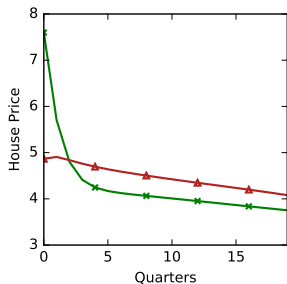
State-Dependent Responses

- ▶ Compare response in normal times, bust to approximate regional variation.



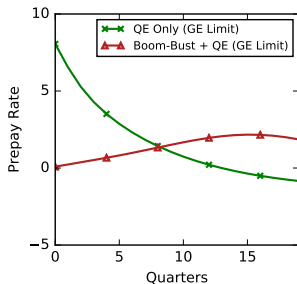
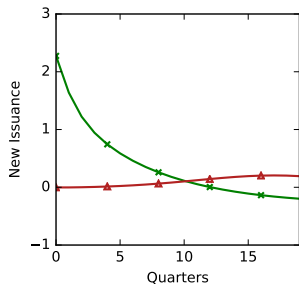
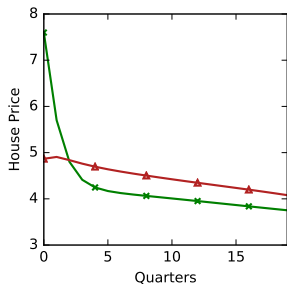
State-Dependent Responses

- ▶ QE in depressed housing conditions still effective at raising house prices.



State-Dependent Responses

- ▶ However, authors mechanism (little refinancing, new issuance in depressed state) completely validated.



Conclusion

- ▶ Combined empirical and theoretical approach lays out compelling channel from monetary policy to regional inequality.
- ▶ Treating house prices as exogenous initial conditions rather than outcomes may limit response.
 - QE1 may have been effective stimulus for housing market.
- ▶ But inequality channel appears to hold up strongly under endogenous house prices.
 - Very little debt response in bust experiment, despite house price boost.