

“Modelling a Housing and Mortgage Crisis”  
Discussion by Simon Gilchrist

Motivation:

- Housing sector collapses has important consequences through its impact on asset prices, default risk, and spillovers via interbank and other short-term lending markets.
- What is the evidence for such spillovers?
- What is the appropriate policy response?

**Previous literature:**

- DSGE models with important linkages between balance sheets of borrowers and real activity: These models imply a financial accelerator mechanism.
- Partial equilibrium models of interbank and other financial markets:
  - Allow one to study the role of interbank trades, along with bank runs, and “fire-sales” of assets.
  - These models imply multiple equilibria and may provide an economic rationale for government intervention through asset purchases.
- Finite-period general equilibrium heterogeneous agent models with costly default and limits to trade – this allows a role for money and banking.

This paper:

- Builds on previous work by authors that models financial fragility in an environment with heterogenous agents, liquidity and costly default.
  - Two period models with cash in advance constraints to generate money demand and hence monetary-real linkages.
- In contrast, recent work by Kiyotaki and Moore considers dynamic environments where money has value owing to liquidity risk:
  - Assets (houses) provide collateral but are illiquid. In bad states of the world, liquidity risk is high and households is exposed to idiosyncratic risk.
  - Money bears no idiosyncratic risk and provides a hedge against liquidity risk. Result – money is valued in equilibrium even without cash in advance constraint.
- In both models, monetary injections or other policy interventions help mitigate liquidity problems of private agents in bad states of the world.

## Households:

- Consume housing and other goods.
- Have access to financial markets:
  - Assets: Money, Bank deposits, Housing claims.
  - Liabilities: Intraperiod debt – relates transaction cost of using money to the interest rate. Mortgages.
- Endowments:
  - Goods
  - Housing
  - Money

## **Banks:**

- Utility maximize with respect to profits – risk aversion creates demand for bank capital.
- Raise deposits from households and lend in both short-term money market and mortgage market.
- May borrow or lend to other banks via the interbank loan market.
- Banks are heterogenous in terms of capital endowments and quality of bank-dependent borrowers.

**Heterogeneity:**

- Some households are long in housing – sell houses to buy goods.
- Other households are short in housing – sell goods to buy housing.
- New agents have positive housing demand but only operate in second period. These agents cannot hedge against housing risk.
- Banks are heterogenous in capital “endowments” and quality of bank-dependent borrowers.

**Financial frictions:**

- Households can default on mortgages. Housing serves as collateral against default.
- Households may use short-term financing to transact in other goods but are bank-dependent in this activity (i.e. households are committed to a specific bank).
- Money provides liquidity for goods transactions via cash-in-advance constraint.

## **Central Bank**

- Determines money supply and therefore interest rate in interbank market.
- Interbank rate varies across banks in second period.

## **Equilibrium:**

- Two period model with endowment (supply) shocks in second period.
- Parameterize preference and profit functions, along with shocks.
- Result: illustrative examples that highlight the importance of spillovers via the inter-bank market and the potential benefits of monetary and bank regulatory policy.
- Experiments:
  - Monetary injections.
  - Increased risk-taking by banks.
  - Provision of bank capital in bad states of the world.

**Key mechanism:**

- In model without heterogeneity, money affects all prices equally and has no consequences.
  - Bank capital still matters owing to risk-aversion of banking sector.
- Heterogeneity in banks and households combined with limits to trade imply that marginal utilities are not equated across agents.
- Monetary injections and other policy changes will redistribute purchasing power and risk across agents in equilibrium.

## Policy Implications:

- Monetary injections reduce interest rates and facilitate trade owing to CSV modeling framework.
- Bank capital injections alter risk distribution in bad states of the world.
- Difficult to assess “optimal policy” in heterogenous agent environments with winners and losers:
  - e.g. monetary policy injection helps borrowers and hurts lenders.
  - What happens if agents own banks?
- Interest rate targeting – which interest rate?

### Some questions:

- Is this a model of housing?
  - “Houses” are durable but are freely tradeable and hence liquid.
  - In contrast, “goods” are subject to transactions costs via cash-in-advance constraints.
  
- Is this a model of banking?
  - Banking is an activity that specializes in information gathering and lending.
  - Banks are subject to financial market imperfections that limit their ability to raise funds in the open market and hence hold capital as “collateral”
  - Risk-aversion is ad hoc assumption to proxy for these underlying frictions.

- Is this a model of liquidity?
  - Banks borrow short-term (deposits) and lends long-term (assets).
  - Liquidity crises reflect the revelation of bad information prior to the realization of returns on long-term assets.
  - Banks and other financial institutions need to “roll-over” their debt prior to such long-term payoffs but may not be able to do so if the information revealed is sufficiently bad.
  - In this model however there is no information revelation prior to realization of returns on housing.
  
- Is this a model of asset prices?
  - Asset (Housing) price bubbles can be motivated by limits to arbitrage (short-selling constraints) and heterogenous beliefs.
  - In this model, all agents have common beliefs and expectations are rational.

**More generally:**

- This model emphasizes the linkages between interest rate spreads on private sector borrowing and the willingness (ability) of banks to lend.
- Recent evidence suggest these linkages are in fact very strong:
  - Gertler and Lown
  - Gilchrist and Zakrajsek

## Summary:

- Rich framework that captures important aspects of the role of money and banking in facilitating transactions in an environment where loans are defaultable.
- Current model provides interesting illustrative examples that highlight the potential costs and benefits of various monetary and bank regulatory alternatives.
- Ultimately, we need a model that fits into a recognizable DSGE framework that is both quantifiable and amenable to systematic policy analysis