Lessons from the Recent Housing Market Cycle

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1. Three Questions about the Recent Housing Cycle

1. What were the causes?
2. How did the housing cycle spill over to the broader economy?
3. Where is the housing market headed?

Model-Based Answers

- I will give some answers based on a **quantitative** dynamic stochastic general equilibrium model of the housing market
- The model adds a rich housing sector to a well-estabilished framework that is increasingly used in quantitative monetary policy analysis
- The model is my discipline device
- While I have control over the model workings, I try to learn from its predictions using a scientific method

A Model of the Housing Market

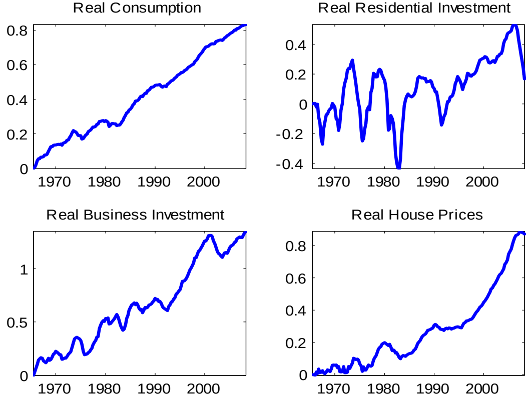
- Model described in Iacoviello and Neri (2008) and Iacoviello, Kamenik, Kumhof and Laxton (in progress)
- Multi-sector structure with housing;
  Collateral effects on spending for a fraction of households:

$$\underset{\text{mortgage debt}}{b_t} = \underset{\text{loan-to-value (90\%)}}{m} \underset{\text{value of the house}}{V_t}$$

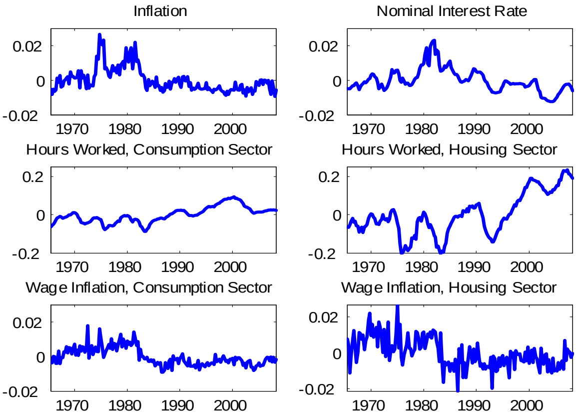
- Model contains several sources of inertia (nominal rigidities, habits, investment adjustment costs) that allow a good fit to the data

2. The Model

- Sectors with different trend technological progress
  - $Y-$sector produces consumption, business investment, intermediate goods (using K and N)
  - $IH-$sector produces new homes (using K, N, land and interm. goods)
- Two Types of Households
  - Patient Households work, consume, buy homes, rent capital and land to firms and lend to impatient households
  - Impatient/Credit Constrained Households work, consume, buy homes and borrow against their home
- Sticky prices in the non-housing sector, Sticky wages in both sectors
- Central Bank runs Monetary Policy following a Taylor rule



Model Estimated on 10 U.S. time series


Inflation
0.02
0
-0.02
1970
1980
1990
2000
Nominal Interest Rate
0.02
0
-0.02
1970
1980
1990
2000
Hours Worked, Consumption Sector
0.2
0
-0.2
1970
1980
1990
2000
Hours Worked, Housing Sector
0.2
0
-0.2
1970
1980
1990
2000
Wage Inflation, Consumption Sector
0.02
0
-0.02
1970
1980
1990
2000
Wage Inflation, Housing Sector
0.02
0
-0.02
1970
1980
1990
2000

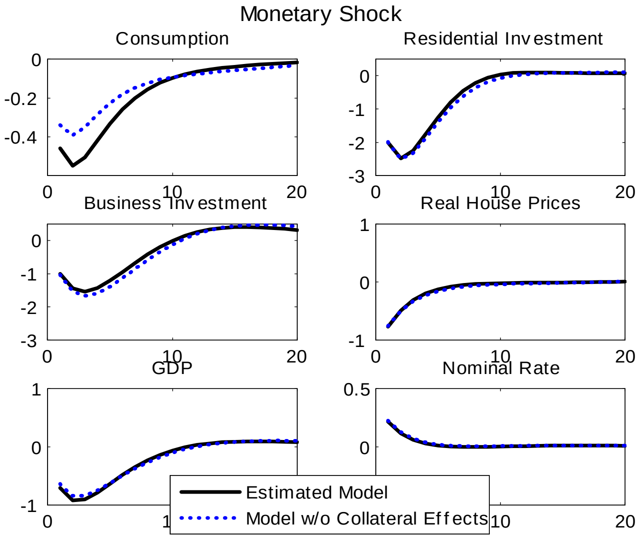
3. RESULTS

1. Slow rate of technological progress in housing construction explains upward trend in housing values of the last decades.
2. Wage share of credit constrained households estimated around 20 percent

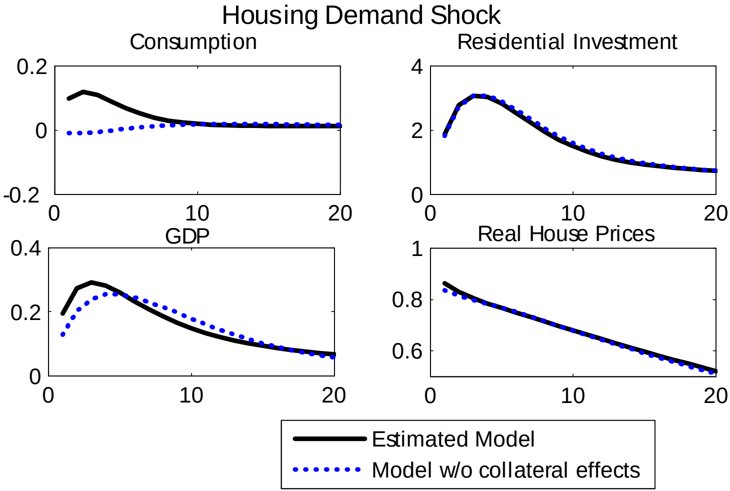
   These are the households who suffer the most from drops in housing values

   This fraction is large enough to amplify effects on consumption from fluctuations in housing values (especially for high values of the loan-to-value ratio)

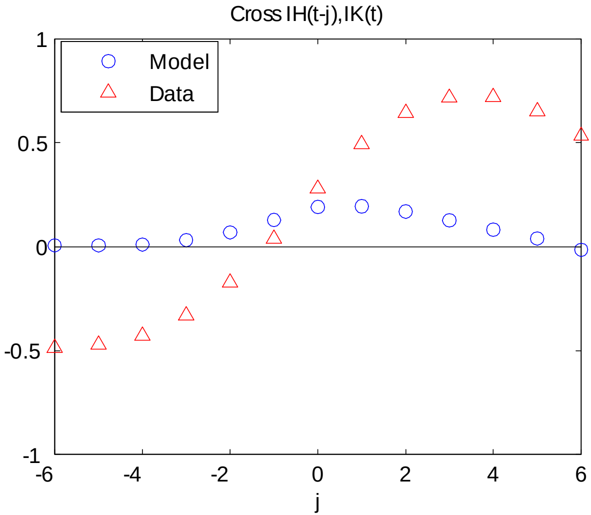
Properties of the Estimated Model: Impulse Responses



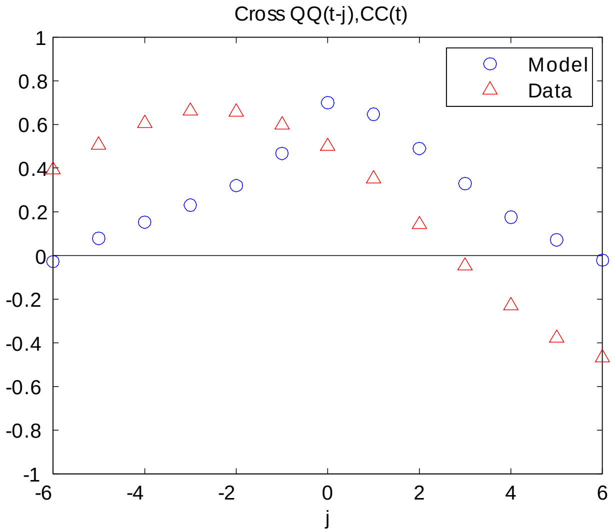
Properties of the Estimated Model: Impulse Responses



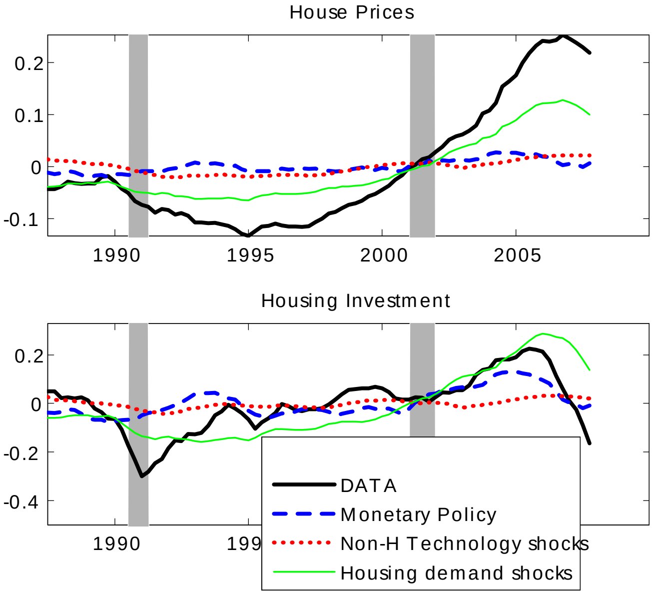
Properties of the Estimated Model: Housing Investment Leads the Cycle



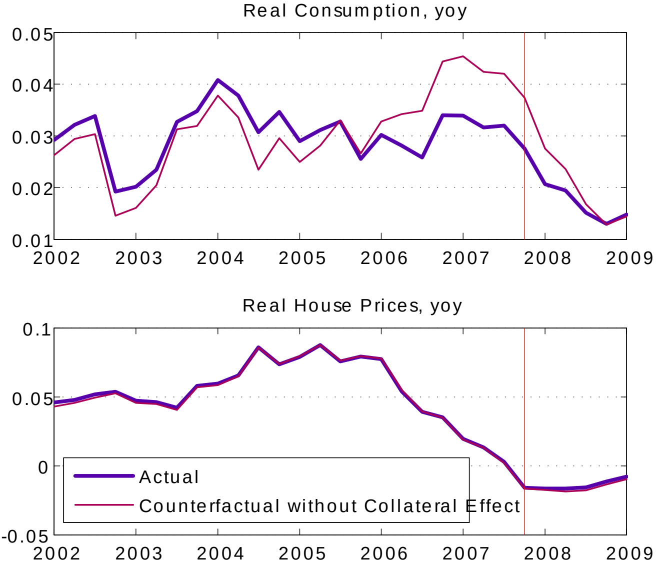
Properties of the Estimated Model: Housing Prices and Consumption are Positively Correlated



4.1. The Recent Cycle: What were the causes?



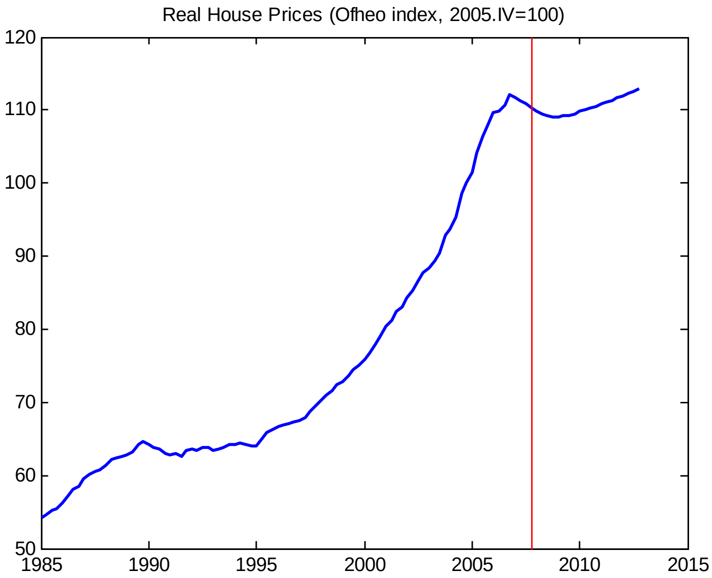
4.2 Did the Housing Cycle Feed Consumption Spending?



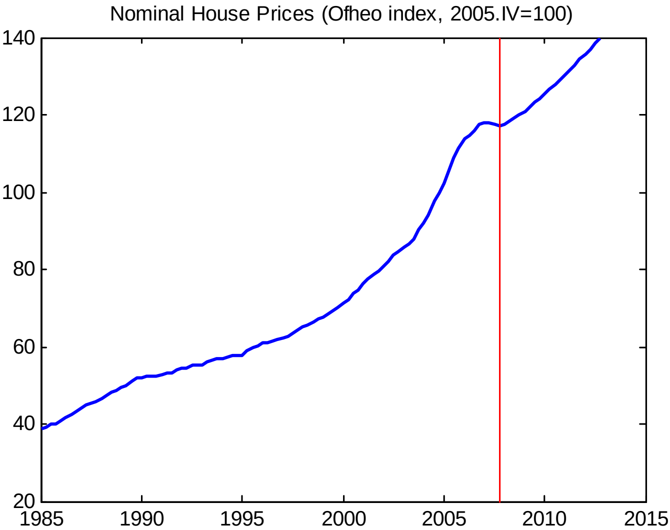
Did the Housing Cycle Feed Consumption Spending?

Year	Model (Actual) Consumption Growth	Counterfactual Consumption Growth	Contribution of housing to C
2001	2.5%	2.3%	0.2%
2002	2.9%	2.5%	0.4%
2003	2.8%	2.5%	0.3%
2004	3.7%	3.2%	0.5%
2005	3.0%	2.9%	0.1%
2006	3.0%	3.7%	-0.7%
2007	3.2%	4.3%	-1.1%
2008	1.7%	2.0%	-0.3%
2009	2.0%	2.0%	0%

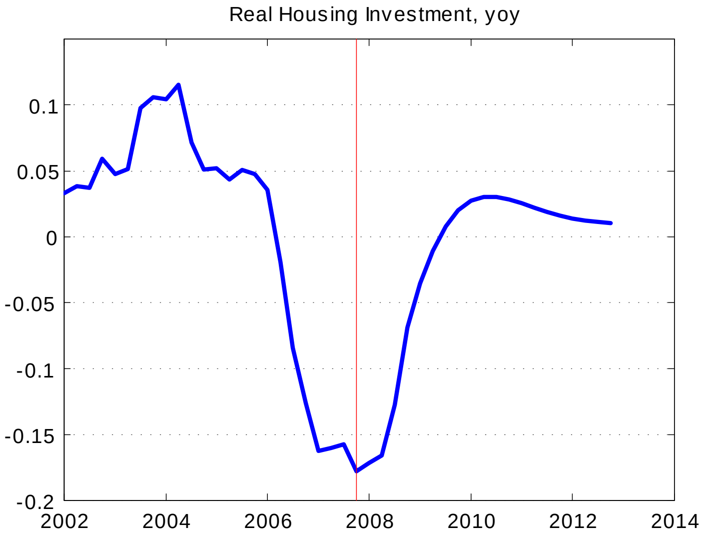
4.3. Where is the Housing Market Headed? Real Prices



4.3. Where is the Housing Market Headed? Nominal Prices



4.3. Where is the Housing Market Headed? Quantities



5. Conclusions

1. The Housing Boom of the late 1990s/early 2000s was mostly driven by demand-side factors in the housing market
   Technological Progress in the non-housing sector and Monetary Policy might have contributed for about 15/20 percent each
2. The Housing Boom has kept consumption growth strong (+0.3% p.a. b/w 2002-2005).
   The housing Bust has dragged consumption growth down (-0.8% p.a. in 2006 and 2007)
3. Real House Prices should return to their 2006 peak around 2012, if no further shocks hit the housing market.