Discussion of

"Aggregate Shocks and the Volatility of House Prices"

by Rios-Rull and Sanchez-Marcos

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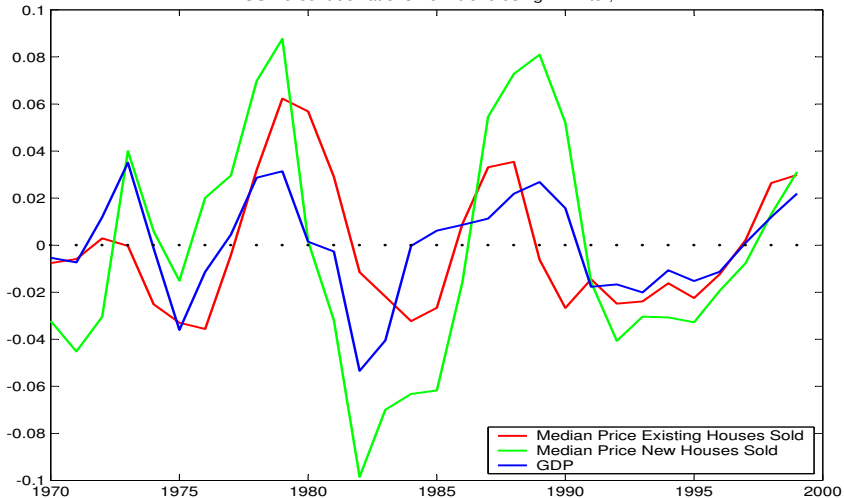
Housing Conference at the LSE
May 18, 2009

The Question

- Why are house prices so volatile and so procyclical?

- Why is volume of house sales so volatile and so procyclical?

- Want: a quantitative theory to account for the facts.

US.Percent deviations from trend using HP filter, A

Legend:
- Median Price Existing Houses Sold
- Median Price New Houses Sold
- GDP

US.Percent deviations from trend using HP filter,A
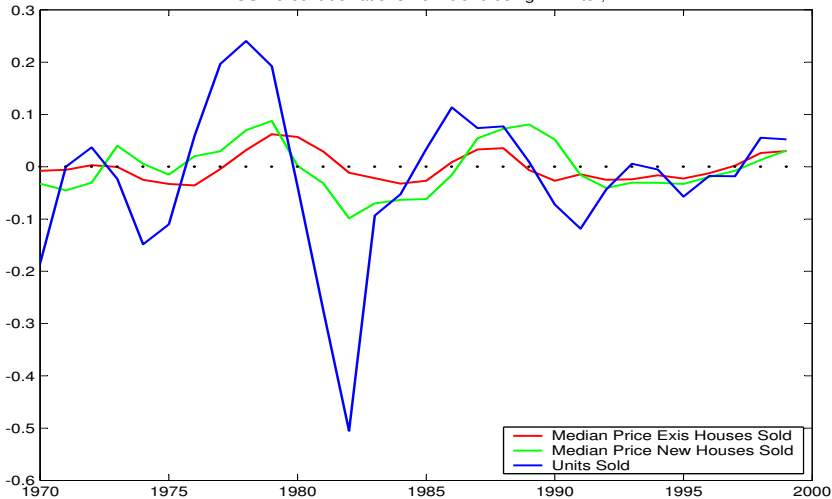
Basic Facts: Volatility and Correlation with GDP

Variable	σ_i/σ_{GDP}	$\rho_{i,GDP}$
$\bar{P}_{ex}$	1.29	0.56
$\bar{P}_{new}$	2.27	0.78
Units	6.77	0.66

The Method

- Construct a model with a) fixed supply of lumpy houses (land?) b) idiosyncratic shocks and incomplete markets and c) aggregate shocks to labor/capital income and mortgage interest rates

- Calibrate it so that model matches selected cross-sectional facts.

- Compute impulse responses to aggregate shocks

The Answer

- With (almost) rational agents and mean-reverting shocks house prices no more volatile than GDP. Sales countercyclical.

- Now free expectations. If expectations about prices are overly optimistic in expansions (overly pessimistic in recessions), house prices much more volatile than GDP. Sales become procyclical.

Key Model Ingredients: Housing

- Three types of dwellings houses h, flats f and the street 0. Prices P_h, P_f. Preferences

$$u_h(c, \eta) > u_f(c, \eta) > u_0(c)$$

- Fixed supply of houses and flats μ_h, μ_f.

- Transaction costs of 10% of purchase price

- Borr. constraint: cannot borrow more than $1 - \alpha$ of value of home.

Key Model Ingredients: Financial Markets _____

- Mortgage interest premium $\bar{r}$ per unit borrowed.

- Financial asset in unit net supply that pays dividends r. Price P_b.

- Idiosyncratic earnings risk: earnings group $e \in E = \{e_1, \ldots, e_M\}$ follows Markov chain with transition $\Gamma_{e,e'}$. Individuals of group e draw iid earnings from F_e. Also idiosyncratic mortality risk π and preference shocks η

- Incomplete financial markets.

The Macroeconomy

- Aggregate shocks $z \in Z = \{z_1, z_2, \ldots, z_N\}$ follow Markov chain with transition $\Gamma_{z,z'}$. They affect

  - Mortgage interest rates $\bar{r}(z)$.

  - Dividends $r(z)$

  - Household earnings distribution $F_e(z)$.

 - Downpayment requirement $1 - \alpha(z)$

Thought Experiments

- Compute household decision rules and aggregate law of motion in model with aggregate shocks.

- Run economy with constant z until a "steady state" is reached. Then hit it with an aggregate shock to $\bar{r}(z)$, $r(z)$, $F_e(z)$, $\alpha(z)$.

- Trace out the impulse response function.

- Do it both for households with (almost) rational expectation and for households with irrational expectations.

Main Findings: Focus on Earnings Increase

- With rational expectations no propagation of shocks. House prices move less than underlying shocks. In model $\sigma_P/\sigma_Y < 1$.

- Sales countercyclical: go down in response to positive income shocks.

- Key "problem": Mean reversion of z-process expected.

Prices
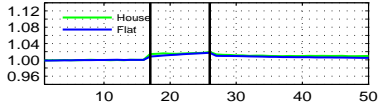
Sales
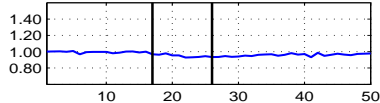
Main Findings: Focus on Earnings Increase

- Irrational house price expectations of households. In expansions expect continuous growth of house prices (by 3% per annum). But understand mean reversion of the z-process.

- House price response doubles. Sales go up initially.

- The expected house price growth makes immediate purchase favorable. But sales fall in second period.

- Conclusion: expectations crucial for house price/sales dynamics.

Comments I: Recurrent Aggregate Shocks Needed?

- Given the thought experiment solving a model with aggregate risk seems overkill (it is very hard!).

- Simply use stationary economy and trace out transition path induced by a zero probability shock.

- The exercise with irrational agents is close in spirit to this exercise.

- I bet: resulting "impulse responses" look very similar to what's currently in the paper (at 1/100 of computing cost).

Comments II: What is the Target?

- The rational model has problems matching house price volatility despite the fact that

  - Paper models existing homes. Prices of these fluctuate less than newly constructed homes. Eases the target for the model.

  - Supply of houses is completely fixed. Since housing construction is procyclical in data, stacks cards in favor of model.

- "Puzzle" is worse than you think.

Comments II: What is the Target?

- Large low-frequency movements in house prices.

- Literature that uses model with rational households and land in fixed supply. Argues that productivity and real interest movements go long way in explaining price movements (Kahn 2009, Kiyotaki, et al. 2009).

- This model shares many features with that literature. Why doesn't it work?

- Opportunity for intellectual arbitrage?

Figure 1: Alternative Home Price Indexes (Inflation-Adjusted)
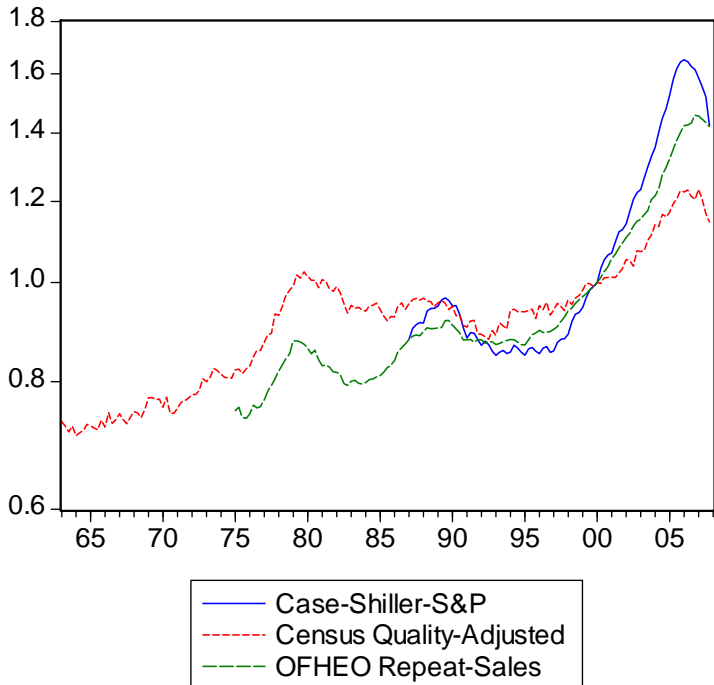
Note: Logarithmic scale, 2000:Q1 = 1.00

Comments III: Irrational Agents

- Tom Sargent: be aware of expectations as free parameters.

- Exact way expectations are formed matter a lot. What is the discipline for choosing them?

- If we open up this box, why not go all the way? What must expectations be for the model to match house price, sales facts exactly?

- Independent evidence for household expectations?

Conclusion

O Tempora O Mores [Cicero]

Oh the times! Oh the customs!

Conclusion

O Tempora O Mores [Cicero]

Oh the times! Oh the customs!

- If Victor goes behavioral, the crisis in much deeper than I thought.

- My human capital (and that of many others in the room) might be gone.