Beauty 0000 th about Housing Prices

Truth about Inflation and Business Cycle 0000000000000 Conclusions

Discussion of Garriga, Kydland and Sustek "Mortgages and Monetary Policy"

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Fourth Wharton Conference on Liquidity and Financial Crises October 9, 2015

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Summary of the Paper

- 1. This paper studies monetary policy transmission in a housing model with prices that are fixed for 30 years
- 2. In certain circles, assuming nominal rigidities of this size is considered a major crime
- 3. Interesting spin: the **nominal rigidity** here applies to **mortgage payments**
- 4. Unlike price rigidity, this is a rigidity that is harder to question, and needs no fairy to be justified

Main Findings of the Paper

Monetary policy characterized by **shifts in the inflation target**. Two channels of monetary policy transmission:

Summary

- Price channel (tilt/frontloading effect): higher inflation increase current real payments relative to future real payments -> hurts borrowers, even if it is neutral for investors
- 2. Wealth effect channel: higher inflation reduces current and expected future real payments on outstanding mortgage debt and thus increases disposable income.
 - ARM: high inflation, higher interest rates, higher real payments (price channel dominates)
 - FRM: high inflation, lower real payments (wealth channel dominates)

Central Element of Transmission and Main Findings

Responses to 1 percentage point rise in inflation

Summary



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Central Element of Transmission and Main Findings

Summary

- Monetary Policy Redistributes Wealth under Market Incompleteness (Figure 4 in the paper)
- ARM: High Inflation -> Higher Debt Payments on Impacts -> Borrowers' Wealth Drops -> Borrowers' Consumption Drops -> Borrowers' Hours Increase -> GDP up (relatively by a lot)
- FRM: High Inflation -> Lower Debt Payments on Impacts -> Borrowers' Wealth Increases -> Borrowers' Consumption mildly rises -> Borrowers' Hours slightly fall -> GDP down (relatively by little)

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Discussion

• My discussion will focus on two main issues

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Discussion

- My discussion will focus on two main issues
- (1) Beauty

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Discussion

- My discussion will focus on two main issues
- (1) Beauty
- (2) Truth

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Conclusions

Beauty

• The channel and mechanisms by which surprises in inflation redistribute wealth is a classic.

A partial and incomplete list includes: Algan-Ragot, Auclert, Bernanke, Brunnermeier-Salnikov, Camera-Chien, Doepke-Schneider, Fischer-Modigliani, Fisher, Gornemann-Kuester-Nakajima, Meh-RiosRull-Terajima, myself, Sheedy, Sterk-Tenreyro, Tobin GKS give proper and ample credit to many of them...

- What is new (and brilliant) in this paper is:
 - the illustration of the key channels
 - the quantitative application to one of the key markets where unanticipated inflation matters, both in the simple 2-period model and in the infinite-horizon version

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Beauty (continued)

• The model is beautiful and perhaps true too, as it beautifully seems to fit moments

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Beauty (continued)

Table 2: Nonstochastic steady state and long-run averages of data

Symbol	Model	Data	Description
Normalized:			
Y	1.0	N/A	Output
Targeted in calibration:			
K	7.06	7.06	Capital stock
Н	5.28	5.28	Housing stock
X_K	0.156	0.156	Capital investment
X_S	0.054	0.054	New housing structures
N	0.255	0.255	Hours worked
$\widetilde{M}/(wN - \Psi \tau)$	0.185	0.185	Debt-servicing costs (pre-tax)
i^M	0.0233	0.0233	Mortgage rate

Not targeted:

Aggregate mortgage variables			
\overline{D}	1.61	2.35^{\dagger}	Mortgage debt
γ	0.0144	0.0118 [‡]	Amortization rate

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Beauty (continued)

Table 3: Business cycle properties

	US data	Model			US data	Model	
		FRM	ARM			FRM	ARM
$\mathbf{Std}(Y)$	1.92	0.94	1.04				
Rel. std	l			Corr with Y			
Y	1.00	1.00	1.00	Y	1.00	1.00	1.00
C	0.42	0.42	0.35	C	0.79	0.88	0.94
X_S	6.94	9.48	8.20	X_S	0.60	0.99	0.85
X_K	2.45	1.76	3.01	X_K	0.73	0.92	0.83
π	0.58	0.85	0.81	π	0.14	0.23	0.41
i	0.58	0.85	0.85	i	0.36	0.32	0.48
i^F	0.35	0.77	N/A	i^F	0.01	0.09	N/A
$i^F - i$	0.42	0.21	N/A	$i^F - i$	-0.49	-0.98	N/A
q	0.58	0.18	0.15	q	0.41	0.99	0.85
$\mathcal{P}H$	1.57	1.13	0.97	p_H	0.55	0.99	0.85

Note: All U.S. moments are for HP-filtered series, post-Korean war data. Interest and inflation rates are annualized. The 10-year government bond yield is used as a proxy for i_t^F due to its longer time availability; the inflation rate of the GDP deflator is used for π_t ; the 3-month T-bill

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Truth

- Can the channels in the model make sense of one specific business cycle event in U.S. macroeconomic history?
- Can the channels in the model explain some conditional correlations, not just unconditional moments?

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Housing Prices in the Model

- One would like to better understand how the model fares in this dimension
- This is what a 1 ppt change in inflation does in the model to housing prices



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Housing Prices in the Model

One would like to better understand how the model fares in this dimension

is negatively correlated with output, as in the data. The model is also consistent with a pro-cyclical behavior of the relative price of new residential structures and **new homes**. The volatility of new home prices in the model is about 60 - 70% as high as in the data. The

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Inflation and Business Cycles

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Inflation and Business Cycles in the Model

Around the early 1980s

- Inflation dropped from 10 to 2 percent in 5 years
- Output fell 6 percent below trend for 4 years
- At the time, the prevalent debt instrument was the fixed-rate mortgage (ARMs did not take off until after banks were allowed to provide them under title VIII of the Garn-St. Germain Depository Institutions Act)
- According to the paper, disinflation should have hurt substantially borrowers, benefited savers, made borrowers work more, led to a rise in output....

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Paul Volcker

Economist



Conclusions



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Truth about Inflation and Business Cycles

How Inflation affects Borrowers (C) and Savers (C*)

- Inflation benefits borrowers under FRM, hurts them under ARM
- Model is an empirical success along this dimension (see e.g. in Di Maggio, Kermani and Ramcharan)



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However, for output to move, labor supply must move...

- ...and it moves in counterintuitive ways in this model
- those who are better off after changes in the inflation target, become lazy, and work less

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The Volcker disinflation under FRM

- Inflation drops
- Nominal mortgage payments do not adjust
- Borrowers under FRM are worse off off and spend less
- As their wealth drops, they work more
- Output may rise

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Tension in the Model between Consumption Effects and Labor Supply Effects

- The Consumption Effects are right and sensible
- The labor supply and output effects are sort-of-strange

increase in income). The behavior of output reflects predominantly the behavior of labor. In particular, output increases in the second period in the case of ARM as homeowners compensate the decline in their disposable income by working more. In the FRM case, a gradual decline in labor, due to the positive wealth effects, leads to a gradual decline in output.

• One could get rid of wealth effects with the appropriate preferences, but then there would be no business cycles

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Tension in the Model between Consumption Effects and Labor Supply Effects

- At the macro level, the model might get some unconditional correlations right
- But some micro correlations might be wrong
- It is a beautiful mechanism, but perhaps needs a bit more to become quantitatively important
- Could other forms of stickiness fix that? Let me bring in nominal rigidities

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Inflation Shocks without Nominal Rigidities

Target shocks in Guerrieri and Iacoviello's estimated housing model (all mortgages are short-term and ARM)



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Inflation Shocks with Nominal Rigidities

Target shocks in Guerrieri and Iacoviello's estimated housing model (all mortgages are short-term and ARM)



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Suggestions

The Modeling of the FRM vs ARM is a gem: it should part of the toolkit of every macroeconomist working on housing and debt in quantitative models

Would like to have more tangible evidence that the model fits the data

1. Can fixed-rate mortgages account for the delayed effects of monetary policy shocks?

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- 2. Is the current prevalence of FRM the reason why QE is not working?

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- 3. Was the unusually high prevalence of ARM the reason why the tightening in 2005 produce a housing recession?

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- 2. Is the current prevalence of FRM the reason why QE is not working?
- 3. Was the unusually high prevalence of ARM the reason why the tightening in 2005 produce a housing recession?
- 4. To what extent can 30 years of mortgage rigidities substitute for 1/2 years price and wage rigidities in the standard textbook model? (say, after a 1% permanent rise in money supply)