

Referee Report on Economics E-Journal 2130-1

1. Summary

The author starts with showing empirical evidence on the housing market including some “puzzles”. He develops a DSGE model with a housing sector and information heterogeneity. The model is calibrated to data. In the end, the author argues that the model can explain the disconnection between house prices and the rental rates. For this argument they show empirical evidence from their estimated model as well as formal arguments.

2. General Critique

There is a research question raised in the beginning: where does the puzzling empirical fact from?

A potential solution for this puzzle is presented. It is also discussed clearly why DSGE models without the mentioned extensions have problems explaining the empirical finding.

In my view this is good scientific practice.

I suggest to **accept the paper after some revisions**. I outline these in detail below.

3. Major Critique

The introduction is far too long. During the introduction I read through a lot of information that is given again in detail later on. It should be a short introduction into the topic. But here it is a mini article that includes Empirics, Literature review, Modeling results and so on in too high detail. Some informations appear even twice in the introduction (e.g. that there is a literature where house prices are defined as collateral).

I suggest to shrink the introduction down to one page (at most one and a half). All Information that doesn't find its place in the introduction any more should be put into the later sections.

Abstract: “Agents are endowed with heterogeneous shocks, and rationally extract information from market activities. Since agents are confused by changes in average private signals about future fundamentals, the model generates an amplified effect of technology shocks on house prices, which accounts for the disconnect between house prices and the discounted sum of future rents.”

These sentences are not understandable here:

- “endowed with shocks” sounds strange, maybe “subject to ..”
- from what market activity do they draw information? Isn't this important to the model?
- “agents are confused” sounds very strange and unscientific here. Should be more precise.
- “the disconnect” has not been mentioned before. Which disconnect?
- “information heterogeneity” about what? In which respect is the information heterogeneous?

The author is sometimes talking about agents being “confused” or “rationally confused” sometimes they are simply “rational” or “noisy rational”. It is not clear to me if this means all the same and what. There seems to be a literature on this rational confusion. Which I am not aware of. Please add this to your literature review.

Additionally but closely related: There is a literature on bounded rationality in macroeconomics, e.g.:

- Paul Grauwe, 2011. "Animal spirits and monetary policy," *Economic Theory*, Springer; *Society for the Advancement of Economic Theory (SAET)*, vol. 47(2), pages 423-457, June

- Lengnick, Matthias & Wohltmann, Hans-Werner, 2016. "Optimal monetary policy in a new Keynesian model with animal spirits and financial markets," *Journal of Economic Dynamics and Control*, Elsevier, vol. 64(C), pages 148-165.

Please relate your work to this literature. That would make it more easy for the reader to understand what your work is about (and what not).

P. 3: “The reason why standard real macroeconomic models have difficulty in explaining the lead-lag relationship is because nonresidential capital produces market consumption and investment goods, whereas residential capital produces only home consumption goods (e.g. Fisher, 2007). The asymmetry in how many goods to substitute away from residential capital provides a strong incentive to substitute away from residential capital toward nonresidential capital after a productivity shock.”

I don't understand that passage. e.g. what are “real macroeconomic models”?

The sentence is too complicated. Please use a simpler way of putting it.

Analysis around table 2: Please define the variables clearly. What does “residential investment” exactly mean?

I also think that the presentation of the results in the table is very cumbersome. Couldn't you present the results more nicely? Maybe the figure in the end of this document (from Walsh, 2010, *Monetary Theory and Policy*) is an inspiration.

E.g. “In other developed countries, there is no clear order among the second moments except Finland, which also shares this feature to some extent.” This is something not directly visible from the table.

Table 3: The 0.06 seems relatively high for a p-value. The argument in the text “residential investment Granger causes nonresidential investment” might be too strong.

The table is also a bit confusing. Could it be sorted in some order? Those countries with highest p values at the top or so, ...?

In the section “The Basic Model” when discussing the assumptions, please make clear, why you are making them:

- which of the assumptions are original in your model?

- why assuming islands? This is not intuitive. How does that look like in standard DSGE with housing sectors?

- why assuming different firms. What exactly do they produce? How does that look like in standard DSGE with housing sectors?

P. 26: “For instance, the model predicts that the forecast errors of output are positively correlated with the business cycle in response to TFP shocks with a correlation of 0,052, since firms are partially informed about the shocks and agents' expectations of output tend to underreact.”

Is it possible to give an example for that? E.g. in a boom agents expect output to be ...

P. 27: Between "... such a hump." and "To check the robustness ...":

Could you add some sentence explaining the results of the two paragraphs above? What is the take away message of your VAR analyses?

4. Minor Critique

Abstract: Close correlated **to** the business cycle

To explain **this** fact

P.1: "In response to the recession" sounds a bit stage here.

"Consumption, but fail(s) in explaining"

P.2: "with the business cycle and their correlation with U.S. GDP is"

→ with the business cycle, **i.e.** their correlation with U.S. GDP is

P.2: "has a difficulty in predicting house prices having a higher volatility than output." I think the word "predicting" is misplaced here. It sounds as if you want to predict how house prices are developing in the future. But this argument is not about prediction, it is about replicating empirical facts.

→ same problem on page 21 and 26

P.3: "an improvement in TFP has an amplified effect on house prices³."

the effect is amplified, ok! But what is the effect? I don't understand the meaning of this sentence.

P.5: La'O (2010), **who** ...

P. 6: from ~~the~~ survey data

P. 6: "the disconnect between house prices and ..."

I think this should be correctly called "the **disconnection**"

P. 6: "the sum of the after-tax equivalent-risk opportunity cost of capital and the expectation of future house prices appreciation excluding maintenance cost."

This expression is too complicate.

P. 8: "an interesting thing is ... in the Europe" This is not a very nice formulation.

P. 9: "that nonresidential investment does not Granger cause"

Is the "not" really correct?

P. 12: "constant-to-scale technology" constant RETURNS to scale?

P. 17: "general model" general equilibrium model?

P. 27: I think the references to figure 5 and 6 are not correct here.

1.2.2 Short-Run Relationships

The long-run empirical regularities of monetary economies are important for gauging how well the steady-state properties of a theoretical model match the data. Much of our interest in monetary economics, however, arises because of a need to understand how monetary phenomena in general, and monetary policy in particular, affect the behavior of the macroeconomy over time periods of months or quarters. Short-run dynamic relationships between money, inflation, and output reflect both the way in which private agents respond to economic disturbances and the way in which the monetary policy authority responds to those same disturbances. For this reason, short-run correlations are likely to vary both across countries, as different central banks implement policy in different ways, and across time in a single country, as the sources of economic disturbances vary.

Some evidence on short-run correlations for the United States are provided in figure 1.1. The figure shows correlations between the detrended log of real GDP and three different monetary aggregates, each in detrended log form as

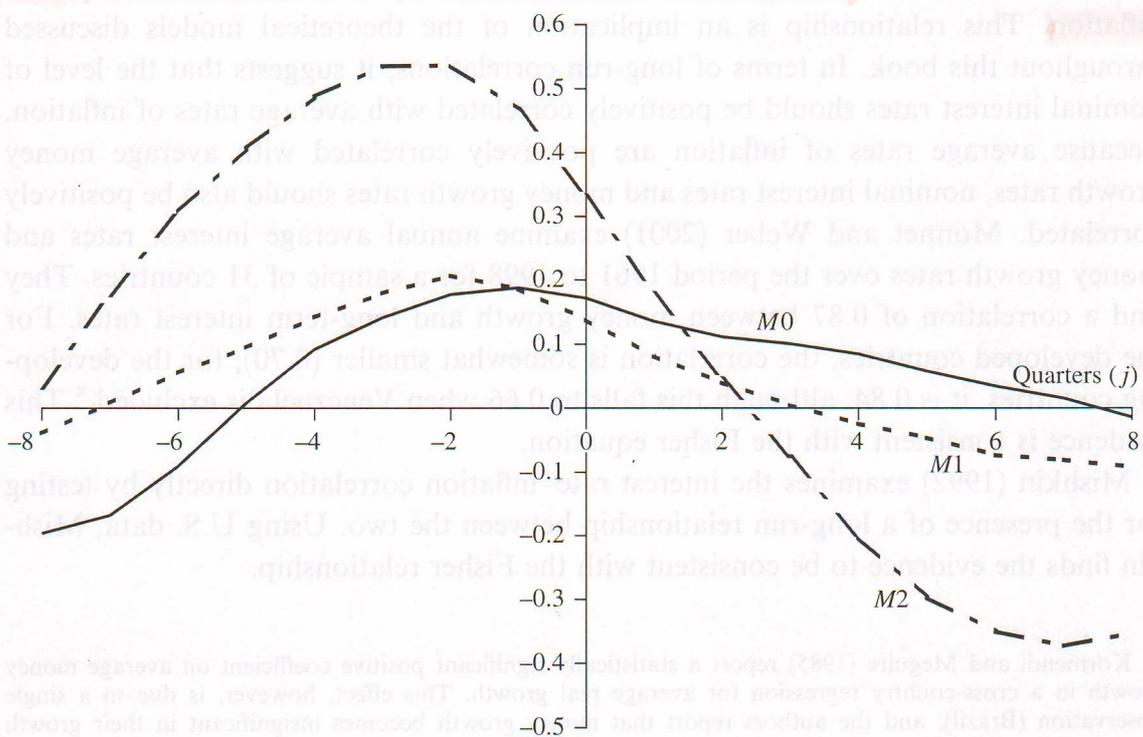


Figure 1.1
Dynamic Correlations, GDP_t and M_{t+j} : 1967:1–2000:4