Open access • Journal Article • DOI:10.2139/SSRN.2482348

Comments on Jeske and Krueger's "Housing and the macroeconomy: The role of implicit guarantees for government sponsored enterprises" — Source link

Brian Peterson

Institutions: Government of Canada

Published on: 01 Feb 2008 - Social Science Research Network (Atlanta, GA: Federal Reserve Bank of Atlanta)

Topics: Subsidy, Systematic risk, Risk premium, Representative agent and Debt

Peterson, Brian

Working Paper

Comments on Jeske and Krueger's "Housing and the macroeconomy: The role of implicit guarantees for government sponsored enterprises"

Working Paper, No. 2008-3

Provided in Cooperation with:
Federal Reserve Bank of Atlanta

Suggested Citation: Peterson, Brian (2008) : Comments on Jeske and Krueger's "Housing and the macroeconomy: The role of implicit guarantees for government sponsored enterprises", Working Paper, No. 2008-3, Federal Reserve Bank of Atlanta, Atlanta, GA

This Version is available at:
http://hdl.handle.net/10419/70645

FEDERAL RESERVE BANK of ATLANTA

Comments on Jeske and Krueger's "Housing and the Macroeconomy: The Role of Implicit Guarantees for Government Sponsored Enterprises"

Brian Peterson

Working Paper 2008-3
February 2008

WORKING PAPER SERIES

FEDERAL RESERVE BANK *of* ATLANTA | WORKING PAPER SERIES

Comments on Jeske and Krueger's "Housing and the Macroeconomy: The Role of Implicit Guarantees for Government Sponsored Enterprises"

Brian Peterson

Working Paper 2008-3
February 2008

Abstract: This working paper comments on Karsten Jeske and Dirk Krueger's "Housing and the Macroeconomy: The Role of Implicit Guarantees for Government Sponsored Enterprises," delivered at the Fiscal Policy and Monetary/Fiscal Policy Interactions conference held on April 19–20, 2007.

Key words: housing, mortgage market, default risk

Please address questions regarding content to Brian Peterson, Department of Economics, Indiana University, Wylie Hall 105, Bloomington, IN 47405, bripeter@indiana.edu.

Comments on Jeske and Krueger's "Housing and the Macroeconomy: The Role of Implicit Guarantees for Government Sponsored Enterprises"

Jeske and Krueger attempt to quantify the effects of implicit guarantees from Fannie Mae and Freddie Mac on the macroeconomy. Modelling the guarantees is an incredibly daunting and complex task. Do the guarantees matter due to times of aggregate turmoil and/or do they have an effect due to the riskiness of individual mortgages? Perhaps the guarantee is simply a straight subsidy? The potential analysis is almost unlimited. I commend the authors for taking up such a task. They choose to focus on Fannie and Freddie providing an interest rate subsidy for mortgages. This comes from the fact that debt issued by Fannie Mae and Freddie Mac is 40 basis points lower than comparable debt. This lower rate can be interpreted as a consequence of Fannie and Freddie having an implicit guarantee from the federal government that lowers the risk premium they face.

Jeske and Krueger evaluate the effects of a 40 basis point subsidy on mortagages in a fully specified general equilibrium model of heterogeneous agents who face individual risk and a complex asset choice of bonds, mortgages and housing. An important aspect of their model is that mortgages are defaultable. However, they do not include any aggregate risk. They find that removing a 40 basis point subsidy to mortgages results in

- *substantially* smaller mortgages, with mortgages falling by 91% in the aggregate,
- a halving of default,
- a 0.72% decrease in the aggregate stock of housing
- and higher welfare.

In the rest of this discussion I will slowly build up the main features of the model, starting from a representative agent environment and ending with their environment, to illustrate the effects that a mortgage subsidy plays in the economy, with an emphasis on welfare.

1 Model

1.1 Main Features

The main features of their model are: *(a)* Agents are heterogeneous due to idiosyncratic income shocks. *(b)* Agents derive utility from a consumption good and housing services. *(c)* Agents can hold two assets: a risk-free bond; and a combination of risky housing and a (continuum of) mortgages. *(d)* Owning and renting are disconnected. *(e)* There is a competitive banking sector that issues mortgages. *(f)* There is a construction sector, but it is normalized away. *(g)* Last, the government subsidizes mortgages, financed via a proportional earnings tax.

1.2 Representative Agent Model

To examine the consequences of a subsidy, let's first consider a representative agent model where safe housing is the only asset. The representative agent's problem is

$$V(g) = \max_{c,h,g'} u(c,h) + \beta V\left(g'\right)$$

subject to

$$c + P_l h + g' = y + (1-\delta) g + P_l g'$$

where V is the value function, y is income, c is consumption, h is housing rented, g is housing owned and P_l is the rental price of housing. Note that I follow the timing in the paper that in the period that a house is purchased it can be rented out to receive $P_l g'$. The price of a house has also been normalized to one as in the paper. The market clearing condition is

$$h = g'.$$

In such a representative agent model there are no inefficiencies so we get the efficient outcome. Therefore there is no role for a subsidy. However, to create a benchmark to examine the effects of a subsidy, modify the budget constraint by the introduction of a subsidy s financed by a tax τ,

$$c + P_l h + g' = y(1-\tau) + (1-\delta) g + (P_l + s) g'.$$

Such a subsidy creates a misallocation from consumption of goods to housing services. This serves as a good reference point for the benefits/costs of a subsidy as we go ahead and complicate the model with frictions.

1.3 Heterogeneous Agent Model: One Safe Asset

First modify the model to allow for individual agents to face idiosyncratic income shocks, as in a Bewley (1980) model. Assume that there are not complete markets for the individual income shocks so that agents have to self-insure. In a standard Bewley model, the asset used for self-insurance is money. Since money is only used for self-insurance, the optimal policy is to subsidise money (run deflation) until the supply of real money goes to infinity in the limit. This allows agents to fully self-insure against the income shocks in the limit. However, instead of money let's now let the only asset that agents can use to self-insure be risk-free housing. The individual uncertainty is going to result in agents accumulating housing greater than in a complete markets economy. We are now faced with a trade-off in the use of a subsidy. On the one hand the subsidy further creates a misallocation from consumption of goods to housing services as in the representative agent model. On the other hand, when housing is the safe asset used for self-insurance the housing subsidy lets agents better self-insure. We now have a model with a non-trivial answer as to the benefits/costs of a subsidy to housing. Some complicated quantitative analysis is indeed merited.

1.4 Heterogeneous Agent Model: Only One Risky Asset

Now let the housing asset be risky. In their model, housing is non-diversifiable so it is a very risky asset. The return to housing is

$$R_h = P_l + \beta\left(1 - \tilde{\delta}\right)$$

where $\tilde{\delta}$ is a random variable that is a mix of log-normal and uniform. The riskiness in housing dissuades agents from wanting to accumulate it. In contrast to a model where housing is safe, we now face the possibility of there being an *underaccumulation* of housing. If there is underaccumulation then a subsidy will unambiguously raise welfare. We need to quantify whether the housing accumulated is above or below the efficient quantity of a representative agent model.

An important feature of the model to keep in mind is that the *consumption* of housing services is disconnected from the use of housing as an asset. This implies that we never have a bad distribution of housing services relative to the distribution of total consumption. All households choose the same ratio of housing services to total consumption. What matters is whether that ratio, which is constant across all households, is efficient. When there is an underaccumulation of housing it is necessarily inefficient, since a greater stock of assets will provide more risk sharing.

1.5 Heterogeneous Agent Model: Risky Housing and Safe Bonds

Now consider the asset structure of the paper. Here agents have access to a safe bond and a combination of a risky house and a mortgage. The mortgage structure is quite complex. It boils

down to an agent choosing the amount of leverage, κ, for a given size of a house. The features of the leverage choice are:

- Agents can default on a mortgage. This reduces the risk of a house, but default is costly.
- There is a competitive banking sector, so that mortgages are priced actuarily fair.
- The choice of leverage provides agents with an actuarily fair trade-off between risk and return.

To understand the last point, when an agent does not leverage he faces all of the risk of a house since the default option is not available. However, when an agent fully levers all of the risk is gone. However, the return is lowered to cover the expected default costs.

This is an incredibly rich asset structure. The combination of safe bond and *choice* of leveraged housing probably provides the richest asset structure for agents to self-insure, short of complete markets. This implies that of all of the asset structures that I have covered in this discussion, this one would have the least scope for a subsidy. A subsidy is most likely not going to have much of an impact into the ability of agents to self-insure. The dominant effect of a subsidy will be to affect the portfolio choice of how much to leverage. The question of whether a subsidy is good or bad is simply going to hinge on whether the aggregate amount of housing is efficient. My guess is that it is going to be very close to efficient without a subsidy. Therefore the main effect of a subidy will be to reallocate consumption from consumption of goods to housing services.

2 Comments

2.1 Primary Comment

Given the analysis I just covered, my main comment is *what do they get out of the complicated model*? I would like to see what the representative agent model predicts for the effects of the same subsidy on the stock of housing and welfare. The results they get on mortgages and default are interesting, but these are simply financial outcomes, they do not have much of an affect on the real outcomes *except for the fact that default is costly.* Thus the comparison to the representative agent model would help us break-out the overaccumulation affect versus the effects of potential better risk sharing at the cost of greater defaults.

2.2 Other Comments

Last, I have a few other comments:

- They do not model bailouts. This seems to most people to be at the heart of the issues of the implicit guarantees. Do they not want to handle aggregate uncertainty? Maybe a potential

solution would be banking islands that have island wide uncertainty, but without aggregate uncertainty.

- Housing is only an asset. This seems to make the mortgage choice very sensitive to the subsidy. *A 90% fall in mortgages from a 40 basis increase in mortgage rate seems much to huge*. Tying the consumption of housing services to the owning of housing owned may break this.

- In their benchmark, leverage by wealth is almost constant in the model, see figure 1 in the paper. This seems counterfactual. See my figure 1 where I have plotted leverage by net worth for households that own a home with the head of the household between the ages of 40 and 50 from the 2001 Survey of Consumer Finances. There is a clear declining relationship. In fact, examination of their figure 1 implies that their counterfactual seems more factual along this dimension.

- They get redistributional welfare implications. Are their results the same as switching from a flat tax to a progressive tax?

- Last, they have an endogenous interest rate. This just makes the model more computationally complicated. They could get away without doing this since they are leaving out the upper tail of the wealth distribution.

To end, I must again commend the authors for working on such a difficult project. I found the paper very interesting. We need a lot more analysis on these issues in these types of models. This is especially true given the current troubles in the mortgage market.

References

[1] Bewley, Truman. 1980 "The Optimum Quantity of Money." In J.H. Kareken and N. Wallace (eds.) *Modles of Monetary Economies*. Minneapolis: Federal Reserve Bank of Minneapolis, pp. 169-210.

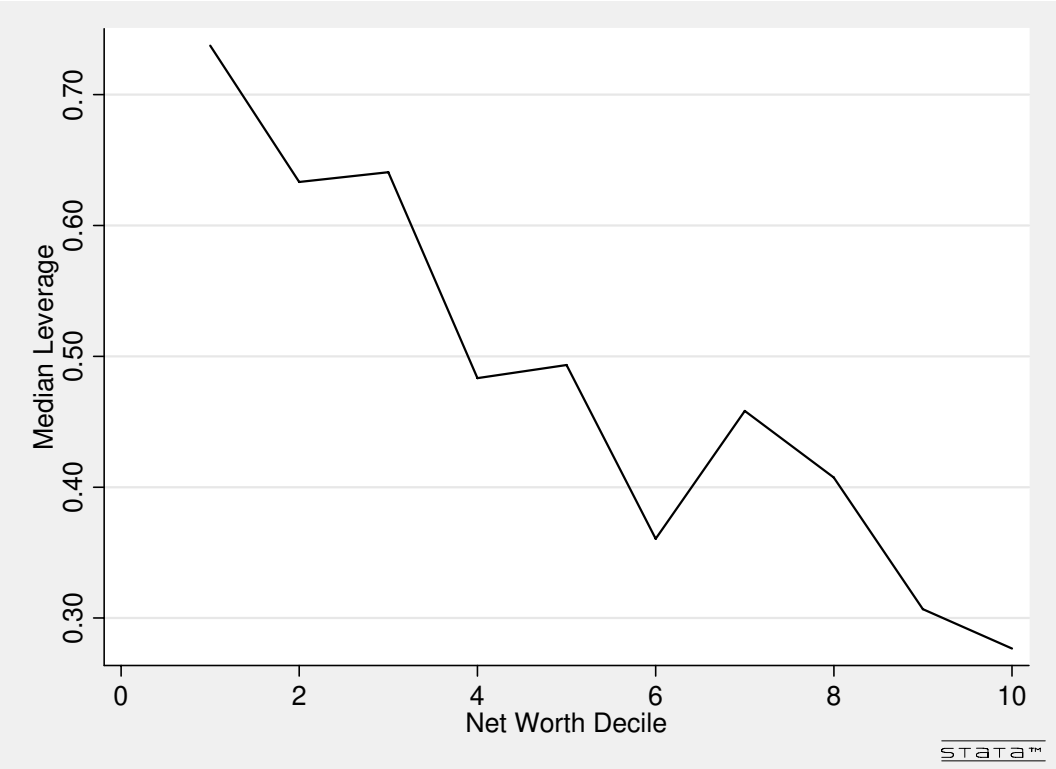

Figure 1: Median leverage of primary house by net worth decile, age of head of household 40-50, 2001 SCF