Comments on Marjorie Flavin's

Housing, adjustment costs, and endogenous risk aversion

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Overview of the discussion

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Introductory remarks

Despite being the most natural asset pricing model from an economist's point of view, the plain vanilla version of the Consumption Capital Asset Pricing Model (CCAPM) with:

- a representative agent
- a composite nondurable consumption good
- intertemporally separable preferences
- power utility function (CRRA)
- no transaction costs or other impediments to trade

is a complete empirical failure unless one assumes incredibly high values for the coefficient of relative risk aversion, or incredibly low values for the elasticity of intertemporal substitution.

Introductory remarks

Although the traditional Capital Asset Pricing Model (CAPM) has also been increasingly criticised from an empirical point of view, it still provides a much more accurate description of reality than the CCAPM.

To make the CCAPM work, one needs to introduce a wedge between intertemporal substitution and risk aversion (or between the curvature of the instantaneous utility function over consumption and the curvature of the value function).

Three popular approaches have been considered in the literature:

1. Habits
2. Recursive preferences
3. Transaction costs

Marjorie Flavin's paper falls in the last category.

Relationship to the literature

This paper is also part of a broader research agenda trying to bring housing into finance. Closely related papers are:

- "Asset pricing and optimal portfolio choice in the presence of illiquid durable consumption goods", Sanford Grossman & Guy Laroque, *Econometrica* 58, 25-51, 1990.
- "Owner-occupied housing and the composition of the household portfolio over the life cycle", Marjorie Flavin and Takashi Yamashita, *American Economic Review* 92, 345-362, 2002.
- "Optimal consumption and portfolio choices with risky housing and borrowing constraints", Rul Yao & Harold Zhang, *Review of Financial Studies* 18, 197-239, 2005.
- "Portfolio choice in the presence of housing", João Cocco, *Review of Financial Studies* 18, 535-567, 2005.
- "A model of housing in the presence of adjustment costs: a structural interpretation of habit persistence", Marjorie Flavin & Shinobu Nakagawa, *American Economic Review* 98, 474-495, 2008.

Main findings

- Transaction costs in sales of the durable good lead to an Ss rule.
- There is an endogenously determined inaction zone in which a consumer/investor does not move houses.
- If the lower bound is reached, then she moves to a smaller house.
- If the upper bound is reached, then she moves to a bigger house.
- Optimal portfolio of risky, financial assets is as in the CAPM, exactly like in Merton (1969, 1971) and Grossman & Laroque (1990).
- The main effect of transaction costs in housing is to change the effective degree of relative risk aversion.
- Near the lower bound, an agent seems less risk averse.
- Near the upper bound, an agent seems more risk averse.

Questions/Suggestions

- Grossman & Laroque (1990) found that effective risk aversion was larger just after purchasing a new house, and smaller just before purchasing one. What explains the difference?
- Play around with the elasticity of intratemporal substitution between nondurables and housing services. Consider special cases of the CES utility function: perfect complements, additively separable, and perfect substitutes.
- Change the parameters governing the distribution of the risky asset. See whether a riskier and/or less profitable stock market leads to more or less frequent adjustments to the housing stock.
- House prices reflect not only differences in sizes (sq. footage), but also in other attributes, such as location, preservation, etc. From an empirical perspective, it may be worth adopting a hedonic approach, and regard houses as composite goods.

Additional comments: Rental markets, house price risk and mortgages

- While it is true that there are tax advantages to owner occupied housing, it is also true that rental markets exists, especially in big cities, and that many rich (and not so rich) people often own second houses.
- Although house prices are assumed constant in this paper, Flavin and Nakagawa (2008) show that similar results are obtained if variations in house prices are uncorrelated to those in stocks and bonds.
- They present empirical evidence showing that the correlation of house prices with stocks and bonds is minimal.
- Still, there are also Real Estate Investment Trusts (REITs), which allow investors to "benefit" from price movements without the need to buy a house.
- Somewhat remarkably, though, their returns are also hardly correlated with house price movements!

Additional comments: Rental markets, house price risk and mortgages

- In the US, the Chicago Mercantile Exchange now offers futures and options contracts on the Case-Shiller Home Price Indices, both at the aggregate level and for 10 metropolitan areas (including San Diego).
- It would be interesting to see how the optimal consumption/portfolio problem is affected by the introduction of such assets, which can substantially reduce national and regional house price risks (but not idiosyncratic ones).
- Many consumers face liquidity constraints. Nevertheless, they can borrow to buy a house by offering it as collateral. They can also use this collateral to finance their nondurable consumption, as well as their holdings of financial assets, sometimes with dramatic consequences.
- It would be interesting to assess the robustness of some of the results to such liquidity constraints, which may well give rise to corner solutions.

Additional comments: Other background risks and aggregation

- Inflation is an important source of background risk, and houses have traditionally provided a hedge against it. It would be interesting to incorporate inflation into the consumption/ portfolio problem.
- Human capital is another source of background risk, probably at least as important as housing. Again, it would be useful to allow for labour income risk.
- This could be done in a model with inelastic labour supply, as in Cocco (2005), or with elastic labour supply assuming leisure is not intratemporally separable from consumption, as in Mankiw, Rothemberg and Summers (1985, QJE) and others.
- Once we abandon the representative agent paradigm, aggregation across consumers matters. Grossman and Laroque (1990) could not obtain analytical aggregation results in their simpler framework, but presumably one could solve models with heterogeneous agents numerically.