Discussion of Banks, Blundell, Oldfield and Smith, “House Price Volatility and the Housing Ladder”

Steven Venti

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Housing is the dominant component of wealth and housing services are the dominant component of consumption for most young households. These facts alone suggest that volatile house prices can have enormous consequences for household behavior and welfare. Unlike most other risky assets, housing investments are also indivisible, illiquid and difficult to diversify. Given these differences, it is not surprising that many of the standard predictions of financial models may not apply to housing. One such prediction is that house price risk should make ownership less attractive. This prediction is challenged by the central finding of this chapter, which concludes: “Typically, risk-adverse individuals will avoid risky assets as volatility increases. In this paper we show that owner-occupied housing is an exception to this rule.” This chapter provides compelling evidence that young households correctly perceive the price risk associated with home ownership and are able to hedge this risk by “buying-in” to the housing market earlier in the life-cycle. Results supporting the dominance of the hedging motive are found for five indicators of housing demand and these results are strikingly similar across countries. The authors have done an excellent job establishing the “fact” that housing demand responds positively to price volatility, so in my comments I will try to offer some additional insights into the origins, identification, and limitations of hedging behavior from a finance perspective.

Price volatility provides households with two competing incentives. From an investment perspective, risk-adverse households should hold lower levels of all volatile assets – including housing - unless compensated by higher returns. However, households who anticipate that they will need to “buy up” in the future have an incentive to buy more housing (and buy it earlier) to hedge against future price risk. This latter incentive arises because households make a series of decisions over the life-cycle that is described by the “housing ladder.” These housing decisions are, more or less,

forecastable: most households anticipate that at some point in the future they will have to sell their current home and buy another. This exposes the household to house price risk. If a household plans to move up the ladder, then getting into the housing market – both buying earlier and buying a larger quantity of housing - insures the household against price risk because the price of the current house (to be sold) is likely to be positively correlated with the price of the future house (to be purchased). The strength of this correlation is a measure of the benefit of the hedge. Sinai and Soules (2009) show that in the US about 80 percent of all moves are in the same MSA, so the correlation is likely to be quite high. Sinai and Soules (2013) go further to show that even if moves are not local, households tend to move between markets with correlated housing prices. They also show that the likelihood of home ownership is greater if the covariance between prices in the current and future (post-move) housing markets is high. If current and future house prices are not correlated, then households face two independent risks – the sale price of the current house and the purchase price of the future house – and the hedging motive will not exist.

Most financial analyses of risky assets make a distinction between two types of risk: market (or systematic) risk and firm-specific (or idiosyncratic) risk. For most securities, firm-specific risk can be eliminated through diversification so only market risk is priced by the market. Thus investors holding a well-diversified portfolio avoid market risk (or require a higher expected return to hold assets with higher market risk), but are oblivious to firm-specific risk. The risk properties of housing are quite different from those of conventional risky assets. Total price volatility can be split into three components: national market volatility, regional or local market volatility, and house-specific volatility. The co-movement of the return on housing with national housing market returns is analogous to the co-movement of security returns with market returns in conventional asset pricing models. This source of volatility cannot be eliminated through diversification. The risk associated with regional volatility – the component of risk that is the focus of this chapter - is also nearly impossible to shed through diversification because people rarely own homes in multiple regions. The idiosyncratic risk component in housing (the component of the return on housing that is unrelated to national or regional returns) is likely to be quite large. In a recent paper Droes and

Hassink, using data for the Netherlands, find that house-specific risk accounts for 90 percent of total price risk.[1] For most risky assets, this component is diversified away by holding large portfolios. However, most homeowners own only one house and that house is often the largest asset in their portfolio, so again there is little opportunity for diversification. Although investors can limit risk exposure to most risky assets through diversification, this is not the case for housing, giving rise to the hedge that is the focus of this chapter.

The evidence this chapter provides in support of this hedge is the positive estimated effect of house price volatility on various indicators of housing demand. In my view, the empirical challenge is to distinguish the effect of price volatility from other closely-related factors that affect demand. If housing is viewed as an investment then the *expected return on housing* is a key factor. If housing is viewed as a consumption good then the *level of house prices* is a key factor. The ability to separate out the effects of each of these factors will depend on the strength of the association between volatility, the level of prices and the return on housing. These linkages are pursued in this chapter. This can be seen in Figures 3a and 3b that show the log of the price index in "safe" (low volatility) and "risky" (high volatility) regions, yielding the obvious conclusion that regions with high price volatility also tend to have high price levels. I have made similar figures using more recent data for the US, both to assess the strength of the association between the key variables and to determine whether these associations persist after the end of their sample period. Their analysis for the US spanned 1980 to 1997, was based on annual data, and used five years of prices to construct the volatility index. My analysis for the US, shown in the top panel of Figure C1, spans 1997 to 2014, uses quarterly data, and bases the volatility index on 8 quarters of data.[2] Despite the differences, the figure in the chapter and my figure are remarkably similar. Both show that volatile regions are also pricier. The middle panel

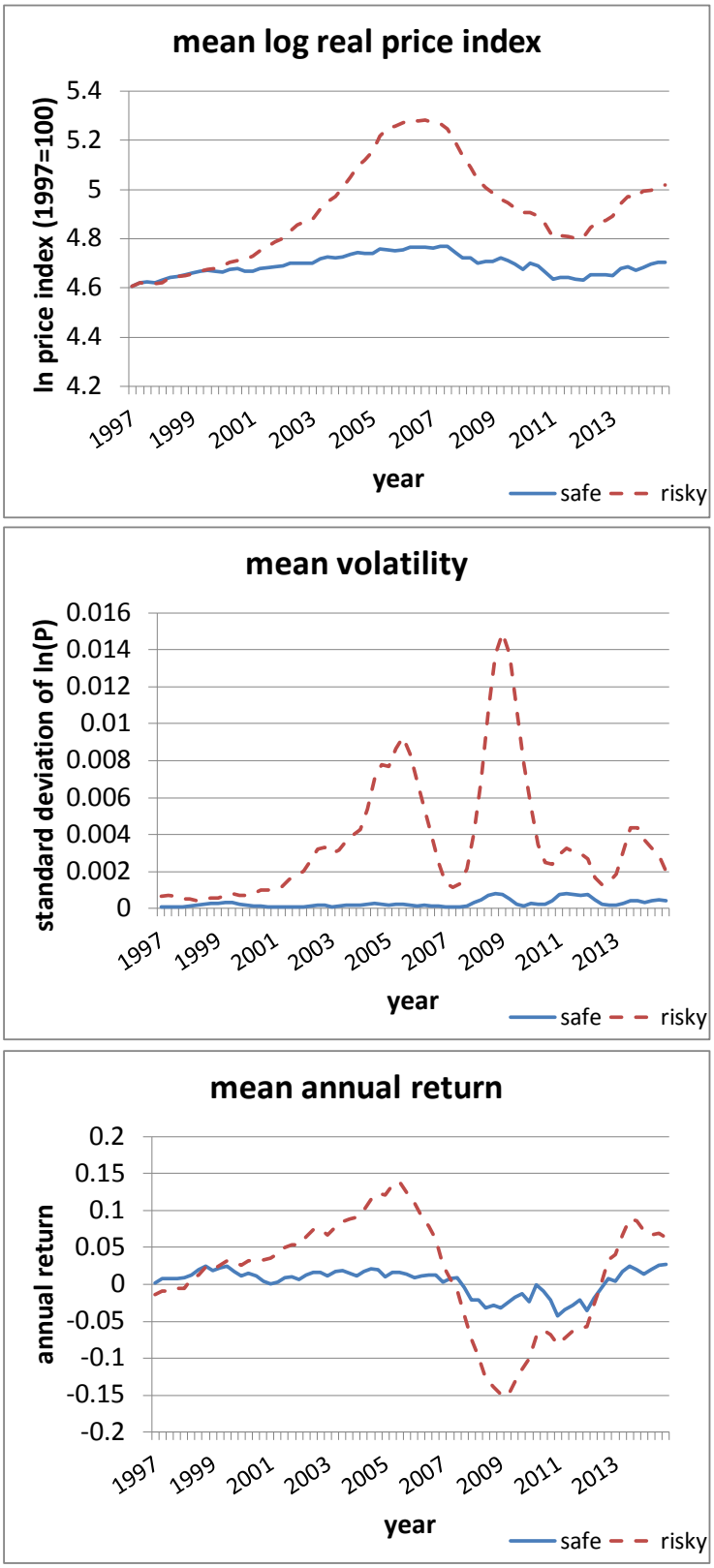
[1] An implication of their finding is that price volatility, as measured by a regional price index, severely underestimates house price risk. It is perhaps surprising that, despite the relative small contribution of regional price variation to total price risk, the estimates in this chapter find that regional price volatility has a strong effect on ownership.

[2] We both define regions to be the 50 states and the District of Columbia. My definition of "safe" states includes the 10 states with the lowest standard deviation of the log price in the trailing eight quarters. "Risky" states include the 10 states with the highest standard deviation.

of Figure C1 shows the level of volatility in “safe” and “risky” regions. The pattern of volatility in the high volatility states is particularly striking. After rising through 2005, the level of prices was essentially flat (and volatility near zero) from the beginning of 2006 and mid-2007, before declining steadily through 2012. Despite these fluctuations, price volatility in the risky states was always greater than volatility in the safe states.

As noted above, from an investment perspective the *expected return* on housing (or the expected change in house prices) is a key variable. The bottom panel of Figure C1 shows the mean annual *return* in “safe” and “risky” regions. Until the Great Recession, the return on housing was quite a bit higher in “risky” regions than in “safe” regions. This is likely to have been true over most of the period considered in this chapter as well. Over the 1997 to 2014 period the annual return on housing was 1.69 percent in risky states and 0.38 percent in the safe states. This period of time is highly unusual and includes a burst of extreme price volatility. Nonetheless, the results suggest that the return on housing is also greater in regions with high price volatility.

Figure C1. Price index, volatility and expected return in high (risky) and low (safe) volatility states



The figures strongly suggest that volatility, prices, and returns are all closely related. This empirical evidence showing a strong association is also supported by conventional financial theory. In a standard CAPM equilibrium, expected returns will be a linear function of non-diversifiable risk. Investors will only hold more volatile assets if they are compensated through higher returns.[3] Thus one challenge for the empirical work in this chapter is to separate out the effect of volatility from both the level of prices and the expected return on housing. Models for five indicators of housing demand are estimated. Each controls for the level of prices, but only one of the five models controls for the expected return. In the one set of estimates that includes the expected return variable, the estimated effect of the expected return on ownership is large, but only marginally statistically significant. Failure to include this variable in the other models makes the interpretation of the coefficient on volatility ambiguous. It would be useful to see results that control for both the price level and the expected return in all specifications.

When I began to write up my discussion of this chapter I would invariably begin with something like: "Recent housing market collapses in the US and, to a lesser extent on the UK, demonstrate how volatile house prices can be." But the Great Recession that began in 2007 is a poor choice to motivate the hedging behavior described in this chapter. The behavior described in this chapter hedges future price *increases*: households buy early to protect themselves against rising prices. But price volatility works in both directions. *Decreases* in house prices – as experienced in both the US and the UK in the recent past - confront households with a completely different set of concerns. Many households held mortgages in excess of home values and foreclosures were widespread. For younger households that did not yet own a home the collapse of the housing market was a reminder that home ownership is probably the most consequential investment decision they will make in their lifetime. In general, if households anticipate future house price *decreases*, then they are better off *waiting* to

[3] Han (2013) does not expect a strong positive association between housing price risk and the expected return. She argues that, if owning a home is a hedge against price risk, then owners will require lower returns to housing in high volatility areas. This distorts the tight link between risk and return that one might expect to observe if housing were purely a financial asset. However, Case, Cotter and Gabriel (2010) find evidence of a strong positive association between price risk and expected return for housing in a CAPM framework.

buy – just the opposite of the hedging behavior that is central to this chapter. If prices decline modestly, then homeowners suffer a financial loss (and a larger loss the earlier they get in), although they may still be able to match housing consumption to the needs of the housing ladder. However extreme price declines resulting in negative equity, default, or foreclosure may actually prevent households from moving up the ladder and discourage ownership altogether. Thus the nature of house price risk seems to have changed over the last decade. The salience of recent price declines may make the hedging incentives that were prevalent prior to the Great Recession irrelevant today. The chapter uses data for 1980-1997 for the US and 1991-2003 for the UK. It would be useful, in future work, to see if the recent experience in the US has tempered the hedging effect observed in this chapter.

The strong association between house price volatility and several measure of housing demand for younger households is offered as evidence of hedging behavior. I agree with this interpretation for the two time intervals they consider for the US and the UK. However, confidence in this interpretation of the empirical results can be strengthened by estimating the same specifications for subsamples of households for whom the hedging incentive is weak or non-existent. For these subsamples, we expect a negative coefficient on the volatility variable since the traditional investment incentive to avoid risk is not offset by the incentive to hedge. If the estimated coefficient is positive then the explanation for the positive association between volatility and housing demand must be something other than the hedging motive. The most obvious subsamples for this test are households without children and older households – both groups for whom the usual demographic incentive to upsize in the future do not apply. Hedging incentives are also likely to be less relevant for high wealth households who hold more balanced wealth portfolios than low wealth households. For these households the share of housing in total wealth is lower, so house price risk is better diversified. Another test of the robustness of the hedging interpretation would be to estimate the same models for declining housing markets where, as discussed above, there is no benefit to hedge by “buying in” early.

Finally, the hedging behavior described in this chapter arises because the usual mechanisms for hedging asset risk do not work for housing. In particular, homeowners

cannot diversify regional house price risk by owning homes in many regions. The strength of the hedging behavior underscores the strong desire by homeowners to hedge price risk. But the self-hedge described in this chapter is not the only mechanism that can enable households to limit their exposure to house price volatility. One alternative mechanism is the use of publicly traded financial instruments designed to hedge exactly the type of risk considered in this chapter (see Case, Shiller and Weiss 1993). In the US, futures and options on the S&P Case-Shiller Home Price Index for 10 MSA-level indices and the national index are traded on the CME. Another innovation is the availability of shared equity and shared ownership products in Australia and the UK (see Whitehead and Yates (2010)). These products allow homeowners to diversify across regions by allowing the equity in a house to be shared by many owners. Caplin et. al (1997, 2007) discuss related proposals for housing partnerships and shared equity mortgages in the US. An ongoing puzzle is why - given the need for households to limit their exposure to house price risk - that neither house price derivatives nor shared equity and similar arrangements have met with much success in the market. The findings of this chapter may provide a resolution to this puzzle. Households have little need for innovations marketed to help households limit risk exposure because they do a pretty good job of hedging house price volatility on their own.

References

Caplin, A., Chan, S., Freeman, C. and Tracy, J. 1997. *Housing Partnerships: A New Approach to a Market at a Crossroads*, Cambridge: MIT Press.

Caplin, A., Carr, J., Pollock, F., Tong, Z. 2007. *Shared-Equity Mortgages, Housing Affordability and Homeownership*, Washington D.C.: Fannie Mae Foundation.

Case, Karl, John Cotter and Stuart Gabriel, 2011. “Housing Risk and Return: Evidence from a Housing Asset-Pricing Model.” *Journal of Portfolio Management*. 35: 89-109.

Case, Karl, Robert Shiller and Andrew Weiss, 1993. “Index-Based Futures and Options Markets in real Estate.” *Journal of Portfolio Management*. 19(2): 83-92.

Droes, Martijn and Wolter Hassink. 2013. “House Price Risk and the Hedging Benefits of Home Ownership.” *Journal of Housing Economics*. 22: 92-99.

Han, Lu. 2013. “Understanding the Puzzling Risk-Return Relationship for Housing.” *The Review of Financial Studies*. 26(4): 877-928.

Sinai, Todd and Nicholas Souleles. 2005. “Owner-Occupied Housing as a Hedge Against Rent Risk.” *Quarterly Journal of Economics*. 120(2): 763-789.

Sinai, Todd and Nicholas Souleles. 2013. “Can Owning a Home Hedge the Risk of Moving?” *American Economic Journal: Economic Policy*. 5(2):282-312.

Whitehead, Christine and Susan Yates. 2010. “Is there a Role for Shared Equity Products in Twenty-First Century Housing? Experience in Australia and the UK.” in *The Blackwell Companion to the Economics of Housing: The Housing Wealth of Nations* (eds S. J. Smith and B. A. Searle), Wiley-Blackwell, Oxford, UK.