The Ability to Hedge House Price Risk: Are we there yet? Should we be?

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Abstract

At any given point in time, residential real estate has comprised anywhere from one third to one half the assets owned by U.S. households (see, for example, Labuszewski, 2006, and Case, et al, 1993). It is not surprising, then, that Case, et al (1993) claim that for individual homeowners, house price risk "has caused them enormous concern and trepidation in past years." Given these concerns, a case can be made for derivative markets in residential real estate to hedge these risks. Indeed, Robert Shiller has championed the notion of derivative real estate markets for more than two decades, citing the need to manage house price risk and address the economic inefficiencies in the housing market. It can be said that Shiller's body of work in this area is literally a Nobel, if not noble, idea, having led to his being awarded economics' most prestigious award in 2013.[1]

Ultimately, Shiller's work led to the creation of futures and options trading on the Chicago Mercantile Exchange in 2006. The CME listed contracts on 10 different city indexes as well as a composite index of the 10 cities. The underlying Case-Shiller index for a city is based on repeat sales in the metropolitan area and can be used to measure price changes in the housing stock over time.

Bertus, et al (2008) first examined hedging effectiveness based on transactions recorded in Clark County, NV and the Las Vegas Case-Shiller index. As the futures contract had not been traded prior to the study, Bertus, et al, calculated minimum variance hedge ratios using the index and found mixed results regarding hedging effectiveness. More recently, Schorno, et al, (2014) considered hedging in Las Vegas using futures prices from the CME. They "show that neither static nor dynamic strategies would have maintained an effective hedge during the significant decline in housing prices."

[1] Within the context of asset pricing, Shiller (2013) devotes a significant portion of his Nobel Prize lecture discussing the inefficiencies in the real estate market and the need for liquid financial instruments based on real estate indices.

In this paper, we consider hedging from the standpoint of an individual homeowner. Specifically, we examine hedging effectiveness in light of idiosyncratic risk in real estate markets. As each home is a unique asset, the house price risk the homeowner faces is both systematic as well as idiosyncratic. The analysis examines the transaction data from Clark County, NV, specifically looking at repeat sales for homes from the start of CME futures trading in May, 2006 until mid-2013. We compare price changes for individual houses to simultaneous futures price changes and measure the individual's ability to effectively hedge using derivatives.

The analysis measures hedging effectiveness in three different ways:

Average loss coverage = sum payout/sum loss where the sum is taken over repeat sales that involved a loss.

Interpretation: If this number is 0.6, then homeowners that incurred a loss, got on average 60 percent of the money lost covered by the insurance.

Payout efficiency= sum of payouts to those who incurred a loss/sum all payouts.

Interpretation: If this number is 0.6, then for every dollar paid out by the insurance company, 60 cent is to a home owner that incurred a loss. The rest, 40 cents, is to a homeowner that sold with a (nominal) profit.

Payout probability= number of repeat transaction with loss and payout/number of repeat transactions with a loss.

Interpretation: If this number is 0.6, then 60 percent of the homes that incurred a loss received a payout.

Taken as a whole, the results suggest that hedging house price risk with futures contracts would not be an effective hedge for the individual homeowner. Idiosyncratic risk is large relative to the systematic component and often homeowners' losses are greater than the payout from a futures hedge. Moreover, futures hedging as an insurance program is inefficient as payouts are frequently made to homeowners that have experienced positive capital gains from holding their home.

References

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