Anchoring and loss aversion in the housing market: Implications on price dynamics☆

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ABSTRACT

In this paper we develop a simple model with anchoring and loss aversion to explain house price dynamics. The model has two testable implications: 1) when both cognitive biases are present, price dispersion and trade volume are pro-cyclical; 2) if anchoring decreases with time, then price dispersion and trade volume are higher for transactions with a previous purchase that is more recent. Using a data set that contains most real estate transactions in Hong Kong from 1992 to 2006, we find anchoring and loss aversion to be important, and the results are robust to type of housing and sample period. The finding is consistent with the strong correlations among house price, price dispersion, and volume found in the data. Moreover, anchoring, price dispersion and volume decrease with time since previous transaction. Our results suggest that anchoring and loss aversion contribute to the cyclicality of the housing market.

1. Introduction

Contrary to what Lucas (1978) suggests, there is well-documented evidence that trading volume and price are positively correlated in asset markets.[1] To explain the correlation in the housing market, Stein (1995) shows that in a housing demand model with down-payment requirement, an exogenous negative shock to house price can have a large and broad-based negative impact on household liquidity and lead to a lower transaction volume. By simulating a search model in which sellers differ by their time on the market, Berkovec and Goodman (1996) generate the correlation among demand, turnover and prices over time. Leung, Lau, and Leong (2002) empirically test the two models above and argue that the findings, based on Hong Kong housing transaction data, are more consistent with the predictions of the search theoretical model. Genesove and Mayer (2001) use housing data in Boston in the 1990s to empirically show that house sellers are loss averse, and loss aversion can explain the correlation between price and volume.

A less-documented fact in the property market, which the studies above do not consider, is that the level of price dispersion is also positively correlated with the trading volume and price.[2] Regarding price dispersion, Leung, Leong, and Wong (2006) use

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  [1] The literature is too large to be mentioned here. See Lee and Swaminathan (2000) for a recent example in the stock market. See the citations in Genesove and Mayer (2001) for examples from the housing market.
  [2] We define price dispersion as the standard deviation of the residual from a hedonic regression.

Hong Kong housing data to attribute the level of price dispersion to macroeconomic factors like interest rates. They also find that the level of price dispersion is positively correlated with trading volume.

In this paper, we present a simple model in which buyers anchor the value of a housing unit with its previous purchase price (the price of the previous transaction) and sellers are averse to loss. The model implies both 1) positive correlation between prices and trading volume and 2) positive correlation between price dispersion and price. Using data from the Hong Kong second-hand housing market, we show that the presence of both anchoring and loss aversion can explain the observed cycles in the housing market.

We ask whether buyers anchor the value of a housing unit with its previous purchase price. When a rational buyer decides whether to buy a housing unit, the buyer inquires on the characteristics of the housing unit and then compares the price with that of other housing units. Unless the initial price contains information on the unobserved characteristics of a housing unit (which the buyer may want to learn), the initial purchase price should not matter here. We make use of a sample of repeated sales to control for the unobserved characteristics, and find that buyers' decision still depends on the initial purchase price. We argue that there is a strong anchoring effect in the Hong Kong housing market.

A related, though not identical, concept is loss aversion. The effect is related to the timing of the seller of putting the housing unit to the market: homeowners tend to sell housing units when there is a gain in nominal value instead of a loss. Homeowners with loss aversion have asymmetric attitudes toward gains and losses and use the previous purchase price as a reference point to make their selling decision. If the seller is rational, the previous purchase price is only relevant for calculating the sunk cost and it should not affect the seller's behavior. Using the same sample of repeated sales in the Hong Kong housing market, we find that homeowners are strongly loss averse.

After showing the existence of anchoring and loss aversion in the Hong Kong property market, we build a model with anchoring buyers and loss-averse sellers to explain the correlations among price, trading volume and price dispersion. In our model, the existence of loss averse sellers lead to the price–trading volume correlation as explained in Genesove and Mayer (2001). The novelty of our model is that we include anchoring buyers. Buyers are matched with housing units with different previous purchase prices. Price dispersion arises due to anchoring. Since housing units with a high previous purchase price will be taken out of the market when prices fall, price dispersion will drop with prices.

To put our model to a more stringent test, we make use of its other implication that a smaller anchoring effect reduces both price dispersion and volume. First, we allow anchoring to vary with the time since previous transaction in the anchoring regression. We find that anchoring decreases with time since previous transaction, suggesting that buyers put less weight on an "older" previous price. We then allow price dispersion and volume to also vary with the time since previous transaction, and find that they match with the downward trend in the anchoring effect.

By combining anchoring and loss aversion we are able to explain several features of our housing data. Our results suggest that the two phenomena contribute to the cyclicality of the housing market.
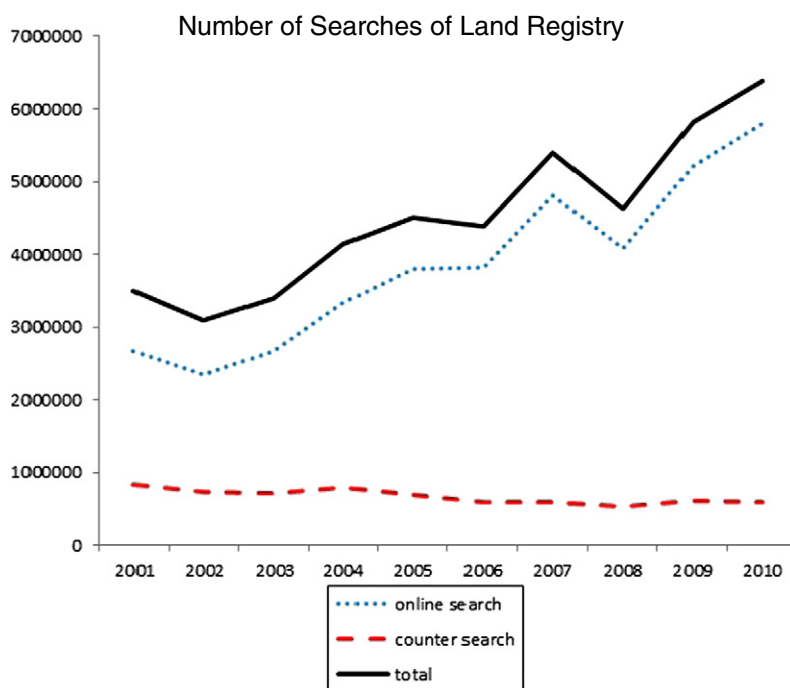

Fig. 1. Number of searches of land registry.
Source: Hong Kong Land Registry.