

Smart Money or Dumb Money: Investors' Role in the Housing Bubble

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hat drove the remarkable 50 percent rise in U.S. house prices from 1996 to 2006 — and their dramatic 30 percent fall by 2011?¹ To explain this historic cycle, most research points to three factors: low interest rates, the growth of subprime mortgages, and increasingly lax lending standards.² But there appears to be increasing evidence of another important factor: speculation by individual investors. Investors can improve market efficiency under certain circumstances. Yet, as this article summarizes from recent research, they also have an outsize effect on house price changes. To assess what part investors played in the housing bubble, it will help to understand investor characteristics and what factors drive their buying and selling.

HOW INVESTORS DIFFER FROM TYPICAL HOMEOWNERS

Residential real estate investors buy homes with no intention of living

¹ Calculated using the Federal Housing Finance Agency house price index deflated by the headline consumer price index.

² For example, John Taylor cites low interest rates that he attributes to overly expansionary monetary policy (although see Ben Bernanke's 2005 remarks for a different view on the cause of low rates). Yulia Demyanyk and Otto Van Hemert find that mortgage quality had deteriorated for six years before the crisis and that securitizers were aware of the trend. Atif Mian and Amir Sufi closely correlate the increase in securitization of subprime mortgages with mortgage lending growth in zip codes where subprime mortgages were prevalent but income growth was not. Tim Landoigt finds that expectations of higher-than-average price gains were greater at the beginning of the boom but had nearly evaporated by 2004, two years before the bust, while down payment requirements continued to be relaxed throughout the boom.

in them. Some investors rent their properties out, but most look to resell them after a short holding period to make a profit. Although ordinary homeowners may also view owning a home as an investment — one that may yield a capital gain or loss when they eventually sell it — their primary motivation for buying a house is to have a place to live — shelter.

For this article, I will focus on individual investors as opposed to institutional investors such as homebuilders, construction contractors, real estate agencies, and financial firms. Because data are limited, relatively little is known at this point about institutional investors' role in the housing crisis. In addition, I will restrict the discussion to single-family homes due to data limitations.

There are at least two reasons to believe that housing transaction and default costs — financial as well as emotional — are lower for real estate investors than for typical homeowners. First, when selling its primary home, a household needs to find an alternative place to live and perhaps a new school for the kids and a new mode of transportation to work. All these activities take time and money. Second, if its house is foreclosed upon, a household may feel more stigmatized if the house is its primary residence. Neighbors will learn of the foreclosure more quickly and may shun the family. Of course, investors also strive to avoid losses on their real estate assets, but for them the fallout is chiefly financial, since they don't live in the house and so it is less likely that other people will learn about the foreclosure.

A simple model of housing investment. These lower costs make real estate investors more price sensitive, as outlined in a simple stylized model that Zhenyu Gao and I constructed. The basic elements of the model are that households consume both housing and nonhousing goods and that they save exclusively by investing in housing, which is a simple way of focusing attention on the role of investment in housing. We assume that households are uncertain about their future income and future house prices, which are standard assumptions in models of household consumption and saving decisions. Our model is specialized to draw out the implications of two basic features of investment in housing. Consistent with my description of real estate investors, our model assumes that households find it more expensive



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to buy and sell a primary residence than an investment home and to default on a mortgage on a primary residence than on investment housing.

In this setup, only relatively rich households that expect their incomes to fall in the future, such as in retirement, will save by purchasing investment housing. In addition, because of the lower transaction costs associated with investment housing, households that purchase investment housing are more sensitive to current prices and to expectations about future prices in their buying and selling decisions than are households that purchase only a primary residence. For example, in our model, demand for investment homes will rise more than demand for primary residences in response to greater optimism about future house prices.

Our model also makes predictions about household default rates and credit standards. Because households face lower costs when they default on a second home than on a primary home, pessimism about future prices will lead to more defaults on mortgages on investment homes than on ordinary homes. Of course, lenders are not unaware of this phenomenon, so they impose higher standards on borrowers seeking to finance investment homes. Lenders will require investment homebuyers to have higher incomes, lower loan amounts, or higher mortgage interest rates than required of ordinary primary homebuyers.³

Real estate investors and market efficiency. Because they are more sensitive to current and expected price movements, investors can significantly influence prices in the residential market. Whether they improve market efficiency, however, depends on whether they act with superior information and

on how they act based on that superior information. In economics, *market efficiency* is defined as the degree to which prices reflect all the relevant information.⁴ In the case of the housing market, this information would include local demographics, income distribution, the labor market, land availability, zoning restrictions, public services, and so on. Economists refer to such information as *market fundamentals*. Following Friedrich Hayek's Nobel prize-winning insight, each investor's information drives individual buying and selling decisions, which in turn are aggregated in the market into a single statistic — a price. Real estate investors improve market efficiency if they keep prices in line with market fundamentals by possessing and acting on superior information about those fundamentals. That is,

But real estate investors will not improve market efficiency if they simply bet on future house price movements based on past and current price movements without any superior information. For example, when investors bet that the housing boom would continue longer than implied by market fundamentals, they effectively boosted house prices even higher than they would have risen had it not been for investor speculation. Similarly, when investors later bet that the housing bust would last longer than implied by market fundamentals by unloading their properties cheaply or defaulting, they further depressed house prices and exacerbated the bust. As we will see, studies suggest that real estate investors generally did not possess superior information.

Real estate investors will not improve market efficiency if they simply bet on future house price movements based on past and current price movements without any superior information.

the market becomes more efficient if, through their experience or diligence, investors do more than just guess about the ultimate direction in which house prices are headed.

For example, suppose real estate investors correctly predict that there will be an influx of immigrants to the city that will increase demand for housing. If this information is not available to other homebuyers, then investors will be more willing to purchase from sellers and more willing to pay higher prices.⁵

One might argue that in comparison with ordinary homeowners, there are relatively few real estate investors and so their effect may not be large. However, Monika Piazzesi and Martin Schneider show that even a relatively small group of real estate investors can have a large effect on house prices. Unlike stocks, houses are not standardized assets traded in highly competitive markets. Instead, households search for individual houses that suit them and bargain with sellers over the price. Once they have found a suitable house, they cannot easily exchange it for an equivalent house. In *search markets*, where buyers search for sellers and then bargain over prices, house prices will reflect only actual transactions, no matter how sparse these transactions are relative to the stock of

³ This type of prediction illustrates the benefit of examining a formal model in which households and lenders adjust to each other's likely behavior.

⁴ See Fama (1965).

⁵ Real estate investors often fix up their investment homes before selling, thereby improving the quality of the housing stock on the market. This is, however, a separate argument from market efficiency.

housing for sale. As a practical matter, actual transactions (not the stock of offer prices) are the primary source of information for appraisals.⁶

In summary, real estate investors can drive up house prices without spending substantial wealth or obtaining as large a market share as speculators in other markets, such as the stock market, do.

INVESTOR SHARE OF DEMAND SOARED THEN SANK

Interestingly, as a share of total U.S. households, those that owned investment homes did not fluctuate much in the years leading up to and following the bubble. According to the Survey of Consumer Finances (SCF), 13 percent of households owned investment homes in 1989. The share rose to 14 percent in 2007 but returned to 13 percent in 2010. By contrast, the share of households that owned their primary residence moved up from 64 percent to 70 percent in 2007 and then dropped back to 67 percent in 2010.

However, this more or less constant fraction of households that invested in residential real estate is misleading. According to the Federal Reserve Bank of New York/Equifax Consumer Credit Panel, the share of new mortgages taken out for home purchases (as opposed to mortgage refinancings) by households with more than one first lien went from 20 percent in 2000 to 35 percent in 2006-07.⁷ In the four states with the most dramatic house price movements — Arizona, California, Florida, and Nevada — the rise was from 20 percent in 2000 to 45 percent in 2006-07 (see Figure 1). In

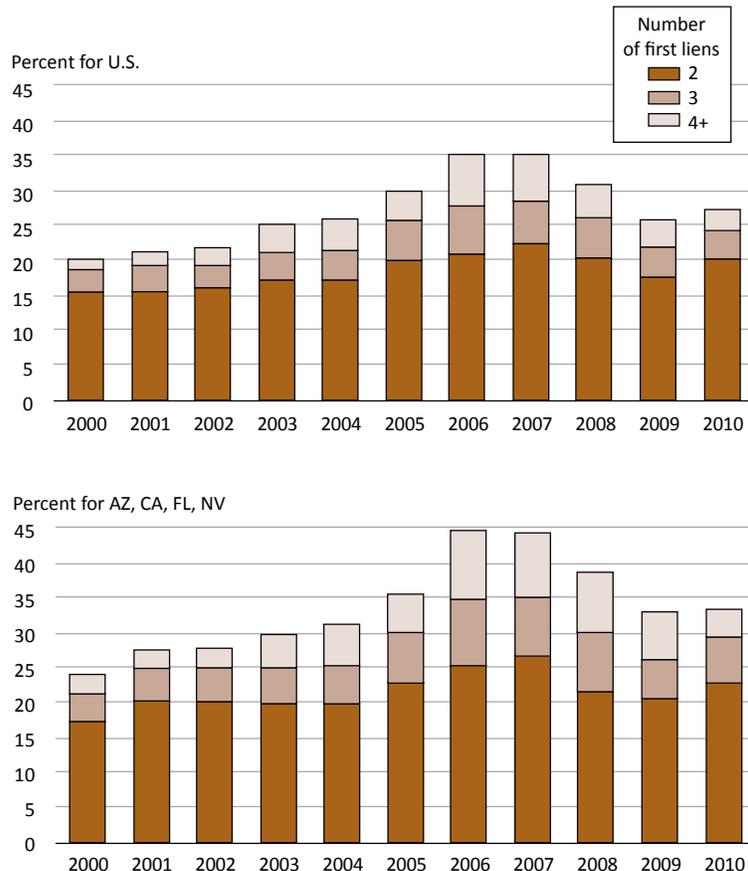
⁶ See Leonard Nakamura's 2010 *Business Review* article in which he also discusses the problems that arise in housing markets when too few transactions take place to form accurate appraisals.

⁷ See Haughwout and his coauthors.

FIGURE 1

Average Number of Houses Investors Held Rose Before Crisis

Share of new purchase mortgages taken out by households carrying more than one first lien.



Source: Calculations by Haughwout and coauthors (2011) based on the Federal Reserve Bank of New York/Equifax Consumer Credit Panel data set.

other words, although the fraction of households that owned investment homes didn't change dramatically, the average number of investment houses they held increased prior to the crisis.⁸ This observation is consistent with William Wheaton and Gleb Nechayev's calculation that in 2005, total housing

⁸ An alternative but complementary explanation is that investors were buying and selling houses so frequently — that is, *flipping* properties — that the quarterly credit data were capturing multiple mortgages between transactions.

production exceeded household formation by 60 percent.⁹

Turning to the flow of buying and borrowing for real estate purchases, using Home Mortgage Disclosure Act (HMDA) data, Gao and I calculate the fraction of mortgage applications for nonprimary residences as reported by

⁹ As the U.S. Census Bureau defines it, a household consists of all the people, related and unrelated, who occupy a housing unit, including any lodgers, foster children, wards, or live-in domestic help.

borrowers themselves and find a similar albeit less dramatic pattern than Haughwout and his coauthors find (see Figure 2). The fraction of mortgage applications for nonprimary residences went from a low of 5 percent in 2000 to a high of about 14 percent in 2006, falling to less than 10 percent by 2010. Applications in Arizona, Florida, and Nevada rose and fell more steeply than in the country as a whole.

Investors: Good credit risks who made bad investments. As mentioned earlier, one popular narrative of the housing crisis is that too many homebuyers with low credit scores resulting from poor repayment histories were able to get subprime mortgages. More generally, many researchers have pointed to a decline in credit standards for all homebuyers, even those who qualified for prime mortgages.¹⁰

Investors appeared creditworthy. An examination of SCF data from

2001, 2004, 2007, 2009, and 2010 reveals that owners of second and investment houses actually had higher incomes than those who owned only their primary residences. For example, the median income for owners of just a primary residence was \$31,176 in 2007 in 1980-84 dollars versus \$46,645 for owners of second and investment homes. In fact, in 2007, 90 percent of those who owned investment homes already owned their primary residence, consistent with the theory that Gao and I have outlined.

Calculations using HMDA data confirm the pattern that incomes of mortgage borrowers were noticeably higher for investment homebuyers than for typical homebuyers. In 2007, the median income for primary mortgage applicants was \$30,316 in 1980-84 dollars and \$59,394 for nonprimary mortgage applicants. Other data also indicate that people with second or investment mortgages had higher credit scores on average than those with just a primary mortgage.¹¹ For

example, in 2007 at the height of the mortgage crisis, the median credit score at the time of mortgage origination was 720 for owner-occupants with prime-rate mortgages and 750 for nonowner-occupants with prime-rate mortgages. For subprime borrowers, the median credit score was 630 for owner-occupants as opposed to 663 for nonowner-occupants.¹²

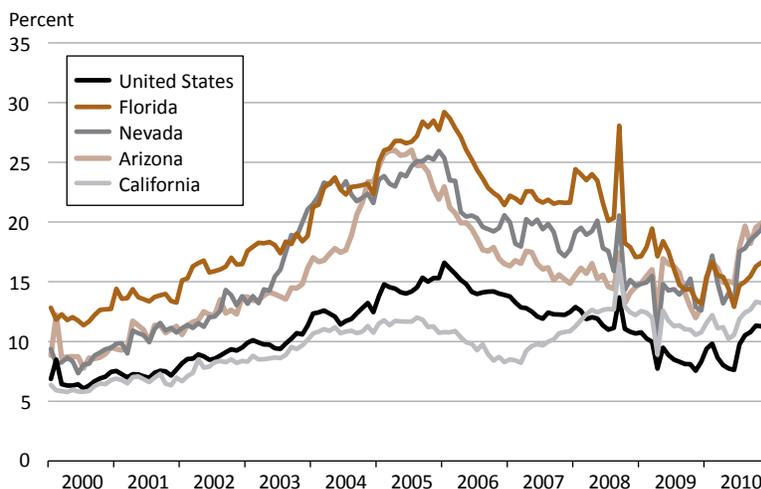
But appearances can be deceiving. Despite their apparently superior risk credentials, there is some evidence that real estate investors may have been more leveraged. All else equal, more leveraged borrowers typically pose more risk, as they are more vulnerable to declines in house prices and in their own financial situation. Additionally, Gao and I find that among prime-rate borrowers, investors tended to take out riskier types of mortgage contracts such as adjustable-rate and interest-only mortgages more often than did noninvestors.¹³ Empirically, these types of mortgages have been found to have higher rates of delinquency and default than traditional fixed-rate mortgages.

Another telling phenomenon is that many real estate investors were out-of-town or distant buyers; that is, they bought properties outside the area where their primary residence was located. Alexander Chincio and Christopher Mayer find that 12 percent of

¹⁰ See Ronel Elul's *Business Review* article.

FIGURE 2

Investment Mortgages as Share of Total Applications



Sources: Calculations by Gao and Li (2012) using Home Mortgage Disclosure Act data.

¹¹ See my paper with Gao for data from LPS and CoreLogic. Also, it is worth noting that both the SCF and HMDA rely on what households report about themselves. Comparing consumer credit bureau data with loan-level mortgage data, Haughwout and his coauthors discover that households underreport how many first liens they have.

¹² Credit scores in those data sets range from 350 to 800.

¹³ With an interest-only mortgage, the borrower pays only the interest on the principal for a set period, leaving the principal balance unchanged. We use LPS Applied Analytics data for prime mortgages and CoreLogic data for subprime and near-prime mortgages.

single-family homes purchased in Las Vegas by distant investors in 2000 were resold within 24 months.¹⁴ By 2005, that share had risen to 25 percent. They find that compared with local buyers, distant investors were less likely to be well informed about local market conditions. In that sense, distant investors may behave like so-called noise traders in many financial markets who buy and sell for reasons other than market fundamentals. They speculate and are not well informed.

Indeed, there is significant evidence that, rather than using market fundamentals to predict where and when prices would rise, investors gravitated to areas where prices were already rising rapidly, further fueling excess short-term appreciation. Studying zip code-level mortgage demand, Gao and I find that real estate investors responded more strongly to recent local house price movements than did people buying their primary homes. In other words, investors were more attracted to areas where single-family house prices had risen rapidly.

Patrick Bayer, Christopher Geissler, and James Roberts distinguish between experienced versus inexperienced investors who purchased homes in Los Angeles between 1988 and 2009 with the intention of quickly reselling them.¹⁵ The researchers define experienced investors as those engaged in buying and selling four or more properties at a time.¹⁶ They find that experienced investors bought homes at below-market prices from motivated sellers and resold them quickly and that they invested in housing during

¹⁴ They use county deed records from DataQuick.

¹⁵ Bayer and his coauthors use home sales data from DataQuick.

¹⁶ This is obviously not a perfect definition, as those who flip four or more houses at a time can still be very inexperienced. According to their paper, only about 1 percent of purchases are made by experienced investors.

both boom and bust years. In doing so, these experienced investors did appear to provide liquidity to the local housing market in addition to contributing to market efficiency. Inexperienced investors, on the other hand, invested in periods and areas of rapid market appreciation. Their speculative activity increased sharply during the boom and fell during the bust.

Finally, Chinco and Mayer document that many more out-of-town buyers than local investors bought homes just before house prices peaked and on average lost money on those investments, with the worst relative performance in those markets where prices fell the most. Put simply, distant buyers seemed overconfident and uninformed about local housing market conditions.

In a nutshell, it appears that real estate investors during the housing bubble tended to buy high and sell low.

EFFECT OF INVESTORS ON LOCAL HOUSE PRICES

All of this raises an important question: Did real estate investors' behavior influence local house prices as theory predicts, fueling the boom and prolonging the bust?

Analyzing house price movements and relative demand by real estate investors by zip code, Gao and I show that even after controlling for local fundamentals including population growth, income growth, and the unemployment rate, real estate investment helps predict house price movements. In the short run — within one to two years — house prices appreciated more in areas with high percentages of investment home purchases than in areas where investment purchases were scarce. However, after three to four years, house prices in these areas on average declined more significantly than in areas where investment home purchases were less prevalent.

For the Los Angeles area, Bayer and his coauthors also find that a great-

er percentage of purchases by inexperienced investors predicts above-average rates of appreciation for the area over the next one to two years and below-average price increases over the following three years. Unlike experienced investors and traditional homebuyers, inexperienced investors kept buying after prices peaked and held onto their houses well after 2007, when house prices had declined significantly.

Focusing on distant buyers, Chinco and Mayer show that an increase in purchases by distant second-home buyers as a fraction of total sales in a metropolitan area predicts an increase in house price appreciation rates in the following year.

Another channel through which real estate investors affect local house prices is through their propensity to default. There is strong evidence that investors are more likely than owners of just a primary residence to default on their mortgages and thus depress local house prices. For example, using the Federal Reserve Bank of New York/Equifax Consumer Credit Panel, Haughwout and his coauthors show that investor-owned homes accounted for more than 30 percent of mortgages 90 or more days delinquent in 2007. Similarly, Gao and I find that for prime mortgages, 90-day delinquency rates were 14 percent higher for investors than for owner-occupants.¹⁷ Combining our results with those of Atif Mian and Amir Sufi, we conclude that increases in investment home foreclosure rates further slowed house price growth by 1.61 percent. Breck Robinson and Richard Todd also find that defaults and foreclosures occurred more often among investor-owned homes than owner-occupied homes.

Sorting out cause and effect. When we see higher prices in markets where purchases by investors are

¹⁷ We use LPS Applied Analytics data.

more prevalent, how do we know that expectations of higher prices based on market fundamentals are not causing more investors to enter a particular market? Or perhaps something else altogether is causing both higher prices and higher investor demand. Toward this end, Bayer and his coauthors and Chinco and Mayer analyze the timing of speculative transactions and establish that buying by investors continued to rise after house prices peaked and that sales by investors did not rise until after house prices had begun to decline. Put simply, investors had no better information about local house price dynamics than did traditional homebuyers. Rather than accurately reflecting the long-term outlook for house prices, investor behavior fueled

short-term price movements and led to a long-term price correction.¹⁸

CONCLUSION

Research into the causes of the housing boom and bust has pointed largely to credit-related factors such

as low interest rates, the growth of subprime mortgages, and increasingly lax lending standards. However, as this article has shown, recent evidence strongly indicates that intense speculation by individual real estate investors also significantly magnified the boom and worsened the bust. 

¹⁸ Gao and I estimate the causal relationship using a different strategy often employed in economics, epidemiology, and other disciplines when controlled experiments are not feasible that relies on *instrumental variables*. We identified two instruments for investor demand — state homestead exemptions, which protect a portion of the value of a primary residence from creditors' claims in personal bankruptcy cases, and the share of local employment in leisure and hospitality — that are reasonably closely related to investor demand but not related to prices through any channel other than investor demand. States with higher homestead exemp-

tions provide greater incentives to buy costlier primary homes and thus should reduce the relative share of investment home purchases. The exemptions by themselves have no direct effect on home prices. Similarly, leisure and hospitality employment in a locality increases the relative demand for vacation homes, which are significantly more likely to be investment homes, but has no other connection to local home prices. See Gao and Li (2012). For the mathematical reasoning behind the instrumental variable approach and the actual implementation, see Greene (2012).

REFERENCES

Bayer, Patrick, Christopher Geissler, and James W. Roberts. "Speculators and Middlemen: The Role of Flippers in the Housing Market," National Bureau of Economic Research Working Paper 16784 (2011).

Bernanke, Ben. "The Global Saving Glut and the U.S. Current Account Deficit," remarks at the Sandridge Lecture, Virginia Association of Economists, Richmond, VA, 2005.

Chinco, Alexander, and Christopher Mayer. "Noise Traders, Distant Speculators and Asset Bubbles in the Housing Market," manuscript, Columbia University (2011).

Demyanyk, Yulia, and Otto Van Hemert. "Understanding the Subprime Mortgage Crisis," *Review of Financial Studies*, 24:6 (2011), pp. 1,848-1,880.

Elul, Ronel. "What Have We Learned About Mortgage Default?" Federal Reserve Bank of Philadelphia *Business Review* (Fourth Quarter 2010).

Fama, Eugene F. "The Behavior of Stock-Market Prices," *Journal of Business*, 38:1 (1965), pp. 34-105.

Gao, Zhenyu, and Wenli Li. "Real Estate Investors and the Boom and Bust of the U.S. Housing Market," manuscript (2012).

Greene, William H. *Econometric Analysis*, Seventh Edition, Upper Saddle River, NJ: Prentice Hall (2012), pp. 228-229.

Haughwout, Andrew, Doonhoon Lee, Joseph Tracy, and Wilbert van der Klaauw. "Real Estate Investors, the Leverage Cycle, and the Housing Market Crisis," Federal Reserve Bank of New York *Staff Report* 514 (2011).

Hayek, Friedrich. "The Use of Knowledge in Society," *American Economic Review*, 35 (1945), pp. 519-530.

Landvoigt, Tim. "Housing Demand During the Boom: The Role of Expectations and Credit Constraints," working paper (2011).

Mian, Atif, and Amir Sufi. "The Consequences of Mortgage Credit Expansion: Evidence from the U.S. Mortgage Default Crisis," *Quarterly Journal of Economics*, 124:4 (2009), pp. 1,449-1,496.

Nakamura, Leonard. "How Much Is That Home Really Worth? Appraisal Bias and House-Price Uncertainty," Federal Reserve Bank of Philadelphia *Business Review* (First Quarter 2010).

Piazzesi, Monika, and Martin Schneider. "Momentum Traders in the Housing Market: Survey Evidence and a Search Model," *American Economic Review: Papers and Proceedings*, 99:2 (2009), pp. 406-411.

Robinson, Breck L., and Richard M. Todd. "The Role of Non-Owner-Occupied Homes in the Current Housing and Foreclosure Cycle," Federal Reserve Bank of Richmond Working Paper 10-11 (2010).

Taylor, John B. "Responses to Additional Questions from the Financial Crisis Inquiry Commission," mimeo (November 2009), www.stanford.edu/~johntayl/Responses%20to%20FCIC%20questions%20John%20B%20Taylor.pdf.

Wheaton, William C., and Gleb Nechayev. "Past Housing 'Cycles' and the Current Housing 'Boom': What's Different This Time?" manuscript, Massachusetts Institute of Technology (2006).