

Some New Math on Homes

By DAMON DARLIN

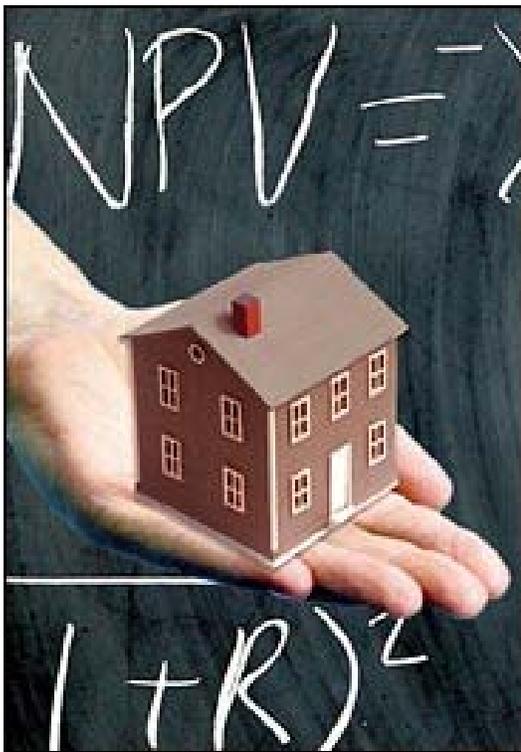


Illustration by The New York Times

Gary and Margaret Hwang Smith spend a lot of time musing about real estate.

It is not just that the couple, economics professors at Pomona College, have put so much of their money in the game, having bought a home in Claremont, a college town in Southern California, a real estate market that has been described as overpriced by most and a bubble by some.

Rather, they said, applying economic tools to buy a five-bedroom 1922 Craftsman home sharpened their thinking and guided two years of research into whether there is a bubble. They concluded that not only was the Los Angeles region not in a bubble, but many markets that others were calling overpriced, like Chicago or Boston, were probably underpriced.

Their findings are at odds with other surveys that use the relationship of home prices to income to determine whether home buyers are overreaching. Homes in Orange County, Calif., were fairly priced, the Smiths found. Some cities like Dallas, Indianapolis and Atlanta were screaming bargains. Homes they surveyed in San Mateo County, south of San Francisco, were, however, overpriced by about 54 percent.

In a paper the two presented at the Brookings Institution this week, "Bubble, Bubble, Where's the Housing Bubble?" they said that even though prices had risen rapidly and some buyers unrealistically expected the trend to continue, "the bubble is not, in fact, a bubble in most of these areas."

They argued that the value of a home is determined by the rent it could fetch. Calculate the future rents, subtract mortgage

payments, taxes and other costs, factor in a good annual rate of return of 6 percent or more, and one should be looking at the proper price of a house or condo.

Their bottom line was: "Buying a house at current market prices still appears to be an attractive long-term investment."

Speculating about bubbles — their cause, their longevity, and indeed, their very existence — occurs whenever there is a rapid rise in asset prices. When dot-com stocks pushed the stock market to record highs in the late 1990's, many people tried to explain — or justify — the high prices of the stocks by talking about how the Internet was creating a new economy, one that worked by different rules or needed valuations that did not depend on earnings but on eyeballs viewing Web sites or the "stickiness" of those eyeballs. Those justifications were proved false by the technology meltdown.

With real estate, there have been fewer attempts to justify the high prices and more of an effort to understand why it is happening and whether there is an asset bubble.

Robert J. Shiller, the Yale University professor who warned of the stock market bubble, has few doubts that a real estate bubble exists in many American cities. He said he did not buy the Smiths' point that certain markets were not overpriced.

The way the Pomona professors reached their conclusion, however, has generated a lot of interest among fellow economists. "I think the paper is a sign of the times," Mr. Shiller said, because it emphasizes the link between home prices and rent as the proper way to understand the value of real estate.

Richard Peach, a vice president at the Federal Reserve Bank in New York who studies home prices and their relation to income, echoed that view, saying, "This is an important paper."

The value of the Smiths' research may be its practicality. It concentrates on the how, more than the why, in laying out a method to determine the underlying value of a home. They offer a way for real estate agents, financial planners and prospective homeowners to understand how much is too much to pay for a house.

Karl E. Case, a Wellesley College economics professor who has been studying real estate prices for more than 25 years, calls the paper's method "absolutely the correct way to think about it."

The Smiths say a prospective homeowner needs to ask, Should I buy or should I rent? That the value of a house is tied to the rent it can command is not a new idea. Other economists have advanced the idea and some have advanced the notion that a bubble can be measured with price-to-rent ratios that correspond to price-to-earnings ratios for stock.

But a price-to-rent ratio does not go far enough, according to the Smiths. Investors like Warren E. Buffett value a stock by looking at its intrinsic value — that is, how much return one would get on the stock over time. For stocks, that is the cash the company generates and, in some cases, gives back to shareholders in the form of dividends.

The intrinsic value of a house is the rent that it can generate. "It's not that houses are like stock," Mr. Smith said, "but if you think about them as you do stocks, you start thinking about it correctly."

The problem is that there has not been a good way to compare rents with homes. Indexes that try often end up comparing apartment rent with prices of a single-family home. A result, the Smiths said, is inflated price-to-rent ratios that are displayed as evidence of a bubble when one may not exist.



Gary and Margaret Hwang Smith at their home in Claremont, a college town in Southern California. They teach economics at Pomona College.

The Smiths solution was to look for "matched pairs" of similar houses, one rented, one owned, but both in the same neighborhood. They did this in 10 cities in which they could find enough real estate data and matched pairs. Once they had established what rent was for a certain house, they used software they created to compute the flow of rents over time, factoring in the outflow of mortgage payments, maintenance costs and taxes. Then they had to determine what those future payments would be worth today, which economists call the net present value. If the net present value is a positive number, the house is worth the price. If the result is a negative number, the buyer would be better off renting it. (For more, see *Your Money*, Page B4.)

Of course, few people do that math when they buy a house. They look at what other houses in the neighborhood are selling for and base their bid on some expectation of what the house may be worth in the future.

Those expectations are far too optimistic, numerous studies have shown, most notably a 2003 study by Mr. Case and Mr. Shiller that found, for instance, that homeowners in San Francisco expected annual price increases of 15.7 percent. "It's clear a lot of people are nuts," Mr. Case said.

The Smith formulas provide a way to determine if a buyer is overpaying. Making the calculations takes a fair amount of math skill, so Gary and Margaret Smith, who is also a certified financial planner, say they want to commercialize their program so that the average person can determine a house's value. She

has helped several clients decide whether to buy or rent. "We may have some intellectual property that is valuable," Mr. Smith said.

Indeed, the Smiths used an early version of the formula before they moved from a tract home in Claremont to a home closer to the college. The two met and married while teaching at Pomona, about 35 miles east of Los Angeles. They have three children (a fourth is on the way), so they needed more room.

They found a four-bedroom house a short walk from the college that also had a separate guest house they could use as an office. But the owner was selling it without an agent and did not have an idea of what to sell it for. "He told us to figure out a price," Ms. Smith said. They determined what rents were for comparable homes and ran their cash-flow software to find a price. "We knew where we could go up to," Ms. Smith said. Their first offer was rejected, but he eventually accepted \$950,000.

A house, this formula finds, is still a good long-term investment.

That was about 30 percent more than the price of the house they had been living in, but the net present value calculation told them that they would be generating an 8 percent after-tax return. "It seemed like a no-brainer," she said.

"Then it occurred to me that it was an appropriate method for looking at the question of the bubble," she said.

The Smith analysis does not escape criticism. Several economists, like Mr. Case and Mr. Shiller, quibble about the assumptions the Smiths make in doing their calculations — for example, homeowners spending only about 2 percent of the house price a year on maintenance or that everyone can obtain a mortgage interest deduction. One-third of taxpayers do not itemize their deductions and many more are getting hit with the alternative minimum tax that removes some of the advantages of home ownership, said Christopher Mayer, a professor of real estate at the Columbia Business School. Still, he agrees with the Smiths that there is not a housing bubble and he was impressed by the effort they made in finding matched pairs of houses.

But he also said that they lacked an understanding of what drives the economies of cities. For instance, he says, Indianapolis looks undervalued because, unlike the Northeast and West Coast cities, land there is inexpensive. The supply side of the supply-demand relationship that determines prices seems to be overlooked. In some cities, zoning and other restrictions limit the building of homes. Elsewhere it is relatively easy to build houses when demand rises because most of the cost of a home is in construction. That is one reason there is a greater expectation of price appreciation in California than in a place like Indianapolis, he said.

The questions many people want to know about housing prices are not answered by the Smith research: when will they fall and by how much? "Some people think we are trying to predict prices and we are not," Mr. Smith said. "That's a point a lot of people get hung up on."

Sure, he said, if prices drop you would have been better off if you had waited. "But you can't time the market," he said. "If you are a house flipper, we aren't talking to you."

Your Money

Calculating What to Pay for a Home

By DAMON DARLIN

How do you know what to pay for a house?

You look at the "comps," of course. A real estate agent will tell you what comparable houses in the neighborhood sold for. Web sites like Zillow.com or HomeValues.com value homes the same way.

Is that not a little like thinking Yahoo stock is a bargain at \$32 a share because Google is selling at \$390 a share? With stocks, you would want to know how the price relates to the company's future earnings. Gary and Margaret Hwang Smith, Pomona College economics professors, argue that with housing you similarly want to know how the price relates to the future stream of rent from a home, whether you intend to rent or not.

It is not an unheard notion among investment professionals. Redbrick Partners, an investment fund that buys and rents single-family homes, evaluates a property's cash flow, as well as the economic prospects of the neighborhood and larger region, before buying it. "Just because you pay 5 percent less than somebody else doesn't mean it is a good price," said Thomas Skinner, a managing partner.

You will need some math skills and some software or a financial calculator to do this. The Smiths said they might offer a program on their Web site, www.smithfinancialplace.com, to automate the process, but until then, you'll have to read the formulas in their new research paper found there and work out the numbers using a spreadsheet.

Use the rent you could get for that dream house to figure out the price.

To see how this would be useful to a buyer, take a look at a house on Silver Cloud Drive in Diamond Bar, Calif. It is an 1,812-square-foot four-bedroom two-bath split-level ranch built in 1964.

It sold last July for \$560,000. First, you need to know how much the house could rent for. As it happens, just across the street is a nearly identical house that was renting at the that time for \$2,295 a month.

Determining how much rent a house can fetch may turn out to be one of the more difficult tasks in this entire process, especially if you live in a single-family home in a neighborhood where few homes are rented. If you own a condominium or an apartment, it's easy because there are always comparable units renting.

Now you need to calculate the annual cash inflow, that is, the rent, and subtract it from the outflow, things like mortgage payments, taxes and maintenance. You'll have to make some assumptions of how much any of those factors will change over time. The cash flow may be negative in the first few years of ownership, but as rents increase and the mortgage payments don't, the returns flip positive.

Plug these numbers into a spreadsheet set up to calculate net present value — what the future payments are worth right now. You can find advice at <http://office.microsoft.com/en-gb/assistance/HP052091991033.aspx>. In our example provided by the Smiths, assuming (economists love to assume) the buyer makes a 20 percent down payment, secures a 30-year fixed mortgage at 5.7 percent, and spends about 2 percent of the price of the house each year on maintenance as rents rise 3 percent a year, you discover that with a 6 percent after-tax annual rate of return, the house price would be \$696,000. That's about 24 percent more than the actual selling price and 18 percent above Zillow's estimate of \$588,502.

The calculation doesn't mean that as a seller you'd necessarily get that much. Supply and demand — and the Greater Fool Theory — will still determine the price. It means as a buyer you could go that high and still be happy with the decision in years to come.

Given the price it did sell for, for someone in a 28 percent federal income tax bracket, the long-run after-tax annual rate of return will be 7.4 percent. (Use an internal rate of return, or I.R.R., function in a spreadsheet.) Given that a 30-year bond was yielding about 4.83 last week and some banks will give you 4.5 percent interest, 7.4 percent isn't a bad return.

What if the price drops? That's the risk in owning over renting. Certainly, if you had waited you would pay less and probably get an even better return. But that's the reason you analyze the fundamentals. If you computed a healthy return and are holding it for the long term, you minimize the danger of losing your investment.

At the risk of sounding like a real estate agent, Mr. Smith said there are two risks to consider when buying a house. One is that you buy and the price goes down. The other is that you don't buy and the price goes up. "The second is more scary," he said.

E-mail: yourmoney@nytimes.com