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Past Housing "Cycles" and the Current Housing "Boom": What's Different This Time?

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ABSTRACT

This paper examines the historic cyclic movement in house prices since 1975. Past swings in home prices have been largely a result of economic recessions. The exception is the 2001 recession caused by a plunging stock market wherein the Fed loosened credit, rather than fighting inflation with tight credit. Home prices have soared since then, while income, job, and rent growth were slow to recover.

We show that incorporating all the actual movements in economic variables (including mortgage rates), forecasts made back in 1998 completely fail to capture the recent rise in prices. The current housing market however has been subjected to two "shocks" not seen previously. The emergence of an active sub-prime lending market has raised the homeownership rate nationally to historic highs. In a state cross-section we show that recent increases in homeownership correlate strongly with increases in Price/rent ratios.

Secondly, households have been purchasing homes as a "2nd" residence or for "investment" at record rates. In 2005 total housing production exceeded household formation by 60%! Again using a cross section, we show that markets where this has been on the rise are also experiencing greater price inflation. These new factors are "outside" of model forecasts and hence a cause for concern. Going forward, rising interest rates could both reduce homeownership and cause a more sudden exodus from the 2nd home investment market. These changes would cause prices to correct more severely than in the past.

I. Introduction: How high are House Prices and relative to what?

Recently there has been renewed interest in the behavior of the US housing market. The most commonly heard view is that prices have risen "too" high – relative to some benchmark. Here we review both some "facts" about these claims as well as some recent papers that use them to either confirm or deny the existence of a housing market "bubble".

Average US housing prices have risen 45% when adjusted for inflation over the last decade (Figure 1). Average (not median) income per worker has increased only 10% and income per capita a little over 20%. Household income (which is measured with less precision) has grown between these two. Thus with certainty, average housing prices are growing faster than the average income that Americans have to buy them. When the comparison is done with median income values the situation becomes worse. When the comparisons are made over the last three decades much the same conclusion holds although prices have outdistanced income by somewhat less than over the more recent decade.

As Himmelberg, Mayer and Sinai argue this does not mean that housing has become less "affordable". The annual cost of owning a dollar's worth of housing incorporates interest rates, taxes, maintenance – and the likely appreciation of the asset. Without going into a complicated calculation, which invariably must make some assumptions about owner's estimate of future appreciation, one can simply take the average housing price and multiplying it by the mortgage interest rate each year ("home payment" in Figure 1). This pure "annual cash cost" has risen right in line with income per capita in the last decade and similarly over the last three decades – albeit with considerable fluctuation. Thus there is *not* an "affordability crisis" – unless mortgage rates revert back to their historic average.

The second criticism of the "affordability crisis" is that it all depends on where you live. Across the US, income per capita or per worker *grows* remarkably similar across regions and gradually over time there has been slow convergence in income levels. Over the last decade, however, inflation-adjusted house prices have risen 35% in Chicago, more than 100% in Boston ad Los Angeles, but 0% in Dallas and many other

areas of the South East and Mid West (Figure 2). Since no one lives in the "nation", once we factor in the interest rate annual cost of ownership it turns out that any affordability crisis exists mainly in California and a few East Coast States.

Figure 1: Prices, Income, Payments

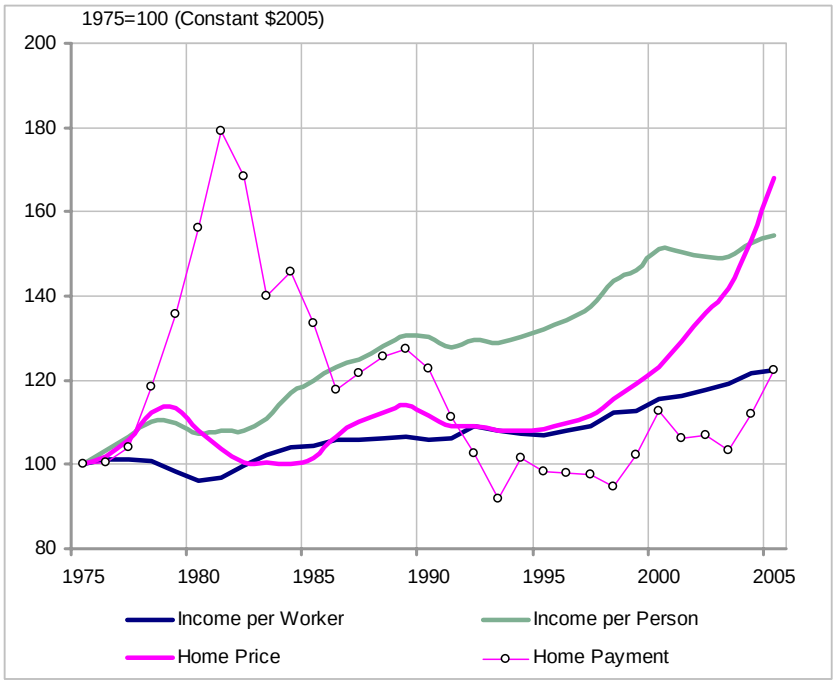
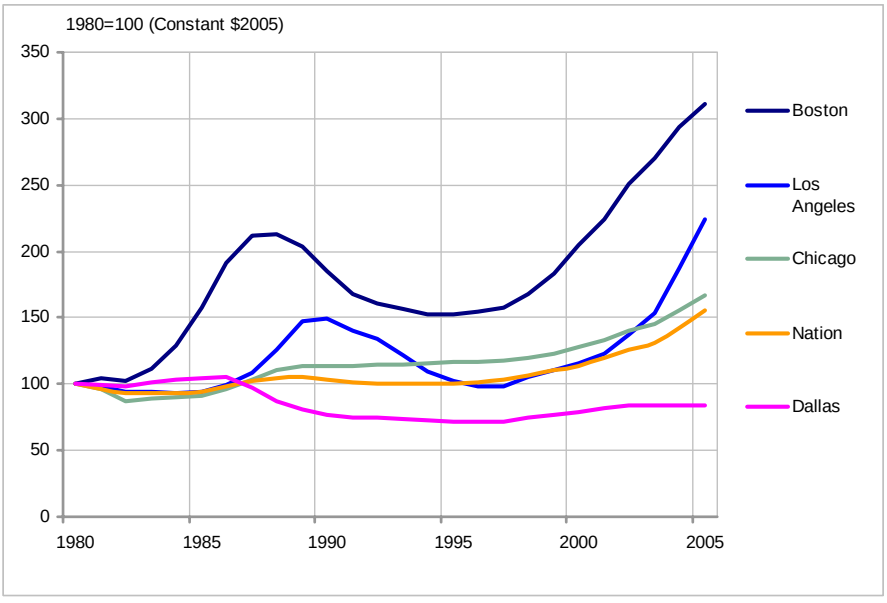


Figure 2: Prices in Markets



Then there are the financial market arguments. Shiller in particular argues that the housing rent-to-price (R/P) ratio has trended down continually since 1913. He compares this too with real interest rates that have actually risen over this period. This comparison however is valid only if housing is assumed to appreciate at the same rate as the CPI. Furthermore it ignores quite possible changes in the housing "risk premium".

Comparing rents and prices more recently, it is clear that prices have risen 45% and rents only 10% since 1995 (Figure 3). Hence the R/P ratio has continued to fall in the last decade by 35%. Of course, interest rates (both real and nominal) have also fallen over the decade so again it could be argued that the housing R/P ratio has recently just been moving with the return on the risk free opportunity investment.

Another problem of comparing prices to rents has been highlighted in a clever paper by Smith and Smith. They empirically fortify an argument made by many housing economist over the years – that median or average rent levels are just not comparable to price levels. The typical apartment has no land and around 700 square feet. The median house has both a back yard and more than twice that square footage. Furthermore, the characteristics of the average rental and owner unit have changed over time. The Smiths painstakingly match a sample of single family housing sales to comparable houses that are rented and find that these R/P levels seem in general to be overly high - 10% or more. While a ratio near to the real interest rate is found in one California market (3%), in some Mid Western markets the ratio is as high as 25%. Clearly there are major measurement issues with the entire R/P approach.

Finally, there has been recent discussion by Glaeser et al. arguing that prices are rising "excessively" because of a shortage of new construction – due largely to increased local development regulations. Now it is clear from economics 101 that supply inelasticity is certainly a necessary, although not a sufficient reason for prices to increase. But measuring development restrictions, estimating supply elasticities and then connecting the two to buttress this argument is an empirical task far more daunting than correctly measuring R/P ratios. Rather than enter this quagmire, we simply want to point out several important facts about the supply side of the current housing market.

Figure 3: Median Prices/Rents

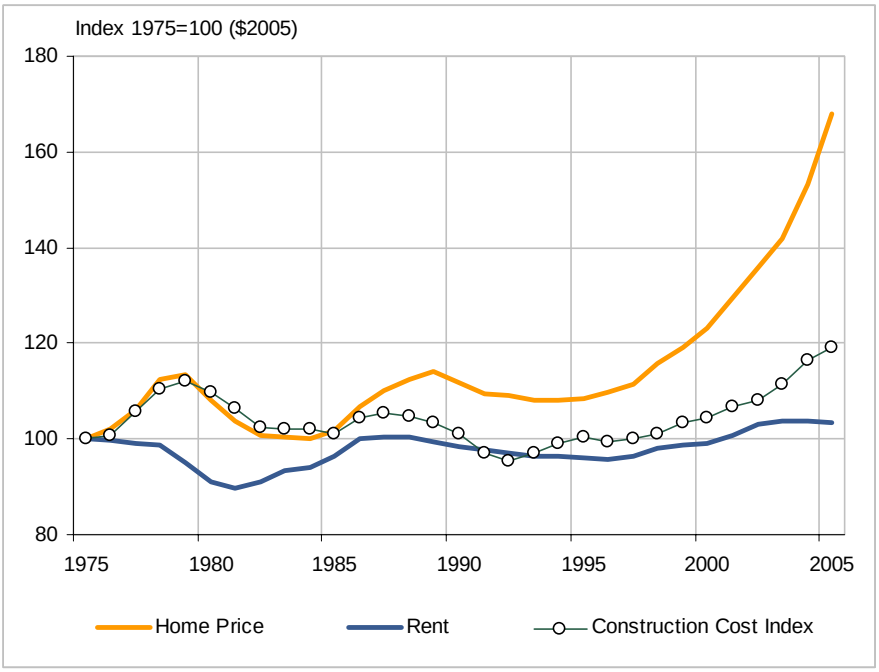
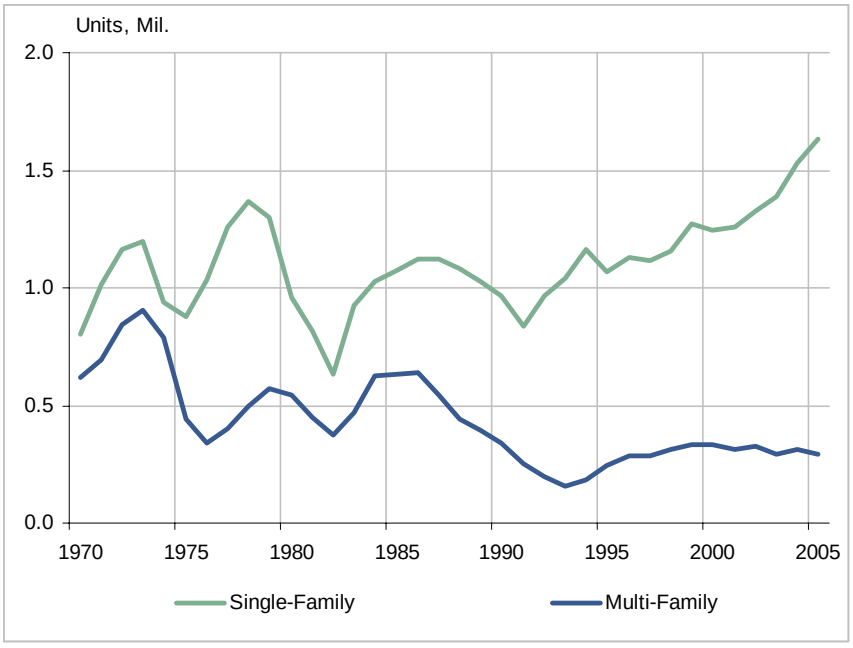


Figure 4: Housing Construction



First, the number of constructed single-family houses in 2005 is seen to be at an *all time record* (Figure 4). When added to multi-family units, total construction last year was near two other previous peaks (1973, 1978). The "robustness" of recent supply will

become even more apparent later when compared to household formation. Second, we examine prices and rents against construction costs – as measured by the Commerce Departments cost index for new homes excluding land (Figure 3). Construction costs in general have just matched rents which have just kept up with inflation. Only in the last 3 years, have supply shortages of selected materials (originating globally) generated any rise in costs. This finding is consistent with recent work showing little real rise in construction costs over the longer run in most markets in the country and for other building types as well (Wheaton). In sum, there is little evidence of "cost push price inflation" occurring from the construction side. If increased development regulations are the instigating factor behind price inflation then we should see rising prices together with lower construction levels – not the record new number of units in Figure 4.

Thus while housing prices have risen to new heights in many markets, it is not clear that this is a cause for concern. It is also clear that something is driving the demand side of the market to new heights – all cannot be blamed on supply restrictions. Let's investigate what is driving demand in more detail.

II. Why Have Prices Risen: Forecasts Using Economic Fundamentals

An initial test of why prices are rising is to see if all the changes in the economic variables known to impact housing demand can "forecast" the recent rise in prices. The best way to do this is to estimate an econometric forecasting model using data only through some date (here we choose 1998). Then we forecast prices forward with this model using the actual 1998-2005 historic economic data. The question is whether the model picks up the rapid rise in the last 5-8 years?

The model we use is a univariate model as shown in (1) below.[1] We regress current prices on lagged prices and a set of current economic variables (X_t). If the model works as theory would suggest, we need to allow several years worth of price lags – to pick up the eventual impact of supply in reaction to the demand changes. Hence we expect the α_j to be at first positive and then turn negative as new supply helps to quell the impact of demand shocks. For this to produce a stable "impulse response" the sum of the

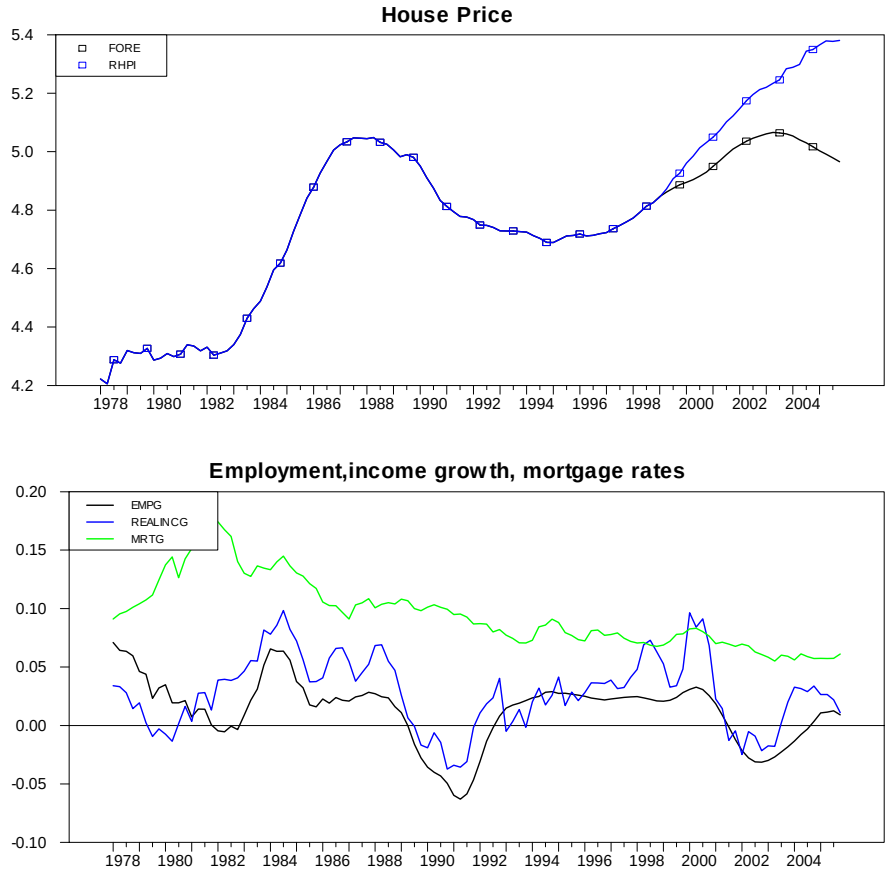
[1] A model similar to this is used in a recent investigation of MSA price movements by Capozza, et. al. (2004).

α_j must be less than one. In any given market, the elasticity (or inelasticity) of supply is implicitly picked up in the price response pattern. With perfectly elastic supply, eventually prices return to their original level after a positive increase in an X_t variable, with inelastic supply they rise and generally remain high.

$$LogP_t = \sum_{j=1}^{n} \alpha_j LogP_{t-j} + \beta' X_t \qquad (1)$$

We have estimated such models individually for each of 60 MSA markets. For prices we use the OFHEO repeat sales indices, and for the economic variables we use MSA personal income, employment, population and the 30 year fixed mortgage rate. We have experimented with using both real and nominal rates, but nominal work better in this instance. To illustrate the model and its application we turn to Figure 5 where the data and results for the Boston MSA are described.

Figure 5: Boston Prices and Fundamentals



In the case of Boston, the first frame in Figure 5 shows that the model forecast completely misses the recent price growth if the forecast is started in 1998.[2] The recovery from 1994 is forecast to continue for three more years (adding 20% to real prices) and then a correction sets in. In fact, prices have risen without stopping a full 60% (in constant dollars).

The model's forecast is completely explainable however, by turning to the second frame in Figure 5. Like many regions, starting in mid 2001 there is a downturn in income and jobs almost as severe as the downturn in 1989-1992 and more severe than 1980-1983. Furthermore the fall in interest rates from 2001-2004 is no greater than that during the previous two recessions – and the recovery from 2004-2005 is actually less than the previous two episodes. Given these movements in fundamentals, it is easy to understand how the model calls for a correction after 2001.

To varying degrees, this story is exactly repeated in 47 of our 60 MSA. In these 47 MSA, the model forecasts some degree of price growth after 1998, but always with a slowdown or correction. The sustained price increases that actually happen are never picked up by the model. In another 5 markets, the forecasts actually call for little or no price increase (and no correction) from 1998 onward.These are mostly in Texas where real prices steadily declined from 1980 through 1998. The Texas markets actually have recovered bit and grew a bit stronger than this from 1998-2005, which again is not picked up by the model. Thus in 52 of 60 markets the model consistently under forecasts actual price gains.

In the remaining 8 MSA, the model simply does not work - because the sum of lagged price coefficients is greater than one. These markets are the 6 Florida MSA, Phoenix and Las Vegas. Each of these MSA has a similar history of steady declines in real prices from 1980 through 1997 or so, and then a huge doubling or more in the last 8 years. None of the local economic fundamentals move in this manner – and so the model tries to explain the pattern with a continuous exponential growth curve.[3] Our conclusion is that in these metropolitan areas something is completely missing from the model.

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[2] In the top frame of Figure 5, prices are in natural logs of an index that starts at 100 in 1978.

[3] In most of these markets economic growth was as strong in the 1980s and mid 1990s as recently, but real prices during those earlier periods stagnated or declined.

IV. This Time is Different: Homeownership Soars

One factor that has changed in the last ten years is the soaring national growth in home ownership. Between 1965 and 1995 the home ownership rate bounced around between 63 and 64 percent. Since 1995 it has jumped 5 percentage points and is now near 70% (Figure 6). This movement was so pronounced that over the last decade the total number of renters in the US actually declined a bit – for the first time since WWII. As might be expected, multi-family construction has followed the ownership trend. In 2005 condominium construction will exceed rental apartment construction for the first time ever while just in 2000 it was only 30% of total multifamily development. What has caused this?

The evolving demographic makeup of the country accounts for only a small part of the overall homeownership increase. Weighting up age-specific ownership rates by the changing age distribution, we get only a very gentle 1% increase in projected ownership from 1995 to 2005. Per capita income might also be a suspect, but it grew more in the 1960s and 1970s than in the last decade, so it too would be hard to use as an explanation. In an effort to shed further light on home ownership we have examined the recent change in homeownership rates across states. There is absolutely no statistical relationship between the growth in home ownership and income – over either the 1990-2000 or during the more recent 2000-2005 period.[4] Something new and different is driving home ownership in the last decade.

What is clear is that state growth in home ownership is strongly driving the growth in state-level price/rent ratios (Figure 7). When we undertake a more sophisticated statistical analysis of the state changes in price/rent ratios we find that home ownership continues to be the most important driver – controlling for state changes in employment, income, or demographic makeup.[5]

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[4] For example from 2000 to 2005 we find: $\Delta HO = 1.01 - .0003\Delta Y$, $R2 = .002$.
(ΔHO and ΔY are measured as cumulative 5 year percentage changes).

[5] For example using changes from 2001 through 2005 we find:
$\Delta P/R = -3.4 + 4.5\ \Delta HO + .001\ \Delta Y$, $R2=.52$ (T statistics in parenthesis)
(-5.3) (7.1) (.3)

Figure 6: US Homeownership and Renter Households

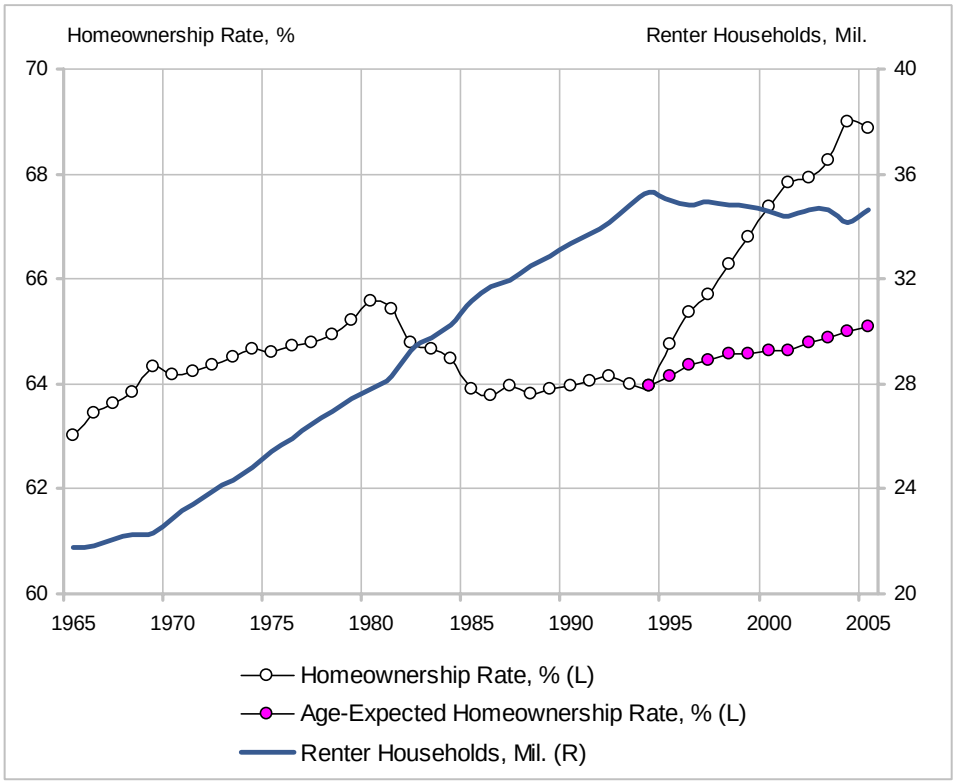
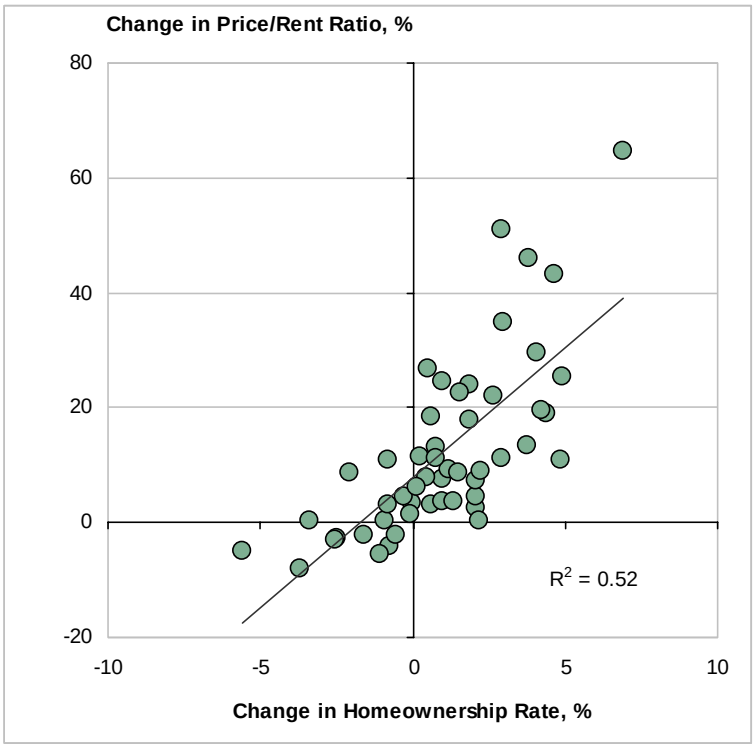


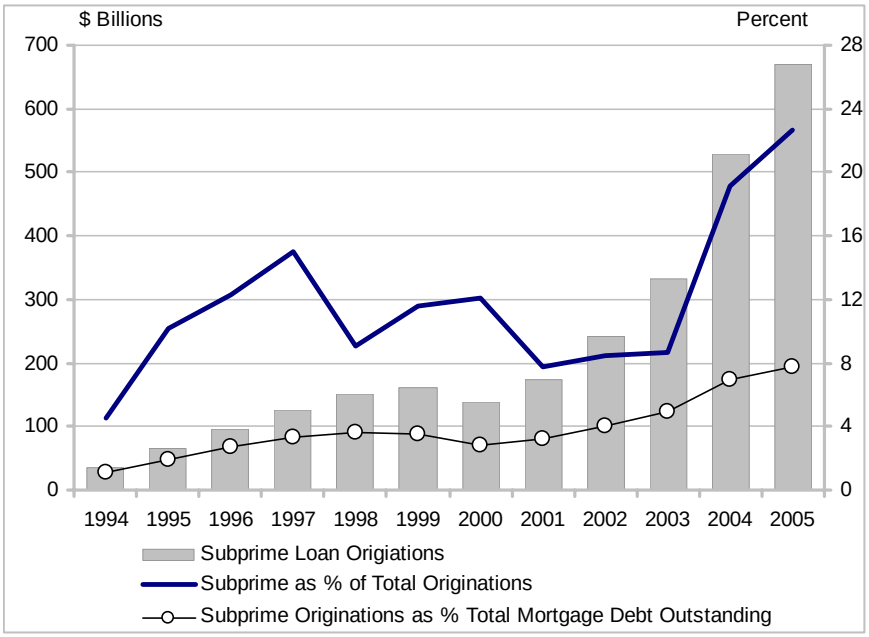
Figure 7: Cross-State Changes: 2000-2004



We believe that the growth in US homeownership has been driven by an explosive growth in credit availability – in particular the new emergence of the so-called "subprime" lending market. The emergence of this market in the mid 1990s is perfectly timed with the beginning of the sharp rise in US home ownership (Figure 8). Prior to this time, most households with poor credit ratings, or households seeking very aggressive underwriting were simply rationed out of the mortgage market. Since that time, "risk based pricing" has provided ample credit in these situations – albeit at significantly higher rates. There seems to be no end to investors' appetite for securitized pools of these loans. By 2005 almost a quarter of all loans originated were subprime and the stock of subprime loans had reached 8% of total US mortgage debt.

Ideally we would examine the distribution of subprime credit availability across states to see if it explains the variation in home ownership growth – that which cannot be explained by state level economic variables – and which is so important to explaining price appreciation. There is a tricky problem of causation, however, and several researchers have struggled to identify whether lender supply causes ownership demand or whether the latter generates lending outlets and origination channels.[6]

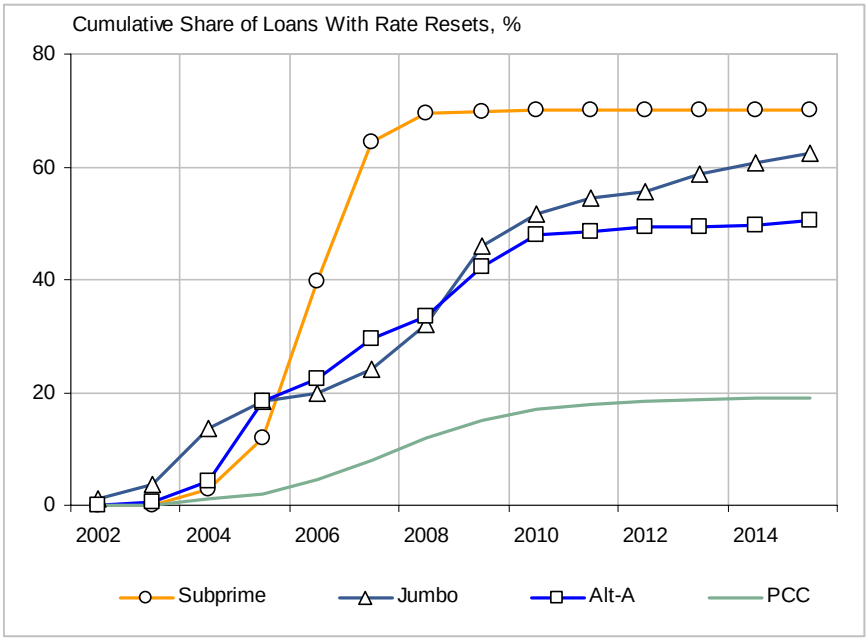
Figure 8: Mortgage Originations



[6] See for example Giang Ho, Anthony Pennington-Cross, "The Impact of Local Predatory Lending Laws on the flow of Subprime Lending", and also the articles in a special issue of the Journal of Real Estate Finance and Economics, 29, 4 (2004).

Recently, the explosive growth in subprime lending has generated two concerns in Washington. The first is whether "opportunistic" or "predatory" lending is occurring. This happens when households who because of income risk or other considerations are not good candidates for owning, are "enticed" into buying. The second concern is that most of the loans in the subprime pool remain variable rate rather than fixed-rate - despite the obvious advantages of the latter in the current rising-rate environment. Fannie Mae has produced the estimates of what fraction of loans in each pool have rate-resets coming over each of the next ten years (Figure 9).[7] Unlike the other pools, fully 60% of all subprime loans will have rate resets in the next two years. To some this entire situation raises the specter of large-scale defaults and foreclosures, with the possibility of a price correction that matches the ferocity of the price rise of the last 5 years.

Figure 9: Rate Resets in Mortgage Pools



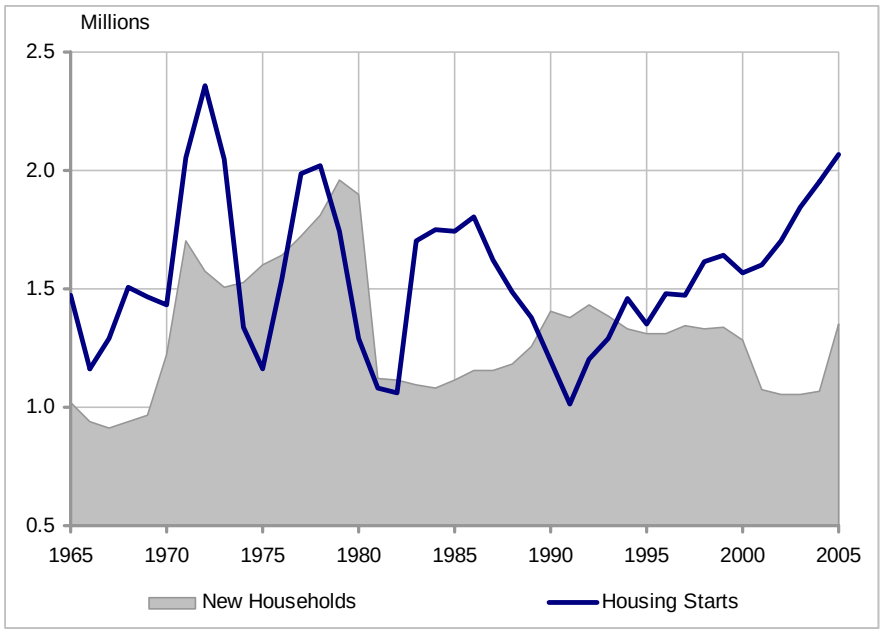
V. This Time is Different: 2nd home and Investment Buying

The current housing market has also seen a record number of housing sales to investors and 2nd home buyers. This is a statistic that is extremely difficult to determine

[7] David W. Berson, "When Does Interest Rate Risk Become Credit Risk?" Fannie Mae Economic Commentary, May 31, 2005.

and generally is not available consistently over time. We estimate such activity with two approaches. First we can compare household formation with unit production. As long as vacancy is roughly constant this measures investor demand ex post. Figure 10 shows that in the last few years, production has outstripped household formation by record amounts. Now to be sure, over the long run production should exceed household formation to allow for demolitions and replacements. In the last few years, however, production has been 30-60% in excess of new households. This is certainly suggestive.

Figure 10: New Units and Households

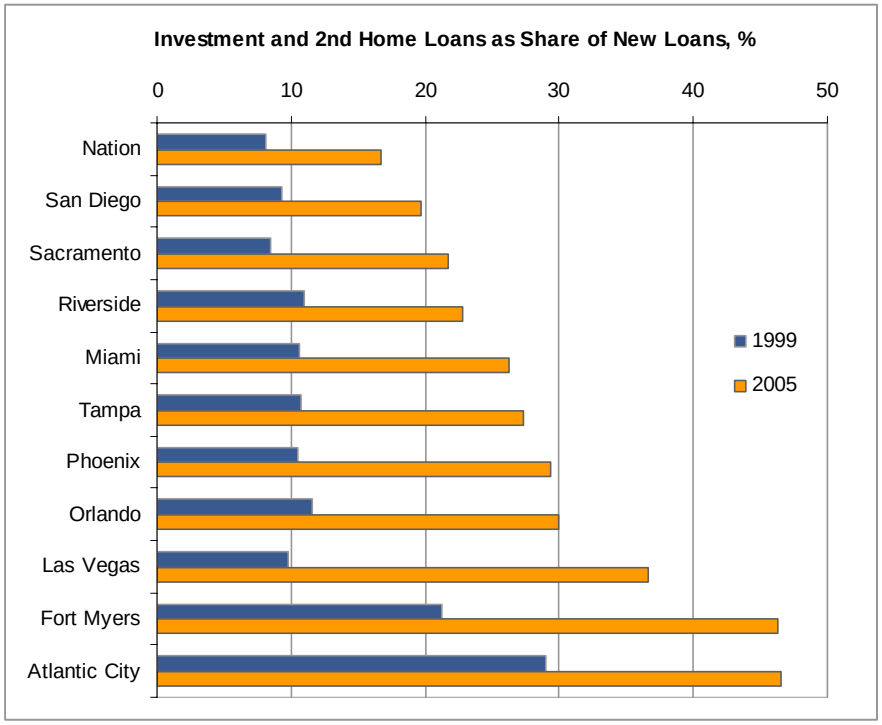


Another way to examine this is to look at loan origination records - wherein the borrower must declare (by law) whether the financing is for a primary home, 2nd home or investment property. This data is available from Loan Performance Inc. and goes back to the late 1990s. The sum of "investor" and "2nd home" originations as a share of all originations increased sharply since 1999 (Figure 11). It is important to note that these shares are orders of magnitude higher than the Census-reported share of "seasonal" housing units (nationally around 3.5%). The "investor" and "2nd home" shares have doubled in the last 5 years, despite that fact that the reported data is only for 1-4 family units. Surely, these shares would be much greater had the condominiums sales been

included since condominiums are perceived as a more "liquid" and flexible form of investment compared with single-family homes.

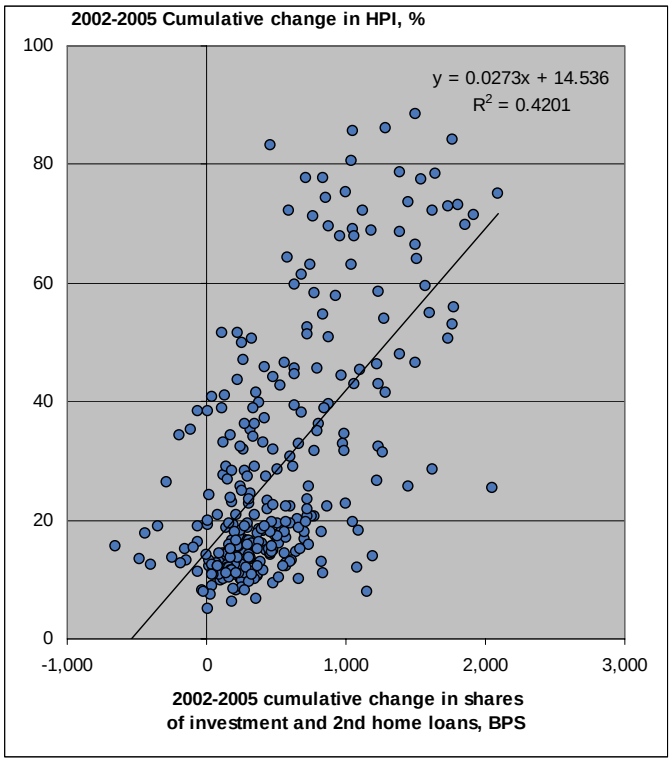
What is important about 2nd homes and investment properties is that such buying affects directly "net supply" or vacancy. Most primary home purchasers are making lateral moves from one house to another. A purchase/sale by a 2nd home owner subtracts/adds directly to vacancy, and we know from years of study that small movements in the generally low housing vacancy rate have major impacts to prices. To illustrate the importance of recent 2nd home and investment buying, we show in Figure 12 the simple relationship between the increase in these loan shares and increases in home prices across the 300 MSAs. The relationship is very strong and continues when we undertake a more sophisticated statistical analysis.[8]

Figure 11: Investor and 2nd Home Buying



[8] For example we have the regression using the previous state data where I2 is investor/2nd home share:
$\Delta P = -728 + 756\Delta HO + .026\,\Delta I2 + 1.28\Delta Y$, $R2 = .60$ (T statistics in parenthesis)
(-6.9) (7.2) (5.2) (2.0)

Figure 12: MSA Price Appreciation



If the housing market in many areas is being propelled by investment buying (for either vacation use or renting) – this again is another cause for concern. What if interest rates and the stock market begin to provide higher returns? A sudden reversion of these buyers into sellers could lead to a much more abrupt downturn than in the past.

VI. History Will Most Likely Repeat Itself

On the surface, the growth of the US economy has been impressive since 2002. Under the surface, however, there is a huge trade deficit, a Federal budget deficit, the absence of savings, and the possibility of growing inflation. Taken together, these could lead to the Federal Reserve Bank raising interest rates more strongly than anticipated, generating a classic economic slowdown as has happened so often in the past. As in the past, the housing market would undoubtedly "correct" as well. This time, however, there are two wild cards in the deck. Any economic slowdown could generate a much larger increase in foreclosures than in the past, and quite possibly a liquidity crisis that would generate an investor bailout from housing. With these two added factors a "correction" could turn into a deep slump.

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