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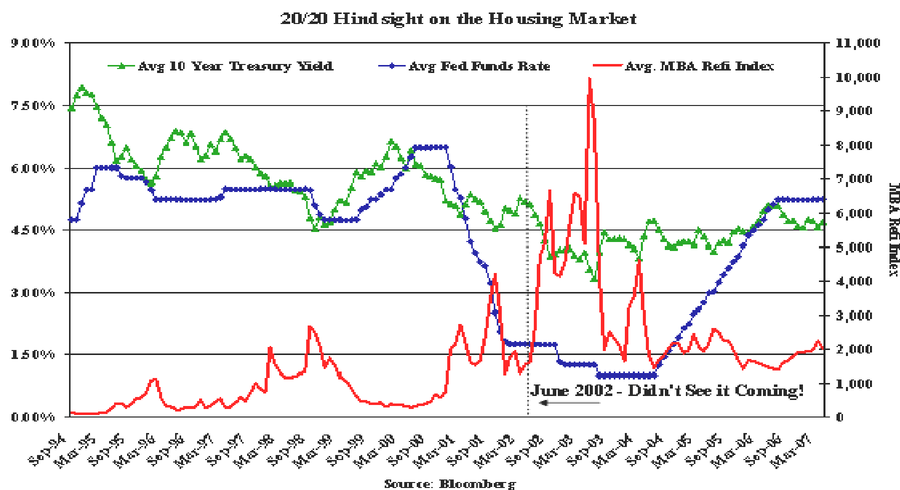
Home Prices: The Under-Appreciated Economic Indicator

If one aspect of the American Dream is home ownership, then implicit in the Dream is that a house is a good investment. To suggest otherwise would be downright unpatriotic. But home prices nationally are doing the unthinkable—they are going down. In years past there certainly have been local markets that have experienced declining home prices, but not since the Great Depression have home prices in the US declined on a national basis. No matter how you measure it or which index you prefer to follow, prices are struggling: In the latest reporting period, year-over-year median new and existing home sale prices are down 10.9% and 0.8% respectively, the S&P/Case-Shiller national index is down 1.41% year-over-year, and the OFHEO Home Price Index is marginally positive year-over-year and flat quarter-over-quarter. Even the National Association of Realtors, the trade group representing real estate agents, is forecasting falling prices.

Before this turn in market events, home prices hadn't received their due as an important measurement of the nation's economic health because, well, they never went down. The purpose of this illustrated essay is to highlight just how critical home prices are to great swaths of businesses and people in our economy, not to mention bond ratings. If you can't wait until the end of the next four thousand words to find out what happens when home prices fall, here's a preview: It's not pretty.

The fallout from the collapse of this decade's fabulous housing market is starting to look like the aftermath of every other market that has bubbled to the limit and beyond. The papers are rife with stories of upside-down homes, greedy lenders, naïve borrowers, stern-faced legislators, rising foreclosures and a damaged economy. Most tellingly, the market for homes in many parts of the country has become illiquid, sellers in search of buyers, a market in search of a clearing price. In California, for example, sales activity is quickly diminishing. Last month, home sales declined by 27.8% year-over-year to the slowest seasonally-adjusted pace since 1995. Levels of unsold inventory in the state also spiked to 10 months of inventory. "We've fallen way below trend because we soared way above trend during the boom time," National Association of Home Builders Chief Economist David Seiders said in a recent interview.

We last visited the topic of home prices in June 2002. In our piece, entitled "A housing bubble? Not like the South Seas," (http://www.annaly.com/mc/hbs/hbs_1.html) we argued that the housing market was doing well but not experiencing a bubble. "The data don't support it," we argued, "and history doesn't support it. In sum, while the returns to housing have been strong, they hardly resemble a bubble, nor do they portend a crash in value." Clearly the world is different today than it was in 2002. As a document that tracked the history of housing, our piece was correct. But it turned out to have poor predictive value: The housing market, which we argued was not in a bubble in June 2002, was about to enter something that looked a lot like one. In the four years ending June 2002, the average sales price for an existing single-family home rose 25.6%. In the four years beginning June 2002, existing home sales prices rose another 29.1%. Since June 2006, however, prices have fallen 3%.



Reading the piece again, it is clear that there are a few things we didn't see coming: First, the Federal Reserve took the Federal Funds target rate down from 1.75% in June 2002 to the emergency, deflation-fighting level of 1% by June 2003 and held it there for a year.[1] The whole yield curve followed suit, as the 10-year Treasury fell in yield from about 4.9% to just above 3% in June 2003. Second, the generational lows in interest rates resulted in a refinancing wave that was unprecedented and unimaginable, as virtually the whole mortgage universe was refinanceable. Refinancing activity, as measured by the Mortgage Bankers Association refinancing index, hit an all-time high in 2003 that was 10 times the pace previously considered a refi boom. Third, the swamped mortgage finance industry got very efficient at processing mortgage applications, and average Americans got very adept at taking advantage of the opportunity to improve their financial position through this process—lowering their monthly cost, extracting equity for consumption. Fourth, the lower cost to finance a home effectively made them more affordable. So prices went up accordingly, thus making houses less affordable. Even as the Fed started to raise rates in 2004, the long end of the yield curve stayed relatively rangebound and the chameleon-like mortgage finance industry adapted to falling affordability by marketing ever more flexible products to borrowers of increasingly lower creditworthiness.

Robert J. Shiller, in his popular treatise on the housing market, Irrational Exuberance (2005), defined a bubble as "a situation in which news of price increases spurs investor enthusiasm, which spreads to psychological contagion from person to person, in the process amplifying stories that might justify the price increases and bringing in a larger and larger class of investors who, despite doubts about the real value of an investment, are drawn to it partly through the envy of others' successes and partly through a gambler's excitement." In other words, if others are getting rich—and they are—why shouldn't I? Charles Mackay, who wrote the seminal Extraordinary Popular Delusions and the Madness of Crowds in 1841, chronicled manias and bubbles throughout history. Of the famous tulip-bulb mania in 17th century Holland, he wrote, "Individuals suddenly grew rich," and these new riches attracted speculators "like flies around a honey-pot."[2] For his part, Alan Greenspan refused to call the housing market a bubble, based largely on the nature of the asset itself—its lack of portability, liquidity and significant friction costs.[3] Ex-Chairman Greenspan may technically be correct, but we know what we have seen over the last several years. Anyone who has watched "Flip This House!" on the A&E cable network certainly knows something is going on. Only if prices go up do we cheer for the speculator and laugh at the greater fool. It makes for better television.[4]

Besides being fodder for reality TV, home price appreciation (HPA) can benefit the economy in many ways. First, rising home prices begets the construction, financing, beautification and furnishing of homes, which in turn spurs activity in all manner of related services and manufacturing. This all adds to economic growth. Second, rising home prices effectively allows homeowners to increase consumption by using their homes as a source of "saving" and spendable dollars. Third, rising home prices improves the credit performance of all borrowers.

[1]Ben Bernanke didn't deliver his now-infamous speech, "Deflation: Making Sure 'It' Doesn't Happen Here," until November 2002. His 'by any means necessary' prescription earned him the nickname "Helicopter Ben". At the time, core CPI was running at 2.2% year-over-year. Today core CPI is running at 2.3% year-over-year

[2]Mackay described the classic bubble: "In 1634, the rage among the Dutch to possess them was so great that the ordinary industry of the country was neglected, and the population, even to its lowest dregs, embarked in the tulip trade." Entire fortunes were spent on bulbs, real estate exchanged, instant wealth was attained on a single trade. "Every one imagined that the passion for tulips would last for ever, and that the wealthy from every part of the world would send to Holland, and pay whatever prices were asked for them. Foreigners became smitten with the same frenzy, and money poured into Holland from all directions. The prices of the necessaries of life rose again by degrees: houses and lands, horses and carriages, and luxuries of every sort, rose in value with them, and for months Holland seemed the very antechamber of Plutus." This bubble, too, burst when prices could go no higher and started to fall. When confidence was lost, panic ensued and the speculators were left with nothing more than a few bulbs that no one wanted to buy.

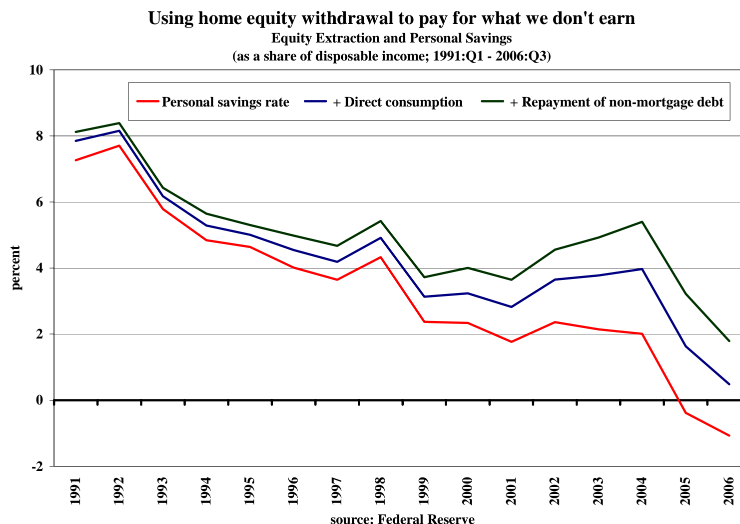
[3]"I don't think we have a bubble in house prices," he said in a May 2002 speech. "First, let's remember it's very difficult to get one. Unlike stocks, where you have a single market, low transaction costs and an ability of people to pile on nationally and cumulatively, residential housing markets are all local. And they have certain structural impediments to creating bubbles. Transaction costs are quite large. Most importantly in order to unload your asset, usually you have to move. And that is a big deal. So you do not have a type of market dynamic that leads to the types of acceleration in prices that ultimately crack. That is not to say it is impossible. It is possible...[L]et me just say, we did have overall a fairly significant pickup in home prices in the last couple of years, even adjusted for changes in the mix, quality and size of homes [but] it's not showing itself in the most recent data." To correct just the first point made by the ex-Chairman, it was not difficult at all for virtually anyone to buy a house during this housing boom.

[4] That "Flip This House" is on the Arts & Entertainment network is itself telling of the cultural ascendancy of real estate investing, but it isn't the only housing-related reality show on TV. There's also "House Hunters," "Take This House and Sell It," "Designed to Sell", "Sell This House," and "Property Ladder." The latter, shown on The Learning Channel, describes itself as follows: "Are you a real estate "flipper" or rehabber who's flipped less than three properties? Do you want to learn how to slash your budget and up your profit? TLC's hit show "Property Ladder" is back with host Kirsten Kemp looking to dish out invaluable renovation advice about the moves that will bring you the biggest return on your real estate investment. Looking to make your flip a success and finally get out of the rat race?" The last episode of House Hunters ran in June 2006, but as far as we can tell the other named shows are still on the air.

Economic growth. David Rosenberg, chief North American Economist for Merrill Lynch, estimates that residential construction alone accounted for 20% of growth in the US economy from 2001 to 2006. But, he says, "there are direct and indirect impacts—when I take on all the multiplier effects, including the house price impact on household [net] worth and consumer spending, I get almost 60% of the growth in GDP came from the real estate boom." GDP grew from $9.9 trillion to $11.5 trillion from the end of 2001 to the end of 2006, an increase of $1.6 trillion. Thus, Rosenberg estimates about $1 trillion in economic growth over the period can be related to the growth in housing.

Personal savings rate. Not only have rising housing values been a dominant driver of growth in household net worth since 2001, but the equity cash-out mechanism has enabled investors to spend money they haven't earned and to draw down their other liquid assets relative to their liabilities. In a Federal Reserve research paper (http://www.federalreserve.gov/pubs/feds/2007/200720/index.html) entitled "Sources and Uses of Equity Extracted from Homes," Alan Greenspan and James Kennedy estimate the amount of free cash generated by home equity extraction through home sales, home-equity lines and refinancings, and drew conclusions based on their evidence. According to the authors, discretionary extraction of home equity accounts for about four-fifths of the rise in home mortgage debt since 1990. Further, the authors found that "a considerable portion" of the equity extracted through cash out refinancings and home equity loans was used for personal consumption and the repayment of non-mortgage debt, such as credit card loans. The paydown of credit card loans freed up the cards for further consumption, making it "in effect, bridge financing for personal consumption expenditures."

The authors also adjust the personal savings rate in America to reflect the consumption related to equity extraction.[5] A negative savings rate like we have in the US implies that we spend more than we earn. If we are spending more than we earn, then the money has to come from sources unrelated to disposable personal income. By approaching the sources and uses of cashed-out equity in this way, Greenspan and Kennedy gently contradict the point made earlier by Alan Greenspan that the transaction costs of the housing market make it less likely to be in a bubble. After all, the reasoning goes, you can't sell a piece of your house to realize gains like you would with stocks (or tulip bulbs). But that's not necessarily true: You indeed can realize gains using the various cash-out mechanisms available, like a home equity line of credit. To many Americans, the ability to simply write a check that draws on a HELOC is the functional equivalent of partially realizing gains in a stock portfolio or going to your ATM to withdraw cash from savings (except unlike a stock sale you have to pay back the cashed-out equity… sorry). The graph below from the Greenspan/Kennedy piece illustrates that if we subtract the spending that was related to home equity extraction, the personal savings rate would not have turned negative in recent years. The red line is the personal savings rate—in 2006 it was -1.07%; if we add the equity extracted that the authors estimate was directly consumed back into personal savings, the personal savings rate would have been 0.48%; if we add



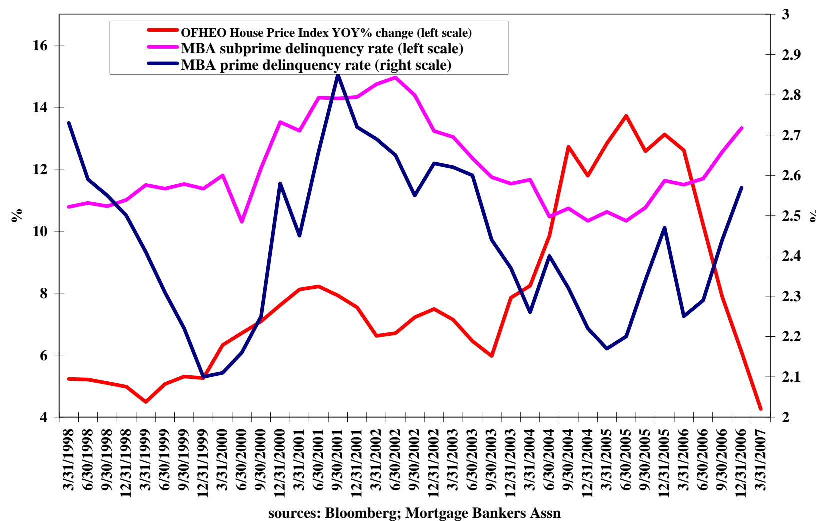
[5] Personal savings rate is the ratio of personal saving to disposable personal income, or DPI. DPI is personal income less taxes, and personal savings is DPI less personal consumption expenditures and interest. There are debates over the validity of the measurement of the personal savings rate—for example, it does not include realize gains in financial assets—but as a measure of cash flow management, it essentially reflects what we spend relative to what we earn.

back the equity extracted that the authors estimate was used to “bridge finance” consumption through the paydown of non-mortgage debt, the personal savings rate would have been 1.79%. As if we need to repeat ourselves, without home price appreciation (and significant equity in the home), this equity extraction process slows down, which therefore reduces consumption. All-in, say the authors, approximately $1 trillion in home equity was withdrawn annually from 2000 to 2005. This cash added 2.1% to consumer spending in 2005.

Credit performance: One of the defining features of this housing boom has been the method of payment. James Grant, editor of *Grant’s Interest Rate Observer,* has said that the argument over what to call the housing market phenomenon is just semantics—bubble, boom, whatever you want to call it—because the real culprit is the bubble in mortgage lending. “What drives the real estate boom?” he wrote in 2005. “Credit, first and foremost…” While it may be circular to question which came first, the growth in mortgage debt or home price appreciation, the bottom line is that both have been growing, but debt has been growing faster. To use our before and after construct, over the four years ended December 2002, mortgage debt grew 47%, from $4.05 trillion to $5.97 trillion; but from 2002 to 2006, mortgage debt growth accelerated, growing 62% to $9.68 trillion. Moreover, the fastest growing parts of the mortgage market in recent years have been those outside of the purview of the US Agencies, Fannie Mae and Freddie Mac, and in affordability products including adjustable-rate mortgages, interest-only mortgages and Option ARMs.[7]

The mortgage finance cycle works best when credit performance is strong, and credit performance is strongest when home price appreciation is rising fastest. The graph below shows how credit performance rose and fell inversely with house prices, for both prime and subprime borrowers.[8] All boats rise and fall with the tide, not just the subprime ones. It is also no coincidence that the greatest volume of mortgage origination and mortgage-backed security issuance has been in the past five years, thanks to the crest in credit performance and home prices. Given current trends in home prices and credit, it should be no surprise that mortgage volumes are expected to decline in 2007.

HPA affects prime and subprime alike; worst yet to come



sources: Bloomberg; Mortgage Bankers Assn

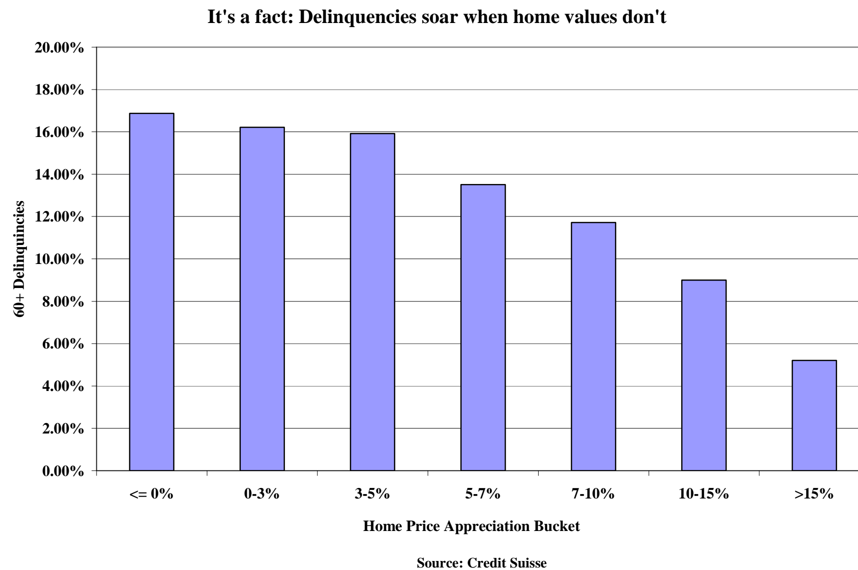
The above graph is the top down look at national trends. Home price appreciation, however, is local, which means credit performance is also local. From 2001 to 2006, house prices in Indiana rose a cumulative 21%, while cumulative subprime defaults were 4%. At the same time, house prices in California rose 101% and subprime defaults were practically zero. To give a sense of how HPA and thus credit can change within a single market, in 2003

[6] In the May 6, 2005 edition, Grant explained the chain of events. “The Federal Reserve pushed the funds rate down to 1%. Foreign central banks bought dollars, which they invested in Treasurys and the obligations of Fannie and Freddie. American homeowners refinanced not just once, but over and over again. Lenders implemented a No-Borrower-Left-Behind policy, such that—with interest-only mortgages, adjustable-rate mortgages and negative-amortization mortgages—virtually every competent American could be judged financeable.”

[7] In an option adjustable-rate mortgage, the borrower generally has the choice of paying principal and interest, interest-only, or a reduced minimum interest rate that results in the principal increasing—a so-called negative amortization or neg-am loan.

[8] Note that the prime and subprime data are presented on separate axes in order to better show the trend.

California had home price appreciation of about 20% and virtually no foreclosures or delinquencies; in 2006, with home price appreciation flat, the California delinquency rate and foreclosure rate was 5.40% and 2.65%, respectively. The graph below shows the historical credit performance of subprime borrowers generally by home price appreciation "bucket". If we are heading towards the 0% bucket, we're heading to worse credit problems.



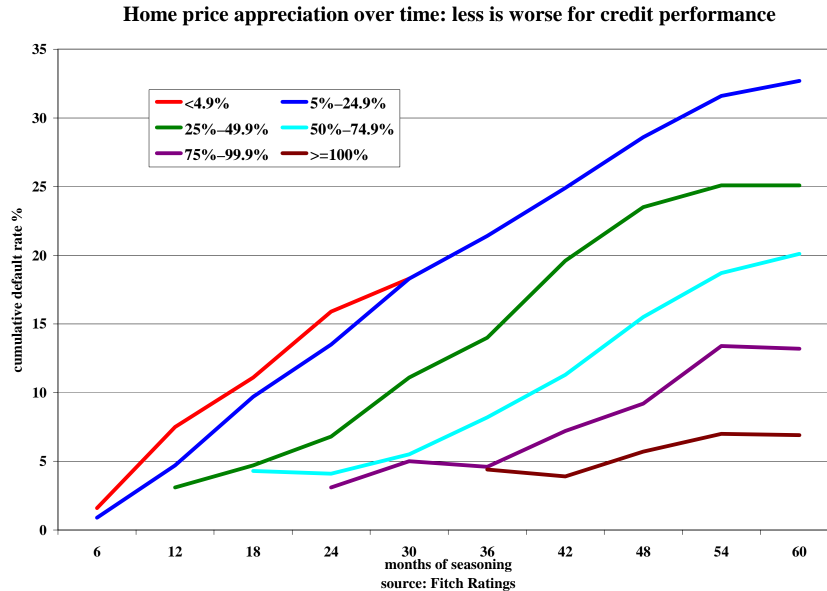
Banks and mortgage finance companies only keep lending as long as it is profitable and, traditionally, the primary mortgage lending business stops being profitable if lenders are not getting paid back. Today, 56% of loan production ends up in securities, so the lending business really stops being profitable the day lenders can't sell their loans into securitization products (thereby ridding themselves of the credit risk). But that day only comes, again, when borrowers are defaulting. In other words, liquidity in the secondary mortgage market is just like the primary mortgage market: it won't be there to finance the market if it is not getting its capital back or, perhaps more importantly, if it is afraid that it won't get it back in the future. It won't just be in subprime, either. Robert Toll, CEO of high-end homebuilder Toll Brothers, said that even though less than 2% of his clients are considered sub-prime borrowers, stricter lending standards are affecting all borrowers. "This," he said, "can impact the entire housing food chain, including some of our potential customers' ability to sell their existing homes."

While underwriting criteria—loan-to-value ratios at origination, debt-to-income ratios, FICO scores, income verification—are important determinants of credit problems, one of the most important exogenous variables in their incidence and severity is home price appreciation. It makes intuitive sense. To simplify, if a borrower is having credit problems for whatever reason—a cash flow problem brought on by an unwanted coupon reset, a medical emergency or some other life crisis—and the value of their house has appreciated enough, their mortgage can be refinanced with an equity extraction, thus enabling them to forestall the credit problem and maintain their lifestyle. If they can roll down the yield curve into a lower coupon, so much the better, but that has been harder with the flattened yield curve. Banks exhibit more forbearance if they know they can work out the problem (particularly if the new loan can also be sold into the securitization market). However, leaving aside outright cases of fraud or predatory lending, we have no sympathy for the foolish borrower and lender who is depending on ever-increasing home values for a credit bailout. Not only is there no bailout, but if home prices have actually declined and there was little to no equity in the house in the first place, everyone loses. The *Wall Street Journal* recently devoted a lengthy front-page article to the problem. One close-to-foreclosure borrower in Detroit summed it up very well: "You have two options—to sell it or to refinance it. But if you can't do either, what can you do?" [9]

[9] The May 30 story gave many examples of homeowner/borrowers in a community in Detroit. This particular borrower, Jacqueline McNeal, a school principal, took out a $112,700 mortgage in 2002 with a coupon of 8.75% from a unit of Countrywide Financial Corp. The rate reset last year to 12% and Ms. McNeal, who has lived in her house for 12 years, can't make the payments and faces foreclosure. Countrywide stated that there was nothing amiss or fraudulent about the loan.

In a May 24 report called "Examining Home Price Inflation and Residential Mortgage Default Rates," Fitch Rating Service explains the idea further, adding time to the equation: "As one might expect, the data shows that default rates are highly correlated to housing price indices. Markets experiencing relatively higher home price appreciation have relatively low default rates."[10] The historical data on the 2002-2006 vintages show that the slower home price appreciation results in a faster buildup of borrower defaults. One point to emphasize from the following graph is that the credit deterioration occurs over a long period of time—to borrow a phrase, in the worst HPA scenario, it's like a slow-motion car-wreck.

Home price appreciation over time: less is worse for credit performance



source: Fitch Ratings

We undertook our own research to test what the default rates and severities would be going forward in different home price appreciation scenarios. Using the 20 bonds in the Baa2 and Baa3 tranches of the ABX 2006-2 index[11], we ran three different home price appreciation vectors: the base case (which is the average of the assumptions built into each individual bond in the ABX) in which home prices are projected to appreciate roughly 3.5% going forward; the 5% correction case in which home prices decline 5% over the next two years, stay flat for three years and then appreciate 3.5% thereafter; and the 10% correction case in which home prices decline 10% over the next two years, stay flat for three years and then appreciate 3.5% thereafter.[12]

	Year					
	1	***2***	***3***	***4***	***5***	***6 and on***
Base Case	4.92%	3.99%	3.51%	3.50%	3.50%	3.50%
5% Correction	-2.50%	-2.50%	0.00%	0.00%	0.00%	3.50%
10% Correction	-5.00%	-5.00%	0.00%	0.00%	0.00%	3.50%

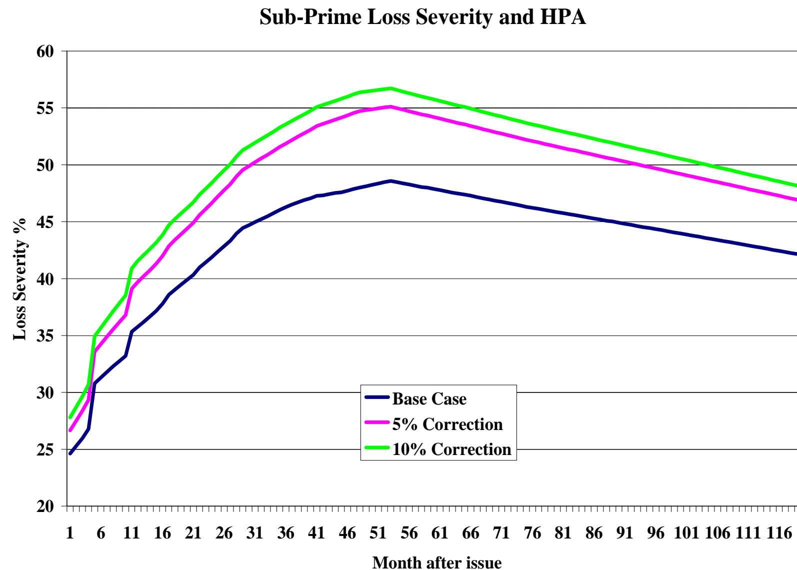
The base case is a relatively mild housing slowdown and the 5% and 10% correction cases aren't particularly draconian but nevertheless would be cases of negative to zero growth for the next five years. Even so, the minor changes to the forecast can have significant ramifications on performance as the table on the next page sets forth.

[10] Fitch went on to explain: "With stalling home price inflation, borrowers experiencing difficulty making payments are less able to resolve their problems through a profitable sale or refinancing, leading to rising defaults. 2006 vintage mortgage pools were composed of loans that were mostly originated in late 2005 or 2006, when the trend of home price appreciation started to slow down or even reverse. Default rates for the 2006 vintage is significantly higher than those of other vintages with similar age…."
[11] The ABX is an index of 20 sub-prime mortgage-backed securities grouped by ratings tranche and by vintage; it is used as a pricing index for over-the-counter derivatives contracts.
[12] The source on which we based our analysis is Credit Suisse LoCus

It shows that in the base case, two of the 20 bonds in the ABX 2006-2 Baa2 index and four of the Baa3s would experience a principal loss, while in the 10% correction case, 14 of the Baa2s and virtually all of the Baa3s would suffer a loss.

ABX 2006-2		
HPA	% of Baa2's In ABX experiencing write-down of Principal	% of Baa3's in ABX experiencing write-down of Principal
Base Case	10%	20%
5% Correction	30%	80%
10% correction	70%	95%

The table above shows what percentage of bonds would show a loss, but it does not quantify how *much* would be lost.[13] That depends on the performance of the loans underlying the bonds. How bad would the losses be? We graphed the projected loss severity of the loans under a single bond, a New Century 2006 vintage that is included in the ABX 2006-2 Baa3 tranche, to illustrate how bad the losses would be in our different scenarios. The point is made that losses become more severe with lower home price appreciation trajectories, and that they will peak about in the fifth year. The severity of the loss peaks at about 57% in the 10% correction case.[14] The implications for the holder of this particular bond under positive or negative HPA assumptions are almost binary because of the subordination structure of the mortgage-backed security as well as the increased frequency AND severity of the losses on underlying loans. In the base case, the underlying loans that default would suffer a loss of 47%, but the bondholder would receive all of his principal back. In the 10% correction case, more loans default and those that do will experience a 57% loss, but the bondholder would experience a 100% write-down of his purchased principal amount.



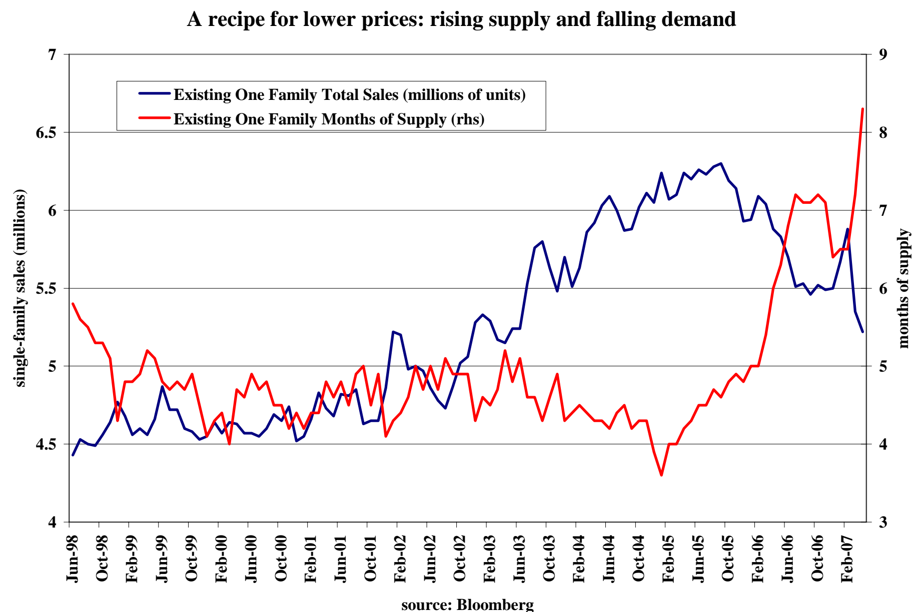
The data and models like the one we've done here are available to anyone in the market, including the ratings agencies—Moody's, Standard & Poor's and Fitch. When they assign their ratings they run similar scenarios and have to make assumptions about home price appreciation, and assign probabilities for different outcomes. The ratings agencies typically do not assign a high probability to an extended period of flat or negative HPA in their ratings assessments. In the event this scenario actually transpires and losses therefore come in faster than projected, it is

[13] What defines a loss? The percentage of par that will be lost in an assumed recovery scenario in the event of foreclosure.
[14] This analysis was prepared to show the loss and severity performance based on a limited number of changes to variables which may have substantial effects. This analysis should only be used as a guideline to what the possible effects may be given the home price assumptions outlined above. The effects of credit crunches, changes in regulation, consumer bailouts and loan modifications have not been, nor could they be, accurately incorporated in this analysis.

likely that ratings downgrades will occur. In this case, spreads widen and values fall for non-Agency mortgage-backed securities.

The reason to talk about all of this is that home prices are no longer moving up. In fact, they are moving sideways and down. There are many indexes of home prices, but no matter how you slice it, they all show the same picture. Home prices are struggling to show positive gains or are showing outright losses. Moreover, we believe that the supply-demand imbalance that exists in the housing market means that home prices will be under pressure for the foreseeable future. In the new home sales market, that fire sale is starting. In April new home sales rose 16.2% from a month ago, but the median price of single-family home fell 11.1% from a year ago, the worst deflation since December 1970. Interestingly, most of those sales were in the category of “units not started”, which soared 35%, while sales of completed units were flat. “Question is,” wonders Merrill’s Rosenberg, “why anyone would be buying on spec when there is such a glut of inventory out there for free- standing completed units—still near a record high of 175,000 units and up 33% year on year.”

The graph below illustrates the dynamics in the existing homes market, by far the largest share of home sales in the country. While homebuilders have greater latitude to slash prices in order to move unwanted inventory, homeowners with a mortgage to pay don’t have that luxury. At last report, existing home sales in April fell 2.6% from a year ago to just under 6 million units (annualized), the lowest level since 2003 and 17% less than the peak level of June 2005. The months of supply surged to a cyclical high of 8.4 months from 7.4 months in March, with soaring vacancy rates (2.8% of homes are vacant, the highest since the data started getting collected in 1956) and homes for sale (over 4.1 million new and existing homes). The median sales price was down just 0.9% from a year ago.



A general condition of falling prices can be a problem for the economy. Just as rising home prices had a positive impact on the economy, consumer spending and the availability of credit, the coming contraction in home price appreciation should have a deflating effect. No one will buy a good or service if they believe they can buy it for less tomorrow. Speaking on deflation generally, Alan Greenspan commented in 2003 that this weak demand can turn into “a corrosive deflationary spiral.” As a general statement, weak or declining home prices is a problem with far-reaching consequences and we believe that this process has many more quarters to run. House prices will remain under pressure as long as the overhang of homes for sale remains this large, and this will increase the pace of delinquencies and losses. A slower pace of home price appreciation alone, however, may not be enough to spell disaster for the economy. As to how it plays out, the devil is in the details. Some parts of the country, classes of borrowers and types of home will be harder hit than others.

We are certain, however, of two things: First, just like after our last paper on this topic, there will be events in the unfolding future that we have not foreseen that will exacerbate or mitigate the effects of this one variable. Nevertheless, the law of supply and demand is immutable, and the trends have already begun to play out. Second, as time goes on and the current trends continue, highest quality mortgage-backed securities will likely perform relatively well.

June 4, 2007

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