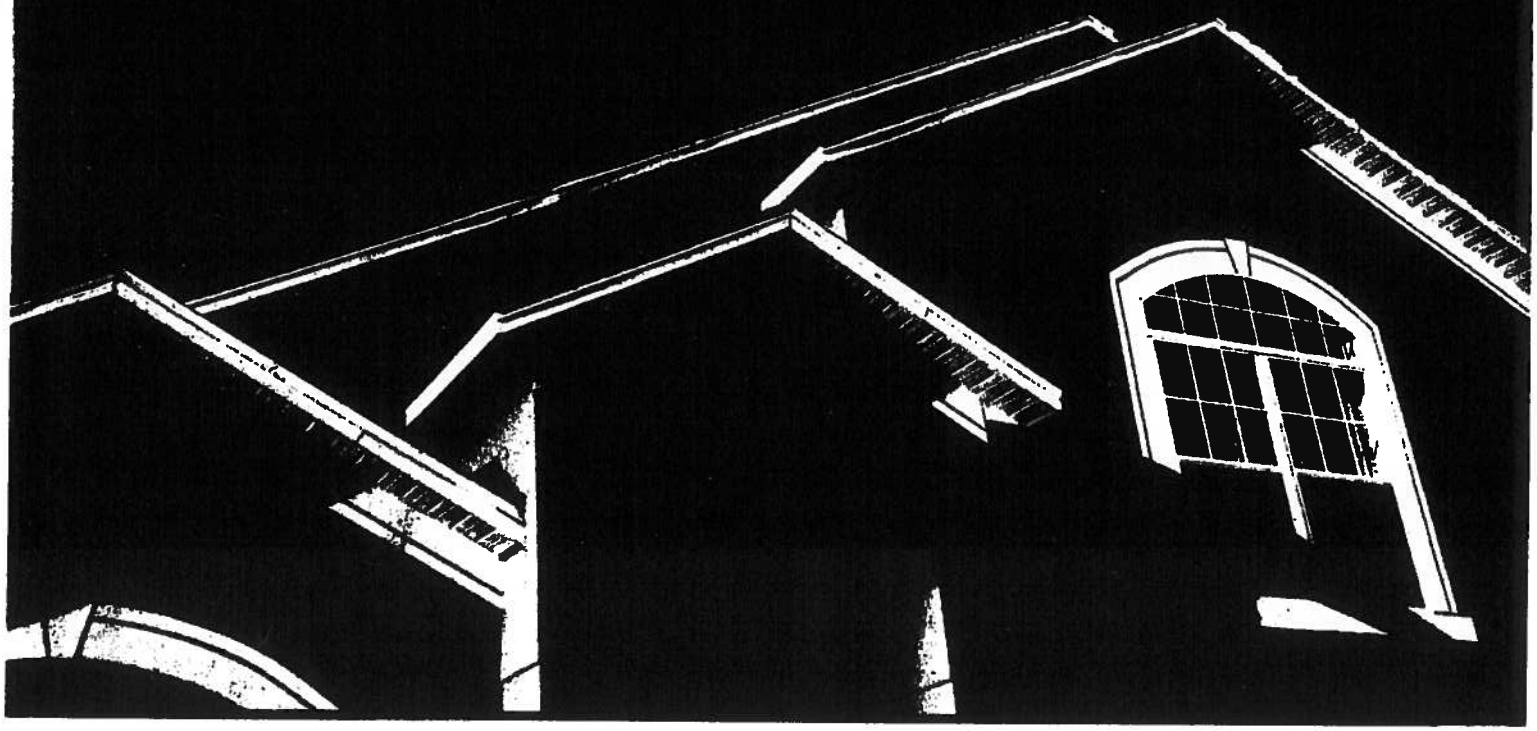
Housing at the Tipping Point

The Outlook for the U.S. Residential Real Estate Market



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Executive Summary

The U.S. housing market downturn is in full swing. New and existing home sales and single-family housing construction are sliding, inventories of unsold homes are surging to new record highs, and house prices are falling in an increasing number of areas.

Housing's problems began just over a year ago when activity peaked, but have increased substantially in recent months. The bright optimism of homebuyers, builders and lenders has abruptly devolved into increasingly dark pessimism.

Housing's previous boom and current downturn are not evident from coast to coast, but largely along the coasts. Housing activity in the Northeast from southern Maine to just south of Washington, D.C., and in Florida and California, has fallen off dramatically in recent months. There are sundry problems inland, including in Arizona and Nevada, in and around Detroit, and in Chicago and Minneapolis.

The housing boom was based on strong fundamental underpinnings. Very low mortgage rates, more ample mortgage credit, portfolio shifting by households spooked by the collapse in the equity market, nesting in the wake of 9/11, surging construction costs, a better job market, and tougher restrictions on new housing development all fueled the record housing activity.

The boom was ultimately also infected by speculation, however. Short-term investors or flippers with the objective of purchasing and then quickly selling homes for a profit became increasingly prevalent in many of the most active markets. Speculators were particularly attracted to the condominium market and other second and vacation homes areas.

The catalyst for the unwinding of the housing boom was the steady tightening in monetary policy between the summer of 2004 and earlier this year. While long-term interest rates and thus fixed mortgage rates have risen only modestly, short-term rates and thus adjustable mortgage rates have risen substantially more. This has been particularly hard on the housing market as most first-time homebuyers could only afford to purchase a home in these previously very active markets with an aggressive ARM loan. As the Federal Reserve continued to tighten rates, even these loans have become unaffordable for most first-timers.

Housing's downturn has turned even more dramatic with the rapid flight of the flipper from the market. As the prospects of making a profit have devolved into a scramble to limit their losses, these investors have gone from sending home sales and prices shooting higher to driving sales and prices lower. Adding to flippers' financial woes are their rising mortgage payments and difficulty in being a landlord and renting their now longer-term investment. All of this has seemingly occurred overnight.

To date, the housing downturn has been generally orderly and is characterized best as a correction and not a crash. Sales and construction are now well below their peaks and still falling, but the level of activity remains very high by broader historical standards. House prices have turned soft in many markets, but at least so far have yet to show any appreciable decline.

Whether the housing correction unravels into a crash will largely depend on the secondary or indirect effects from the housing downturn. These include the impact on the job market, on consumer spending via the housing wealth effect, which has seemingly been supercharged by unprecedented mortgage equity withdrawal, and on financial intermediaries and the global financial system as mortgage credit quality weakens. The larger these effects, the more serious the blow to the broader economy, which in turn will reverberate back onto the housing market.

Chart 1: Markets at Significant Risk of House-Price Declines According to the LHPI

Note: Among 100 largest metro areas

So far, the indirect effects from the housing downturn have been very modest. The job market outside of housing-related industries has held firm as flush businesses with ample financial resources continue to expand their operations. Consumer spending has remained sturdy, as heretofore healthy compensation gains have offset any negative fallout from the fading equity withdrawal and the increasingly negative wealth effect. Mortgage delinquencies and foreclosures are rising, but from record lows, and credit problems appear a long way from threatening well-capitalized commercial banks and thrifts or the confidence of global investors who have been avaricious buyers of mortgage securities.

The objective of this study is to assess the severity of the unfolding housing downturn. It considers how much longer housing activity will weaken, the degree of the downturn, and which regions of the country will experience the most pronounced reversal. This assessment is done through the prism of house prices. Home sales and construction activity will closely follow house-price trends.

To these ends, Moody's Economy.com has developed two different approaches to projecting house prices for each of the nation's 379 metropolitan areas and divisions. The first is a leading indicator approach, in which several measures of housing market imbalances that have historically led changes in house prices are combined econometrically to determine the probability that house prices will fall measurably in the coming year. The imbalances accounted for in the Leading House Price Indicator, or LHPI, include housing affordability, non-housing related employment growth, the physical supply and demand balance in the market, and a measure of house-price overvaluation/undervaluation.

According to the LHPI, over 100 of the nation's 379 metro areas have a significant probability of experiencing price declines by this time next year (see Chart 1). These areas account for nearly one-half of the value of the nation's single-family housing stock. The highest probability of price declines is in metro areas throughout California, and in and around New York City. Probabilities are nearly as high in the rest of the Northeast Corridor, many Florida metro areas, and in sundry areas in the Midwest and Mountain West. It is important to note that the probability of house-price declines remains measurably lower in Texas and most of the Southeast and Farm Belt and, to a lesser degree, in the Pacific Northwest.

The second approach is based on a structural econometric model of housing supply and demand. The model is based on statistically estimating the historical relationships among economic, demographic, financial, and housing-related variables. House-price forecasts are produced by extrapolating these relationships into the future. A wide range of variables is accounted for in this approach, including, but not limited to, everything from low mortgage rates and more aggressive mortgage lending, to solid demographic trends and a better job market, to constraints on the supply of new housing.

According to the structural econometric approach, nearly 20 of the nation's metro areas will experience a crash in house prices; a double-digit peak-to-trough decline in house prices (see Table 1). These sharp declines in house prices are expected along the Southwest coast of Florida, in the metro areas of Arizona and Nevada, in a number of California areas, throughout the broad Washington, D.C. area, and in and around Detroit. Many more metro areas are expected to ex-

perience only house-price corrections in which peak-to-trough price declines remain in the single digits. In addition to the some 30 metro areas that are already experiencing price declines, the structural econometric approach identifies 70 other metro areas that will soon experience a measurable decline in prices. It is important to note that price declines in various markets are expected to extend into 2008 and even 2009.

With over 100 metro areas representing nearly one-half of the nation's housing stock experiencing or about to experience price declines, national house prices are also set to decline. Indeed, odds are high that national house prices will decline in 2007; the first decline in nominal national house prices since the Great Depression.

While the broader economy is expected to bend under the weight of the listing housing market, it is not expected to break. Economic growth has weakened and will remain below the economy's potential as long as the housing correction is unfolding; unemployment will edge higher, but even during the worst of the housing downturn, expected early next year, the expansion should remain intact. This optimism is predicated on the view that the secondary effects from housing's downturn will remain largely contained and that policymakers will not misstep. A much darker scenario is not difficult to construct, but the more sanguine scenario remains the most likely one. Moody's Economy.com will continue to update the tools and analysis described in detail in the study that follows to assess the health of the housing market and the broader economy.

Table 1: Metropolitan Areas That Will Suffer House-Price Declines According to the Structural Econometric Model

	Peak-to-Trough % House Price Decline	Peak Quarter	Trough Quarter
Cape Coral, FL	-18.6	05:4	07:2
Reno, NV	-17.2	05:4	08:4
Merced, CA	-16.1	05:4	09:2
Stockton, CA	-15.7	05:4	08:4
Sarasota, FL	-14.0	05:4	07:3
Naples, FL	-13.8	05:4	07:3
Tucson, AZ	-13.4	06:1	08:2
Las Vegas, NV	-12.9	05:4	09:2
Chico, CA	-12.6	05:4	08:2
Fresno, CA	-12.5	06:1	09:2
Atlantic City, NJ	-12.2	05:4	08:2
Vallejo, CA	-12.1	05:4	09:2
Washington, DC	-12.0	05:4	08:2
Redding, CA	-11.8	06:1	08:2
Detroit, MI	-11.7	05:3	06:4
Riverside, CA	-11.4	06:1	08:4
Bloomington, IL	-11.1	05:3	06:4
Bakersfield, CA	-11.1	06:1	09:2
Greeley, CO	-10.7	06:1	08:2
Salinas, CA	-10.3	05:4	08:2
Santa Ana, CA	-10.0	06:1	08:4
Sacramento, CA	-9.9	05:4	08:2
Carson City, NV	-9.8	06:1	09:2
Phoenix, AZ	-9.3	06:1	08:2
Punta Gorda, FL	-8.9	06:1	07:2
San Diego, CA	-8.5	05:4	08:2
Warren, MI	-8.4	05:3	06:4
Allentown, PA	-8.2	05:4	08:2
Nassau, NY	-8.1	06:1	08:2
Fort Walton Beach, FL	-7.9	05:2	06:3
Santa Rosa, CA	-7.9	05:4	08:2
Ocean City, NJ	-7.6	07:1	10:2
Visalia, CA	-7.3	05:4	08:4
Rockford, IL	-7.3	06:1	09:1
Santa Barbara, CA	-7.2	05:4	08:2

Table 1: Metropolitan Areas That Will Suffer House-Price Declines (cont.)
According to the Structural Econometric Model

	Peak-to-Trough % House Price Decline	Peak Quarter	Trough Quarter
Worcester, MA	-7.0	05:4	07:2
New Orleans, LA	-6.7	05:4	07:3
Saginaw, MI	-6.5	06:1	09:2
Oakland, CA	-6.4	05:4	08:2
Fort Collins, CO	-6.1	05:3	07:2
Portland, ME	-5.9	06:1	07:1
Fort Lauderdale, FL	-5.9	05:4	07:3
West Palm Beach, FL	-5.7	05:4	06:3
Miami, FL	-5.5	06:1	08:2
Edison, NJ	-5.2	06:1	08:2
Los Angeles, CA	-4.8	06:2	08:4
Denver, CO	-4.6	06:2	08:2
Napa, CA	-3.8	06:1	06:3
Providence, RI	-3.6	05:3	07:2
New York, NY	-3.5	06:2	08:4
Champaign, IL	-3.5	05:4	09:1
Essex County, MA	-3.1	05:3	06:3
Bethesda, MD	-3.0	05:4	08:2
Boulder, CO	-2.8	05:4	06:3
Yuba City, CA	-2.6	05:4	06:3
Salt Lake City, UT	-2.3	06:1	06:3
Boston, MA	-2.2	06:2	06:3
Pueblo, CO	-2.1	06:1	06:3
Prescott, AZ	-2.0	06:1	08:2
Madera, CA	-1.8	07:1	09:2
Colorado Springs, CO	-1.6	06:2	06:3
Grand Junction, CO	-1.3	06:2	06:3
Portland, OR	-0.8	07:3	09:2
Lewiston, ID	-0.8	07:1	08:2
St. George, UT	-0.5	07:3	08:2
Honolulu, HI	-0.3	07:2	08:4
Milwaukee, WI	-0.3	07:2	08:3
Hagerstown, MD	-0.2	07:3	08:2
Medford, OR	-0.2	07:3	08:2
San Jose, CA	-0.2	07:1	07:2

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The Outlook for the U.S. Residential Real Estate Market

Historical Assessment. The U.S housing market cycle of the past decade has been unprecedented. The market, which boomed during the decade extending from the mid-1990s through much of last year, is now in full retreat. At the pinnacle of housing activity in 2005, home sales, housing construction, and house-price gains were shattering previous records. Activity has since fallen sharply, with no sign that the downdraft will soon end.

The impact on the broader economy has been substantial. During the boom, housing contributed significantly to overall growth. The 2001 recession was as modest as it was in large part due to housing's strength. Housing's recent decline is becoming an increasingly heavy weight on growth, and poses a growing threat to the current expansion.

The boom. The housing market has enjoyed an unprecedented run in the decade between the mid-1990s and last year. Home sales, housing construction, and house-price gains soared, shattering all previous records.

Booming transaction volumes were particularly notable. New and existing home sales surged from close to 4 million units annually in 1995 to almost double that at last summer's all-time peak (see Chart 1). The turnover rate, or the proportion of the owner-occupied housing stock that turned over in a home sale, also rose to a new record high. Some 8% of the housing stock transacted in 2005 alone.

While sales for existing and new single-family units were robust, activity in the condominium market increased the most earlier in this decade. Condo sales just about doubled between 2000 and last summer's apex of near 1 million units annualized.

Housing construction has also soared. Single-family housing starts, which were near 1.25 million units at the start of the decade, registered an astonishing 1.75 million units last year (see Chart 2). At their very peak at the start of this year, some 1.8 million annualized units were started. Construction last year even dwarfed the activity in the late 1970s when the outsized baby boom generation began forming households. Just over one million households were formed last year, compared to almost two million in 1979.

The steady rise in the homeownership rate also reflects the previous strength of the housing market. The proportion of households that owned their own home rose to a record 69%, up a full five percentage points from a decade earlier (see Chart 3). The increase in homeownership was broad-based across income, age and ethnic groups. Homeownership had been largely unchanged in the quarter century prior to this period.

The most impressive aspect of the housing boom, however, was the surge in house prices. According to the National Association of Realtors, the median single-family existing house price has risen some $75,000 during the past five years to $225,000, a whopping gain of over 50%. Other house-price measures, including the Office of Federal Housing Enterprise Oversight purchase only repeat-sales house price index, tell the same story. After inflation, house prices rose by an astonishing 10% last year (see Chart 4).

While the housing boom was evident in many parts of the country, conditions were particularly strong along the coasts and sundry inland areas. Of the nation's 379 metro areas, 44 have experienced a doubling in housing values during the past five years (see Chart 5 and Appendix 1).

The bust. Housing market activity has unraveled quickly this year. New and existing home sales have slid nearly 15% since peaking last summer, with similar declines for single-family homes, condominiums, and new homes. Total home

Chart 1: Record Home Sales...

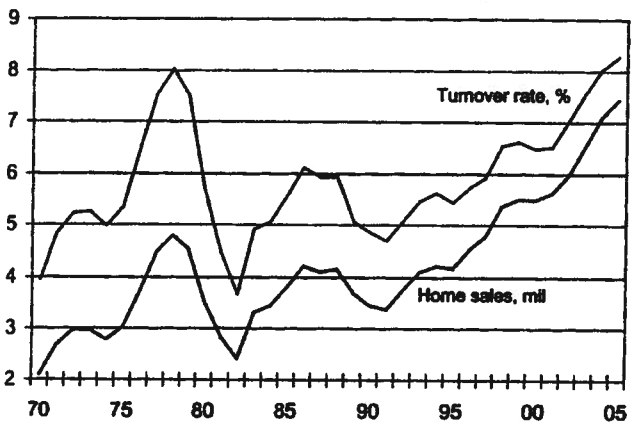


Chart 2: ...Housing Construction...
Single-family housing starts, mil

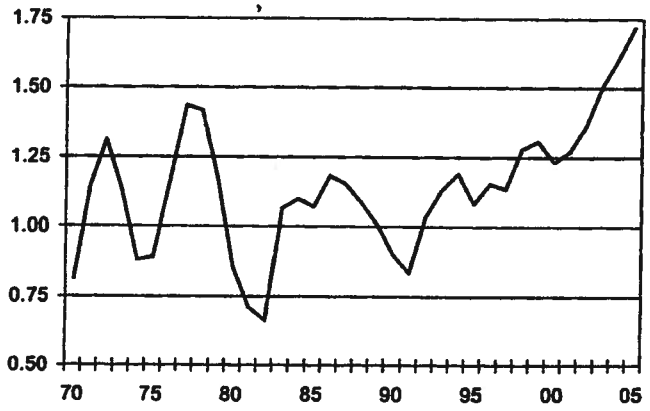


Chart 3: ...Homeownership...
Homeownership rate, %

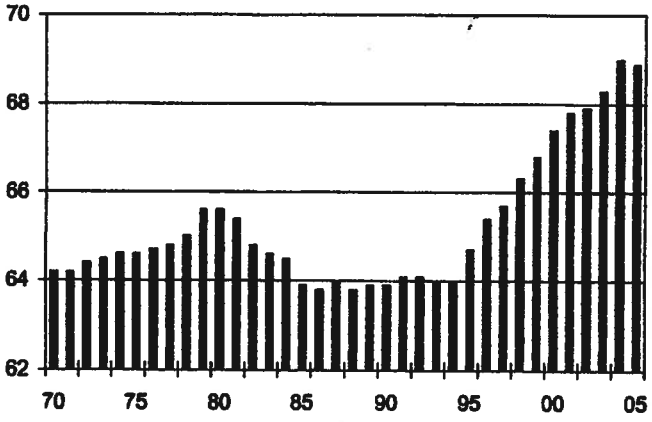
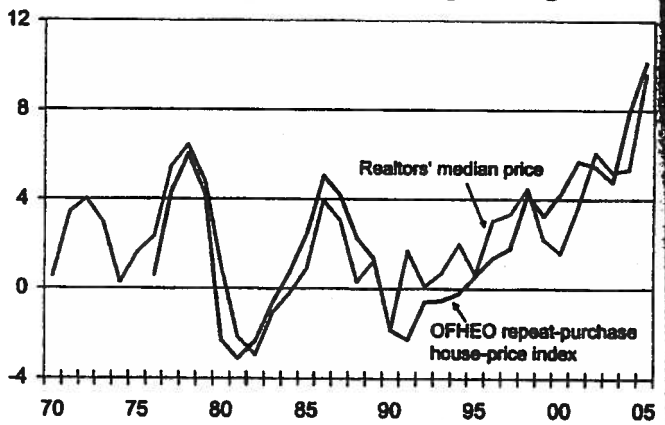


Chart 4: ...And House-Price Growth
Real price growth, single-family, % change year ago



sales are now running more than one million units below last summer's apex (see Chart 6). The weakening in sales is evident across the country, but to date has been most pronounced in the western U.S.

With sales sliding, unsold inventories of homes for sale are piling up. New and existing units for sale are fast approaching a record 4 million units, double the inventory available at the start of the decade. The months supply of unsold inventory at the current sales rate is thus surging higher. There are over eight months of unsold condo inventory, seven months of existing single-family homes for sale, and six months of new homes. When the market was at its best, months supply was running no higher than four months. Given prospects for further sales declines and greater unsold inventory, at least through the remainder of the year, months supply is likely to spurt over the record 10 months that prevailed at the depths of the recessions in the early 1990s and early 1980s. Six months of inventory is often thought to be consistent with a sturdy housing market that can support real house-price gains.

The inventory situation may be even worse than these numbers suggest, at least in the new home market. The Bureau of Census, the provider of the new home sales and inventory data, does not account for cancelled sales contracts. A growing roster of homebuilders such as the Ryland Group, Toll Brothers and KB Homes is reporting rising cancellations in addition to sharp drops in orders and mounting inventories. Indeed, the cancellation rate for some of the nation's largest public builders is now well over one-third, well above the one-fifth that has prevailed in recent years (see Chart 7).

With sales falling and unsold inventory soaring, national house prices are now falling (see Chart 8). Actual transaction prices, which include various types of price discounting that are not accounted for by measured prices, are likely falling substantially given the apparent sharp increase in their use, particularly by increasingly panicked homebuilders. House prices have turned particularly soft at the high end of the single-family market and in the condo market.

House prices are falling in an increasing number of metro areas. Year-over-year price declines are evident in the area from Portland, ME through Boston to Providence, RI, in Michigan and Ohio, and Minneapolis. They are falling on a sequential quarterly basis and will soon be declining versus a year ago in a large number of areas. The most notable include Baltimore, MD, Washington, D.C., Miami, FL, Las Vegas, NV, Phoenix, AZ, San Diego, CA and Sacramento, CA.

Chart 5: Where House-Prices More Than Doubled
2000-2005

Sources: Moody's Economy.com, National Association of Realtors

Chart 6: Sales Are Now Sliding, and Inventories Soaring...

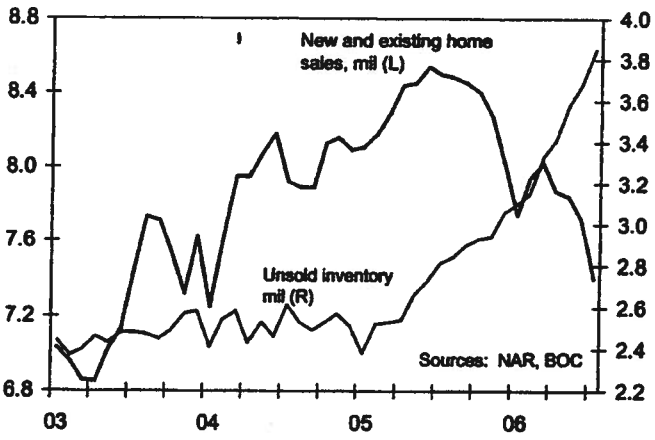


Chart 7: ...As Cancellations Mount
Cancellation rate, %

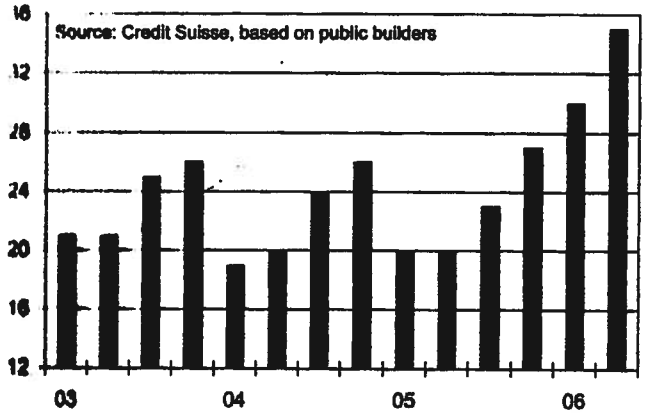
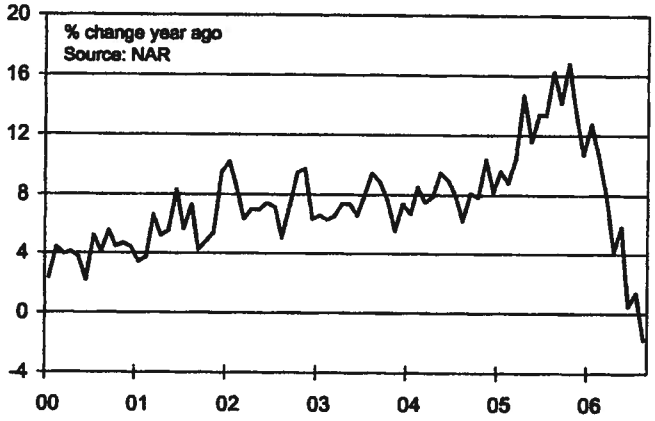


Chart 8: House Prices Start to Fall
Median single-family existing house price



Homebuilders have finally responded to the clear weakening in housing demand and softer house prices by slashing their new construction. Single-family housing starts, which surged to a record high of 1.8 million annualized units at the start of the year, have since plunged to less than 1.4 million units (see Chart 9). The decline in permits has been even more substantial, suggesting further declines in starts this fall.

The impact of this on residential investment spending and thus GDP has only just begun. Housing completions, which lag starts, are only starting to decline. Indeed, the number of units completed so far this year is still up over last year's record pace. The double-digit decline in real residential investment in this year's second quarter is thus likely to repeat in coming quarters.

All of the leading indicators of housing activity definitively point to even weaker conditions in the months ahead. The Mortgage Bankers Association's purchase applications index, which measures the volume of applications for mortgage loans to purchase a home and typically leads home sales by a couple of months, continues to decline. The Realtors' pending home sales index, which measures existing homes that are under a sales contract and thus leads existing sales, which measures closings, also continues to slide.

Perhaps, most ominously, the National Association of Home Builders' diffusion index, which measures builders' perceptions of current and expected buyer activity in the new home market, continues to plunge. A reading below 50 indicates that more builders view conditions as poor than good. The index currently stands at 30, just above the record low set in the depths of the 1990-1991 recession when single-family housing starts were half of what they are currently (see Chart 10).

Economic contribution. The housing market boom and subsequent bust have been instrumental in shaping the broader economy's performance over the past decade. Indeed, no sector of the economy has made a more significant contribution.

Of the real GDP growth that has occurred since the start of the decade, fully one-fourth is due to housing. Real GDP growth since Y2K has been 2.6% per annum. If the housing market had simply been neutral with respect to the economy during this period, then per annum real GDP growth would have been 2%.[1]

Housing played an unprecedented role during the 2001 recession. Unlike in past recessions when housing activity declined sharply, weighing heavily on the economy, it contributed substantially to growth

[1] This result is based on a simulation of Moody's Economy.com's macroeconomic model system.

Chart 9: Builders Slash Construction

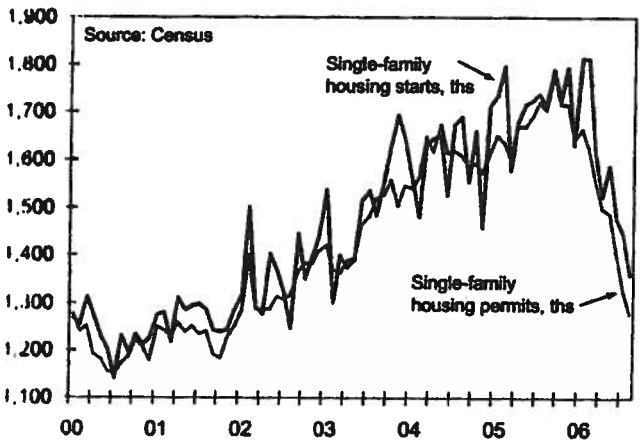


Chart 10: Ominous Leading Indicator

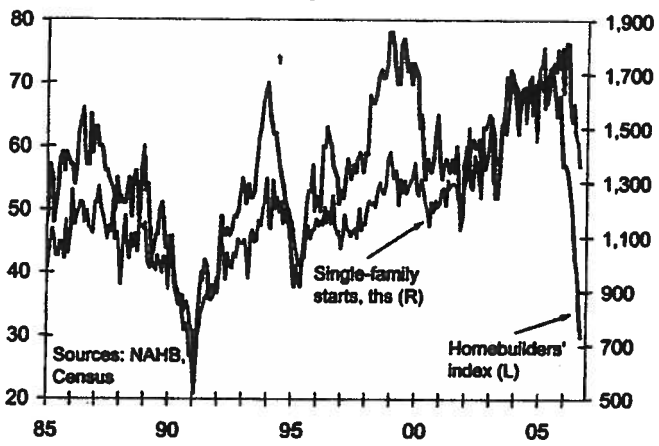
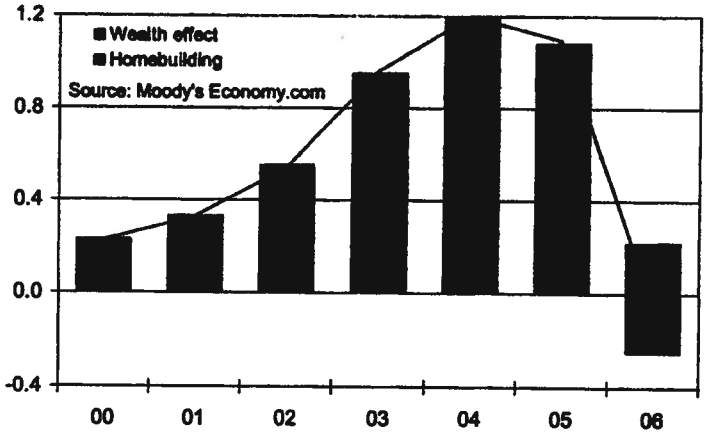


Chart 11: Housing's Outsized Contribution to Growth
Percentage point contribution to real GDP growth



throughout the downturn. Residential investment fell by an average of one-third during previous recessions since World War II, but rose during the 2001 recession. Housing's contribution increased substantially during the expansion, adding a full percentage point to real GDP growth in both 2004 and 2005 (see Chart 11).

The most direct link between housing and the broader economy is through residential investment, which is comprised of homebuilding, remodeling and renovation. With a record number of new and increasingly spacious homes built last year, residential investment soared to well over 6% of GDP. This compares to 4.5% of GDP in 2000, and is the highest GDP share since a very brief period during the housing boom immediately following World War II.

There is also a substantial wealth effect resulting from soaring house prices and homeowners' equity that has indirectly boosted the economy by powering robust consumer spending. For every $1 increase in housing wealth, an estimated seven cents in extra spending occurs over the subsequent nearly two-year period.

Households own nearly $20 trillion worth of housing and have more than $11 trillion in homeowners' equity. The median amount of equity owned by homeowners is an estimated close to $70,000 according to the Federal Reserve's Survey of Consumer Finance. With the stock market yet to fully recover from its post-Y2K bust, housing is far and away the largest asset in the household balance sheet. Indeed, while less than one-half of families have some stockholdings, only one-fourth of families have holdings worth more than $30,000. Well over two-thirds own their own home, and more than one-half have homeowners' equity that is greater than $30,000.

For wealthier, higher-income households, the wealth effect largely works through its influence on their views regarding their long-term financial well-being. With rising housing values and thus net worth, these households do not feel the urgency to save for their children's college education or their own retirement. Their saving rate declines, and their spending increases.

For less wealthy households, the wealth effect has been empowered by increased mortgage borrowing. Until very recently, home equity borrowing was surging, and cash-out refinancing remains strong. All together, gross mortgage equity withdrawal (MEW) totaled an astonishing over $1 trillion annualized in the first quarter of this year, equal to nearly 10% of disposable income (see Chart 12). Even after mortgage origination fees and closing costs, MEW totaled $900 billion earlier this year, compared to closer to $200 billion as recently as 2000.

Housing's economic contribution has shifted dramatically with the recent slide in activity. With construction falling and the wealth effect fading, housing is expected to add nothing to the economy's growth this year. GDP growth has slowed from above its potential to below since the beginning of the year, due entirely to housing's shift from boom to bust.

Explaining History. The housing market cycle has been driven by a wide array of forces. Some of them more fundamental and thus longer-lasting, while others more temporary. An understanding of what is behind the housing boom and bust is necessary to gauge the housing market's prospects.

Behind the boom. Driving the housing boom were a number of fundamental forces. A combination of low and falling interest rates, favorable demographics, increased restrictions on homebuilding, household portfolio shifting, and a substantial expansion in the availability of mortgage credit fueled the record housing activity.

The most significant force behind the housing boom has been the low, and until recently, falling, user cost of housing. The user cost measures the net mortgage interest cost of borrowing, and is equal to the difference between the after-tax effective mortgage rate and borrowers' expectations of future house-price growth.

The user cost has more or less fallen since peaking in the early 1980s, but it turned sharply negative early in this decade (see Chart 13). Not since the late 1970s had the user cost been consistently negative. Reflecting the lower user costs was very high housing affordability. Throughout the first half of

Chart 12: The Home Has Been a Cash Machine
Gross mortgage equity extraction, $ bil

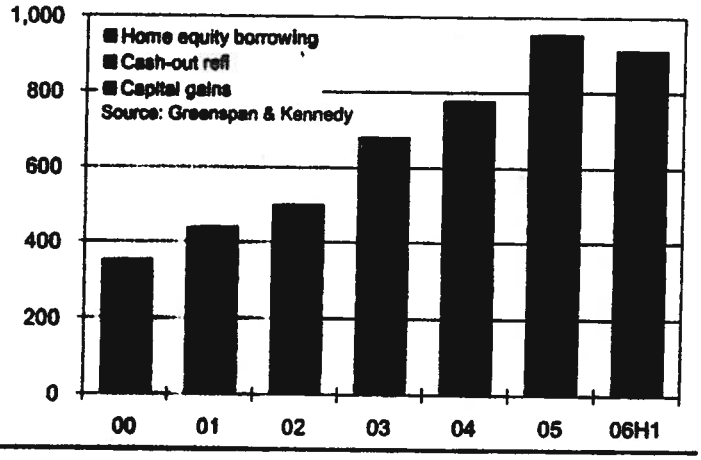
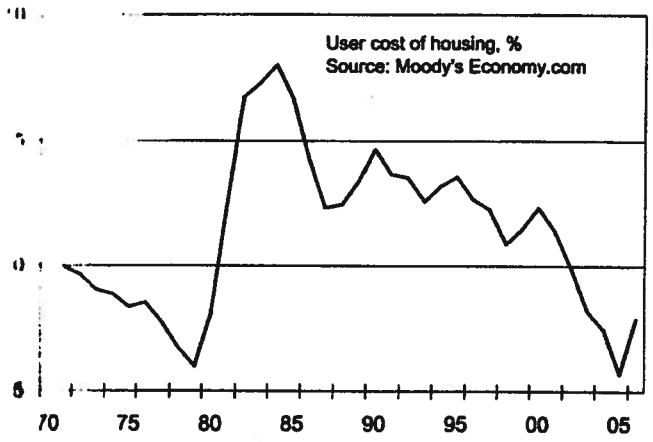


Chart 13: Driving the Boom Were Negative User Costs...



this decade, the household earning the median income could afford to purchase between 125% and 135% of the median priced home, according to the Realtors.

Driving user costs lower were falling mortgage rates. Fixed mortgage rates, which were hovering near 8% (as measured by Freddie Mac) at the start of the decade, were consistently below 6% between 2003 and late 2005. Rates on adjustable mortgages fell even more sharply when the Federal Reserve slashed the federal funds rate to only 1 percent through mid-2004.

Declining mortgage transaction costs also contributed to the falling user cost. Average fees and points on purchase mortgage originations are under 50 basis points, according to the Federal Housing Finance Board. This compares to 100 basis points in the mid-1990s and 200 basis points two decades ago.[2] The mortgage origination industry has been effective in using information technology to lower its cost structure, with many of the benefits accruing to borrowers.

Further pushing user costs lower were the increasingly heady expectations regarding future house-price growth. Strongly rising prices begat expectations of even bigger future price gains, pushing user costs lower, and fueling even stronger housing demand and higher prices. It is the unraveling of these lofty expectations that is behind the more recent rise in user costs and the fast-weakening housing market.[3]

The rapid expansion in the availability of mortgage credit also fueled the housing boom. Subprime, Alt-A, affordable and high loan-to-value mortgage lending has surged during the past decade. Subprime loans, or loans to mortgage borrowers with blemished or no credit histories, and Alt-A loans, loans to investors or to borrowers with incomplete documentation of their financial or employment histories, have ballooned from essentially nothing a decade ago to an estimated $1 trillion last year, accounting for one-seventh of all mortgage debt outstanding. Many households are being approved for mortgage loans that would not have been able to obtain any credit just a few years ago.

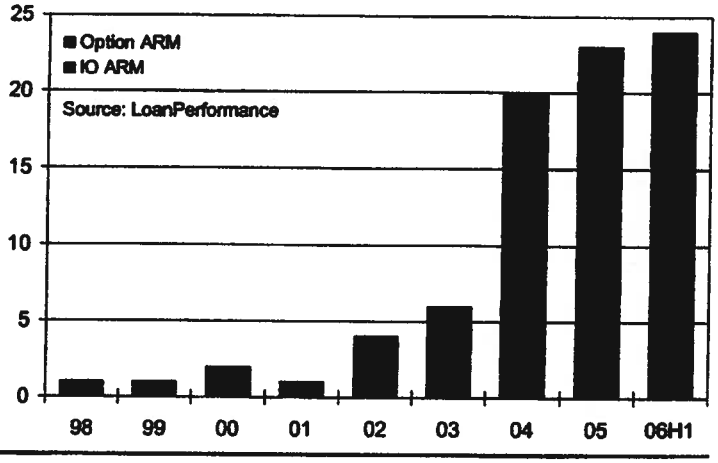
Driving the expansion of credit is the burgeoning mortgage backed securities market, where bonds backed by the interest and principal payments made by mortgage borrowers are issued and traded. Historically, the primary source of funding for residential mortgages was depository institutions, including commercial banks, thrift institutions and credit unions. As recently as the mid-1980s, depositories held nearly two-thirds of residential mortgages.[4] Today, almost two-thirds of mortgages have been securitized. Owners of these mortgage backed securities include a wide array of investors from mutual funds to global financial institutions.

The RMBS market facilitates the provision of mortgage credit as it is particularly efficient at allocating the risks involved in extending such credit. Investors can more precisely take on the amount of prepayment and credit risk they are able to tolerate. Given that the MBS market is more than $4 trillion deep, investors also face substantially less liquidity risk than when investing in other assets. The large market also reduces the costs of purchasing insurance or hedging the risks involved in an MBS investment. All of this is recognized by bank regulators, who require depositories to hold more capital against a mortgage than an MBS.

Further fomenting the expansion of mortgage credit is the adoption of scoring technology, risk-based pricing, and direct market techniques.[5] Mortgage lenders have been emboldened to extend more credit by their ability to assess risk, target borrowers within certain risk profiles, and price that risk. The popularity of interest-only and option payment mortgages is a good example of this. Some one-fourth of nonconforming mortgage originations are currently of these exotic mortgages in which borrowers pay only the interest due or just a minimum amount that does not fully cover the interest, with the balance added back into the loan's principal (see Chart 14). IO and option loans were virtually nonexistent just a few years ago.

Housing activity has also been supported by household portfolio shifting. Housing

Chart 14: ...Increasingly Aggressive Lenders...
Share of non-conforming mortgage originations

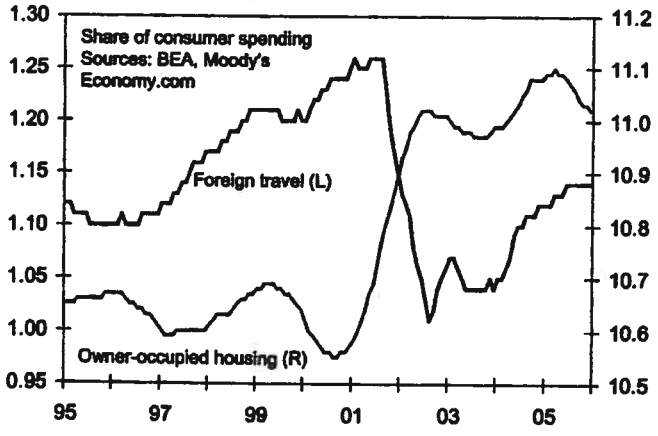


[2] This is based on data from the Federal Housing Finance Board. In the calculation of the user cost, expected house-price growth is assumed equal to house-price gains over the past three years. Survey information supports this view of how house-price expectations are formed. See "Is There a Bubble in the Housing Market, Case and Shiller, *Brookings Papers on Economic Activity*, September 2003.

[3] See "Mounting Mortgage Leverage," *Regional Financial Review*, May 2004.

[4] This is based on data from the Federal Reserve Board's Flow of Funds.

Chart 15: ...And Nesting Post-9/11



has easily provided households the best investment returns of any asset since the start of the decade, especially considering that for the majority of homeowners, a home is a highly leveraged investment.[6] Cash returns have, until very recently, been paltry. Despite a half year of monetary tightening, yields on money market accounts are still low by historic standards. Long-term bonds have performed well, but yields are now very low and corporate bond spreads extraordinarily narrow. Investors must also be anxious over the prospects that foreign investors will turn more cautious in their bond purchases given the weakening dollar. Stock prices have revived, but they are still below their post-Y2K peak.

Nesting also boosted housing demand early on in the boom. Heightened fears of terrorism and travel convinced households to travel less and stay closer to home, at least for awhile. Spending by consumers on foreign travel plunged in the wake of 9/11, while at the same time, the share of consumer spending devoted to owner-occupied housing rose sharply (see Chart 15). Nesting has induced households to purchase bigger homes and to spend more on home improvement and home entertainment.

While there have been solid fundamental reasons for the housing boom, activity surged due to soaring investor demand. Investor demand increased for second and vacation homebuyers, those with a generally long investment horizon, and for short-term investors or flippers, those looking to make a quick profit. Flippers speculating in housing eventually infected a large number of markets in communities throughout the Northeast, Florida, and California, and increasingly even in metropolitan areas in the Mountain West and Midwest. Even homebuyers planning to live in their homes may have been dabbling in a form of speculation by expecting the extraordinary price gains of recent years to extend long into the future, and thus buying bigger homes or adding to and improving their existing one.

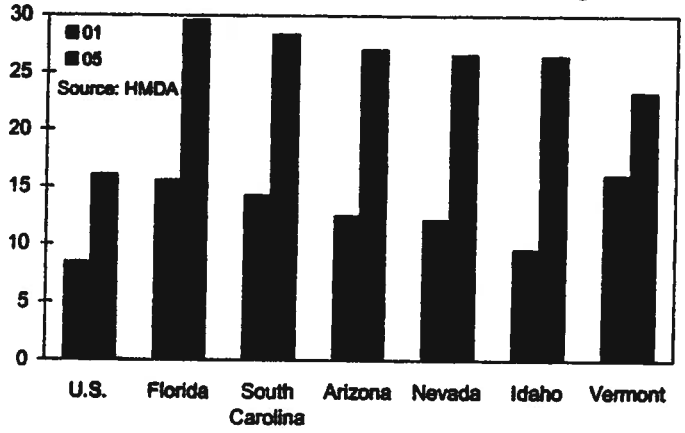
The jump in investor demand is evident in the HMDA mortgage originations data.[7] These very comprehensive data show that the investor share of national purchase originations for single-family housing doubled between 2001-2005 to over 16%. In some of the previously more active housing markets, the share surged even more (see Chart 16). In Florida, for example, the investor share soared to 30% last year, with investor shares of over 50% in metro areas along the state's west coast. The highest investor share in the country last year was along the New Jersey beach, with three-quarters of originations in Ocean City, NJ by investors (Appendices 2a & 2b). For contrast, the lowest investor share in the nation was in North Dakota, where only 8% of originations were to investors.

Behind the bust. The housing boom has rapidly devolved into a bust as many of the forces supporting the boom have faded. Mortgage transaction costs can scarcely go lower, lenders and their regulators are rethinking their most aggressive underwriting standards, households are becoming accustomed to the threats of terrorism, and cash and stocks are once again attractive investment alternatives to housing.

The catalyst for the rapid shift from boom to bust in the housing market, however, has been the tightening in monetary policy. Between mid-2004 and earlier this year, the Federal Reserve steadily tightened policy, pushing the federal funds rate target up from 1% to its current 5.25%. Long-term rates ultimately rose in response, but much more modestly, with the yield on 10-year Treasury bonds rising from a low of 3.5% to closer to 5%. Rates on adjustable mortgages and fixed mortgage rates moved higher in sympathy, with fixed mortgage rates rising about 100 basis points and ARM rates rising 250 basis points.

Higher mortgage rates when mixed with very lofty house prices have undermined housing affordability. The Realtors affordability index has plunged, and is now closing in on 100, meaning that the household earning the median income can afford to purchase just 100% of the median priced home at prevailing

Chart 16: Investor Demand Also Surged
Non-owner-occupied origination share of 1-4 family originations



[6] The return to a homeowner enjoying annual house-price appreciation of 5% with a mortgage equal to one-half the home's value, for example, is 10%.

[7] HMDA, or Home Mortgage Disclosure Act, data are based on reports by nearly all mortgage lenders that are required to submit this information for purposes of monitoring mortgage lending discrimination. The HMDA data may understate the level and increase in investor demand, as homebuyers have a financial incentive to claim they will live in the residence as lending terms are easier on an owner-occupied loan. The HMDA is consistent with data from LoanPerformance.

Chart 17: Housing Affordability Is Sliding...
Housing affordability index

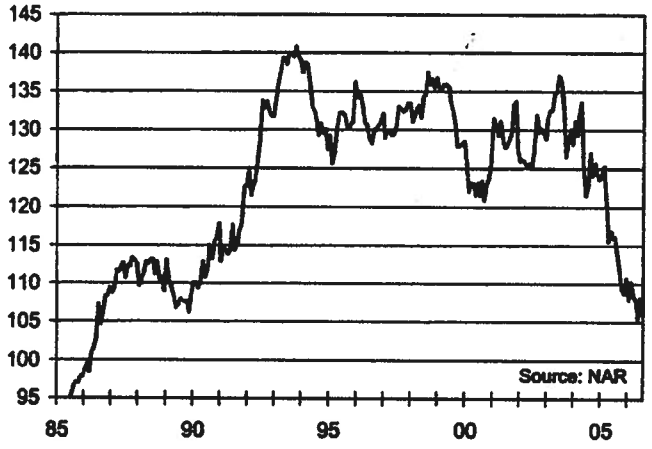
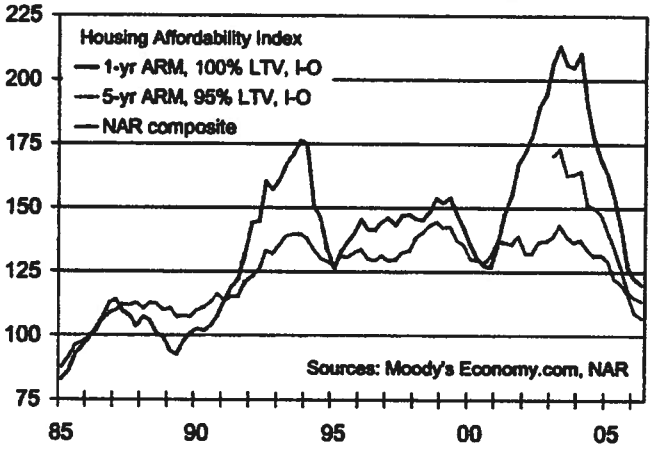


Chart 18: ...Particularly for Exotic Mortgages



mortgage rates and terms (see Chart 17). This is the lowest level of affordability by this measure since the mid-1980s.

The collapse in affordability has been much more pronounced in those metro areas where house prices have risen the most. Miami is illustrative, with the affordability index plunging from near 120 earlier this decade to near 60 today. Affordability in Las Vegas has caved from a high of over 130 to less than 70 currently. Washington, D.C. affordability has dropped from a very affordable 160 to below 90.

Falling affordability has been particularly difficult for first-time homebuyers, given their generally lower incomes and savings. According to the Realtors, the affordability index for homebuyers, which was as high as 90 earlier in the decade, has fallen to only 70; a 20-year low. Housing demand has been hit hard, as first-time buyers accounted for as much as one-half of home sales last year in many large markets across the country.

For a time, mortgage lenders were able to cushion the blow of tightening monetary policy on affordability by heavily marketing IO and option mortgages. The affordability of even these exotic loans has fallen sharply, however, as the Federal Reserve pushed short-term rates higher. Based on the Realtors affordability measure, a 1-year IO ARM loan with nothing down is now only marginally more affordable than a more traditional mortgage loan (see Chart 18).

While lenders remain aggressive, they are hard-pressed to extend out their underwriting standards even further. Mortgage credit quality concerns are rising and regulators are growing increasingly nervous and have become increasingly vigilant in their oversight.[8]

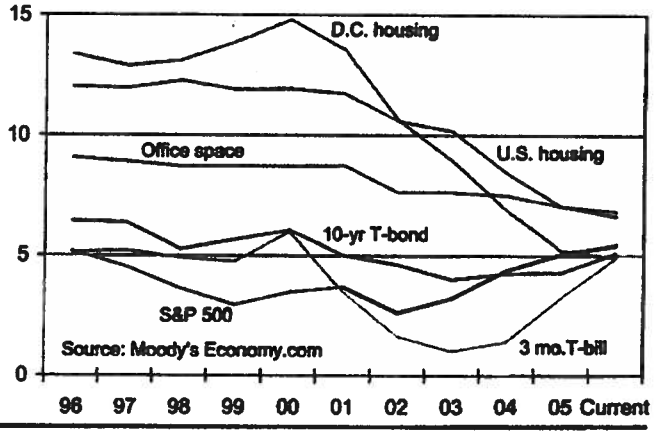
Reinforcing the shift from housing boom to bust is the rapidly-exiting investor. Higher borrowing costs, more cautious lenders, and, most importantly, the realization that house prices were no longer headed higher have induced flippers to stop buying, and if possible, to sell. Longer-term investors are also re-evaluating their strategies. Even if they were willing to look through the likely near-term weakening in housing values, it is difficult to justify such an investment as the cash or income return on housing has fallen sharply in recent years.

As measured by the ratio of effective apartment rents to house prices, housing's cash yield has been cut nearly in half since the start of the decade (see Chart 19). At currently under 7%, it is lower than that on office space, and is fast-approaching the over 5% yield on stocks, long-term bonds, and cash itself.[9] At the start of the decade, in contrast, housing cash yields were in the double digits, while stock, bond and cash yields were in the low single digits.

With investors accounting for as much as one-fourth of home sales in the most active markets last year, housing demand has collapsed as they have made a run for the proverbial door. Many of the flippers likely have yet to sell, suggesting they will continue to weigh on the market for sometime to come.

Not only is the downdraft in housing demand contributing to the housing bust, so too is a surfeit of new housing supply. New housing construction, including single and multi-family construction and manufactured housing placements, has been extraordinary in recent years. Total new supply was well over 2 million units annualized between late 2003 and early this year. This is

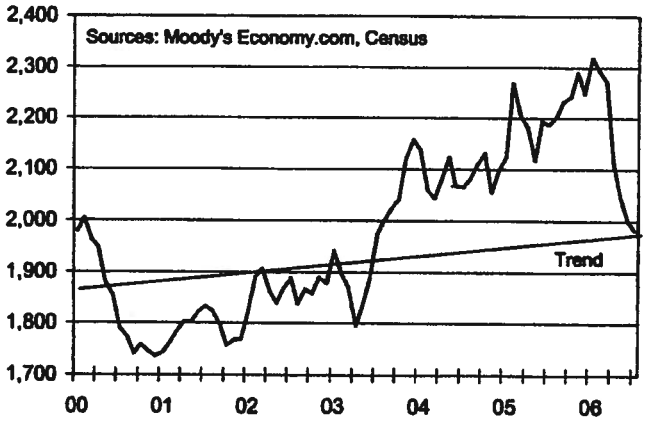
Chart 19: Housing Is No Longer a Buy
Cash yield



[8] Regulatory agencies issued several restrictive guidelines on home equity and first mortgage lending during 2005. See www.occ.gov/ftp/bulletin/2005-22a and www.occ.gov/fr/fedregister/70fr6329.pdf.

[9] Effective apartment rent data from Global Real Analytics are used for this analysis. The constructed measure is the inverse of the price-earnings ratio. The housing PE has risen from 8.5 to nearly 15 currently.

Chart 20: More Supply Than Demand
Single-, multi- and manufactured housing, ths, 3 mo. MA



well above trend housing demand for new housing, which is composed of the sum of household formations, what is needed to replace the stock of homes that become obsolete each year, and second and vacation homes. Indeed, trend demand, while rising steadily, is still below 2 million units annually (see Chart 20). The gap between new housing supply and demand has thus been steadily widening and now stands at near 500,000 units, equal to one-fourth of current annual supply. The overbuilding is evident in record high homeowner vacancy rates and stubbornly high near-record vacancy rates for rental units. Overbuilding appears most pronounced in the Northeast and Midwest, and, somewhat surprisingly given robust household growth, in Florida. California, and to a lesser degree, the Pacific Northwest and the Mountain West also appear overbuilt, albeit a bit less so.

House-Price Primer. To assess the severity of the unfolding housing downturn, the remainder of this study will focus primarily on the prospects for house prices. Prices reflect changing housing demand and supply and also impact a wide range of other economic activity, from consumer spending to mortgage delinquency and default. There are three sources of house price data available for the nation and a large number of metropolitan areas. These include the National Association of Realtors' median existing house price, the measure used most prevalently in this study, the repeat-sales house price index available from OFHEO, and the repeat-sales house price index from Case Shiller, a division of mortgage services company Fiserv. Each of these house-price measures has its advantages and limitations. The most favorable attribute of the OFHEO series is its ability to measure house-price changes based on repeat sales of the same homes over time. Thus OFHEO controls, at least in part, for the quality of homes sold since it is based on matched pairs of home. During any quarter, the house-price index includes in its sample a home that is sold in the current quarter if there are data available on at least one other sale of this house in previous quarters. This is not exactly a constant quality index, since improvements or additions made to a home between sales are not controlled for, but it is much closer to a constant quality index than the Realtors' measure.

A weakness of the OFHEO data is that its coverage is limited to houses that were purchased by Freddie Mac or Fannie Mae, mostly leaving out the lower house-price tiers that are transacted with government loans such as FHA and Community Reinvestment Act loans and upper house-price tiers that use jumbo loans or even cash. The current limit on a Freddie Mac or Fannie Mae loan is $417,000, well below the median price in many of the markets that enjoyed the strongest appreciation recently. OFHEO also excludes condominiums for its measure, a particularly significant omission currently given that the condo market has been particularly active in recent years.

Another weakness of the OFHEO data for metro areas is that it includes home values based on refinance transactions that often bias the indexes. There are several sources of refinance bias. First, valuations from refinance transactions are based on house-price appraisals, rather than actual home purchase prices. Valuations based on appraisals are constructed under different circumstances than those surrounding purchase prices, as appraisers operate under specific types of pressures and may employ different comparable properties in estimating value than were used, at least implicitly, in the formation of a purchase price. Second, refinance appraisals may lag during periods of rapidly changing prices to the extent that they utilize historical price data that may quickly become out of date. Finally, houses that are refinanced may be houses that have appreciated the most. Indeed, houses with weak or negative house-price appreciation may have insufficient equity that precludes their owners from refinancing at the most favorable interest rates. While OFHEO has constructed a purchase only index for the national house price, the metro area price indexes still incorporate refi transactions.

The OFHEO data are also lagged a bit given the 30 to 45 day lag time from loan origination to Fannie and Freddie funding. OFHEO receives data on new fundings for one additional month following the last month of the quarter. These fundings contain many loans originating in that most recent quarter, and especially the last month of the quarter. While this is not a particularly significant problem in a more stable housing market, it is a problem in a fast-changing one.

The Case Shiller house-price indexes (CSI) give an even more accurate representation of price movements. Calculated in a similar manner to the OFHEO data, the CSI is a repeat-purchase house price index. Since the price data upon which the index is based are home sales, the CSI improves upon OFHEO in that the CSI does not have a refi bias, nor is it limited to prices based on home sales involving a conforming mortgage. The main disadvantage to using the CSI is that it lags considerably in reporting; as long as four months after the quarter ends.

The Realtors' data are based on survey data from regional realtor associations. The median price captures actual home purchases across the house-price spectrum, but may be swayed by differences in the mix of homes transacted from period to period. Moreover, NAR data are only available for approximately 150 metro areas. Moody's Economy.com does construct estimates of house prices for the nation's remaining metro areas based on other housing indicators (see Methodology

Methodology 1
Estimating Median Existing Single-Family House-Prices

Moody's Economy.com estimates historical data for median existing single-family home prices for all counties, metropolitan areas and states. The data has a quarterly periodicity as far back as the early 1970s depending on the area.

The principal data sources used to estimate this data are the National Association of Realtors (NAR), the California Association of Realtors (CAR), the Florida Association of Realtors (FAR), the Office of Federal Housing Enterprise Oversight (OFHEO) and the U.S. Census Bureau. The NAR provide median existing house price data for over 150 metropolitan areas. CAR provides data for 12 California metropolitan areas directly and 11 indirectly. FAR provides data for 11 Florida metropolitan areas. OFHEO provides repeat sales house price indices for over 300 metro areas. The Census provides data on the median value of occupied homes from the decennial census.

Step 1) The first step is the creation of a regional series that relates NAR house prices to the decennial census median value of occupied homes by population size. This adjustment series is used in a later step.

Step 2) A preliminary estimate of median existing single-family home prices by metropolitan area is then calculated by infilling the median value of occupied homes from the decennial census with growth rates from the repeat purchase house price index from OFHEO.

Step 3) This estimate is then adjusted to account for the differences between the decennial census figure and data from the NAR by applying the appropriate regional adjustment series created in the first step to the preliminary metropolitan area estimate.

Step 4) Where available these estimates are replaced by published house prices from the NAR, CAR and FAR.

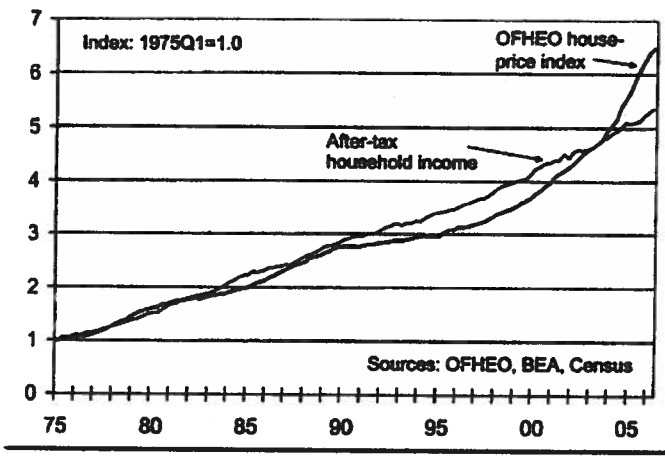
Step 5) Preliminary estimates by county are then made using the median value of occupied homes from the U.S. Census Bureau's decennial census and infilling in the intercensal years with growth rates from Moody's Economy.com's estimate of median household income.

Step 6) Counties located in a metro area are then adjusted to match the newly published metropolitan home prices. This is done by taking the ratio of the preliminary county house price to a weighted average of the counties in the metro, using home sales as a weight, and applying it to the final metropolitan estimate. If the county is not in a metro area, then division data is used. Again, a ratio of preliminary county to a weighted average of counties in the division is applied to the final division.

Step 7) State estimates are created from a weighted average of the counties in a state using home sales as the weight.

The work presented in the remainder of this study is based on the Realtors' median existing house price data. Most importantly, the Realtors' data are the timeliest, with the metro area data released within six weeks after the end of the quarter. Moreover, at this juncture in the housing cycle, the Realtor data are seemingly more accurate at picking up turning points in house prices across the country. The refinance and conforming loan biases in the OFHEO data are likely causing that measure to miss the current rapid slowing or outright declines in house prices now occurring in many places. It is important to note that none of the house-price data are able to measure changes in the use of various incentives and discounts that are not reflected in actual transaction prices. In today's weakening housing market, for example, sellers are reportedly offering a myriad of incentives, from fixing the deck to help with financing, in order to complete a sale. If so, then actual effective house prices would be even weaker than measured prices.

Chart 21: House-Prices and Household Income



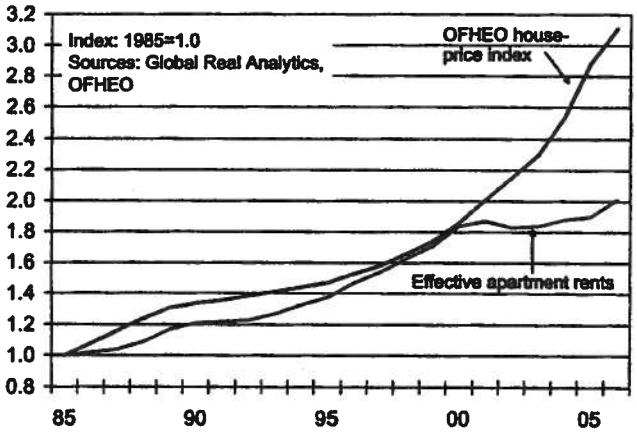
Measuring House-Price Risk. There are several traditional approaches to assessing the prospects for house prices by gauging whether prices are measurably over- or undervalued. These approaches typically involve comparing prices with household incomes, rents, and user costs.

Income-to-Price. A popular approach for identifying whether housing is appropriately valued is to compare house prices with household incomes.[10] Over long periods, house-price gains have closely mirrored household income gains nationally and across metropolitan areas (see Chart 21).

That housing values and household incomes should be closely related is based on the special importance most households seemingly place on owning their own home. This importance is seemingly rooted in both household psychology and the significant tax advantages of homeownership. Households have historically purchased as much housing as their incomes will allow. The strong relationship between house prices and incomes can also be established through the cost of land and construction costs. The value of land is ultimately determined by its opportunity cost, which in turn equals the value of goods and services produced in the geography. Given a constant labor share of output, the growth in land values and incomes will thus be equivalent. The growth in construction costs also closely tracks incomes since these costs are predominantly labor costs.

[10] See Case, Karl and Shiller, Robert, "Is There a Bubble in the Housing Market? An Analysis," in *Brookings Papers*, Fall 2003.

Chart 22: House-Prices and Apartment Rents



When house prices and household incomes diverge substantially, this is only suggestive that a housing market is overvalued or speculative. House prices and incomes can diverge over extended periods when mortgage rates or other transaction costs are steadily rising or falling as they have done over the past quarter century, for example, or when non-labor construction costs, such as the cost of materials, are growing at a persistently strong or weak rate.

By this measure, national house prices are approximately 50% above their long-run historical level relative to household incomes, and more than double in some high-priced metro areas (see Appendix 3).

Price-to-rent. Another traditional approach to gauging whether housing is over- or undervalued is to compare house prices with apartment rents.[11] That is, to value houses by the amount of net income (or net rent) they generate. This is similar to the stock market's earnings yield or taking the inverse, the price-to-earnings ratio (see Methodology 2). Over long periods, house-price gains and the growth in apartment rents have tracked closely across the nation and metropolitan areas (see Chart 22).

That fundamental housing values and rents are closely related is simply due to the fact that multifamily housing and single-family housing are close substitutes. If house prices deviate substantially from rents, then this suggests that the cost of housing services provided via owning is substantially different from the cost of those services via renting. Households will eventually adjust, as will house prices and rents.

The strong relationship between house prices and rents is also due to the tautology that house prices equal the present value of the future services provided by housing. Those services are equal to what it would cost the homeowner to rent her home back to herself, which in turn is equal to the rent on a comparable apartment.

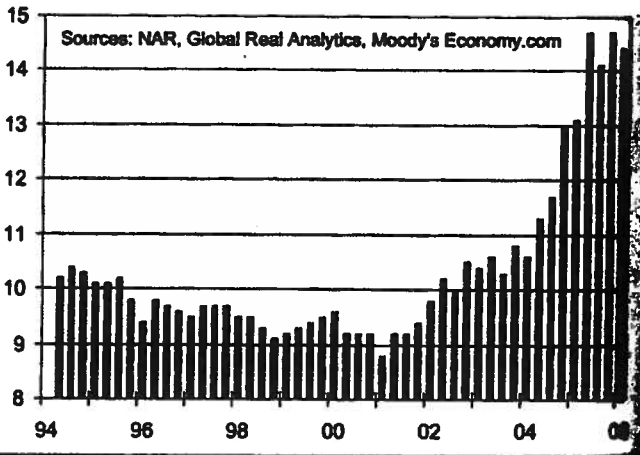
House price and rent growth can diverge over extended periods, however, due to forces unrelated to speculation. Steadily rising or falling mortgage rates or other transaction costs, changes in the availability of mortgage credit, tax law changes that impact the cost of homeownership via renting are all examples of factors that can cause house price and rent growth to diverge for extended periods of time. Eventually, these forces abate, and house price and rent gains converge. If the gap between price and rent gains is large and continues to persist, however, then speculation is likely affecting housing markets.

The gap can be measured by an equivalent housing PE ratio that values house prices relative to the net income or rent they can generate. This is done by determining an annual mortgage payment using data on median existing house prices, loan-to-value ratios, and contract mortgage rates. The annual mortgage payment is then divided by the median-sized home to determine the annual mortgage payment on a per square foot basis, which proxies the operating cost of owning the home, and is subtracted from the annual apartment rent per square foot to obtain the annual net income per square foot from housing.[12] The annual net income per square foot from housing is multiplied by the median size of the house to obtain the gross annual net income. Finally, the median existing house price is divided by the gross annual net income to derive the price-to-earnings ratio.[13]

The national house PE has soared from less than 10 at the start of the decade, to near 15 currently (see Chart 23). PEs have expanded substantially more in metro areas like West Palm Beach, Fort Lauderdale, Miami, Las Vegas, Phoenix and San Diego (see Chart 24). In contrast, more modest housing PE expansion is evident in middle-America markets, such as Kansas City, Indianapolis and Pittsburgh (see Appendix 4).

User cost-to-rent. A third common approach is a type of accounting exercise in which the user cost of housing is compared to rents or the net present value of owning a home is calculated and compared to prevailing house prices.[14] If the user cost

Chart 23: Housing PE Ratio Soars Nationally...
Median existing house price-to-net apartment rent



[11] See Gallin, J., 2004, "The Long-Run Relationship Between House Prices and Rents," *Finance and Economics Discussion Series*, Board of Governors of the Federal Reserve System, No. 2004-50

[12] Property taxes and maintenance costs are assumed to be offset by the mortgage interest deduction.

[13] Due to limitations in data availability for metro area rents and house sizes, these calculations are limited to 59 metro areas and the nation.

[14] See Himmelberg, C.; Mayer, C.; and Sinai, T., 2005, "Assessing High House Prices: Bubbles, Fundamentals, and Misperceptions," *Federal Reserve Bank of New York Staff Reports*, no. 218, and Smith, G., and Smith, M., 2006, "Bubble, Bubble, Where's the Bubble?, forthcoming in *Brookings Paper on Economic Activity*.

Methodology 2
Estimating Housing's PE

Moody's Economy.com estimates historical housing price-earnings ratios for metropolitan areas and the nation. The principal data sources used to estimate this data are the National Association of Realtors, the Federal Housing Finance Board, the Census Bureau's American Housing Survey, and Global Real Analytics.

Step 1) An annual mortgage payment is calculated using data on median existing house prices, loan-to-value ratios, and effective mortgage rates.

Step 2) The annual mortgage payment is divided by the median sized home to determine annual mortgage payment on a per square foot basis. The median size of owner-occupied homes is available for the U.S. every two years and for metropolitan areas on a multiple year cycle. Data were interpolated for intervening years. In cases where only one data point was available, this size is used throughout the analysis period. In some cases, the median house size is proxied from similar or nearby metro areas (e.g. Las Vegas by Phoenix).

Step 3) The annual mortgage payment per sq. ft. proxies rental operating cost and is subtracted from the annual apartment rent per sq. ft. to obtain the annual net rental income per sq. ft. from houses. It is important to note that property taxes and maintenance costs are assumed to be offset by the mortgage interest deduction.

Step 4) The annual net rental income per sq. ft. from houses is multiplied by the median size of the house to obtain the gross annual net rental income.

Step 5) The median existing house price is divided by the gross annual net rental income to derive the price-to-net rent or earnings ratio.

is measurably higher than rents or the net present value of owning a home is lower than house prices, then the housing market is deemed to be overvalued or speculative.

This approach is very sensitive to the measurement of housing costs, however, including things such as property taxes and maintenance costs. These costs are very difficult to measure accurately, particularly at a metro area level. Risk premiums and discount rates, things that can not be directly observed, must also be assumed to perform the calculations of the user cost and net present value. It is also worth noting that the results in some cases are hard to explain. In one of the studies, for example, it is found that Los Angeles house prices have always been undervalued to varying degrees.

Each of the previous efforts at determining the appropriate level of house prices thus has consequential limitations. Simply comparing household incomes and apartment rents to house prices ignores the possibility that they may diverge for extended periods of time. Accounting exercises are useful, but the results are severely impaired by the quality of the data used and the assumptions made. The methods developed and employed in this study provide an alternative approach to identifying housing markets at risk of experiencing price declines that address, at least in part, these limitations.

Leading House Price Indicator. The leading house price indicator, or LHPI, measures the probability that a metro area will experience a measurable house-price decline during the coming year.

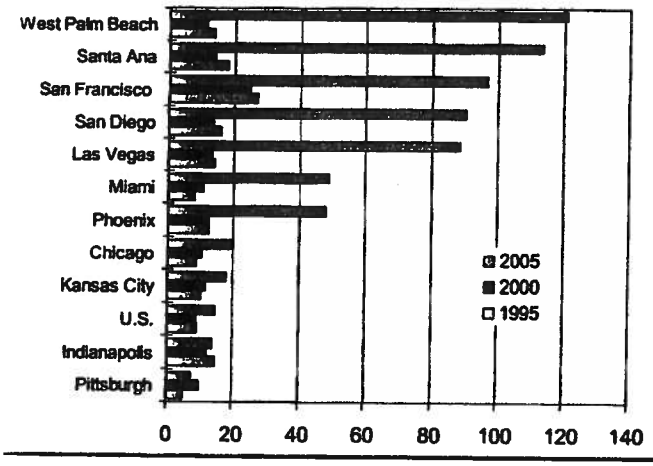
The LHPI econometrically identifies and combines variables that have historically led changes in housing values. This LHPI determines the probability of a significant decline in future house prices; it does not provide an estimate of the magnitude of that change. Since the LHPI does not impose a fixed formal relationship among the included variables, it can reflect changes due to a wide variety of causes.

Specification. Many variables were tested in the construction of the LHPI, but five variables were ultimately found to lead house prices by approximately one year. These variables include non-housing related employment growth, housing affordability, a measure of house price over- or undervaluation, the physical balance between new housing supply and demand, and a variable that captures the volatility and persistence in house prices.

The current value of these variables, properly combined, thus provides a one-year-ahead forecast of house prices. More precisely, the LHPI is an econometrically estimated relationship between the one-year lagged value of these variables and a binary dependent variable, equal to one when house prices have declined on a year-ago basis, and zero otherwise.

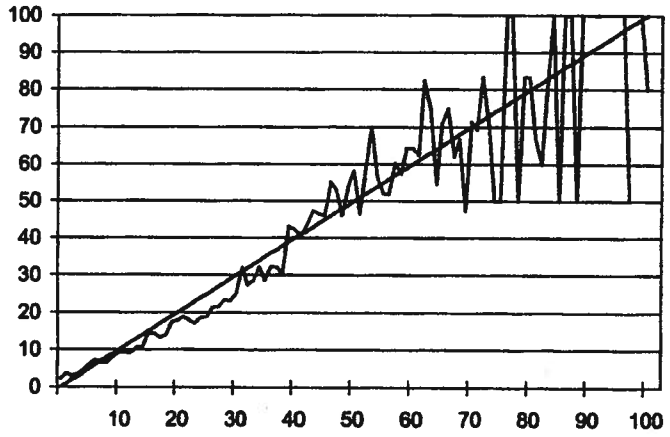
Non-housing related employment is equal to total employment less employment in housing-related industries, which includes a wide range of industries from construction to mortgage finance.[15] Historically, house-price declines have occurred during periods of declining employment. Excluding housing-related employment is necessary since these jobs are directly tied to the housing market and therefore not accurate

Chart 24: ...And by Much More in Some Metro Areas
Housing P/E ratio



[15] See Appendix 16 of this study for a complete definition of housing-related industries.

Chart 25: Probability of a House-Price Decline
LHPI *Predicted* (x-axis) vs. *Actual* (y-axis), %



indicators of underlying job growth when housing markets are in flux. Not coincidentally, some of the metro areas with the quickest non-housing related employment growth last year, such as Las Vegas NV, Phoenix AZ, Cape Coral FL and Fort Lauderdale FL and Riverside CA, are also those that enjoyed the most robust house-price gains (see Appendix 5).

Housing affordability, a key factor influencing housing demand, is also an important leading indicator of house prices. The Realtors affordability index adapted for metropolitan areas is used in the LHPI. Of the nation's 379 metro areas, affordability has weakened over the past year in all but 50, and in 74 metro areas, the index currently stands below 100. In other words, households earning the median income can not afford to purchase the median priced home at prevailing mortgage rates and terms. While some of these areas, such as San Francisco CA, San Diego CA and New York City NY, are perpetually unaffordable, others are new to the ranks of the unaffordable (see Appendix 6).

The physical balance between new housing supply and demand also affects house prices. Pricing is weaker in metro areas where the supply of new housing outpaces underlying demand. Supply is measured by housing completions over a three-year period, while demand is measured by the sum of household formations, vacation home demand and replacement demand over the same three-year period. To account for the different size of each market, the level of excess supply is divided by average annual demand to obtain months of excess supply in the market, similar to an inventory-to-sales ratio. A three-year period is sufficient to abstract from the temporary vagaries of housing supply and demand as the national average length of time it takes for homebuilders to go from planning to completion is approximately a year and a half. The greater the months of housing supply, the greater the slack, and the higher the risk of a house-price decline.

The balance between new housing supply and demand varies considerably across the country. Markets are well-balanced in areas such as Fort Lauderdale FL, and Washington D.C., but appear oversupplied around Boston and New York City and parts of the Midwest (see Appendix 7).

The degree of house price over- or undervaluation is derived from the structural econometric model described later in the study. The model produces an equilibrium or long-run house price that is determined by a range of factors, including personal income, household wealth, the vacation home share of housing stock, a 9/11 dummy variable, the risk-adjusted return on alternative investments, and a proxy for structural changes in the mortgage market. The difference between actual and equilibrium house prices measures the degree of over- or undervaluation.

Not surprisingly, the most overvalued metro areas are concentrated in the previously heated housing markets along the coasts and in the Mountain West (see Appendix 8). Miami FL tops the list, while the smaller inland California metro areas are also notably overvalued. A few housing markets are deemed to be undervalued, but the number of such areas has dwindled.

Measured house prices are volatile and exhibit persistence. Smaller metro areas with thinner, less-active, housing markets experience large swings in prices. This volatility is particularly pronounced in the Realtors median house price data as it can be significantly affected by the mix of homes that are transacting. Price movements are also persistent. If house prices are rising strongly in a metro area, then homebuyers, sellers, lenders and builders anticipate further future price gains, which in turn affect their behavior and thus become self-fulfilling.

The volatility and persistence in house prices are captured in the LHPI through two dummy variables. The first is set equal to one if the metro area experienced a sequential price decline in the most recent quarter and zero otherwise, and the second is set to one if the area experienced a year-over-year price decline in the most recent quarter and zero otherwise.

Estimation. The LHPI is estimated over a more than 20-year period extending back to the mid-1980s using ordinary-least-squares (OLS).

While there are inherent econometric problems with using OLS to estimate a probability model, the most significant being that the results may not be bounded between 0 and 1, OLS estimation is appropriate for the LHPI. The objective of the LHPI is to identify the metro area housing markets at risk of experiencing a future price decline. Probability estimates that may fall below 0 are therefore of little concern. Moreover, the number of estimates above 1 is so rare that it is virtually a nonexistent problem. There is also a clear linear relationship between predicted model estimates and the actual historical probability of decline. That is, a probability estimate of 50% has an actual historical probability of occurring very close to 50% of the time (see Chart 25).

According to the regression results, the degree of house price over- or undervaluation is the most important determinant of the probability of future house-price declines, accounting for 30% of the variability in the LHPI (see Table 1). Non-housing employment growth and housing affordability each account for approximately 20%. Non-housing employment impacts the LHPI over an extended period. While job gains are a source of additional housing demand, new job holders usually do not become immediate homeowners. Indeed,

Table 1: Probability of House-Price Decline Equation

Dependent Variable: Probability of House-Price Decline
Method: Pooled Least Squares
Sample: 1985:1 2005:4
Included observations: 84
Number of cross-sections used: 379
Total panel (balanced) observations: 31836

R-squared	0.149
Adjusted R-squared	0.138
S.E. of regression	0.345
Durbin-Watson stat	1.101

Independent Variables	Coefficient	Std. Error	t-Statistic	Beta Weight
Constant	0.3608	0.0149	24.19	-
Non-housing employment, 4 quarter lag, % change year ago	-0.2906	0.0844	-3.44	3%
Non-housing employment, 8 quarter lag, % change year ago	-0.5437	0.0811	-6.71	6%
Non-housing employment, 12 quarter lag, % change year ago	-0.5671	0.0752	-7.54	7%
Non-housing employment, 16 quarter lag, % change year ago	-0.4328	0.0730	-5.93	5%
House Price (Over/Under) Valuation, 4-Quarter Lag, %	0.0068	0.0002	31.63	29%
Housing Affordability, 4-Quarter Lag, Index	-0.0012	0.0001	-13.15	20%
Housing Supply, 4-Quarter Lag, Months	0.0018	0.0002	7.68	8%
Dummy = 1 if % change in house price < 0, quarter-to-quarter, 4-Quarter Lag	0.0259	0.0047	5.49	5%
Dummy = 1 if % change in house price < 0, year-over-year, 4-Quarter Lag	0.1167	0.0059	19.93	17%

Fixed Effects Not Shown

employment growth has a four-year lagged impact on house-price declines—with the smallest impact in the first year and largest impact in the third year. Contributions for the other variables are more modest, including 10% for the new housing supply and demand balance measure, 5% for the sequential quarterly price decline dummy, and the remaining 15% for the year-over-year price decline dummy.

Validation. Historically, the LHPI has accurately identified those metro area housing markets most at risk of experiencing future price declines, and has also accurately identified those markets at least risk of experiencing future price declines.

This is evident by classifying markets as being either High Risk, those with a probability of a year-over-year house-price decline of over 50% at some time during the coming year, or Elevated Risk, those with a probability of between 33% and 50%. The average risk of such a house-price decline, as measured by the percent of times there were price declines across all metro area markets over the entire more than 20 years considered, is 16.5%. Markets with a probability of price decline less than 33% are classified as Normal Risk.

Metro area markets classified as High Risk markets experienced lower house prices one year later 62% of the time. Elevated Risk markets suffered lower prices one year later 39% of the time. All other markets had lower prices just 12% of the time. These probabilities increased to 84% and 66% in the High Risk and Elevated Risk groups, respectively, when considering price declines over a subsequent two-year period (see Chart 26).

The LHPI is particularly accurate in identifying High Risk markets that experienced subsequent price declines during the late 1980s and early 1990s, the last time there were broad-based declines across the country. Over the 20-year period used in the construction of the LHPI, the peak number of High Risk markets was the 65 identified in the third quarter of 1987. The share of identified High Risk markets that actually ultimately experienced price declines during this period ranged from 75% to 100% (see Appendix 9a).

During these years, most of the High Risk markets were in the Northeast and oil-patch states. The former was entering recession, while the latter was still recovering from the mid 1980's oil-price collapse. Among the 55 metro areas identified as High Risk in the first quarter of 1988, house prices were lower one year later in 44 of these markets, with an additional 10 markets experiencing a price decline within two years (see Appendix 9b). The only High Risk market that did not experience a decline within this period was Beaumont-Port Arthur, TX; where house prices managed to eke out a very small gain one year later, before rising the year after. In addition, of the 47 Elevated Risk markets identified in the first quarter of 1988, 35 actually experienced price declines in the following year and all but one area experienced prices declines within two years.

The period since the end of the 2001 recession, a period of strong broad-based house

Chart 26: LHPI Probability of Decline Across Risk Groups

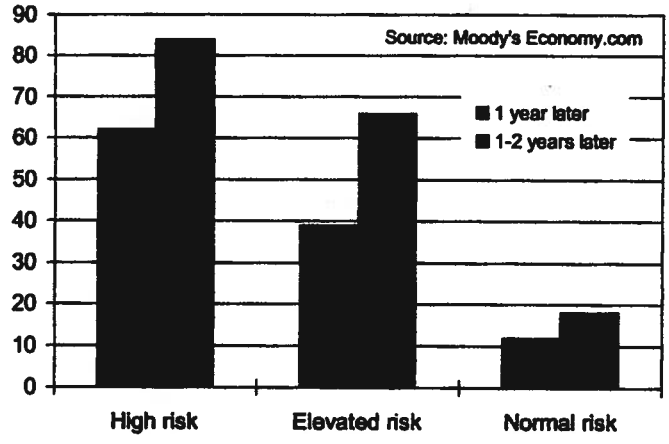
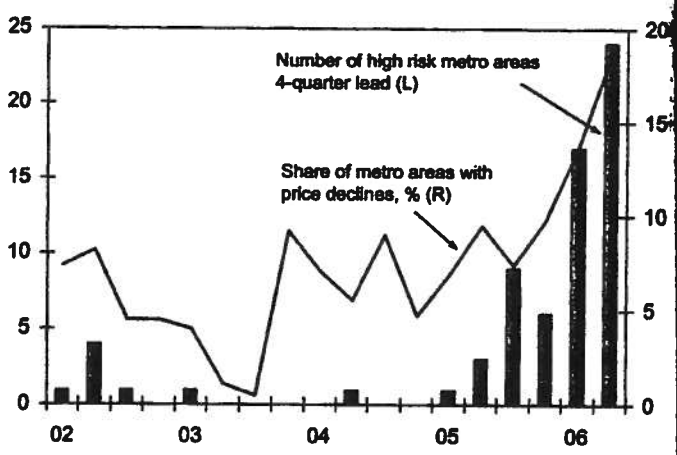


Chart 27: The LHPI Has Pegged Housing's Recent Performance



price gains, is useful to demonstrate the ability of the LHPI to accurately identify markets with a low probability of experiencing future price declines. Indeed, only a handful of metro areas were identified by the LHPI as being High Risk between 2002 through 2004, and few markets actually did experience price declines during this period (see Chart 27).

The LHPI was seemingly least accurate around Y2K and the 2001 downturn. The LHPI did not identify a large increase in the number of High Risk markets; yet, the actual number of metro areas experiencing house price declines did in fact increase sharply. Most were small midwestern metro areas, however, that experienced only very brief and modest house price declines.

LHPI's Outlook. The message from the current reading of the LHPI is disconcerting. Over 100 metro areas, together accounting for nearly one-half of the nation's housing stock, are at a High or Elevated Risk of experiencing house-price declines during the coming year (see Chart 28).

Seventeen of the 36 High Risk metro area markets are in California (see Chart 29 for largest 100 metro areas, and Appendices 10 and 11 for all metro areas).. The areas range from Los Angeles, Riverside, San Diego and Santa Ana in southern CA, to Chico, Salinas, Santa Rosa, Vallejo, and Redding in northern California, and Bakersfield, Fresno, Merced, Modesto, Sacramento, Stockton, Madera and Visalia in the Central Valley. These markets are generally characterized by both severe overvaluation and low housing affordability. In particular, metro areas in the Central Valley are among the most overvalued in the nation, despite relatively lower nominal house prices than other at-risk markets in the state and nation. In contrast, northern and southern California metro areas are more burdened by low and falling housing affordability.

The difference between overvaluation and low housing affordability is subtle. The northern and southern coastal California markets have historically been burdened by high house prices and low affordability, reflecting their tight land constraints. Consequently, current high house prices are less out of line compared to their historical norms. Rapidly rising house prices are only a recent phenomenon in the Central Valley, however, where house prices have been propelled well above what history suggests is consistent with in-migration from other higher cost markets. If these migration inflows slowed or even halted, then the existing population would be unwilling or unable to support the current higher pricing. In fact, house prices in the Central Valley are now moving lower.

Chart 28: Markets at Risk of a Price Decline According to the LHPI

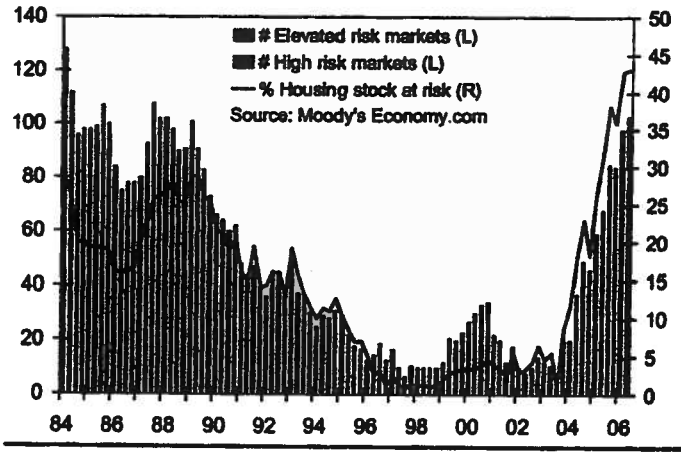
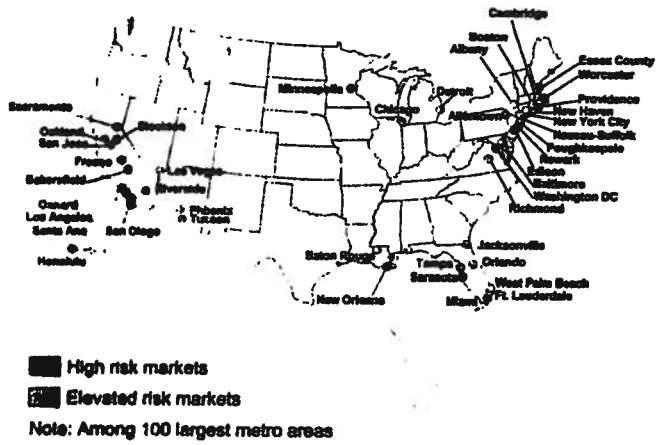


Chart 29: Markets at Significant Risk of Suffering from Falling House-Prices



Other factors contributing to the high risk of price declines in California is modest non-housing related employment growth, particularly in northern California, and recent indications that new housing construction is outstripping underlying demand for new homes.

The second largest concentration of High Risk markets is in the Northeast Corridor: Barnstable Town (Cape Cod) and Worcester (MA); Atlantic City, Edison, and Ocean City (NJ); Nassau-Suffolk and Kingston (NY); Portland (ME), Providence (RI); and Washington, D.C. Most of these metro areas are highly overpriced and many are also experiencing weak non-housing employment growth. In some cases, excess homebuilding is also a problem. New York City and Baltimore, are not classified as High Risk, but are at the high end of the Elevated Risk group.

It is notable that the Philadelphia, PA metro area is not considered to be at substantial risk of price declines, yet, some surrounding smaller Pennsylvania metro areas are at substantial risk. House-price gains in the Philadelphia area have been strong in recent years, but nothing compared to the growth experienced elsewhere in the corridor. Investor demand has increased in the downtown condo market, but is not evident elsewhere in the metro area. Metro areas such as York, Reading, and Allentown, PA are at higher risk in part because prices have risen sharply and affordability has fallen due to strong migration from less affordable housing markets such as Baltimore, Philadelphia, and New York, respectively.

Miami and Naples are the only High Risk market in Florida, but an additional 15 markets in the state are at Elevated Risk, including Cape Coral, Deltona, Fort Lauderdale, Fort Walton, Gainesville, Jacksonville, Lakeland, Ocala, Orlando, Palm Bay, Panama City, Port St. Lucie, Punta Gorda, Sarasota and West Palm Beach. Miami is the most overvalued housing market in the nation and among the least affordable. The comparatively lower risk of the Florida markets vis-à-vis the California and East Coast markets results from Florida's vibrant non-housing employment growth. An additional downside risk in the Florida markets, however, is not captured by the LHPI, and that is the sharp downturn in the condo market, which is a large part of many of the state's housing markets.[16]

Western metro areas at High Risk are Honolulu (HI); Carson City (NV); St. George (UT); and Greeely (CO). House prices have already turned down on a year ago basis in the latter metro area. Other markets at Elevated Risk include Phoenix, Prescott, and Tucson (AZ); Las Vegas and Reno (NV); and Coeur d'Alene (ID). Despite rapid house-price appreciation that have led to significant overvaluation in these markets, house prices are being sustained by well above average non-housing employment growth and well-balanced new housing supply that is being supported by surging population growth.

Rockford (IL) and Saginaw (MI) are the only metro areas in the Midwest at High Risk. Rockford's housing market has been pumped up by migrants from Chicago's more expensive market and also from strength at the DaimlerChrysler facility, one of the few expanding domestic auto plants. The influx of Chicago residents may be skewing the mix of homes toward more expensive homes, thus elevating the median price measure and rendering the market highly overvalued. The overvaluation and a net decline in non-housing employment are contributing to Rockford's High Risk designation. Other metro areas in the region at Elevated Risk of house-price declines are Davenport and Waterloo (IA); Champaign, Chicago, and Kankakee (IL); Lansing (MI); Minneapolis (MN); and Madison and Milwaukee (WI).

In the aftermath of Hurricane Katrina, New Orleans (LA) is identified as High Risk. This is primarily due to the fact that house prices have risen at an annualized rate of 20% in the post-hurricane period. Not since hyper-inflation period of the early 1980s have house prices increased so much in this metro area. Consequently, the area's housing is deemed to be overvalued. Although recent house-price appreciation is a reflection of the massive destruction of the housing stock, rebuilding is gaining momentum. As new supply comes on line, house prices will come under significant pressure.

Structural Econometric Model. An alternative to the leading indicator approach to identifying metro areas at risk of experiencing house price declines is a structural econometric model. A structural model of the housing market is based on estimating statistical relationships among the various wide range of variables that affect housing demand, supply and price.

The structural model used in this study can determine whether metro area housing markets are overvalued, the degree to which overvaluation exists, and how these markets will ultimately adjust. The model, in conjunction with forecasts of the economic, demographic, and financial drivers of the housing market, is also used to produce explicit metro area house-price forecasts.

The information provided by a structural model is richer than that provided by a leading indicator, including the magnitude and timing of a change in house price in addition to the direction of that change, but it also has its clear disadvantages. Most importantly, a structural model cannot anticipate events that have never occurred historically, and may not fully reflect the myriad factors that affect housing demand, supply and prices. Moreover, the forecasts produced by such a model are only as accurate as the forecasts of the drivers. Fundamentally, however, the leading indicator and structural model approaches are complements rather than substitutes, as they provide different types of information about the future of house prices.

The theoretical basis for the structural model, its estimation and validation, and the outlook for house prices derived from the model are presented in the discussion that follows.

Theory. The structural econometric model of housing demand, supply and price allows for serial correlation and mean reversion in the housing market. Mean reversion implies that in the long run, housing markets move toward equilibrium. In each metro area k and each period t, it is assumed that there is a long-run equilibrium value for the unit price of housing space that is determined by:

$$P^*_{tk} = f(x_{tk}) \qquad (1)$$

Where P^* is the real equilibrium house value per quality adjusted square foot in the metro area, and x_{tk} is a vector of explanatory variables. Equation (1) can be thought of

[16] Condominium data are limited for metro areas and are thus not directly incorporated into the LHPI.

as the reduced form of a long-run housing supply and demand relationship.[17]

The explanatory variables in the equilibrium equation can include real household income, real household non-housing wealth, the age and ethnic composition of the population, regulatory conditions and permitting requirements, structural changes in lenders' underwriting standards, and the long-run risk-adjusted return to housing and other household assets.

The change in real house prices is determined by:

$$\Delta P_{tk} = a_k \Delta P_{tk-1} + b_k(P^*_{tk} - P_{tk-1}) + c_k \Delta P^*_{tk} + D_{tk} \quad (2)$$

The first term in equation (2) is a serial correlation term where a_k is the serial correlation coefficient, the second term is an error correction term where b_k is the rate of mean reversion, and the third term captures the immediate adjustment to changing fundamentals where c_k is the degree of adjustment. The vector D_{tk} includes various business cycle factors, such as unemployment and user costs, that impact changes in house prices around its long-run equilibrium. These factors are also interacted with the adjustment terms a, b, and c. The degree of serial correlation and the rate of mean reversion are affected by where the economy is in its business cycle.

It is important to note that equation (2) can be written in different equation form and its dynamic properties examined. The parameters a_k and b_k determine whether house prices exhibit oscillatory or damped behavior, and convergent or divergent behavior.[18]

The user cost of housing, which measures the after-tax cost of homeownership, is a key explanatory variable in the model, and is equal to:

$$U_{tk} = (1-Tax_{tk})(r_{tk} + Ptax_{tk}) - M_{tk} - P^e_{tk} \quad (3)$$

Where U_{tk} is the user cost, Tax_{tk} is the effective marginal tax rate, r_{tk} is the effective mortgage rate, $Ptax_{tk}$ is the effective property tax rate, M_{tk} equals maintenance costs and obsolescence, and P^e_{tk} represents the homeowners' expected house-price growth over the horizon of their homeownership, and is estimated using long-run household income growth.

Historical Data. The structural model estimated presented in this study is based on the Realtors' median existing house-price data. While not shown, the estimation results based on the OFHEO and CSW repeat-sales house price data are not materially different.[19]

The model also uses a plethora of other historical housing market, economic, and demographic data at the national, state, and metro area level that has been constructed by Moody's Economy.com. Historical data ranging from home sales to household income to apartment rents, etc. are derived from various government sources and trade organizations, but are cleaned and adjusted to be on a consistent basis across metro areas and over time. A comprehensive list of the variables tested in the estimation is shown in Table 2.

Equilibrium equation. The model is estimated in two stages. In stage 1, the equilibrium house price in Equation (1) is estimated. In stage 2, the adjustment house-price equation in Equation (2) is estimated using the fitted values for the equilibrium house price from stage 1. Both equations are estimated using pooled cross-sectional estimation with fixed effects.[20]

Five pools have been constructed across the 379 metro areas included in the estimation (see Appendix 12). The pools are based on geography, with pool 1 including East Coast metro areas, pool 2 including Mountain West metro areas, pool 3 including Florida metro areas, pool 4 including metro areas in the interior of the country, and pool 5 including metro areas on the West Coast. The industrial and demographic makeup of the metro areas in each pool is similar, as is the supply side of their housing markets, including the degree of building constraints and the prevalence of restrictive regulatory requirements.

The pooling creates a large number of observations, over 40,000, to allow for greater experimentation in the variables included in the estimation. A large number of interaction terms were thus tested.

The most important explanatory variable in the equilibrium house-price equation, Equation (1), is real per capita income (see Table 3a). The income elasticity of equilibrium house prices is higher for the interior metro areas and those in the East Coast—both of which are slow growing regions in terms of population growth. A 1% increase in real per capita income in a metro area in these regions leads to an approximately one-half of a percentage point increase in real house prices. This means that households are buying 5% more housing when incomes rise 10%.

Income is not significant in the Florida pool. This is likely due to the large number of migrants and wealthier second and vacation homebuyers from outside the state who purchase homes in the state. Florida house prices are closely related to national income trends, including the ongoing skewing of the income distribution. To capture this, the ratio of national average household income to median income was included in the equilibrium equation for the Florida pool. As this ratio rises, suggesting that higher income households nationally are doing relatively well, so to does Florida equilibrium house prices.

The income elasticity of equilibrium house prices on the East and West Coasts was affected by 9/11. After the terrorist attack, households traveled much less and thus stayed at home more. This prompted a substantial increase in housing demand and thus equilibrium prices in these regions. This nesting effect was not evident in the rest of the country, at least not statistically.

[17] It can also be derived from urban theory. See Capozza, Dennis; Helsley, R., 1989, "The Fundamentals of Land Prices and Urban Growth," *Journal of Urban Economics*, 26, 295-306.

[18] Cappozza et al, 2004, calculate the dynamic properties of equation (2) under the simplifying assumption that P*tk = P*k, a constant.

[19] The three measures of house-price appreciation are, broadly speaking, similar over the long term. Near-term movements can vary considerably, however. Not surprisingly, the two repeat-purchase indices are similar in terms of movements over time, while price growth according to the NAR is far more volatile. The correlation between growth according to the national OFHEO and CSW data is about 90%, while correlations with NAR growth are much weaker, at about 40%.

[20] A criticism of this approach is that it is assumed that there is a cointegrating relationship among the variables included in the equilibrium equation, when in fact there may not be. Standard unit root tests for cointegration based upon Dicky-Fuller or augmented Dicky-Fuller are not appropriate in a panel setting as used in this study. If the urban theory, which is used as the basis for the derivation of the equilibrium equation, is correct, however, then there is a cointegrating relationship among the variables. Nevertheless, the criticism applies.

Table 2: Variable Definitions and Sources

Variable	Sources
Case Shiller Weiss House Price Index	CSW
Median Existing House Price	National Association of Realtors
OFHEO Repeat Sales Price Index	OFHEO
Consumer Price Index	BLS, MEDC
Average Household Income	BEA, BOC, BLS, MEDC
Median Household Income	BOC, MEDC
Household Non-Housing Wealth	FRB, BOC, BLS, Equifax, MEDC
Home Equity Lines Outstanding at Commercial Banks	FRB
Total Commercial Bank Assets	FRB
Construction Costs	BLS, R.S. Means
Effective Apartment Rent	Global Real Analytics
Housing Stock	BOC, MEDC
Households	BOC, MEDC
Population by Age Cohort	BOC, MEDC
Foreign Immigration	BOC, MEDC
Unemployment Rate	BLS
S&P 500 Stock Index	S&P
Treasury Interest Rates	FRB
Effective Mortgage Rate	FHFB, MEDC
Effective Personal Income Tax Rate	BEA
Property Tax Rate	BEA, BOC, MEDC

Note: These variables are available at a metropolitan area level from the source or are constructed by Moody's Economy.com

BLS - Bureau of Labor Statistics
BOC - Bureau of Census
FRB - Federal Reserve Board
MEDC - Moody's Economy.com
FHFB - Federal Housing Finance Board
OFHEO - Office of Federal Housing Enterprise Oversight

Equilibrium house prices have also been affected by a substantial shift in mortgage lending underwriting standards in recent years. Subprime and alternative-A mortgages, IO and option ARMs have become substantially more prevalent, expanding the availability of mortgage credit to households that did not previously have access to any type of credit. This is measured in the equilibrium equation by the ratio of total commercial bank assets in home equity lines of credit. The explosive growth of HELOCs is symptomatic of this democratization of mortgage credit. One example of this is the popularity of piggyback loans, which have been used aggressively by lenders and borrowers to avoid the cost of homeowners insurance. In a piggyback loan, the borrower takes out a first mortgage with a 20% downpayment that is paid for by a HELOC. The impact of the change in underwriting standards is most important in the heated and expensive markets in Florida and the West Coast. The impact is also important on the East Coast. Underwriting standards have an insignificant impact on prices in the interior and fast growing Mountain West metro areas. The impact is particularly strong in Florida, where investors have been availing themselves with these new mortgage products: a 100 basis point increase in the HELOC share of bank assets generates a 900 basis point increase in equilibrium house prices.

The collapse in stock prices and the plunge in short-term interest rates earlier in this decade also elevated housing as an attractive alternative investment for households. Households were incited to engage in seemingly rational portfolio shifting by the high risk-adjusted returns to housing compared to the risk-adjusted returns on stocks and cash. This is measured in the equilibrium house-price equation by the difference between the risk-adjusted returns on stocks and cash, weighted according to their share of assets in the average household balance sheet, and the risk-adjusted return on housing. The risk-adjusted return is in turn measured by a Sharpe ratio, proxied by the ratio of a five-year moving average of returns to the standard deviation of those returns.[21] A 100 basis point increase in the risk-adjusted returns to stock and cash results in a 22 basis point decline in equilibrium house prices. This impact is uniformly evident across all metro areas.

The age composition of the population also affects equilibrium house prices. Those between the ages of 50 and 64 tend to have strong demand for second and vacation homes. As the large baby boom generation has moved into this cohort, second and vacation home demand has significantly increased, lifting housing demand and prices. This is most prevalent in parts of the country where the housing stock is dominated by such homes. This effect is captured in the equilibrium house-price equation by the share of stock in second and vacation homes interacted with the share of the population between the ages of 50 and 64. As would be expected, the elasticity of equilibrium house prices to this variable is much higher in the Florida and Mountain West pools, to which retiree migration is strongest, and lower in the inland and East Coast markets. In Florida,

[21] Alternative moving averages were tested. A five-year moving average provides the best statistical results.

Table 3a: Equilibrium House-Price Equation (Equation 1)

Dependent Variable: Log of Real House Price
Method: GLS (Cross Section Weights)
Sample: 1980:1 2006:1
Included observations: 105
Number of cross-sections used: 389
Total panel (balanced) observations: 40845

R-squared	0.997
Adjusted R-squared	0.997
S.E. of regression	0.123
F-statistic	35,874

Independent Variables	Coefficient	Std. Error	t-Statistic
Real Per Capita Income, Region 1	0.487	0.0290	16.8
Real Per Capita Income, Region 2 and Region 5	0.320	0.0256	12.5
Real Per Capita Income, Region 4	0.528	0.0038	137.4
Ratio of Average to Median Household Income, Region 3	0.301	0.1049	2.9
9/11 Dummy Interacted with Real Per Capita Income, Region 1	0.293	0.0359	8.2
9/11 Dummy Interacted with Real Per Capita Income, Region 5	0.451	0.0271	16.6
9/11 Dummy Interacted with HELOC Share of Bank Assets, Region 1	0.055	0.0038	14.5
9/11 Dummy Interacted with HELOC Share of Bank Assets, Region 3	0.093	0.0043	21.5
9/11 Dummy Interacted with HELOC Share of Bank Assets, Region 5	0.072	0.0020	36.5
Relative Risk-Adjusted Return	-0.002	0.0001	-34.2
Vacation Home Share of Stock Interacted with Population Share 50-64, Region 1	0.001	0.0001	7.0
Vacation Home Share of Stock Interacted with Population Share 50-64, Region 2	0.006	0.0004	16.2
Vacation Home Share of Stock Interacted with Population Share 50-64, Region 3	0.008	0.0002	42.6
Vacation Home Share of Stock Interacted with Population Share 50-64, Region 4	0.005	0.0003	16.3
Vacation Home Share of Stock Interacted with Population Share 50-64, Region 5	0.004	0.0004	10.3
9/11 Dummy Interacted with 5-year Population Growth, Region 3	0.344	0.1409	2.4

Fixed Effects Not Shown

for example, a 100 basis point increase in the share of the population between 50 and 64 lifts equilibrium house prices by nearly 79 basis points.

The final variable included in the equilibrium equation is included only for the Florida pool, and is designed to capture the uniquely strong migration flows, both domestic and international, into the state. Builders in the state have been unable to meet the significant acceleration in population growth with enough new construction in recent years, resulting in tighter housing markets and higher prices. Migration and population are likely to accelerate further in coming years with continued strong foreign immigration, and more importantly increased retiree migration by the aging baby boom generation. The equilibrium equation is estimated with metro area fixed effects in order to capture any systematic differences in the average quality of housing across areas. The fixed effects also capture the impact of those land supply constraints that do not vary over time.[22]

Variables that change substantially over the course of the business cycle were not included in the equilibrium equation. Most notable would include construction costs and the user cost of housing. These variables were tested in the adjustment equation, which is described in the discussion that follows. The residuals from the equilibrium equation thus provide an estimate of the overvaluation or undervaluation of metro area house prices relative to their long-run equilibrium. Overvaluation and undervaluation can be due to temporary business cycle forces and/or speculation.

Adjustment equation. The adjustment house-price equation determines how house prices that deviate from their long-run equilibrium ultimately return to that equilibrium.

The fitted values from the long-run equilibrium house-price equation in Equation (1) are thus an important explanatory variable in the adjustment house-price equation in Equation (2) (see Table 3b). The contemporaneous change in house prices to changes in the long-run equilibrium price ranges from 10% to 15%. This response is measurably smaller than that found in other studies and may reflect the unique housing market conditions of recent years. The response is strongest for the Florida, Mountain West,

[22] F-tests of the metro area effects reject that these effects are zero at the .001 confidence level. Similar tests for time effects were not found to be significant.

Table 3b: Adjustment House-Price Equation (Equation 2)

Dependent Variable: Log of the Change in Real House Price
Method: GLS (Cross Section Weights)
Sample: 1978:1 2006:1
Included observations: 113
Number of cross-sections used: 389
Total panel (unbalanced) observations: 43,781
All independent variable are differences in logs or logs
The mean reversion variable represents the difference between equilibrium and actual house prices.

R-squared	0.13
Adjusted R-squared	0.13
S.E. of regression	0.03
F-statistic	15.8
Durbin-Watson stat	2.32

Independent Variables	Coefficient	Std. Error	t-Statistic
Equilibrium House Price, Region 1	0.09	0.02	4.53
Equilibrium House Price, Region 2	0.13	0.02	7.57
Equilibrium House Price, Region 3	0.12	0.04	3.29
Equilibrium House Price, Region 4	0.08	0.01	11.72
Equilibrium House Price, Region 5	0.12	0.01	8.09
House Price Lagged 2 Quarters, Region 1	0.19	0.01	13.64
House Price Lagged 2 Quarters, Region 2	0.17	0.02	9.89
House Price Lagged 2 Quarters, Region 3	0.14	0.02	7.04
House Price Lagged 2 Quarters, Region 4	0.09	0.01	14.13
House Price Lagged 2 Quarters, Region 5	0.15	0.01	11.14
House Price Lagged 3 Quarters, Region 1	0.22	0.01	15.82
House Price Lagged 3 Quarters, Region 2	0.23	0.02	13.17
House Price Lagged 3 Quarters, Region 3	0.14	0.02	6.82
House Price Lagged 3 Quarters, Region 4	0.10	0.01	16.65
House Price Lagged 3 Quarters, Region 5	0.15	0.01	11.76
Mean Reversion, Region 1	0.07	0.01	5.52
Mean Reversion, Region 2	0.08	0.02	4.44
Mean Reversion, Region 3	0.12	0.03	4.25
Mean Reversion, Region 4	0.04	0.01	6.45
Mean Reversion, Region 5	0.13	0.01	9.20
Unemployment Rate, Region 1	-1.03E-03	2.17E-04	-4.73
Unemployment Rate, Region 2	-9.03E-04	2.21E-04	-4.08
Unemployment Rate, Region 3	-2.89E-03	4.28E-04	-6.75
Unemployment Rate, Region 4	-1.06E-03	6.30E-05	-16.84
Unemployment Rate, Region 5	-2.05E-03	1.71E-04	-12.02
User Cost, Regions 1 and 5	-1.05E-03	2.16E-04	-4.85
User Cost, Region 2	-2.98E-03	4.42E-04	-6.74
User Cost, Region 3	-1.65E-03	5.36E-04	-3.08
User Cost, Region 4	-6.28E-04	1.02E-04	-6.17
Mean Reversion Interaction with User Cost, Region 1	-6.04E-03	2.72E-03	-2.22
Mean Reversion Interaction with User Cost, Region 2	-1.10E-02	3.95E-03	-2.78
Mean Reversion Interaction with User Cost, Region 3	-2.17E-02	5.90E-03	-3.68
Mean Reversion Interaction with User Cost, Region 4	-3.03E-03	1.34E-03	-2.26
Mean Reversion Interaction with User Cost, Region 5	-1.79E-02	3.01E-03	-5.96

Fixed Effects Not Shown

and West Coast metro areas and weakest for the East and inland metro areas.

Serial correlation terms, house prices lagged two and three quarters, are also included in the adjustment equation, reflecting the persistence of house-price changes. House-price persistence is strongest in the East Coast and Mountain West metro areas, with a serial correlation coefficient of over 0.4, and weakest in the inland markets, with a coefficient of less than 0.2. This suggests that speculative pressures are least likely to develop in the inland markets. These results are consistent with those found in other studies, where serial correlation at the national level ranges from 0.25 to 0.5.

Reversion of house prices back to their equilibrium price is most pronounced in the West Coast markets and weakest in

the inland markets. The mean reversion is calculated as the equilibrium price less the market price. Thus, for example, if this term is positive, that is, prices are below equilibrium, then price growth will be faster. West Coast metro areas have historically experienced the most volatile house prices, with large price gains eventually followed by sharp price declines. House prices in the inland markets, in contrast, tend not to deviate far from their equilibrium, which in turn dampens any reversion back to equilibrium.

There are two business cycle variables in the adjustment equation, including the unemployment rate, and the user cost. These variables come in with the correct signs and are significant. That is the higher the unemployment rate and user cost, the slower real price growth, The direct impact of these factors on the adjustment to equilibrium, however, is small relative to the impact of serial correlation and mean reversion, contributing less than one basis point for a 100 basis point increase.

A wide range of interaction terms was also tested in the adjustment equation in an effort to capture the impact of information costs and business cycle effects on serial correlation and mean reversion. The interaction of mean reversion and user cost was found to be significant and with the correct sign. For example, the adjustment back down to equilibrium in an overpriced market will be quicker the higher the user cost. However, similar to the business cycle effects, the impact of this interaction term is small.

Validation. The model was validated by determining the degree to which metro area house prices were overvalued or undervalued in the late 1980s, and comparing this to actual house-price performance through the early 1990s. This historical period was chosen to validate the model as it is the last time house prices rose sharply in large parts of the country and were subsequently followed by sharp price declines.

Overvaluation or undervaluation is determined by the difference between actual metro area house prices and the prices expected based on long-run fundamental economic and demographic factors as determined by the equilibrium house-price equation, Equation (1). This calculation was done for both the fourth quarter of 1987 and the fourth quarter of 1989 (see Appendix 13).

As of the fourth quarter of 1987, 44 metro areas extending from Boston, MA to Trenton, NJ were deemed to be overvalued by more than 20%, meaning that actual prices were over 20% greater than prices determined by the equilibrium equation. While house prices in most of these areas continued to rise in 1988, all of them were experiencing price declines by the early 1990s. Most of these markets experienced double-digit peak-to-trough price declines. Half a dozen metro areas were determined to be undervalued by more than 10% as of the fourth quarter of 1987, such as Portland, OR, Denver, CO and Detroit, MI. Each of these metro areas experienced sturdy and consistent price growth throughout the early 1990s. The correlation coefficient between the degree of over/undervaluation as of the fourth quarter of 1987 and subsequent house-price growth was -0.69

A similar exercise was performed for the fourth quarter of 1989. By this time, a large number of California metro areas from San Francisco to San Diego were determined to be overvalued. The Santa Cruz metro area just south of the Bay Area, for example, was nearly 35% overvalued. House prices in all of these markets were peaking by late 1989, and all experienced peak-to-trough price declines ranging from 10% to 25%. The price declines continued for some of the markets into 1995. The correlation coefficient between the degree of over/undervaluation as of the fourth quarter of 1989 and subsequent house-price growth was -0.75.

In both the fourth quarter of 1987 and the fourth quarter of 1989 validations, there were no major errors. That is, no large metro area that was determined to be overvalued (undervalued) subsequently experienced substantial house-price gains (losses).

Alternative specifications. A large number of alternative specifications were tested. The model was estimated using the OFHEO and CSW repeat-sales house price indices. The results were somewhat stronger than the model based on the NAR price series presented in this study. The better fit using the OFHEO and CSW indices likely results from the fact that the NAR price data are more volatile than the repeat purchase house price indexes. An important similarity between the NAR and OFHEO series is that the metro area pools found to provide the best model were the same using either series. A notable difference between the model results using the CSW repeat-purchase price indexes and Realtors data is that serial correlation is lower and mean reversion slightly higher using the NAR data.

A number of different variables were tested in the equilibrium house-price equation, but ultimately not used. Most notable is a variable measuring the percentage of land within a metro area that is available for development. Growing land constraints in a growing list of metro areas are an oft-cited reason for rapidly rising house prices. The inability to find a relationship is likely due to the quality of the data. Another notable variable ultimately not included in the equilibrium equation is foreign immigration and foreign direct investment. Increasing globalization has likely also played a role in lifting house prices in recent years. That it was not found to be significant likely reflects measurement problems, particularly at a metro area level.

Construction costs were also tested in the model, but found not to be statistically significant. Several measures of construction costs were tested, based on national data and R.S. Means annual regional indices. Their insignificance likely reflects the inadequacies of the data rather than the unimportance of construction costs' influence on prices.

Valuation. The degree to which metro area housing markets are over- or undervalued is determined by calculating the difference between current actual house prices and the prices expected based on long-run fundamental economic and demographic factors as determined by the equilibrium equation, Equation (1).

Currently, the most overvalued metro area is Miami (see Appendix 14). Actual prices in the metro area are estimated to be 60% greater than their long-run equilibrium price. Other metro areas that are overvalued by over 30% by this measure are located in South

Chart 30: Overvalued Housing Markets

Highly overpriced = 2 SD above historic average
Overpriced = 1 SD above the historic average
Based on the NAR median house-price, 2006Q2
Sources: Moody's Economy.com, NAR

Florida, throughout much of California, along the New Jersey beach, the New York area, and Las Vegas. Metro areas in which the difference between actual and expected house prices is more than one standard deviation away from that experienced historically are most prevalent in the Northeast, Florida and California (see Chart 30).

The model identifies a number of metro areas in the Midwest that are overvalued, but are unlikely to be speculative. Income growth and demographic trends in areas such as St. Louis MO and Columbus OH have been middling, at best. Since house prices in these areas have been steadily rising, however, they are identified as overvalued.

Only thirty-two of the nearly 379 metro areas included in the analysis are considered undervalued. That is, the current actual house price is significantly less than its long-run equilibrium. Texas and upstate New York metro areas populate the ranks of the undervalued markets.

The national housing market, as measured by a weighted average of the metro areas where the weights are equal to the value of their single-family housing stock, is overvalued by approximately 21%. This is the largest degree of overvaluation over the period for which NAR data are available back to the late 1970s.

Price outlook. The house-price outlook derived from the structural econometric model is equally as worrisome as that implied by the LHPI. National house prices are projected to fall on a year-over-year basis between the third quarter of this year and mid-2007 (see Chart 31).[23] House prices are expected to post even a small decline in calendar year 2007; the first annual decline in nominal house prices since the Great Depression (see Table 4). Peak to trough, the decline will amount to not quite 5%. Prices are projected to stabilize in 2008 and post a mid-single digit gain in 2009, but will not re-achieve its previous high until early in the next decade.

The house-price outlook varies considerably across the nation. Of the nation's 379 metro areas, 21 are expected to suffer a house-price crash, which is defined to be a more than 10% peak-to-trough decline in prices. An additional 24 areas will experience price declines of between 5% and 10%, and 25 more will see prices fall by as much as 5%.

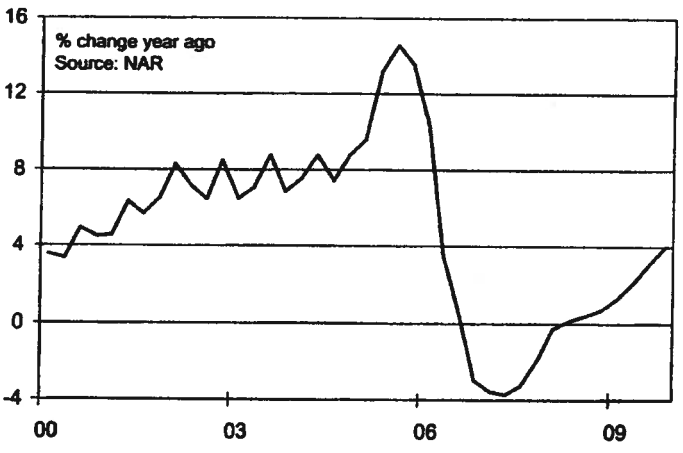
The most serious price declines are expected along the west coast of Florida, including the Cape Coral, Naples and Sarasota metro areas, the Central Valley of California, including Bakersfield, Chico, Fresno and Merced, the metro areas of Arizona and Nevada, the New Jersey Beach, Washington D.C., and Detroit (see Appendices 15a & 15b).

All of these areas, save Detroit and California's Central Valley, were severely infected by speculation. Short-term investors were aggressively purchasing properties and bidding up prices in the quest for a quick profit. These flippers are now being wrung out of the market as the rents they are collecting are not keeping up with their rising mortgage payments, and expectations of selling quickly at a higher price have been dashed.

Crumbling housing affordability has also locked out first-time homebuyers in these markets. While lenders remain anxious to extend credit, even their most attractive loans are unable to overcome the impact of higher interest rates on affordability. Affordability is a particularly nettlesome problem for the Central Valley, where household incomes are generally lower. Those who have moved to the regions from the wealthier parts of California, in search for more affordably housing, have bid up house prices in the region to the point that many of the long-time residents are no longer able to move.

Even this dim outlook assumes that the job market, outside of housing-related industries, remains sturdy. This is not the case for Detroit and surrounding areas, whose economies are reeling from layoffs at the domestic auto makers. As displaced, previously high-paying workers leave for jobs elsewhere, housing demand and prices are fading. The industry's rationalization and its fallout on the housing market are expected to continue throughout the remainder of this decade. The large southern California and broad

Chart 31: National House-Price Fall in 2007
Median single-family existing house-price



[23] National house prices are equal to a weighted average of house prices for the nation's 379 metro areas. The weights are based on the value of the housing stock in 2000.

Table 4: U.S. Housing and Mortgage Market Outlook

		History					Forecast				
	Units	2001	2002	2003	2004	2005	2006	2007	2008	2009	201
Housing Starts	m	1.60	1.71	1.85	1.95	2.07	1.91	1.65	1.60	1.61	1.66
Change	%YA	*1.8*	*6.8*	*8.4*	*5.2*	*6.3*	*-8.1*	*-13.2*	*-3.5*	*-1.7*	*2.5*
Single-Family	m	1.27	1.36	1.51	1.60	1.72	1.55	1.34	1.27	1.28	1.30
Change	%YA	*3.2*	*7.2*	*10.4*	*6.6*	*7.2*	*-9.8*	*-13.8*	*-5.1*	*0.9*	*1.8*
Multifamily	m	0.33	0.35	0.35	0.35	0.35	0.36	0.32	0.33	0.33	0.36
Change	%YA	*-3.5*	*5.3*	*0.5*	*-1.0*	*2.6*	*0.3*	*-10.4*	*3.1*	*-0.1*	*9.0*
Existing Single-Family Home Sales, U.S.	m	4.73	5.00	5.44	5.91	6.17	5.76	5.35	5.25	5.27	5.33
Change	%YA	*2.4*	*5.7*	*8.9*	*8.6*	*4.4*	*-6.7*	*-7.0*	*-1.9*	*0.4*	*1.1*
Northeast	m	0.70	0.71	0.71	0.77	0.78	0.72	0.66	0.64	0.64	0.65
Change	%YA	*1.0*	*0.2*	*0.3*	*9.2*	*0.7*	*-8.0*	*-8.3*	*-1.8*	*-0.1*	*-0.7*
Midwest	m	1.16	1.23	1.26	1.37	1.40	1.36	1.24	1.22	1.21	1.21
Change	%YA	*3.8*	*6.1*	*2.8*	*8.1*	*2.5*	*-2.8*	*-8.6*	*-2.0*	*-0.4*	*-1.0*
South	m	1.75	1.88	2.00	2.32	2.51	2.43	2.23	2.20	2.21	2.24
Change	%YA	*3.7*	*7.0*	*6.8*	*15.6*	*8.3*	*-3.3*	*-8.1*	*-1.3*	*0.6*	*-0.1*
West	m	1.08	1.13	1.21	1.34	1.40	1.22	1.14	1.14	1.16	1.20
Change	%YA	*2.5*	*4.6*	*7.0*	*11.4*	*4.1*	*-13.1*	*-6.4*	*0.3*	*1.9*	*1.3*
Existing Condo and Co-Op Sales	ths	0.60	0.66	0.73	0.81	0.89	0.81	0.75	0.76	0.78	0.80
Change	%YA	*4.5*	*10.2*	*11.0*	*10.8*	*10.1*	*-9.5*	*-6.3*	*0.5*	*2.3*	*3.4*
New Home Sales	ths	0.91	0.98	1.09	1.20	1.28	1.10	1.01	0.94	0.92	0.93
Change	%YA	*3.1*	*7.6*	*11.7*	*10.1*	*6.6*	*-14.0*	*-7.8*	*-7.4*	*-1.7*	*0.5*
House Prices											
Existing Homes, Median, U.S.	ths$	154.4	166.1	178.2	192.7	217.4	222.4	214.3	216.3	222.3	230.3
Change	%YA	*5.8*	*7.6*	*7.3*	*8.1*	*12.8*	*2.3*	*-3.6*	*0.9*	*2.8*	*3.6*
New Homes, Median, U.S.	ths$	172.6	185.1	191.5	217.9	234.2	239.4	230.0	231.4	238.6	247.7
Change	%YA	*3.6*	*7.2*	*3.5*	*13.8*	*7.5*	*2.2*	*-3.9*	*0.6*	*3.1*	*3.8*
Freddie Mac Repeat Purchase, U.S.	1987=100	187.0	199.6	213.0	236.4	267.6	289.5	286.1	285.8	293.5	304.2
Change	%YA	*7.9*	*6.7*	*6.7*	*11.0*	*13.2*	*8.2*	*-1.2*	*-0.1*	*2.7*	*3.7*
Affordability Index	Index	130.0	127.7	132.2	126.7	115.8	106.9	107.6	108.2	111.4	112.5
Change	%YA	*5.6*	*-1.8*	*3.5*	*-4.1*	*-8.7*	*-7.7*	*0.7*	*0.5*	*3.2*	*1.1*
Rental Vacancy Rate	%	8.4	8.9	9.8	10.2	9.9	8.4	7.9	7.8	7.6	7.6
Mortgage Originations, SAAR											
Total Originations	tri$	2.11	2.84	4.06	2.77	3.12	2.80	2.49	2.17	2.21	2.31
Change	%YA	*98.3*	*34.7*	*43.3*	*-31.8*	*12.3*	*-10.2*	*-10.8*	*-13.0*	*2.0*	*4.5*
Purchase Originations	tri$	0.79	0.93	1.11	1.27	1.57	1.51	1.39	1.36	1.40	1.47
Refi Originations	tri$	1.31	1.90	2.95	1.50	1.54	1.28	1.10	0.81	0.81	0.84
Refi Share	%	*38.8*	*34.8*	*29.1*	*46.0*	*50.7*	*54.1*	*55.9*	*62.6*	*63.3*	*63.5*
ARM Share	%	12.3	17.2	18.8	34.3	30.6	25.6	22.7	20.3	22.0	23.5
Residential Investment											
Residential Construction Put-in-Place	b$	387.8	420.6	474.6	563.0	641.7	634.6	576.9	575.5	597.3	629.7
Change	%YA	*3.3*	*8.5*	*12.8*	*18.6*	*14.0*	*-1.1*	*-9.1*	*-0.2*	*3.8*	*5.4*
Residential Investment	b2000$	448.5	469.9	509.4	559.9	608.0	590.8	560.5	558.1	576.0	601.8
Change	%YA	*0.4*	*4.8*	*8.4*	*9.9*	*8.6*	*-2.8*	*-5.1*	*-0.4*	*3.2*	*4.5*
Single-Family	b$	237.1	246.3	272.6	304.9	336.3	319.8	296.8	290.2	299.2	313.4
Change	%YA	*0.2*	*3.9*	*10.7*	*11.9*	*10.3*	*-4.9*	*-7.2*	*-2.2*	*3.1*	*4.7*
Multifamily	b$	29.5	31.1	31.9	34.4	39.2	43.2	42.5	44.3	46.0	49.0
Change	%YA	*4.4*	*5.3*	*2.7*	*7.8*	*14.1*	*10.1*	*-1.6*	*4.2*	*3.9*	*6.6*
Other	b$	*181.9*	*192.6*	*204.8*	*220.3*	*232.0*	227.3	220.7	223.6	230.8	239.4
Change	%YA	*0.0*	*5.9*	*6.4*	*7.6*	*5.3*	*-2.0*	*-2.9*	*1.3*	*3.2*	*3.7*

New York City region are also expected to suffer measurable price declines. Riverside and Santa Ana (Orange County) suffer the most in California, while Nassau (Long Island) NY and Edison NJ are hit hardest in New York. First-time homebuyers and speculators, previously very important sources of housing demand in these areas, are fast leaving the market. Overbuilding is also a mounting problem on Long Island.

Housing markets and house prices are projected to hold up well throughout the national housing downturn. The largest Texas metro areas will enjoy continued sturdy price growth, as will most of the large metro areas in the nation's Southeast and Farm Belt. Atlanta GA and Charlotte NC, for example, will enjoy low single-digit house-price gains, as will St. Louis MO and Kansas City MO. These markets experienced staid conditions when the rest of the national housing market was booming and are now enjoying very high housing affordability. Homebuilders throughout these areas have also been largely successful in matching new supply with underlying demand.

Behind this house-price outlook are projections of a wide range of variables ranging from per capita income and unemployment to mortgage rates and lending terms. Broadly, these forecasts are based on the expectation that the national and nearly all metro area economies remain recession-free. Given generally flush businesses with strong balance sheets, employment and income gains will slow further, but continue to expand.[24] Unemployment edges higher into next year in response, but very modestly so. Nationally, the unemployment rate is expected to rise from its current under 5% to just over 5% at its peak.

Interest rates are also expected to remain stable, which assumes that the Federal Reserve has completed its tightening cycle and that long-term rates as measured by the 10-year Treasury yield will remain near 5%. This implies fixed mortgage rates of near 6.5% and ARM rates of no more than 5.5% through next year.

With this generally positive backdrop of continued sturdy job and income growth and stable interest rates, the housing downturn has more to run, but it should remain orderly. That is, while home sales, housing construction and house prices will decline further through mid-2007, the declines will not be precipitous, and at bottom, activity will still be about as strong as during some of the best housing years in the 1990s.

Most At-Risk Metros. Those largest metro area housing markets expected to experience a crash in house prices, a more than 10% peak-to-trough decline, are considered more carefully in the discussion that follows. These metro areas include, Las Vegas, Miami, Nassau-Suffolk, Riverside, Sacramento, Salinas, Santa Ana, Stockton, Tucson and Washington, D.C.

After several years of booming conditions, the **Las Vegas** housing market is rapidly weakening. Home sales are off substantially, unsold inventories are up by more than one-third, and developers are canceling residential projects—particularly condo projects. The median existing single-family house price has fallen from its peak of late last year, and residential construction is dropping. Construction payrolls have thus contracted during the first half of this year, weighing on the metro area's broader economic growth.

The metro area's housing market has been upended by a collapse in affordability and wringing out of speculation that was rampant just a few months ago. The metro area's affordability index currently stands at only 70%.

Prospects are for substantially more price declines. According to the Las Vegas LHPI, there is a 43% probability that house prices will be lower one year from now. Moody's Economy.com expects the decline in house prices to continue though the mid-2009, with a total price correction, peak to trough, of 13%.

The risks are also to the downside, particularly due to an expected substantial erosion in mortgage credit quality in the metro area. IO and option-ARMs, mortgages at substantial risk, account for a very high share of mortgage debt outstanding; among the highest in the nation. Mortgage credit quality is already weakening.

The Las Vegas housing downturn will be mitigated, however, by sturdy net in-migration and continued employment gains in the leisure and retail industries. Gaming activity remained strong in the second quarter and Las Vegas is on track to record another firm, if not stellar, year. Longer term, Las Vegas will benefit from its low living and business costs relative to neighboring economies, particularly in California.

Miami's booming housing market is unraveling. Home sales are currently half their 2004 peaks according to the Florida

[24] There are a few notable exceptions, including the domestic auto makers, some of the airlines, the newspaper industry, and sundry nondurable manufacturers that are losing in trade competition with China.

Las Vegas-Paradise, NV Metropolitan Statistical Area

1999	2000	2001	2002	2003	2004	2005	Indicators	2006	2007	2008	2009	2010
47.6	49.8	51.6	53.3	57.5	62.6	68.5	**Gross Metro Product, C$B**	73.7	76.9	80.3	83.7	87.2
6.2	*4.5*	*3.7*	*3.2*	*7.9*	*9.0*	*9.4*	*% Change*	*7.5*	*4.4*	*4.4*	*4.2*	*4.2*
661.8	697.7	726.7	730.9	760.1	812.5	871.3	**Total Employment (000)**	917.8	947.3	977.3	1,009.8	1,044.6
7.7	*5.4*	*4.2*	*0.6*	*4.0*	*6.9*	*7.2*	*% Change*	*5.3*	*3.2*	*3.2*	*3.3*	*3.4*
4.2	4.6	5.5	5.8	5.2	4.4	3.9	**Unemployment Rate**	4.0	4.3	4.2	4.1	3.9
8.7	9.3	4.7	4.7	8.2	11.1	10.3	**Personal Income Growth**	6.5	7.9	7.7	8.2	8.5
1,321.3	1,393.2	1,456.0	1,515.5	1,575.2	1,648.5	1,710.6	**Population (000)**	1,778.9	1,841.9	1,906.3	1,973.3	2,026.3
19,919	21,282	21,871	22,148	27,354	31,741	30,479	**Single-Family Permits**	29,372	29,108	27,575	27,719	27,010
6,937	4,942	7,836	7,008	9,378	4,654	8,758	**Multifamily Permits**	10,417	3,723	4,440	4,580	6,470
130.6	137.4	148.6	160.1	181.1	264.9	305.1	**Existing Home Price ($Ths)**	312.3	296.4	284.5	281.6	284.8
8,822	7,847	15,332	18,703	31,614	37,990	46,626	**Mortgage Originations ($Mil)**	38,901	34,126	29,056	28,275	28,538
59.1	60.1	51.3	48.2	47.5	61.0	49.2	**Net Migration (000)**	54.7	48.9	50.0	52.1	37.9
10,290	9,787	13,161	14,614	15,711	12,711	18,311	**Personal Bankruptcies**	11,582	13,679	14,561	15,140	16,267

Miami-Miami Beach-Kendall, FL Metropolitan Division

1999	2000	2001	2002	2003	2004	2005	Indicators	2006	2007	2008	2009	2010
69.0	71.3	73.6	74.0	76.7	79.9	83.4	**Gross Metro Product, C$B**	86.4	88.5	90.8	93.4	96.0
2.7	*3.3*	*3.2*	*0.6*	*3.7*	*4.2*	*4.3*	*% Change*	*3.6*	*2.4*	*2.7*	*2.8*	*2.8*
983.5	1,009.3	1,021.6	1,004.3	997.3	1,018.6	1,043.0	**Total Employment (000)**	1,059.3	1,072.2	1,085.4	1,103.8	1,123.3
1.2	*2.6*	*1.2*	*-1.7*	*-0.7*	*2.1*	*2.4*	*% Change*	*1.6*	*1.2*	*1.2*	*1.7*	*1.8*
5.9	5.1	6.1	6.6	5.9	5.4	4.3	**Unemployment Rate**	3.7	3.8	3.8	3.7	3.6
5.5	8.4	4.3	3.7	3.1	6.1	6.6	**Personal Income Growth**	6.4	5.5	4.9	5.2	5.3
2,221.0	2,260.3	2,286.7	2,314.5	2,335.7	2,358.7	2,376.0	**Population (000)**	2,405.7	2,435.4	2,462.9	2,493.2	2,527.2
6,711	5,998	6,828	6,374	8,740	9,603	9,922	**Single-Family Permits**	8,838	9,110	8,513	8,565	8,649
7,356	6,477	7,168	8,232	6,793	13,253	16,198	**Multifamily Permits**	13,211	8,603	8,603	8,838	9,074
134.7	138.2	159.6	184.3	221.2	271.8	349.9	**Existing Home Price ($Ths)**	374.9	367.2	366.6	375.6	386.9
9,050	8,116	13,814	18,282	28,675	27,814	38,534	**Mortgage Originations ($Mil)**	34,749	31,242	27,060	26,167	26,202
27.6	24.3	11.1	12.4	5.8	7.2	1.0	**Net Migration (000)**	13.7	14.1	11.6	14.1	17.6
12,690	12,446	14,447	14,607	14,487	12,604	16,579	**Personal Bankruptcies**	11,190	12,958	13,875	14,846	16,224

Association of Realtors, construction is down by one-third, and house prices are now falling. The previously heated condo market is unwinding most quickly as investors flee the market, placing further downward pressure on the single-family market. Anecdotal reports of a surging number of vacant units and conversions back to rental apartments abound.

The market is deemed to be among the most overvalued in the nation as investor demand was particularly rampant not long ago. Housing affordability has also collapsed with the previous runup in prices. Affordability is so low it has been driving residents to move to higher affordability areas in places ranging from Fort Lauderdale next door, to Deltona up the state's east coast.

Additionally, a significant part of the recent real estate frenzy in Miami has been fueled by foreign investment inflows, notably from Latin American countries. These inflows could easily dry up or even go into reverse should economic conditions change. A general drop in commodity prices could cause profits to fall in Latin American economies and thereby reduce the amount of capital that makes its way to the U.S. and Miami.

Miami's job market is also less buoyant, particularly compared to other metro areas in the dynamic state. Tourism has improved, but job gains are lagging in retailing and educational and health services.

The anticipated housing market correction will weigh on Miami's economic outlook through 2008 when the housing market is expected to hit bottom. The risks to this outlook are on the downside, as a large number of investors exit the market.

Nassau-Suffolk's housing market is fast weakening. Median prices of existing single-family homes declined in the second quarter—the first quarterly decline in the metro division since late 1997. Prices are barely rising on a year-ago basis, and the risks for further price declines are growing.

House-price growth in Nassau-Suffolk began slowing in early 2005—well before the national slowdown got under way. Recent deceleration has been swifter, however; the peak of price growth on a year-over-year basis was in the first quarter of 2005 when prices were growing 16.5%. Prices were up over the year by only 2% in the second quarter of 2006. Rapid price appreciation and higher interest rates over the past year have led to plummeting affordability in the metro division.

Putting downward pressure on the metro division's housing market is the fact that affordability has eroded substantially. According to Moody's Economy.com estimates, a median-income earning family in Nassau-Suffolk can afford only 84% of a median-priced single-family home. Declining housing affordability and lackluster job growth in Nassau-Suffolk are keeping the demographic outlook weak: last year Nassau-Suffolk lost population for the first time since 1990. The greatly overvalued real estate, combined with a weak economic and demographic outlook, puts Nassau-Suffolk on the list of metro areas of most concern. According to the Leading House Price Indicator, there is a greater than 50% chance of a price decline over the next year continuing through mid-2008, which could be as large as 8%.

The combination of a scarcity of buildable land, affordability relative to New York City and high incomes has driven house prices on Long Island up over the past year. The metro division has the seventh-highest per capita income in the nation. Money from New York

Nassau-Suffolk, NY Metropolitan Division

1999	2000	2001	2002	2003	2004	2005	Indicators	2006	2007	2008	2009	2010
97.8	101.0	102.9	105.3	107.9	112.2	116.4	**Gross Metro Product, C$B**	120.7	123.1	125.5	127.8	130.1
7.5	*3.2*	*1.9*	*2.3*	*2.4*	*4.1*	*3.7*	*% Change*	*3.7*	*2.0*	*1.9*	*1.9*	*1.8*
1,190.1	1,217.8	1,218.6	1,215.3	1,222.7	1,233.8	1,240.6	**Total Employment (000)**	1,251.7	1,260.8	1,267.2	1,278.6	1,291.0
3.6	*2.3*	*0.1*	*-0.3*	*0.6*	*0.9*	*0.6*	*% Change*	*0.9*	*0.7*	*0.5*	*0.9*	*1.0*
3.3	3.4	3.8	4.7	4.8	4.6	4.1	**Unemployment Rate**	3.9	4.0	4.0	3.8	3.8
4.6	7.8	3.4	-0.2	1.5	6.2	4.7	**Personal Income Growth**	7.5	4.7	3.3	3.6	3.6
2,737.0	2,760.7	2,778.3	2,794.3	2,807.8	2,812.2	2,808.1	**Population (000)**	2,815.1	2,822.5	2,829.4	2,836.9	2,844.5
5,056	4,663	4,176	4,221	3,284	3,675	5,438	**Single-Family Permits**	4,204	3,462	3,330	3,332	3,325
1,262	1,775	1,493	1,148	911	899	1,180	**Multifamily Permits**	1,312	1,476	1,201	1,103	1,174
190.7	213.8	249.3	313.5	362.6	413.2	464.5	**Existing Home Price ($Ths)**	470.4	453.5	444.8	447.3	453.5
15,448	12,688	23,696	34,251	52,795	35,232	41,927	**Mortgage Originations ($Mil)**	37,958	31,805	26,211	24,834	24,584
5.3	6.3	4.8	4.1	1.4	-8.0	-17.2	**Net Migration (000)**	-6.0	-6.0	-6.8	-6.7	-7.2
9,906	8,339	9,241	9,338	8,417	8,120	10,561	**Personal Bankruptcies**	6,407	7,562	8,161	8,598	9,406

Riverside-San Bernardino-Ontario, CA Metropolitan Statistical Area

1999	2000	2001	2002	2003	2004	2005	Indicators	2006	2007	2008	2009	2010
69.7	74.6	77.9	82.5	88.2	96.4	103.7	**Gross Metro Product, C$B**	107.8	110.7	115.0	119.2	123.4
9.9	*7.0*	*4.4*	*5.9*	*6.9*	*9.3*	*7.6*	*% Change*	*4.0*	*2.7*	*3.9*	*3.7*	*3.5*
938.9	988.4	1,029.8	1,064.6	1,099.2	1,159.9	1,217.1	**Total Employment (000)**	1,239.0	1,255.6	1,287.3	1,322.1	1,357.3
6.5	*5.3*	*4.2*	*3.4*	*3.2*	*5.5*	*4.9*	*% Change*	*1.8*	*1.3*	*2.5*	*2.7*	*2.7*
5.2	5.1	5.3	6.2	6.3	5.7	5.0	**Unemployment Rate**	4.7	4.9	4.8	4.5	4.4
5.8	7.8	7.5	4.7	6.1	9.2	7.5	**Personal Income Growth**	5.9	6.2	6.5	6.7	6.4
3,189.5	3,279.1	3,382.3	3,503.3	3,645.3	3,785.9	3,910.0	**Population (000)**	4,014.1	4,096.9	4,194.6	4,303.4	4,421.8
19,018	19,090	23,596	30,038	35,965	43,142	45,485	**Single-Family Permits**	38,029	36,078	33,234	32,194	31,956
1,903	2,406	3,821	2,436	6,287	8,321	5,523	**Multifamily Permits**	5,582	3,566	4,505	4,505	5,032
128.3	138.6	155.7	175.9	218.9	296.9	372.2	**Existing Home Price ($Ths)**	390.3	371.8	358.2	357.5	364.6
16,723	15,014	32,248	46,082	79,439	84,293	121,442	**Mortgage Originations ($Mil)**	102,012	88,734	73,615	72,297	73,846
52.9	61.4	74.0	91.4	109.7	108.4	91.4	**Net Migration (000)**	64.6	41.6	54.6	63.5	70.7
21,443	18,513	21,267	20,853	18,398	13,841	16,502	**Personal Bankruptcies**	9,726	11,199	11,809	12,173	13,055

City has helped to support the housing market in Nassau-Suffolk over the past year. The largest bonus payout in Wall Street's history in the first quarter of this year provided a temporary support to the local housing market. As the good fortunes of Wall Street begin to fade in the second half of this year and the economy cools, a significant source of support for the housing market will vanish. Wages and salaries on Long Island have been growing at a slower clip than the state and national averages over the past several quarters as job growth has been tepid at best.

The impact of the housing slowdown will be substantial on Nassau-Suffolk's broader economy. Construction and other housing-related industries have helped to support the metro division's economy over the past year; industries outside of housing have barely been adding to payrolls. Job growth has slowed to a crawl recently, with both the goods- and private service-producing sectors of the economy experiencing a slowdown. The labor force has contracted recently and the unemployment rate, while still low, has risen from 3.6% in January to 4.2% in July.

The Nassau-Suffolk economic growth outlook is the weakest among the metro areas profiled in this study. The metro area will be hindered by high costs, out-migration, and land shortages over the forecast horizon. The education/healthcare industry will be the main source of job growth going forward, where further gains will be tepid at best. The largest near-term risk is to the area's housing markets and housing-related jobs. Overall, Nassau-Suffolk will underperform the U.S. over the forecast horizon but will grow on par with the New York City economy.

The **Riverside-San Bernardino** housing market and economy have slowed measurably since the beginning of this year. Construction permit issuance is off by about 20% from 2005, and the median sales price is down by 4% from the March peak as of midyear. Construction employment has leveled off since the beginning of the year, but it too is expected to be weak, with further declines into 2007. The one factor favoring an orderly adjustment in Riverside's housing market is that it is one of the most balanced markets in the state in terms of supply and demand. Thus, balance should return if new supply moderates further and the economy continues to expand.

More broadly, the rate of total job growth has been cut in half and industrial production growth lags the national rate. Further, consumer loan delinquency rates in Riverside shot up in this year's first half.

The most disturbing sign for the economy in the near term is a worsening of household credit quality in this year's first half. The broadest such measure, the delinquency rate on all mortgage and consumer credit, jumped from below average to above average in just six months; this breaks a two-year trend of solidly low rates. Rising interest rates, particularly short-term rates that impact Riverside's substantial adjustable rate mortgage debt, combined with high energy bills and slower job growth, generate considerable downside risk for the near term.

There are some indications, however, that the economy remains in good health. First, more complete employment data from unemployment insurance records through the end of last year indicate that growth may not be slowing quite so precipitously. Second, the unemployment rate is holding steady at just over 4.5%. Third, while the housing market is adjusting to higher interest rates, its adjustment to date has been far from debilitating to the economy.

A primary driver of the economy remains trade and transportation; Riverside is becoming the crossroads for southern California commerce, as reflected in rising employment in transportation and warehousing. Indeed, its concentration in these two industries is 50% higher than the statewide average; its location quotient is 1.5, using the state as the base, and it is rising as trucking, rail, and air transport expand. Future growth will be driven in part by rail; BNSF currently is searching for a site for a second intermodal rail yard, with Victorville as the frontrunner. With shipments through L.A. ports rising at a double-digit pace, additional rail capacity is required.

Industrial production growth may be below the U.S. average, but manufacturing payrolls are holding steady. As the low-cost area for manufacturing in southern California, Riverside's industries expand with the broader Southwest economy. The outlook, however, is not as bright as trade and transport because much of the manufacturing activity is related to components for homebuilding—fabricated metal products and electrical equipment. With housing expected to be soft through next year, industrial production will not likely rebound in the very near term.

The long-term outlook remains solid for Riverside-San Bernardino as its economy becomes increasingly globally linked and internally diversified. Low costs of living and strong in-migration trends, both domestic and international, bode well for the metro area's economy. The near term is subject to considerable volatility, however, depending upon the path of adjustment of housing markets and the ability of households to

Sacramento--Arden-Arcade--Roseville, CA Metropolitan Statistical Area

1999	2000	2001	2002	2003	2004	2005	Indicators	2006	2007	2008	2009	2010
61.6	65.3	66.6	69.0	72.7	76.9	81.4	**Gross Metro Product, C$B**	85.2	86.9	89.7	92.4	95.1
8.5	*6.0*	*2.0*	*3.6*	*5.4*	*5.8*	*5.8*	*% Change*	*4.7*	*1.9*	*3.2*	*3.1*	*2.9*
770.5	797.1	819.0	832.3	846.1	859.1	880.4	**Total Employment (000)**	899.3	905.6	921.7	941.1	960.9
5.4	*3.5*	*2.7*	*1.6*	*1.7*	*1.5*	*2.5*	*% Change*	*2.2*	*0.7*	*1.8*	*2.1*	*2.1*
4.1	4.3	4.5	5.5	5.7	5.4	4.7	**Unemployment Rate**	4.6	4.9	4.8	4.6	4.4
7.1	9.1	6.1	3.8	5.3	6.9	6.9	**Personal Income Growth**	6.7	6.4	6.8	7.0	6.6
1,767.2	1,808.5	1,867.1	1,925.3	1,974.8	2,014.6	2,042.3	**Population (000)**	2,076.2	2,102.0	2,132.3	2,165.4	2,198.5
10,964	13,468	14,719	17,614	18,165	18,523	16,380	**Single-Family Permits**	10,441	10,856	11,938	13,521	13,333
3,511	3,325	3,715	4,485	4,667	3,476	3,802	**Multifamily Permits**	2,597	2,158	2,854	3,291	3,501
132.7	143.9	172.3	207.9	246.9	314.8	374.9	**Existing Home Price ($Ths)**	373.2	355.8	347.5	353.0	366.3
11,474	10,423	26,212	36,410	54,627	45,430	53,347	**Mortgage Originations ($Mil)**	42,530	37,598	32,598	32,914	34,341
24.8	30.6	47.2	46.4	37.0	26.8	14.0	**Net Migration (000)**	19.7	11.2	14.9	17.0	16.3
9,832	8,310	8,716	8,380	8,167	7,497	11,001	**Personal Bankruptcies**	6,975	8,139	8,639	8,952	9,648

continue to spend freely, with risks clearly on the downside. The long-term outlook, nevertheless, remains above average.

Sacramento's housing market is slowing rapidly, and is casting a shadow over the metro area's broader economy. Prices are falling, and demand for new housing is quickly drying up. Construction, which was a leading source of employment growth in recent years, has contracted nearly 3.5% this year from its peak. Sales of existing homes have fallen at a similar pace. Additionally, some 3,000 construction jobs have been lost in the metro area since the beginning of this year.

Median house prices are currently falling in most of California's metro areas, but Sacramento and the rest of the Central Valley are experiencing the steepest decline. According to the NAR, the median home price in Sacramento has fallen from a peak of $384,000 in the fourth quarter of 2005 to $376,000 in the second quarter of this year, which is only 0.9% greater than the same time last year.

Like other inland California markets, affordability relative to the coastal California markets pumped up Sacramento's housing markets during the boom. Sacramento seemed like the perfect untapped market. Its large population, proximity to the red-hot Bay Area, and low prices made Sacramento very attractive to speculators and relocators. Indeed, Oakland, San Jose and San Francisco contributed the most in-migrants to Sacramento in 2004, according the IRS data.

Builders aggressively developed the area, with residential permits reaching an all-time high in 2005. Although household formation was strong throughout the period, Sacramento is left with a near record-high months of inventory of unsold homes, according the California Realtors Association.

As the housing market slows, and price growth weakens in the Bay Area, Sacramento's housing market will not attract the same level of speculative buying or vacation home investment that supports high prices in southern California or the Bay Area. Therefore, Moody's Economy.com estimates that it is more likely than not that house prices in Sacramento will decline even further over the next 12 months, losing roughly 10% from their peak value.

Further casting a cloud on the metro area's economic outlook is the state's fiscal outlook. Currently, California's state fiscal conditions have improved, allowing more spending to be directed toward local government. State operations spending rose by 8%, and thus state and local government employment are each on the rise, which is giving a near-term boost to Sacramento's labor market. For the 2006-2007 fiscal year, however, the state may not be able to match its current 7% revenue growth rate as the economy slows and energy costs begin to take a bite out of corporate profits

The correction in Sacramento's housing market will persist for sometime. Although the correction will not be enough to send the metro area into an economic recession, it will be severe enough to stall growth early next year. The metro area's longer-term prospects remain favorable. Sacramento remains a magnet for relocation thanks to its proximity to the Bay Area and its relatively low cost of living. The entire Central Valley is experiencing strong in-migration, and Sacramento enjoys the greatest benefits of this trend. A high proportion of the metro area's in-migrants tend to be young, well-educated families with high median incomes, which will support solid housing market conditions in the long run.

The housing market in **Salinas** is weakening markedly. House-price appreciation has been down on a quarter-to-quarter basis for the last two quarters, and currently stands about 4% below the peak hit at the end of last year. Permitting activity has been trending sharply downward since the end of 2005, indicating that homebuilders are taking a proactive approach to softening demand.

Contributing to the paring in home demand is extraordinarily low housing affordability. Salinas is one of the ten most expensive metropolitan areas to live in nationally. House prices have soared while the median family income in Salinas is barely in the top third of the nation's metropolitan areas. Net migration trends reflect the metro area's overpriced housing markets. According to the Census Bureau, over 7,000 residents on net migrated from Salinas last year, a 50% increase compared to 2004 and a sevenfold increase compared to 2002. The deteriorating migration trends indicate that while investors may have been piling into the market, residents were being priced out of the metro area.

Despite the efforts of builders, plummeting home sales are exacerbating the large discrepancy between the increase in new supply and new demand. Moody's Economy.com estimates that Salinas has one of the highest excess supply indicators in the nation. This indicates that the pace of new construction over the past several years has vastly outstripped new demand. This, combined with a highly overvalued housing market, results in a high LHPI for Salinas, which is among the most at-risk markets in the nation for a house-price decline over the next year.

With only middling economic growth, significant weakening in the housing market

Salinas, CA Metropolitan Statistical Area

1999	2000	2001	2002	2003	2004	2005	Indicators	2006	2007	2008	2009	2010
10.9	11.7	11.9	12.5	12.9	13.2	13.8	**Gross Metro Product, C$B**	14.4	14.8	15.3	15.7	16.2
9.0	*7.5*	*1.2*	*5.5*	*2.7*	*2.4*	*4.9*	*% Change*	*4.2*	*2.4*	*3.3*	*3.2*	*3.0*
123.6	127.3	130.0	129.6	127.8	126.9	127.3	**Total Employment (000)**	128.5	129.1	130.9	133.0	135.0
3.4	*3.0*	*2.1*	*-0.4*	*-1.4*	*-0.7*	*0.3*	*% Change*	*1.0*	*0.5*	*1.4*	*1.6*	*1.5*
9.7	7.3	7.7	8.9	9.0	8.2	7.2	**Unemployment Rate**	7.4	8.0	7.8	7.5	7.3
6.7	8.3	3.7	1.1	6.2	4.6	3.2	**Personal Income Growth**	3.1	4.9	5.1	5.3	5.1
396.3	403.2	408.2	411.6	414.4	414.6	412.1	**Population (000)**	414.6	418.3	422.1	426.5	430.8
1,484	1,505	890	1,054	1,047	1,064	1,296	**Single-Family Permits**	1,306	1,519	1,402	1,354	1,332
574	209	166	168	308	134	134	**Multifamily Permits**	99	162	201	200	216
258.4	307.5	311.4	336.6	389.1	563.7	675.4	**Existing Home Price ($Ths)**	671.3	648.0	638.3	651.7	676.5
2,706	2,556	5,328	6,870	10,214	8,081	9,652	**Mortgage Originations ($Mil)**	7,936	6,949	5,918	5,873	6,029
4.2	2.6	0.7	-1.4	-1.9	-4.8	-7.1	**Net Migration (000)**	-2.1	-1.1	-1.1	-0.7	-0.9
2,056	1,739	1,673	1,647	1,719	1,613	1,926	**Personal Bankruptcies**	1,268	1,509	1,608	1,675	1,816

will have a palpable impact on this metro area's housing market. Job growth is peaking, and the outlook for two of the metro area's three largest industries is lackluster. The metro area's large government sector lends some stability to the area's economy, but is not a growth driver: government jobs comprise 24% of Salinas's job base, well above the 16% national average. Salinas's dominant agricultural industry has been expanding strongly. According to our estimates of farm employment, however, conditions are likely to weaken in the near term. The tourism industry is a bright spot, adding jobs at a steady clip of about 2% year over year, with expectations that job gains will continue at this pace in the outlook. The leisure and hospitality industry contributes 16% to the metro area's job base, compared to the 10% national average. On the plus side, Salinas's job base has a slightly lower than average exposure to housing-related employment.

While the Salinas housing market is expected to significantly correct over the next year, the metro area will avoid sinking back into recession. The housing correction will be enough to put a big dent in economic growth next year. However, by 2008, it should be back on track as an about average performer. Low industrial diversity and low educational attainment will keep Salinas from outstripping the national average over the long term.

Housing market activity is slowing in the **Santa Ana-Anaheim-Irvine** metro division. House prices have fallen by roughly 3.5% since February as measured by the California Association of Realtors' median sales price for single-family homes. Construction of single-family homes already had slowed in response to a similar price adjustment in 2004, and is now holding steady.

The adjustment in the housing market is modest so far, but **Santa Ana's** housing market is unlikely to rebound anytime soon. Sentiment is souring, and the correction is far from over, with prices expected to fall further. The metro division's housing market has developed excesses over the past several years that leave it highly overpriced and among the metro area's most at risk of registering a house-price decline one year from now.

While Santa Ana's economic growth has been quite robust, its strength has been predicated upon the booming housing market, darkening its outlook as the housing cycle turns down. The slowdown in the national housing industry is magnified in the Santa Ana division MSA because of its concentration of the mortgage finance industry, and the fallout is already evident. Hundreds have been laid off from Santa Ana-based mortgage originators, putting hundreds of thousands of square feet of office space back on the market. Fortunately, this came when the metro office vacancy rate was a record low nearly 6%. The rate jumped up above 7% in the second quarter—still a very low rate. But there could be considerable downside pressure on office lease rates as new space begins to be completed.

Other factors still support the economy, however. Manufacturing, particularly related to technology and aerospace, is holding its employment steady as industrial production outpaces the national average. Travel and tourism also remain strong, supporting a broad array of services. International trade and corporate headquarter functions further drive the economy forward.

The second quarter improvement in the delinquency rate for mortgage and home equity loans provides evidence of an economy

Santa Ana-Anaheim-Irvine, CA Metropolitan Division

1999	2000	2001	2002	2003	2004	2005	Indicators	2006	2007	2008	2009	2010
121.0	130.7	132.2	134.6	143.1	153.4	162.8	**Gross Metro Product, C$B**	169.3	173.0	178.6	184.0	189.2
8.5	*8.1*	*1.1*	*1.8*	*6.3*	*7.1*	*6.1*	*% Change*	*4.0*	*2.2*	*3.2*	*3.0*	*2.8*
1,345.2	1,388.8	1,413.6	1,403.5	1,428.9	1,456.6	1,490.8	**Total Employment (000)**	1,506.5	1,513.8	1,535.1	1,561.5	1,587.6
3.6	*3.2*	*1.8*	*-0.7*	*1.8*	*1.9*	*2.3*	*% Change*	*1.1*	*0.5*	*1.4*	*1.7*	*1.7*
2.7	3.5	4.0	5.0	4.8	4.3	3.7	**Unemployment Rate**	3.5	3.7	3.6	3.5	3.4
6.3	10.1	2.8	2.5	4.7	6.7	5.8	**Personal Income Growth**	4.8	4.9	5.2	5.5	5.2
2,815.9	2,857.0	2,895.3	2,927.8	2,959.3	2,982.1	2,988.1	**Population (000)**	3,000.0	3,026.7	3,058.1	3,093.0	3,128.5
7,679	6,814	6,010	6,794	6,108	4,828	4,103	**Single-Family Permits**	5,331	6,131	6,746	7,667	7,600
4,560	5,706	2,601	5,002	3,140	4,428	3,040	**Multifamily Permits**	6,052	3,520	4,234	4,862	5,010
280.7	316.6	354.0	414.3	489.7	624.9	691.2	**Existing Home Price ($Ths)**	706.9	675.7	653.5	652.7	664.1
27,924	21,453	49,982	72,353	108,983	73,189	80,788	**Mortgage Originations ($Mil)**	66,998	58,718	49,437	48,754	49,724
13.0	12.1	10.8	5.8	5.0	-3.9	-21.2	**Net Migration (000)**	-16.4	-2.6	1.2	3.6	3.1
12,167	9,164	10,193	9,606	9,167	7,641	11,653	**Personal Bankruptcies**	6,942	8,079	8,614	8,965	9,710

Stockton, CA Metropolitan Statistical Area

1999	2000	2001	2002	2003	2004	2005	Indicators	2006	2007	2008	2009	2010
14.3	15.0	15.4	16.2	16.9	17.7	18.6	**Gross Metro Product, C$B**	19.5	20.0	20.6	21.1	21.6
9.2	*5.2*	*2.6*	*5.2*	*4.3*	*4.7*	*5.0*	*% Change*	*5.2*	*2.4*	*2.9*	*2.6*	*2.4*
178.7	185.9	191.2	194.1	197.3	200.7	205.5	**Total Employment (000)**	209.8	211.5	214.7	218.3	221.6
4.2	*4.0*	*2.9*	*1.5*	*1.6*	*1.7*	*2.4*	*% Change*	*2.1*	*0.8*	*1.5*	*1.6*	*1.5*
8.8	6.9	7.4	8.8	9.0	8.5	7.5	**Unemployment Rate**	7.4	7.9	7.7	7.4	7.2
6.5	8.9	3.8	3.6	5.1	6.6	5.4	**Personal Income Growth**	5.9	5.1	5.3	5.4	5.2
552.4	568.3	592.9	612.4	631.3	649.2	664.1	**Population (000)**	675.9	685.4	696.7	708.5	720.2
4,189	5,350	4,005	5,654	6,935	6,229	5,684	**Single-Family Permits**	5,233	6,650	6,174	5,998	5,919
14	42	334	489	106	495	185	**Multifamily Permits**	168	74	284	302	395
149.9	168.7	208.2	247.4	285.0	344.5	430.7	**Existing Home Price ($Ths)**	423.1	393.9	377.0	377.6	387.3
2,578	2,763	6,991	8,355	13,365	13,350	18,221	**Mortgage Originations ($Mil)**	14,194	12,249	10,169	9,956	10,126
7.9	11.3	19.3	14.0	13.7	12.3	8.9	**Net Migration (000)**	5.7	3.3	4.8	5.0	4.6
2,887	2,397	2,450	2,484	2,813	2,762	3,224	**Personal Bankruptcies**	2,005	2,354	2,499	2,595	2,806

that has faltered but not fallen. This is in direct contrast to rising rates seen statewide and nationwide. The house-price correction seems so far to be concentrated at the high end of the market, causing little disruption so far to household balance sheets.

There is a redevelopment upside for Santa Ana over the next several years. Orange County will see a shift in the manufacturing and engineering operations of Boeing as it plans to vacate its Anaheim facility and relocate all of its 3,700 employees to another of its plants at Huntington Beach, also within Orange County. Employees will move between 2007 and 2010. As this is simply a transfer within the metro area, the direct economic impacts from a macro sense are minimal. But, the facility in Anaheim is physically huge—1.5 million square feet of industrial and office space. The availability of such space generates good potential for redevelopment that will contribute to the county's long-term growth.

The near-term outlook for Santa Ana-Anaheim-Irvine is quite weak until the path of both local and national housing markets clears toward the end of next year. Santa Ana should rebound quickly from this setback, however, supported by a healthy tourism industry with a record-high hotel occupancy rate, rising defense spending, stable manufacturing, and expanding business and professional service employment. Santa Ana's considerable number of headquarters of international corporate operations will also support the economy, particularly as local direct foreign investment may accelerate if the dollar falls in value versus Asian currencies as expected. Longer term, the economy will be held back by high business and housing costs and increased congestion, but a highly skilled labor force, close links to the global economy and good quality of life factors will maintain a growth rate just below the national average.

The **Stockton** housing market is already showing signs of weakness. Permits for new construction of residential housing have started to drop off, and the median house price has declined in each of the past two quarters. The median house price peaked at $445,000 at the end of 2005. Since then, prices have declined by 4% to $427,000 in the second quarter of 2006.

The metro area's housing market benefited from its location near the booming San Francisco and Oakland metro divisions. While Stockton's median house price is nearly twice as high as the U.S. average, it remains well below that of neighboring San Francisco and Oakland, and provided an affordable alternative for investors and shelter seekers alike. Consequently, Stockton's housing market is highly overpriced; median house prices nearly doubled from the beginning of 2002 to the end of 2005, with year-over-year price appreciation reaching a height of 29% in the second quarter of 2005.

The rapid house-price appreciation, combined with very low income levels, has caused a steep decline in metro area housing affordability, which is placing greater downward pressure on housing demand in Stockton as fewer buyers from outside of the metro area are buying. A Stockton family earning the median income can afford a house that is priced at just 50% of the median house price. Nationwide, a family can afford a house that is valued at 20% above the median price. As house prices continue to fall, the downward pressure on affordability will subside; however, it is expected to remain well below the national average over the forecast horizon. Stockton's high dependence on agriculture will keep per capita income well below both the state and national averages.

Stockton's economy will have a harder time than others digesting the weakening in the housing market. The metro area's main drivers, the farm economy and service-providing industries, will provide some support for Stockton. However, the metro area will feel the pinch through rapidly weakening employment in residential real estate-related industries. Over the past ten years, the booming housing market has helped Stockton construction payrolls make a significant contribution to employment growth. Payrolls have expanded at an average annual rate of nearly 10% during that time, with the strongest growth coming in the late 1990s and the beginning of this decade. Over the past few years, the pace of payroll growth has decelerated but has remained well above both the national average and the pace of total metro area payroll growth. Now, as the housing market slows, construction payrolls are backing off as well. Industry payrolls have already declined from their peak earlier this year.

As a consequence, expect Stockton's economic expansion to weaken substantially through the first half of 2007. Moody's Economy.com expects the decline in house prices to continue though the end of 2008, with a total price correction of more than 15%. In addition, a steeper-than-expected downturn in northern California's housing market constitutes a sizable downside risk for the highly exposed metro area. Once the metro area digests the housing correction, strong demographics and the metro area's service-providing industries will help generate sturdy, slightly above average, economic expansion. Stockton will benefit from its low living costs relative to neighboring metro areas, though

Tucson, AZ Metropolitan Statistical Area

1999	2000	2001	2002	2003	2004	2005	Indicators	2006	2007	2008	2009	2010
22.6	23.7	24.3	23.7	24.7	25.5	26.2	**Gross Metro Product, C$B**	27.8	28.7	29.6	30.5	31.4
8.2	*4.6*	*2.9*	*-2.8*	*4.4*	*3.3*	*2.7*	*% Change*	*6.1*	*3.3*	*3.0*	*3.1*	*3.1*
336.4	350.0	347.4	345.8	348.1	360.0	365.9	**Total Employment (000)**	381.1	390.0	397.5	407.0	417.3
3.8	*4.0*	*-0.7*	*-0.5*	*0.7*	*3.4*	*1.6*	*% Change*	*4.2*	*2.3*	*1.9*	*2.4*	*2.5*
3.2	3.7	4.3	5.6	5.2	4.6	4.4	**Unemployment Rate**	4.3	4.5	4.4	4.3	4.2
5.9	7.6	4.3	2.5	4.7	7.6	7.2	**Personal Income Growth**	8.7	7.9	6.7	7.1	7.2
828.9	848.6	861.2	877.2	890.5	906.5	924.8	**Population (000)**	943.2	962.5	977.1	994.3	1,013.1
7,234	6,816	6,298	6,114	7,598	9,604	11,166	**Single-Family Permits**	8,724	7,600	7,104	7,067	7,144
1,500	963	1,174	1,033	312	917	478	**Multifamily Permits**	569	595	803	828	960
117.1	120.9	127.3	146.0	156.4	176.9	229.1	**Existing Home Price ($Ths)**	240.9	226.8	220.3	221.9	228.6
3,892	3,285	6,590	7,875	11,968	8,156	9,076	**Mortgage Originations ($Mil)**	8,078	7,553	6,768	6,652	6,744
11.3	15.0	8.1	11.8	8.6	11.2	12.8	**Net Migration (000)**	13.1	13.8	9.1	11.6	13.0
3,666	3,255	3,914	4,311	4,574	4,303	5,771	**Personal Bankruptcies**	3,451	4,016	4,348	4,604	5,063

low educational attainment levels will continue to constrain income growth.

Tucson's heretofore booming housing market is reversing rapidly. In the second quarter of this year, single-family permit issuance is retrenching, off by just under 26% on a year-ago basis. The median existing price in Tucson is also reversing sharply and unexpectedly, dropping by an annualized 21%. While the median price data can be quite volatile, the sharp drop, combined with weakening in permitting, suggests that the Tucson housing market is well past peak.

Overvaluation and erosion in housing affordability are contributing to the large downside risks for this housing market. In the last five years, Tucson has gone from being a highly affordable market to being decidedly unaffordable. Although the metro area maintains an affordability advantage vis-à-vis southern California and Las Vegas, the relative affordability will be a less compelling draw as these housing markets also cool. As a consequence, we expect house prices in Tucson to decline by almost 13.5% over the next two years, one of the largest declines in the nation.

The metro area's robust economy will keep the housing correction from taking back an even larger share of the near 80% price gains over the past five years. Economic growth in the Tucson economy continues to accelerate, despite signs of a slowdown at both the state and national levels. Moreover, although housing-related industries have been important drivers in Tucson, payroll growth is generally spread out among its major industries. Indeed, employment excluding housing-related industries has been growing at a well above average pace. Professional and business services and leisure and hospitality have been the main drivers behind the growth and these industries will help insulate the metro area from the housing correction.

Moreover, growth in export and business investment-related industries should continue as long as the U.S. dollar remains weak. Additionally, the recent reaffirmation by Inco Limited's Board of Directors of Phelps Dodge's merger bid augurs well for Tucson given that Phelps Dodge's headquarters are located in the metro area. Indeed, if approved by shareholders and regulators, the bid should bring additional high-paying administrative and management jobs to the metro area as the new company consolidates operations, providing a boost to consumer industries. These positive forces that will create additional high paying jobs in Tucson will help provide a floor for housing prices over the next several quarters.

As the air is let out of the bubble, the metro area's housing market will continue to receive support from fundamental drivers, such as export and business investment firms, that will prevent more drastic declines from occurring. Tucson's economy will remain a strong performer.

Housing markets have clearly turned in the **Washington** metro division. Sales have dropped considerably, and inventory-to-sales ratios have doubled or tripled in most parts of the division. House prices peaked at the end of last year.

Housing market conditions vary considerably across the area. In general, the areas that had the biggest boom in housing markets are now suffering the most. A growing number of proposed condo developments are being converted to apartments or canceled entirely. This trend began in Northern Virginia, but has recently spread to the District of Columbia and Suburban Maryland.

Prince George's County, which was a laggard in the housing boom, is not suffering as badly. It is one of the few areas that are still showing house-price gains. While unsold inventories are up, they remain lower than average for the area at just over one month.

Behind the downturn is a sharp decline in housing affordability due to the previous runup in prices and higher borrowing costs. A family making the median income can only afford 86% of the median priced home. Not too long ago, affordability was among the highest in the nation among large metro areas.

The weakening housing market casts a cloud upon the outlook of an otherwise strong economy. Thanks to government-related activity, professional and business services are leading growth. Unemployment is low, boosting incomes. Household finances are strong, although mortgage credit quality has begun to deteriorate.

The strength of the economy is continuing to stimulate commercial development. One common location for development is near metro stops. A number of projects are being approved or proposed in the division. Prince George's County recently approved the first pieces of a planned $1 billion project near the Greenbelt Metro station, for example. The first phase including apartments is scheduled for completion in 2008. When the ten-year project is complete, it will include large quantities of office and retail/entertainment space as well as a hotel and over 2,000 residences. Alexandria officials are trying to facilitate 2 million square feet of new development near the Braddock Road Metro station on land cur-

Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Division

1999	2000	2001	2002	2003	2004	2005	Indicators	2006	2007	2008	2009	2010
168.7	175.5	184.3	188.1	198.4	211.7	220.9	**Gross Metro Product, C$B**	229.5	235.4	242.7	249.7	256.4
5.3	*4.0*	*5.1*	*2.0*	*5.5*	*6.7*	*4.3*	*% Change*	*3.9*	*2.6*	*3.1*	*2.9*	*2.7*
2,035.4	2,132.4	2,169.7	2,175.3	2,230.5	2,296.0	2,348.7	**Total Employment (000)**	2,403.4	2,430.5	2,465.0	2,503.4	2,541.4
3.6	*4.8*	*1.8*	*0.3*	*2.5*	*2.9*	*2.3*	*% Change*	*2.3*	*1.1*	*1.4*	*1.6*	*1.5*
2.8	2.8	3.4	4.1	4.0	3.9	3.5	**Unemployment Rate**	3.0	3.2	3.1	3.0	2.9
7.7	9.3	7.0	2.5	4.2	8.3	7.1	**Personal Income Growth**	6.3	5.4	5.1	5.2	5.1
3,669.1	3,746.2	3,828.0	3,894.3	3,955.1	4,018.5	4,066.4	**Population (000)**	4,115.7	4,165.1	4,214.2	4,263.0	4,311.5
21,740	22,920	22,234	23,686	24,042	22,846	22,804	**Single-Family Permits**	21,334	22,994	23,296	22,752	22,828
7,896	7,232	7,332	8,289	5,540	9,584	8,509	**Multifamily Permits**	9,184	6,255	5,962	5,827	6,306
157.8	162.6	191.4	227.9	262.1	321.6	412.2	**Existing Home Price ($Ths)**	414.4	394.5	384.1	385.0	390.8
15,443	12,875	27,357	38,139	61,778	49,234	70,104	**Mortgage Originations ($Mil)**	59,273	53,328	46,340	45,649	46,041
36.4	40.8	41.5	27.0	20.1	21.3	9.2	**Net Migration (000)**	11.7	11.2	10.2	9.2	8.2
20,468	18,450	20,221	19,300	17,804	14,996	16,803	**Personal Bankruptcies**	9,453	10,775	11,512	12,057	13,118

rently occupied by industrial and warehouse properties. In addition, Metro is looking for partners to develop land near stations in Fairfax and Prince George's counties.

The presence of the federal government, a highly educated workforce, solid population trends and the development of the local technology hub will enable the Washington metro area to maintain sturdy job growth, which in turn will mitigate the worst of the housing downturn. Growth in federal activity and spending will begin to slow, while consumer and business demand for tourism, services and retail remains strong. Longer term, growing high-tech industries will reduce the metro area's reliance on the federal government, although that will always remain an important component of the Washington economy.

Longer-term prospects for the housing market will also benefit from increasingly tight restrictions on development. For example, Loudoun County supervisors in early September imposed restrictions on growth in the western parts of the county that will reduce the number of houses that can be built in affected portions of the county by about half compared to rules in effect today. The Center for Regional Analysis at George Mason University has recently concluded that the area will eventually be significantly undersupplied if these types of restrictions don't ease.

Housing Crash? The house-price outlook derived from the LHPI and structural econometric model is consistent with a national housing market correction, not a crash. Indeed, the house-price declines anticipated in coming quarters are in a broader historical context quite modest. If this outlook comes to pass, then national house prices will have risen at nearly a 5% per annum pace this decade. This is greater than growth during the 1990s, and compares very favorably to the 2.5% per annum growth in consumer price inflation.

The logic behind a housing correction and not a crash seem well-rooted in historical experience. As previously mentioned, nominal national house prices have not declined during a calendar year since the depths of the Great Depression.

The very recent experience in Australia and the U.K. adds to this confidence. Housing activity and prices soared in both nations earlier in the decade, with gains comparable to those experienced in the most active U.S. markets. Like here, mortgage equity withdrawal was substantial and powered consumer spending and broader economic growth. These economies reached their capacity and inflationary pressures developed sooner than in the U.S., prompting both the Bank of England and Reserve Bank of Australia to tighten policy well before the Federal Reserve. Rates are now comparable, with the U.K. target rate currently set at 4.75%, the Australian rate at 6%, and the funds rate at 5.25%.

Housing markets in Australia and the U.K. have corrected in a very orderly way. House-price growth stalled, but did not fall in either country (see Chart 32). MEW has declined and consumer spending and broader economic growth have moderated in response, but the economies of both nations continue to expand. If anything, housing and economic activity have seemingly revived in recent months. There are differences between the U.S., U.K. and Australian experiences, which may make the impending adjustment in the U.S. housing market and economy more difficult, but these differences seem small compared to the similarities.[25]

Optimism also seems warranted due to the nation's well-capitalized and highly profitable financial intermediaries. In past house-price collapses, financially fragile lenders who were taking properties back in repossession had no choice but to dump those properties back on a reeling market at a significant discount. A self-reinforcing plunge in pricing ensued. Such a possibility seems remote today as lenders are awash in capital.

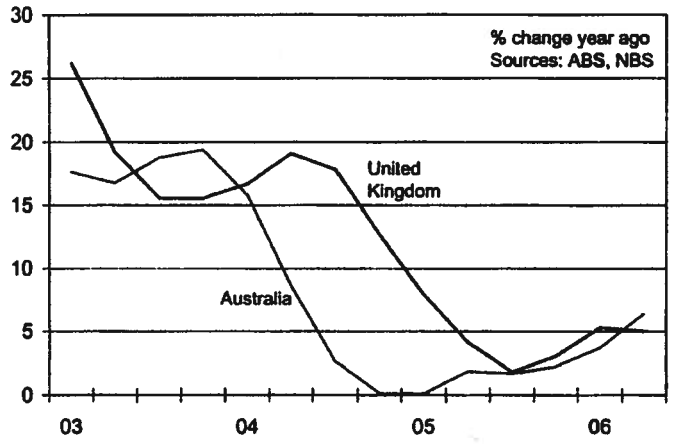
If as anticipated the housing market corrects and does not crash, then the broader economy will slow gracefully. There may be a period in the next few months when the weaker housing market feels like it is undermining the economic expansion, but this period should prove brief.

While a housing market correction and not a crash is the most likely outlook, the risks are decidedly skewed to the downside. The probability that a darker scenario will play out is low, but high enough to warrant careful consideration.

Crashes in history. There has never been a crash in national house prices, but there have been plenty of sizable regional housing market crashes. Most notable are the collapse in California house prices in the early 1990s, New England prices beginning in the late 1980s, and in Texas and other parts of the Southwest in the mid-1980s. Peak-to-

[25] The preponderance of mortgages in the U.S. is fixed rate rather than the adjustable rate mortgages typical in the U.K. and Australia. The blow to the Australian economy of a weaker housing market has been cushioned by rising global demand and prices for the nation's natural resources. The U.K. economy has received a well-timed boost from stronger global trade and capital flows from OPEC and other commodity-rich nations.

Chart 32: Aussie and British Prices Adjust Gracefully
House-prices



trough price declines during these episodes were a stunning 20% to 30%.

There are numerous other examples of more modest, albeit substantial price declines. Most recently was a sharp adjustment in San Francisco Bay Area house prices in the wake of the Y2K tech bust and in various Midwestern metro areas wracked by the manufacturing downturn earlier this decade.

According to OFHEO, there have been 4,935 instances during the past thirty years when house prices have fallen on a year-ago basis in one of the nation's 379 metro areas. This amounts to 10% of the time or once every ten quarters. According to the Realtors, there have been 6,480 four-quarter periods of metro area house-price declines; amounting to 14% of the periods or once every seven quarters over the same period (see Chart 33).

Inflation and rates. Higher inflation and interest rates than anticipated remain a substantial threat to the housing market. Underlying inflation has pushed higher since the beginning of the year and now stands well above policymakers' implicit target.

Core consumer price inflation, excluding volatile food and energy prices, is currently expanding at just under 3%. This compares to near 1% at its nadir in late 2003 and its target of between 1.5% and 2.5%. The core consumer expenditure deflator is growing at over 2%, compared to a low of just over 1% and a target of between 1% and 2%.

Moreover, the supports to the low inflation that have more or less prevailed during the past decade are weakening. For much of the decade, energy and other commodity prices were low, the dollar was strong and rising, and productivity growth was accelerating. Commodity prices are now high, the dollar has been falling and is likely to fall more, and productivity growth will at best hold its own.

The higher energy and other commodity prices of the past several years have yet to affect inflation more broadly, but they remain a serious inflationary threat. Businesses have been willing to shoulder the financial burden of their higher material costs, at least so far. This may be due to their record-wide profit margins, the small share such costs account of their total costs, and the likely belief that material prices will moderate. This thinking becomes increasingly less compelling, however, the longer material prices remain high, and particularly if they were to move higher.

The dollar has slid lower in recent years, which has put upward pressure on import prices. The decline has been concentrated against the euro, pound and Canadian dollar, however. The impact on inflation is sure to be more pronounced if the Chinese allow the yuan to appreciate substantially further, as is anticipated. Other Asian producers, including the Japanese, are expected to follow the Chinese lead. With such a large share of U.S. consumer goods produced in Asia, the impact on consumer price inflation will be measurable.

Productivity growth remains strong, but is likely peaking. The pace of technological change, so key to underlying productivity gains, could hardly be as rapid as in the past decade when it was fueled by the incorporation of the internet into nearly all business practices. Rising factory utilization rates and falling unemployment also suggest that less productive capital and talented labor will be increasingly used.

The slowing in productivity growth is occurring at the same time that labor compensation and thus unit labor cost growth are accelerating (see Chart 34). Despite their wide profit margins, businesses will try to pass this along to their customers through higher prices for their wares. Labor costs are far and away their most significant cost, and unlike commodity prices, they are much less likely to recede quickly.

Policymakers appear willing to tolerate inflation above their target and a less propitious inflation backdrop as long as inflation expectations remain anchored and prospects are that inflation will soon recede. Indeed, implied 10-year inflation expectations in Treasury inflation-protected securities remain near 2.5%, about where they were a year ago and the year before that. These expectations feel very tenuous, however, and there is a palpable risk they become untethered. The Federal Reserve would quickly respond by tightening policy further, sacrificing the housing market and near-term economic growth to ensure stable inflation and the economy's longer-term growth prospects. Given the already very fragile housing market, even a small fur-

Chart 33: A History of Price Declines
Number of markets suffering year-over-year price declines

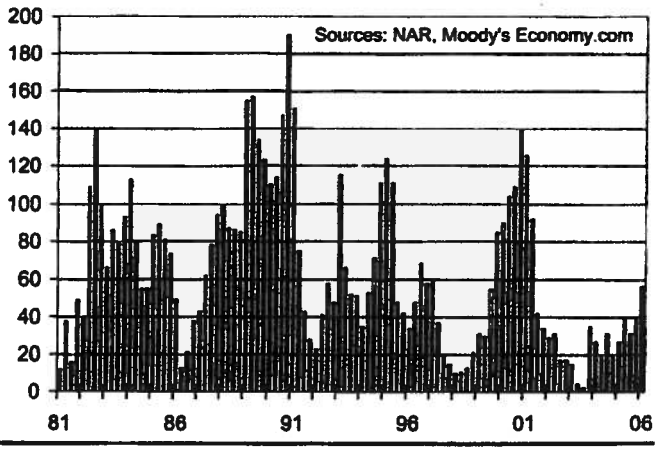
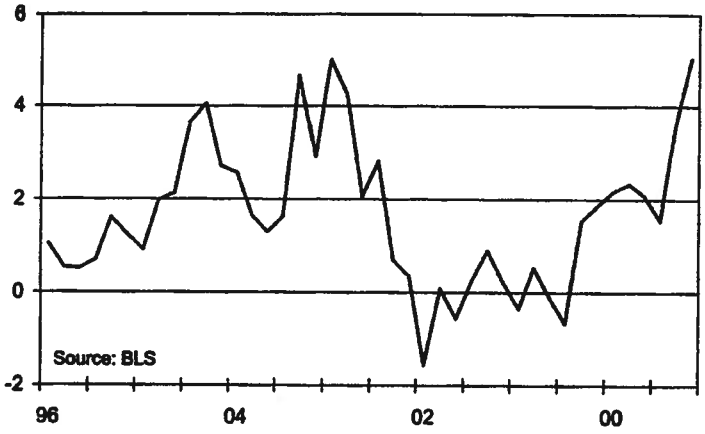


Chart 34: Accelerating Labor Costs Threaten to Ignite Inflation
% change year ago



ther rise in rates would push a correcting market into a crash.

Housing-related employment. The housing correction also threatens to come unraveled if the job market does not hold up as well as expected. Given that housing-related industries now account for such a large share of jobs and an even larger share of job growth, this is a measurable risk.

Nationwide, a record almost one-in-ten jobs are now in housing-related industries.[26] Employment in these industries grew by an average of 30,000 per month over the past three years, adding some 1.2 million jobs in total and accounting for almost one-fourth of all the payroll jobs created during the period. No other industry, save healthcare, has contributed as much to the strength of the job market.

The link between housing and jobs is even stronger in the previously most active housing markets across the country. Housing is particularly important to the job market in Florida, where housing-related industries account for an astounding nearly one-sixth of all jobs (see Chart 35).[27] Other areas with notably out-sized employment shares in housing include Arizona and Nevada, the New Jersey beach, and Myrtle Beach, SC (see Appendix 17).

Job gains in housing-related industries have also been highly concentrated regionally. The ten metro areas experiencing the largest increases in housing jobs over the past three years accounted for fully one-third of the national job gains in these industries. These areas include Phoenix AZ, Las Vegas NV, Riverside CA, Santa Ana CA, Los Angeles CA, Washington DC, Orlando, FL, Atlanta GA, San Diego CA, and Tampa FL.

With the recent sharp turn in housing activity, housing-related industries have begun shedding workers. Since March, the losses have averaged 10,000 per month, equal to 50,000 in total. This has already left a measurable imprint on overall employment trends. Average monthly job gains of 165,000 last year and early this year have recently slowed to monthly gains of 125,000. This slowing in trend employment growth has thus been entirely due to housing.

Employment in industries outside of housing has so far been unaffected by housing's layoffs, and that is expected to largely continue (see Chart 36). Flush businesses with pristine balance sheets should be able and willing to look through housing's problems and any broader economic fallout and remain sturdy in their investment and hiring.

The risk is that they will not, particularly given that those working in housing are generally more highly compensated than those in other industries. Average hourly earnings in housing-related industries range as much as 50% above the economy-wide average, and those working in the heretofore booming industry have enjoyed record sales commissions and bonuses.[28] The loss of this income could weigh heavily on consumer spending and thus broader activity, spooking otherwise financially healthy businesses to turn much more cautious. Of course, this in turn could reverberate back onto housing demand. This negative self-reinforcing dynamic will be particularly potent in areas where housing activity was previously most active and its role in the economy larger.

Mortgage equity withdrawal. A similar vicious cycle could be ignited by a more potent than anticipated negative housing wealth effect. As house prices and housing wealth surged in recent years, homeowners were able and willing to spend much more aggressively. With the recent weakening in housing, the wealth effect threatens to turn overwhelmingly negative, pressuring consumer spending and the expansion, and ultimately turning the housing correction into a crash.

Housing wealth has soared in recent years with the surge in house prices. Homeowners now own nearly $22 trillion worth of housing, almost double what they owned at the end of the 1990s. After netting out what they owe in mortgage debt, their homeowners' equity has nearly doubled during the same period to a whopping more than

[26] See Appendix 16 for a complete list of the industries included as housing-related industries.
[27] Metro areas in the chart are classified based on ± one-half a standard deviation around the national average share.
[28] This is based on the Federal Reserve's Flow of Funds and 2004 Survey of Consumer Finance.

Chart 35: Where Housing-Related Jobs Are Most Important
Share of total employment, 2006Q2, %

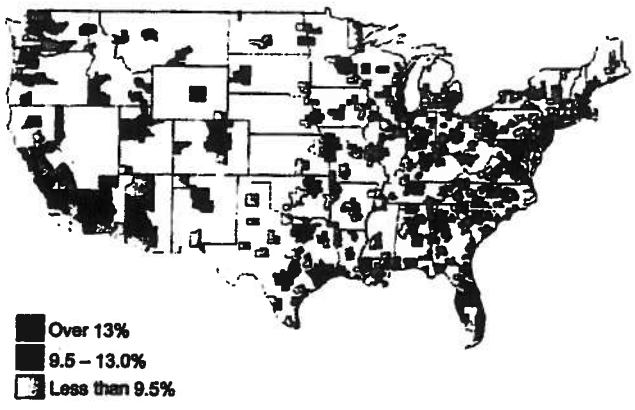
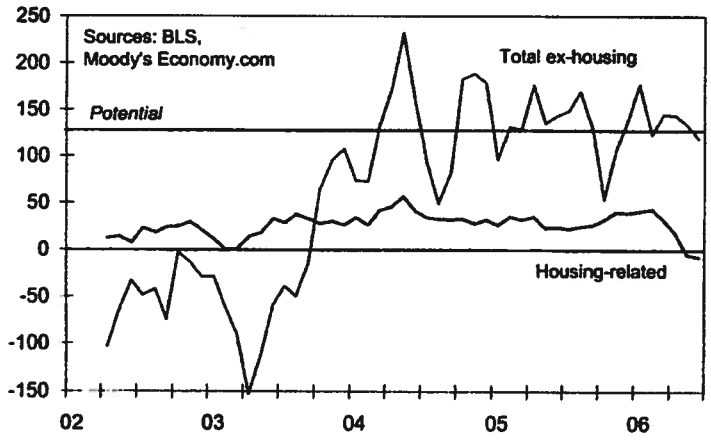


Chart 36: Housing Threatens to Infect the Broader Job Market
Monthly job growth, ths, 3 mo. MA



$11 trillion. With the stock market still struggling to make its way back to its Y2K record high, housing is far and away the largest asset in households' collective balance sheet (see Chart 37).

Homeownership is also substantially broader-based than stockownership. Well over two-thirds of households own at least one home, while less than one-half of households own any stocks. The median amount of equity owned by homeowners is an estimated close to $70,000, while stockholders own only $40,000 in stocks. Moreover, more than three-fourths of families have homeowners' equity that is greater than $30,000, while less than one-fourth of families have stockholdings worth more than $30,000.

It is also worth noting that housing wealth varies substantially across the country. Average homeowners' equity ranges from over $200,000 in California and Hawaii to less than $50,000 in Indiana and South Dakota.[29] Across metro areas, homeowners in the Bay Area of California are the most house-rich, with average equity of over $500,000. Homeowners in South Bend, IN and Buffalo, NY in contrast have equity of less than $40,000.[30]

The wealth effect postulates that changes in household wealth measurably impact household spending. If household wealth is rising (falling), then households will spend more (less) out of their current income, and thus save less (more).

The idea behind the wealth effect, simply put, is that if households become wealthier, it is not necessary for them to save as much today as they are better prepared for their future financial needs. There is no longer the same need to save for such things as their children's college education or their own retirement.

There has been much research into the magnitude of the wealth effect, with most studies finding that 3% to 7% of increased wealth is spent within the following year or two. In other words, for every $1 increase in wealth, there is an estimated 3 to 7 cents in additional subsequent spending. There is a consensus that the housing wealth effect is measurably greater than the stock wealth effect.[31] Driving housing's more powerful wealth effect is the much broader and deeper ownership of homes than stocks. House prices have also proven to be less volatile than stock prices, so any house-price gain is thought to be more durable and thus safer to respond to.[32]

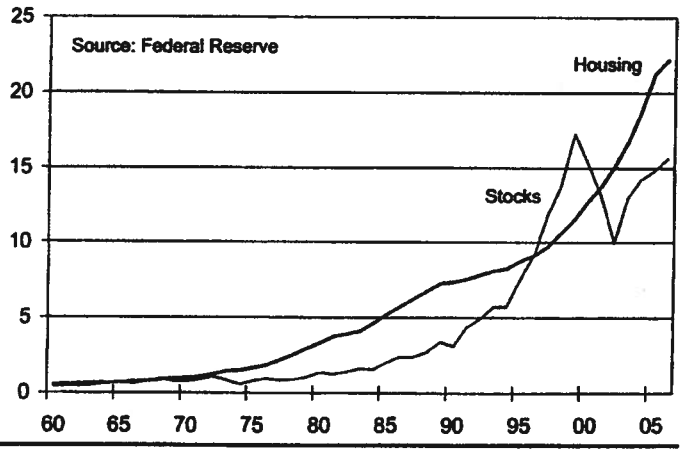
There is also substantial evidence that the housing wealth effect has become even more potent during the recent housing boom. This has occurred through the heightened ability and willingness of homeowners to tap the equity in their homes through increased mortgage borrowing, or what has been labeled mortgage equity withdrawal or equity extraction.

MEW has soared during this decade, from some $350 billion in 2000, according to work done by researchers at the Federal Reserve, to $950 billion in 2005 (see Chart 12, page 14). Even after mortgage origination fees and closing costs, MEW was more than $700 billion last year, equal to almost 8% of disposable income. MEW occurs through home equity borrowing, cash-out refinancing and capital gains realizations, all of which have been used aggressively by homeowners in recent years.

MEW is most pronounced in those areas where there is substantial homeowners' equity. Some 20 metro areas were the beneficiaries of MEW that was near a whopping 20% of disposable income in the second quarter of 2006 (see Chart 38 and Appendix 18).[33] In areas around the San Francisco Bay Area and near Los Angeles, MEW is closer to 30% of disposable income. MEW is also notably substantial in the rest of California, Florida, and throughout much of the Northeast.

There is much debate among economists regarding the degree to which MEW has added to the wealth effect and thus housing's contribution to consumer spending and broader economic growth.

Chart 37: Housing Is Households' Key Asset
$ tril



[29] This is based on data derived from credit bureau files available from CreditForecast.com, a joint venture of Moody's Economy.com and Equifax.

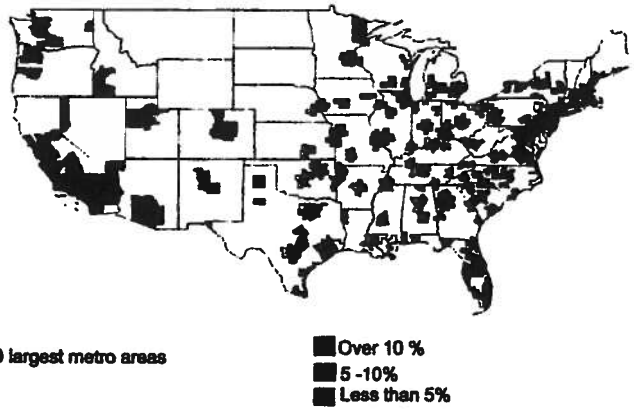
[30] Across the nation's over 3,000 counties, Nantucket County, MA has the highest average homeowners' equity of over $2.5 million. The lowest is Kingsbury County, SD with equity of less than $7,500.

[31] See Case, Quigley, and Shiller, 2005, "Comparing Wealth Effects: The Stock Market versus the Housing Market," *Advances in Macroeconomics*, Volume 5, Issue 1.

[32] The standard deviation of the year-over-year percent change in median existing house prices is less than 3% over the past quarter century, compared to more than 15% in the S&P 500.

[33] The regional MEW estimates are also based on data from CreditForecast.com. These estimates are derived using the methodology suggested by Fed researchers Greenspan & Kennedy, but differ due to the different underlying source data.

Chart 38: MEW Has Been Substantial Along the Coasts
Share of disposable income, 2006Q2, %



One side of the debate holds that MEW has been a minor factor in stimulating consumer spending; that the cash raised from equity withdrawal has simply been a substitute for other sources of cash that would have been used instead. This view holds that the equity withdrawal has allowed for households to diversify their balance sheet, out of housing into other financial assets.[34]

The other side of this debate holds that MEW is a source of cash that is new to many homeowners and has powered much greater consumer spending than otherwise would have been the case.[35] This view holds that many homeowners have historically been liquidity-constrained and thus could not lift their spending even if they wanted to when house prices and their net worth increased. The unprecedented democratization of mortgage credit has allowed the housing wealth effect to finally be fully realized.

Those on this side of the debate also argue that many homeowners have a very short-term focus; that is they value current spending much more than spending in the future.[36] The benefits of saving are clear, but these households have trouble maintaining the self-control needed to do so. Indeed, past research has shown that owning a home has historically been a way for myopic households to force themselves to save. When making their monthly mortgage payments, these households were building equity that could not be easily tapped, or not without great expense. This of course is no longer the case.

The use of MEW to finance increased spending may have also been supercharged in recent years because of an optimistic shift in the expectations of homeowners regarding future house price growth. If homeowners truly believe that their house price will continue to appreciate at the double-digit per annum rate of recent years, then it would seem perfectly reasonable to borrow and spend more aggressively today. Judging by the surge in housing investor demand in recent years, this may in fact describe the behavior of a fair number of homeowners.

The reality of MEW's impact on consumer spending lies between these two polar views.[37] It is hard to argue that higher-income homeowners are spending measurably more in response to the increase in their housing wealth than in the past simply because it is easier to pull equity out of their homes. These households have substantial financial resources and access to all types of credit, and are thus able to quickly change their spending in response to any change in their net worth. Thus, for wealthier, higher-income households, the wealth effect largely works through its influence on their views regarding their long-term financial well-being.

It is equally hard to argue, however, that many lower and even middle-income homeowners have not tapped their homeowners' equity through MEW to finance increased spending; spending they could not have financed in the past. For these less wealthy households, the wealth effect has been empowered by increased mortgage borrowing.

The risk is that those advocating a greater role for MEW in driving consumer spending are more right than wrong. If so, then fading MEW could very well undermine spending and the expansion. The implications for the housing market would be clear.

Financial markets. Another serious threat to the housing market lies in the heretofore burgeoning mortgage backed securities markets.

The nation's soaring housing activity has increasingly not been financed by traditional financial intermediaries, such as banks and thrifts, but by global investors via their booming demand for mortgage backed bonds. Foreign holdings of U.S. mortgage-backed debt has surged to over $3.5 trillion, equal to 30% of the U.S. financial assets held by foreigners.[38] Just a decade ago, foreign holdings of these securities amounted to a bit more than $500 billion equal to near 15% of their U.S. financial holdings (see Chart 39).

[34] This argument is well-articulated in Feroli, 2006, "U.S. MEW Remains a Balance-Sheet Sideshow," *JP Morgan Chase Economic Research Note.*

[35] This side of the argument is well-articulated in Haitzus, 2006, "Housing Holds the Key to Fed Policy," *Goldman Sachs Global Economics Paper, #137.*

[36] This would seemingly be more applicable to younger or lower income households.

[37] See "MEW Matters," *Regional Financial Review*, April 2006 for a detailed discussion of the evidence supporting this view.

[38] This is based on Federal Reserve Flow of Funds data and includes GSE-issued debt and residential mortgage backed securities. This somewhat overstates foreign holdings of U.S. mortgage-backed debt as residential MBS is combined with corporate bonds in the Flow of Funds data. To put this into context, there is some $10 trillion in U.S. mortgage debt and just over $2.8 trillion in GSE-debt outstanding.

Chart 39: Big Players in the Mortgage-Backed Market
Foreign holdings of U.S. mortgage-backed debt

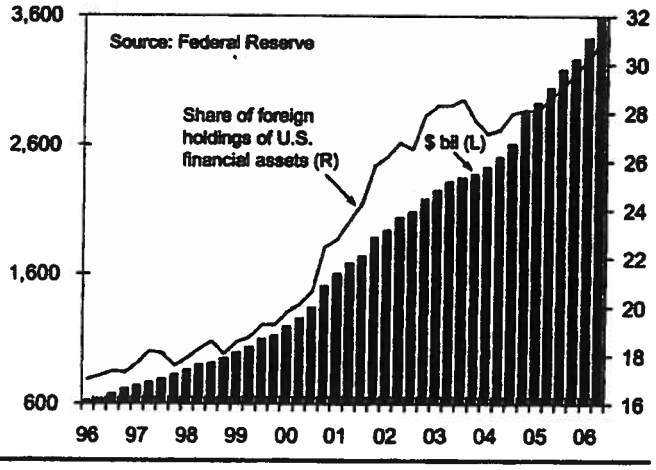


Chart 40: Many Recent Borrowers Have Little Equity...
Share of mortgage originations with equity of less than 10%

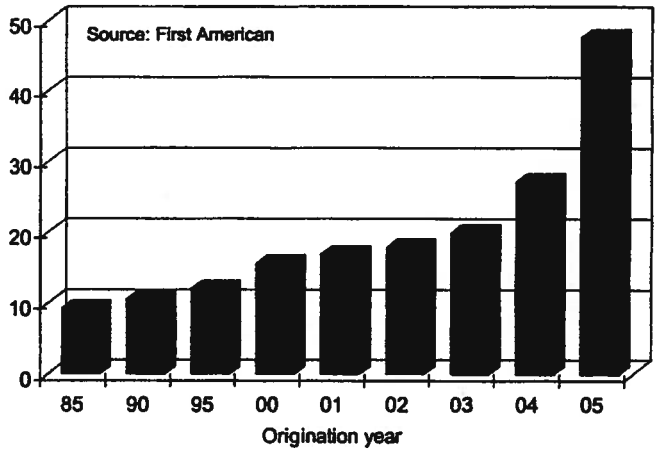
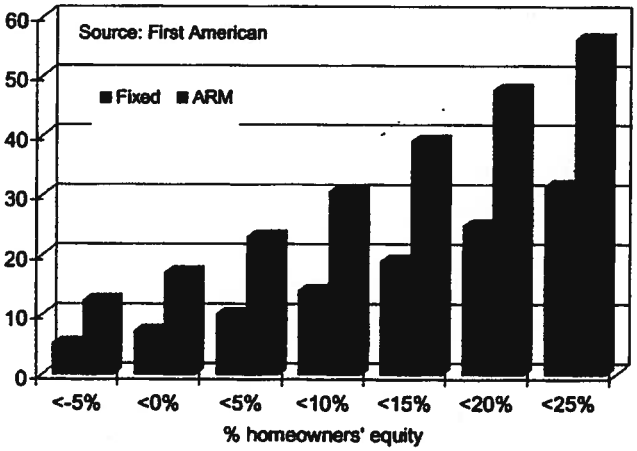


Chart 41: ...Particularly Those with ARMs
Cumulative share of mortgages outstanding



Global investors, flush with U.S. dollars earned in trade, have been attracted to U.S. mortgage-backed bonds given their extra yield over low-yielding Treasuries and their heretofore solid credit performance. Investment banks have also adeptly engineered these securities to make them seemingly better fit the risk tolerance and other idiosyncratic investment criteria of global investors, and the burgeoning number of hedge funds has provided a ready vehicle through which to make these investments.

It is unclear, however, how these new securities will perform as mortgage credit quality erodes, and it is also unclear whether global investors fully appreciate this. It is not difficult to imagine that global investors' heretofore insatiable appetite for U.S. mortgage-backed debt would quickly sour as their performance weakened.

There are reasons to be concerned that mortgage credit will soon measurably erode given the heretofore surge in adjustable rate mortgage borrowing by lower-income new homeowners who have put little down on their homes. The homeowners' equity behind almost one-half of the loans originated last year and over one-fourth of those originated in 2004 is less than 10% of the homes' value (see Chart 40).[39] After accounting for realtor and other fees, these homeowners would have very little if any equity left if forced to sell their homes quickly. For context, less than one-tenth of the loans originated over a decade ago have such a razor-thin equity cushion.

A much higher proportion of adjustable rate mortgage loans is secured with homes in which there is very little equity. Some one-third of ARMs outstanding have equity that is less than 10% of the home's value, and almost one-sixth have no equity at all (see Chart 41). For those ARMs originated in 2004 and 2005, well over one-third have less than 10% equity, and an astounding more than one-fourth are financially upside down.

The most at-risk borrowers are those who took on ARMs in 2004 and 2005 with little down and at a low initial teaser rate. With interest rates on the rise, those with the low initial rates are particularly exposed to an outsized increase in their mortgage payments in coming quarters and years. First American estimates that $400 billion in ARMs were originated in 2004 and 2005 at initial rates of less than 3%, and of these, some 40%, equal to $160 billion, have less than 10% equity (see Chart 42).

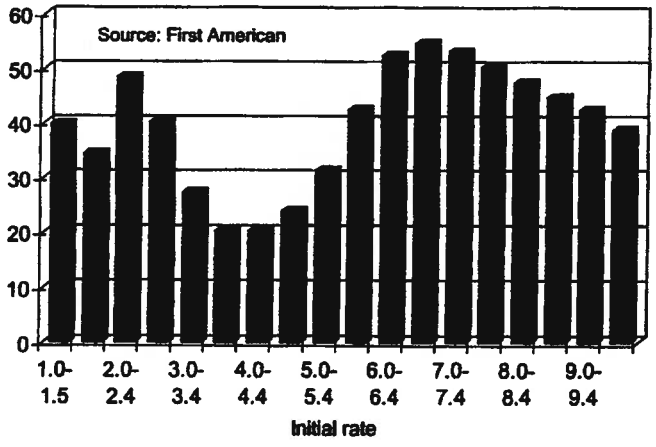
New subprime ARM borrowers that put little down are also at greater risk as rates rise and the housing market weakens. These borrowers have had a difficult time staying current on their debt obligations when rates are low and the housing market strong. They are sure to have even more trouble in the environment now unfolding. There are an estimated $1.1 trillion in outstanding subprime 2004 and 2005 mortgages, and of these, at least 40%, equal to $440 billion, have less than 10% equity.[40]

Given the continued strong ARM origination volume during the first half of 2006, an estimated $750 billion in mortgages outstanding are at measurable risk of suffering some kind of credit problem in the next several years. This is equal to almost 8% of all mortgage debt outstanding.

[39] This is estimated by First American as of September 2005. According to the Realtors, median existing house prices have not changed appreciably since then.

[40] Subprime adjustable rate mortgage loans are defined to be those loans originated with a rate of over 6%. Prime adjustable rate mortgage loans originated during this period had interest rates of near 4%.

Chart 42: Most at Risk Mortgage Borrowers
Share of 04-05 originations with equity of less than 10%



It is also conceivable that an oft-cited benefit of the mortgage backed securities market, namely its ability to diffuse mortgage credit risk more widely, is also a drawback. Given that the risk is so diffuse, it is unclear to investors who is bearing the risk and to what degree. If even a single investor visibly stumbles when credit quality erodes, liquidity in the market could quickly evaporate. Other investors not knowing who is next to suffer may decide not to engage in any further transactions until the proverbial dust clears.

Under some scenarios, the problems in the mortgage-backed market would spill over into the rest of the U.S. fixed income and stock markets. Skittish global investors would propel bond yields higher and stock prices lower. The turmoil in U.S. financial markets would immediately reverberate around the world, engendering a global financial event.

There is historical precedent for this. The asset backed securities market froze in the wake of the Asian crisis and the collapse of Long-Term Capital Management in 1998. Liquidity was restored quickly, but only due to aggressive monetary easing and aggressive buying by Fannie Mae and Freddie Mac. The new Federal Reserve chairman is of course untested, and the GSEs are no longer in a position to come to the rescue in the next securities market crisis.

The economic fallout of this darker scenario could be very debilitating if the free flow of credit, so vital to a well-functioning housing market, is short-circuited. Mortgage rates would rise further, and even the availability of mortgage credit could be impaired. It would at the very least force U.S. mortgage lenders to rein in their most aggressive underwriting, further exacerbating conditions in the deteriorating housing market and potentially igniting a negative self-reinforcing cycle. What is expected to be a small disruption to the economy could quickly turn into a major problem, and for the housing market, a crash.

Conclusions. The nation's housing markets are at a tipping point, as the decade-long boom is fast unwinding. Home sales, construction, and house prices, which surged to record highs late last year and early this year, are quickly fading.

While housing's unprecedented strength was based on sturdy fundamentals, the through-the-roof conditions evident at the peak were fueled by the increasing speculation of buyers and sellers, builders and lenders, and securities issuers and investors.

The catalyst for housing's recent downturn was the Federal Reserve's tightening. Even modestly higher interest rates have undermined housing affordability and the ability of first-time homebuyers to remain in the market, and made housing increasingly less attractive to investors. It was the heretofore surging numbers of first-time buyers and investors that powered the previously extraordinary housing activity.

Optimism that the unfolding adjustment in the housing and mortgage markets will simply be a correction and not a collapse is based on the strength of the broader job market and the balance sheets of financial intermediaries. This optimism is also supported by the heretofore orderly adjustments by the U.K. and Aussie housing markets and economies.

While the national housing market is expected to correct and not crash, a number of significant metro area housing markets will. Moreover, the risks of a darker scenario unfolding in many more parts of the country are skewed decidedly to the downside. It is difficult to gauge just how sharply an asset market infected by speculation, like the housing market, will adjust as sentiment shifts. The broader economic fallout of this could be debilitating. What is expected to be a small disruption to the economy could quickly turn into a major problem.

This study is an effort to comprehensively gauge the mounting risks in the housing market in order to help those who depend on, and who are affected by, the market to be better prepared. It will be updated as conditions in the market unfold.

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