Florida Focus

Volume 3, No. 2 February 2007

The Florida Housing Boom

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The 2000-2005 Florida Housing Boom

The recent rise and subsequent decline of housing prices, both in Florida and across the nation, have led to speculation about the nature of house prices in general. This paper explores recent trends in house prices, especially in Florida. We begin by describing the recent boom in the housing market before offering a model of house prices in an attempt to explain that boom. We then provide empirical evidence in support of the model before elaborating on specific factors, namely the migration of retirees and international immigration, that could affect Florida house prices in the future. Finally, we consider the recent decline in house prices—focusing on the potential of a housing bubble—before concluding with implications for Florida as a retiree destination.

House Prices in Florida and the United States

One problem with many measures of house prices, such as the median price of new houses sold or the average price of all houses sold, is that the quality of houses varies over time. In most places, houses sold in 2005 were better (larger or better insulated, for example) than those sold in 1995. This means that the increase in house prices is partly due to a higher price of a constant-quality house and partly due to improved quality. Though the improved-quality component could theoretically be measured and extracted, that is difficult in practice.

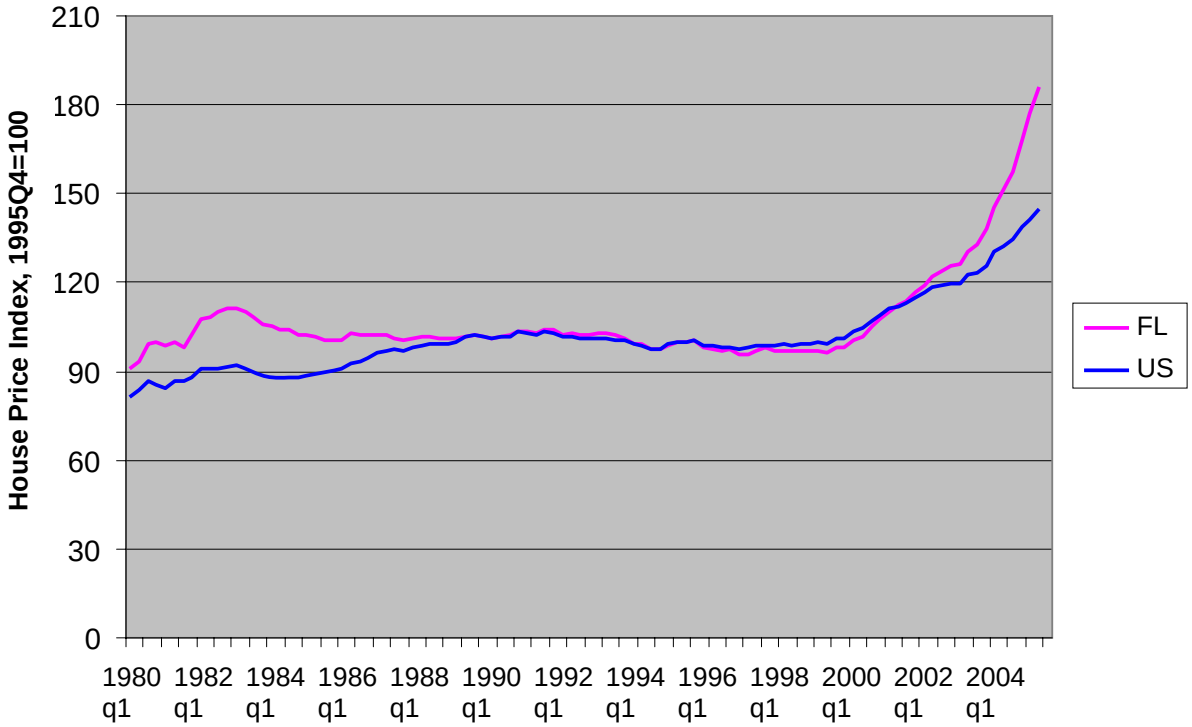
The repeat-sales approach corrects for this by using sales prices of the same house at different times. Fortunately, the Office of Federal Housing Enterprise Oversight (OFHEO) constructs a repeat-sales index of house prices for the nation, for each state, and for most Metropolitan Statistical Areas (MSAs). With thousands of sales from each city, the prices of these houses can be used to construct quarterly indices that control for quality. Even with repeat-sales indices, perfectly controlling for quality is impossible because of depreciation and enhancements to existing structures, though these biases are thought to be small and offsetting.

Since the underlying data for the OFHEO index comes from mortgages backed by Ginnie Mae and Fannie Mae, they represent only houses priced low enough to qualify for mortgages financed by those government-sponsored entities. Because of this, the OFHEO index can only be used for comparing house prices over time within a given city and

not for comparisons between cities. Moreover, data gathering for the indices began only recently, so data for earlier years is relatively unavailable. Even though the indices are available from 1975 on, for Florida—as for most states—they are relatively unreliable for years prior to 1980. Also, the OFHEO indices are not adjusted for overall inflation, but any user can do that easily.

Figure 1 shows the OFHEO repeat sales indices, adjusted for inflation using the GDP deflator, for Florida and the United States from the first quarter of 1980 through the fourth quarter of 2005. The indices for both the state and the nation are set equal to 100 in the fourth quarter of 1995. As the graph shows, there was a mild boom in house price in Florida in the early 1980s, followed by a decade of little change. In 1996, aside from the effect of overall inflation, house prices in Florida were about the same as in 1980. In 1996, house prices in Florida started rising more rapidly than the GDP deflator, though not as quickly as in those in the rest of the nation. After 2000, house prices in Florida took off. Over the five years from the fourth quarter of 2000 to the fourth quarter of 2005, adjusted for inflation, house prices in Florida rose by 82 percent in absolute terms and by 31 percent relative to the entire United States.

Figure 1. Inflation-adjusted House Price Indices, Florida and the US



Source: Office of Federal Housing Enterprise Oversight, May 2006. http://www.ofheo.gov/
Calculations: BEBR.

The Rosen-Roback Model

To understand the recent Florida housing boom, it is useful to start with a model that explains house prices in general. The model we use here, called the Rosen-Roback model, illustrates how differences in productivity and amenities across cities can determine differences in house prices and wages.

In the simplest case, the Rosen-Roback model assumes that all cities are equally desirable places to live and that no city is more productive than any other is. In this model, workers in the same field with the same skill level, education, and experience will command the same wage no matter where they live. If this were not the case, workers in low-wage cities would move to high-wage cities until wages were the same across all cities. By the same token, house prices in one city must be equivalent to those in every other city; otherwise, those living in cities with high house prices would sell their houses, capture the capital gains, and move to cities with lower house prices.

We move toward a more realistic model by forgoing the assumption that all cities are equally pleasant places to live. To attract workers, who are free to choose where they prefer to live, firms in less pleasant cities must pay more than similar firms in more pleasant cities. However, in order to pay their workers more, firms in less pleasant cities will have to charge higher prices for their products and will not be able to compete with lower-cost firms in more-pleasant cities. Firms, followed by workers, would migrate to the most pleasant cities.

In reality, this total migration might be slowed by differences in productivity across cities. For example, Montana may be cold and remote, but its copper mines will pay mining engineers a premium to live there. In contrast, a copper mine might be much less productive in a more pleasant place like West Palm Beach, Florida. Similarly, New York City may be polluted and crowded, but it can attract highly educated financial analysts, whose productivity is increased by interaction and collaboration with other financial analysts on Wall Street. New York firms can pay higher wages and, because they are more productive, still compete with less productive firms that pay lower wages in other cities. Firms in sunny Florida might be less productive in many cases, but they can compete by paying lower wages.

So far we have described two types of cities: those that are unpleasant but highly productive and pay high wages (our example was New York City), and those that are more pleasant but less productive and pay low wages (West Palm Beach). Suppose a city were both highly productive and very pleasant, like, say, Los Angeles. At first it would be able to out-compete both New York and West Palm Beach and would grow vary rapidly. Eventually, however, its inelastic supply of land would fall short of the demand for living space. It would become congested, and house prices would increase.

Logically, there is one other type of city: one that is both unpleasant and unproductive, like, perhaps, Flint, MI after General Motors closed its plants there. But such cities will be on the decline, attracting only those unique individuals with uncommon preferences for low income, adverse conditions, and few public goods. Here, then, are our types of cities:

Productivity	Pleasantness	Wages	House Prices	Example
High	High	Moderate	High	Los Angeles, CA
High	Low	High	Moderate	New York City, NY
Low	High	Low	Moderate	West Palm Beach, FL
Low	Low	Moderate	Low	Flint, MI

However, not every citizen participates in the labor market; we must also consider the substantial population of retirees. Where might they choose to live? More likely than not, they will stay where they worked. Preferences for stability, familiarity, close friends or family, and local lifestyle tend to cause people who worked in Chicago to retire in Chicago, or perhaps a nearby suburb. Those who do move, however, will retire to a pleasant, low productivity place like West Palm Beach. Due to its lower productivity, firms in West Palm Beach pay lower wages, leading to cheaper restaurants, hair care, tennis lessons, and the like. Retirees are similar to workers in that they prefer warm climates, but similar to firms in that they prefer low wages.

There is, however, an important difference between retirees and firms: firms care about productivity while retirees do not. As long as there are enough available residences, retirees can find places to live with moderate house prices. During the 1980s, Florida population ran an average 870 a day without causing inflation-adjusted house prices to rise, thanks to an abundance of land, sufficient infrastructure, and energetic developers.

Now we can introduce two changes: (1) more and more cities, both pleasant and unpleasant, start limiting the supply of housing; and, (2) a little later, the number of retirees begins to surge. What will happen? First, in cities that restrict development, house prices will soar, with the greatest increases being observed in high productivity cities. As workers in those cities retire, they face a greater incentive to move to low-wage, high-amenity areas. By selling their now-expensive homes and realizing the capital gains, they can buy less expensive houses in high-amenity, low-productivity areas and invest the difference to fund a higher standard of living during their retirement. As the first baby boomers reach retirement age, construction in high-amenity, low-wage cities will increase. If enough retirees and the workers serving them move into high-amenity, low-wage cities, house prices will begin to rise. As affordable housing becomes scarce, wages will rise in the retiree destination areas, transforming them from high-amenity, low-wage cities to high amenity, high wage cities. We believe this accurately describes what is happening to the housing market in Florida.

Empirical Determinants of House Prices

In accordance with our interpretation of the Rosen-Roback model, we hypothesized that the determinants of home prices during the second half of the housing boom were different from the determinants during the first half. We termed the first period—from the first quarter of 1996 through the second quarter of 2000—the high technology housing boom, and the second period—from the fourth quarter of 2000 through the fourth quarter of 2005—the high amenity housing boom. This reflects our belief that home prices during the late 1990s were largely determined by local productivity while home prices in the early 2000s were determined by the rising importance of amenities as the baby boomers began to retire.

During the first period, house price increases were more concentrated. About 60 MSAs experienced a greater than 30 percent increase in house prices. Most of these MSAs are located in California (especially the Silicon Valley area and San Francisco), the New England states, Colorado, Michigan, New York, and New Jersey.

Increases in house prices during the high-amenity housing boom were much more widespread. We identified more than 150 MSAs experiencing increases in house prices greater than 40 percent. Although the increase in house prices during this period was geographically diverse, California and Florida experienced particularly high growth.

We collected data on house prices for 316[1] MSAs during the two periods. For those MSAs, we regressed the data on variation in house prices[2] on the percentage of residents employed in high-technology industries,[3,4] the net in-migration of 55 to 69 year olds from 1995 to 2000,[5] the number of miles of highways and expressways per 100,000 residents,[6] average January temperature, average July temperature,[7] latitude and proximity to a coastline.[8]

During the high-technology housing boom, the regression results showed that employment in high technology industries offered a strong explanation for the behavior of house prices. The proximity of an MSA to a coastline also had a strong effect on house prices as did the in-migration of 55- to 69-year-olds, though neither of these had as strong an effect as the employment variable. The number of miles of highways per 100,000 residents, along with average January temperature, average July temperature, and latitude, had no discernible effect on house prices. Complete results for this first regression are included in Appendix A.

However, during the high-amenity housing boom, employment in high technology occupations had no influence at all on house prices. In contrast, we can identify a strong influence of the in-migration of 55- to 69-year-olds, average January temperature, latitude and proximity to a coastline on the change in house prices. Average July temperature and the number of miles of highways per 100,000 residents were once again insignificant influences on the change in house prices. Complete results for the second regression are included in Appendix B.

These results are consistent with our hypothesis that the economy experienced two separate five-year housing booms during the past decade. During the first—the high-technology housing boom—increases in house prices were concentrated in areas with a large percentage of residents working in high technology industries. The high-amenity housing boom saw the largest increases in house prices in warmer, high-amenity retirement destinations.

Migration to Florida vs. House Prices in the Northeast and Midwest

In another empirical test, we attempted to confirm that the migration patterns to Florida from the Northeast and Midwest during recent years were driven by house price patterns in those regions during the late 1990s.

Specifically, we tested the correlation between the percent change in migration from each originating county between 2000 and 2004,[9] and the percent change in house prices in each originating county between the fourth quarter of 1996 and the fourth quarter of 2000.[10] Our analysis was restricted to the 50 counties in the Northeast and Midwest regions that have been supplying Florida with the largest number of migrants since 1996.

The correlation result between the two variables is .56, demonstrating a positive and relatively high correlation. This result further suggests that high house prices in other parts of the country are a factor in

[1] Out of 379 MSAs, there were complete observations for 316.
[2] OFHEO.
[3] Defined as computer-related, engineering, life sciences and physical sciences.
[4] Data from Bureau of Labor Statistics for 1998 and 2004; http://www.bls.gov
[5] Data from Census 2000 on county-to-county in-migration of the population by age.
[6] Data from US Department of Transportation, Federal Highway Administration, *Highway Statistics 2004*, Quick Find/Roads, March 23, 2006.
http://www.fhwa.dot.gov/policy/ohpi/hss/index.htm
http://www.fhwa.dot.gov/policy/ohim/hs03/re.htm
http://www.fhwa.dot.gov/ohim/1995/section5.htm
[7] From research conducted by Dr. Jim Dewey at BEBR, 1998.
[8] Same.
[9] Data on county-to-county migration for all US counties collected by the Internal Revenue Service (IRS).
[10] Data from OFHEO.

promoting migration to Florida. This is consistent with the notion that retirees are the dominant cause of rising house prices in Florida, since retirees living in regions with high house prices and high costs of living would have an incentive to sell their homes, capture their capital gains and then move to high-amenity, average-cost locales.

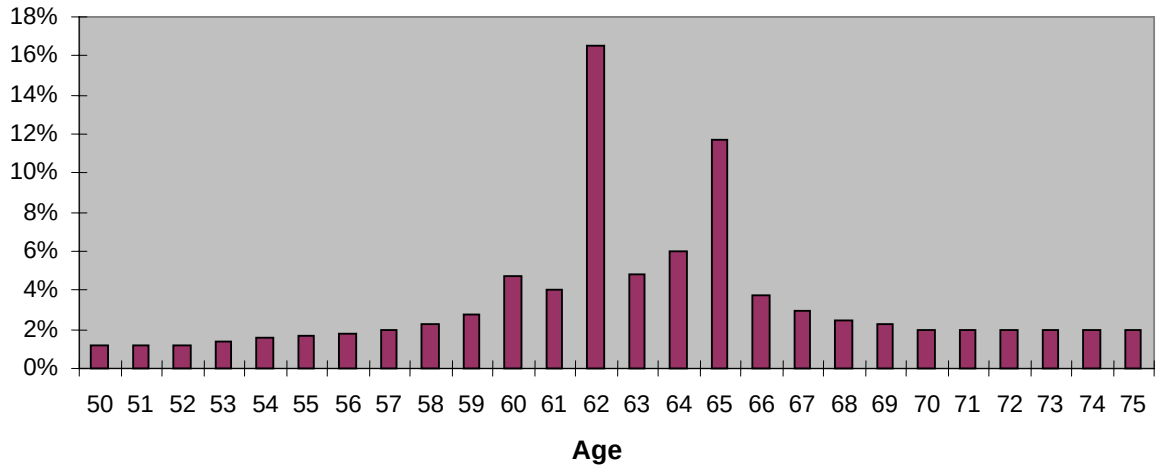
New Retirees and Their Wealth

One important indicator of the potential demand for retiree housing is an estimate of the number of Americans retiring each year from 1950 to 2050. The goal is not to construct a precise measure, but rather an approximate indicator of whether the number retiring in a given year is rising strongly, falling sharply, or staying about the same. One simple means of constructing the approximation would be to note that the most common retirement age is 62 and then simply display the number of people turning 62 each year. We can improve upon that, however, by allowing for a more complex analysis of the retirement age:

1. Few people retire before age 50 or after age 75, so we simplify by assuming that all retirement occurs between these ages.
2. For ages 58 through 66, we use frequencies calculated by Alan Gustman and Thomas Steinmeier from the Current Population Survey for 1992 through 2005.[11]
3. For other ages, we approximate the incidence of retirement using data on employment status for 2005 from the Bureau of Labor Statistics.[12] We calculate the incidence of retirement for each age to be roughly consistent with the labor force participation figures and the Gustman-Steinmeier estimates.

The estimates we formed in this manner are shown in Figure 2.

Figure 2. Percentage Retiring in the US by Age 50-76

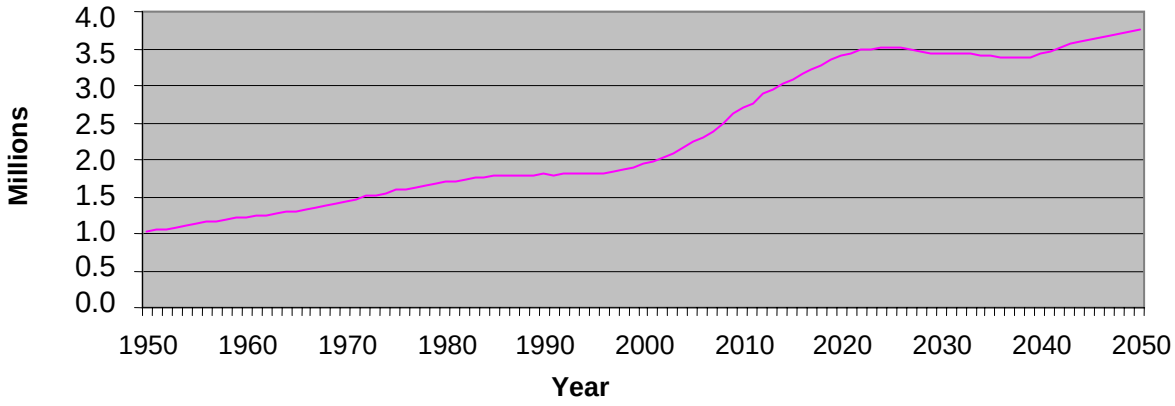


[11] Alan L. Gustman and Thomas L. Steinmeier, "Retirement and the Stock Market Bubble," National Bureau of Economic Research, Working Paper 9404, December 2002, Figure 4.

[12] Bureau of Labor Statistics, "Household data on employment status of the civilian non-institutional population by age, sex, and race, 2005," ftp://ftp.bls.gov/pub/special.requests/lf/aat3.txt

In spite of the estimates' limitations, they are generally accurate in illustrating how the number of new retirees changed little from 1985 through 2000. The estimates also predict that the number of new retirees will rise by 80 percent from 2000 to 2020 and then remain fairly constant for the next two decades, as shown in Figure 3.

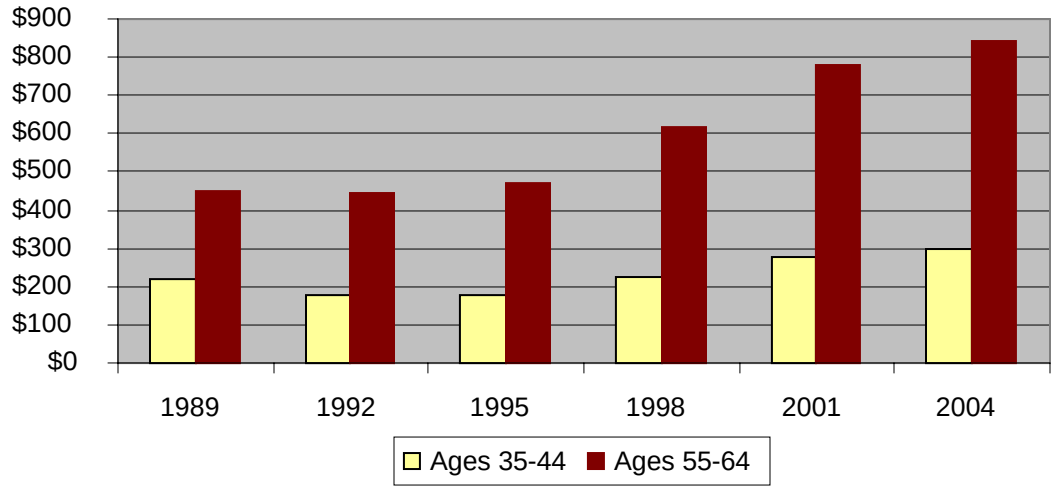
Figure 3. Estimate of New Retirees per Year in the US, 1950-2050



Source: Census data on population estimates and projections, 1930-2050, http://www.census.gov .
Calculations: BEBR.

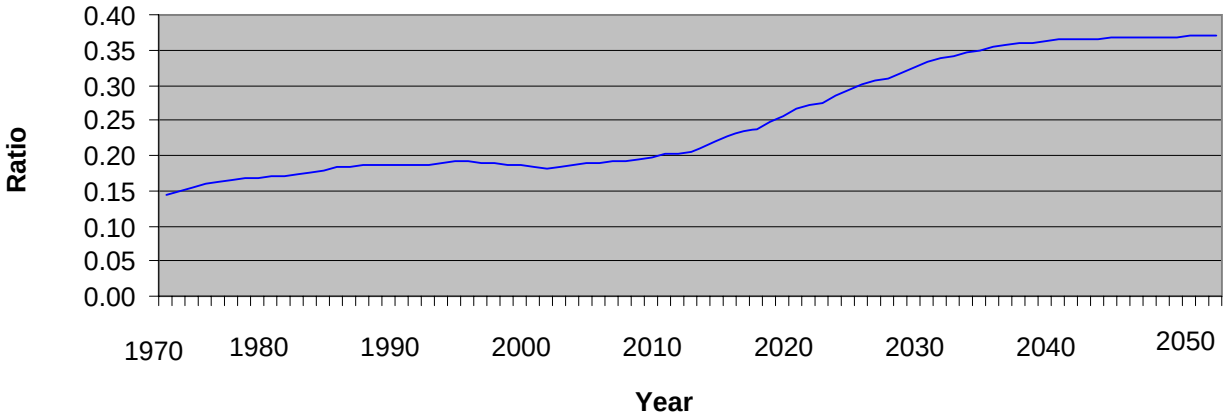
The growing wealth of new retirees reinforces the effects of their increasing numbers. Figure 4 shows the average net worth of households whose heads are 35-44 compared to those whose heads are 55-64. Though their net worth fell when the stock market sank after early 2000, the average wealth of those of retiring age has steadily increased over the past fifteen years, especially relative to the average wealth of younger households, affording retirees a greater share of the national housing market.

Figure 4. Mean Family Wealth for Household Heads Ages 35-44 and 55-64 in the US, 1989-2004 (thousands of 2004$)



Source: Federal Reserve Bank, Federal Reserve Board, Federal Reserve Bulletin 2005. "Statistics: Releases and historical data, survey of consumer finances, Table 3, June 5, 2006, http://www.federalreserve.gov/pubs/oss/oss2/2004/bulletin.tables.pub.xls

Figure 5. Social Security Retired Beneficiaries per Covered Worker in the US, 1970-2050



Source: Social Security, OASDI Trustees Report 2006, Tables IV.B2. and V.C4, http://www.ssa.gov/OACT/TR/TR06/V_programmatic.html#wp182758

The flow of households into retirement allows us to consider the impact of retirees on the demand for housing construction. However, it is also helpful to look at the stock of retiree households. One indicator of the stock of retiree households is the number of social security recipients projected by the Social Security OASDI Trustees Report, 2006, as shown in Figure 5.

International Immigration

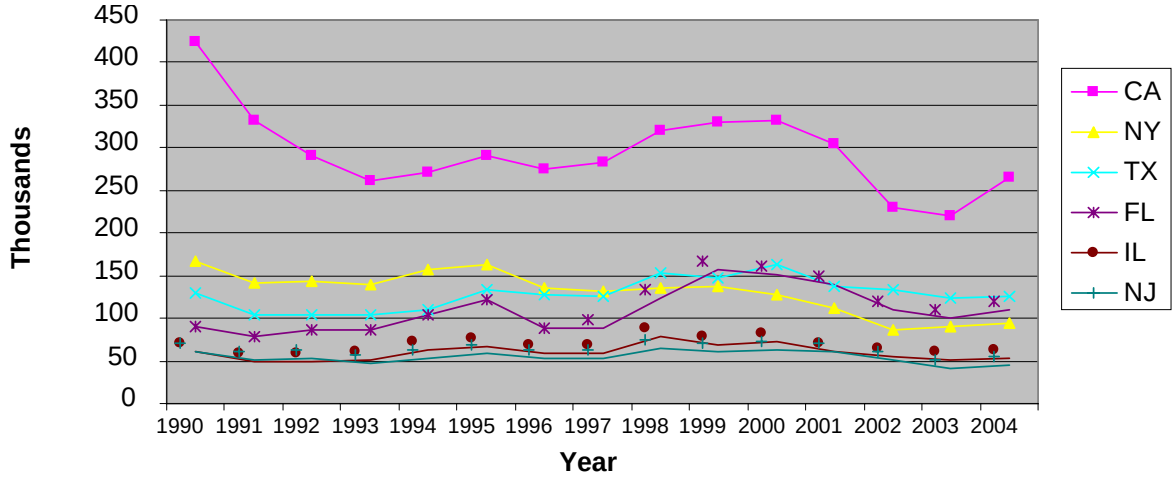
Along with a surge in the number of domestic retirees, increased immigration puts further pressure on the housing market in Florida. In 2004, the United States was home to about 36 million foreign-born residents.[13] Their presence adds to the demand for housing, driving up prices. Since immigrants tend to concentrate in a relatively small number of gateway cities and nearby areas, disparities in house prices across cities may arise. Figure 6 illustrates that California and Texas are the largest recipients of new immigrants, as is to be expected given their size and borders with Mexico. Florida receives the third largest share of new immigrants, hosting immigrants from a wide variety of origins, but particularly from Latin American nations.

Of the six states with the most immigrants, California, Florida, New York, and New Jersey have seen larger-than-average increases in house prices. The correlation between immigration flows and rising house prices makes it plausible that migration trends are driving spatial differences in prices. The surge in immigration from 1997 through 2001 further supports this notion. We believe, however, that immigration has only amplified the increase in house prices sparked by the shift toward high-amenity areas. Immigrants have largely been drawn to high-productivity areas to provide services to workers there, and to high-amenity destinations to do the same for retirees. The inflow of immigrants to provide these services has added to the demand for homes, but their more immediate impact is likely to be on the market for rental units than on the market for owner-occupied housing.[14]

[13] Passel and Suro, 2005b.

[14] Saiz, 2003. Supporting the notion that retirees' demand for services attracts immigrants is the fact that Florida's share of the inflow of immigrants rose from around 7% in 1990 to over 9% in 2004.

Figure 6. Immigration Inflow in the Major Destination States, 1990-2004



Source: Passel, Jeffrey S., & Suro, Roberto (2005a). *Rise, peak, and decline: Trends in U.S. immigration 1992-2004.* Pew Charitable Trust, Pew Spanish Center, September 2005 Report, http://www.pewhispanic.org

The Potential Housing Bubble in Florida

Florida's large increase in house prices over the past five years raises the question of whether the state has experienced a housing bubble. Though decreases in nominal house prices are seldom observed in the United States,[15] the dramatic increase in house prices across Florida cities has many wondering whether prices have become divorced from their fundamental determinants.

A number of analysts have concluded that no bubble exists, that high house prices are easily explained by the fundamentals of demand and supply. McCarthy and Peach,[16] for example, say that rising family incomes and low mortgage rates have kept houses affordable even in extremely high-priced areas. They show that even in periods of weak economic growth and high interest rates, nationally aggregated inflation-adjusted housing prices have fallen only modestly. At the regional level, prices may soften along parts of the east and west coasts, where housing supply has been inelastic and historically prices have been volatile.

Glaeser and his co-authors[17] emphasize that soaring home prices are a coastal phenomenon, leaving most interior states untouched. If the difference in price changes is because of higher demand in coastal states, then there should be a positive correlation between price increases and new construction. But they find the correlation to be substantially negative, indicating that differences in price increases arise from differences in supply and not demand. In these and earlier papers, Glaeser et al. state that the sources of the variations in supply remain somewhat a mystery. They suggest that many areas have come to resemble homeowners' cooperatives, with homeowners banding together to restrict development in order to increase the values of their houses. To a certain extent,

[15] Krainer, John. 2003. House price bubbles. Federal Reserve Board of San Francisco, *Economic Letter*, Number2003-06, March 7.

[16] McCarthy, Jonathan and Richard W. Peach. 2004. Are home prices the next "bubble"? Federal Reserve Board of New York, *Economic Policy Review*, December.

[17] Glaeser, Edward L., Joseph Gyourko, and Raven E. Saks. 2005. Why have house prices gone up? Harvard Institute for Economic Research, Discussion Paper 2061, February.

environmental protections also serve to restrict development. In some areas, we would suggest that the lack of adequate roads providing urban access is another constraint on supply.

Several analysts have pointed out that house prices have two components; the physical structure, and the land on which it resides. Morris and Heathcote[18] note that, from 1996 to 2003, real home prices rose 37 percent, but structure and replacement costs went up only 12 percent. This suggests that most of the increase in price came from rising land values. Glaeser broadens this approach to argue that a house actually has three components; the structure, the land, and a permit to build. In his view, a major contributor to the rising price has been restrictions on issuing permits. Most of his work reinforces the idea that housing supply requires more investigation than it has received.

Some analysts are more pessimistic than the majority of their colleagues. A Harvard study calls attention to the fact that the most recent housing boom lasted for 14 consecutive years.[19] Even with the bursting of the stock market bubble and the recession of 2001, the housing market barely paused in its upward race. The authors conclude, "as a result, prices could be headed for a more significant correction when the next major downturn occurs."

However, unlike the stock market, the housing market is unlikely to collapse. In the stock market people can dump their stocks in a few days. In the housing market, changes occur more gradually. It can take months to sell a house during a cooling housing market.

The initial slow down in the housing market is linked to higher interest rates, which have led to higher mortgage rates, along with high house prices, skyrocketing insurance costs, and increases in property taxes.

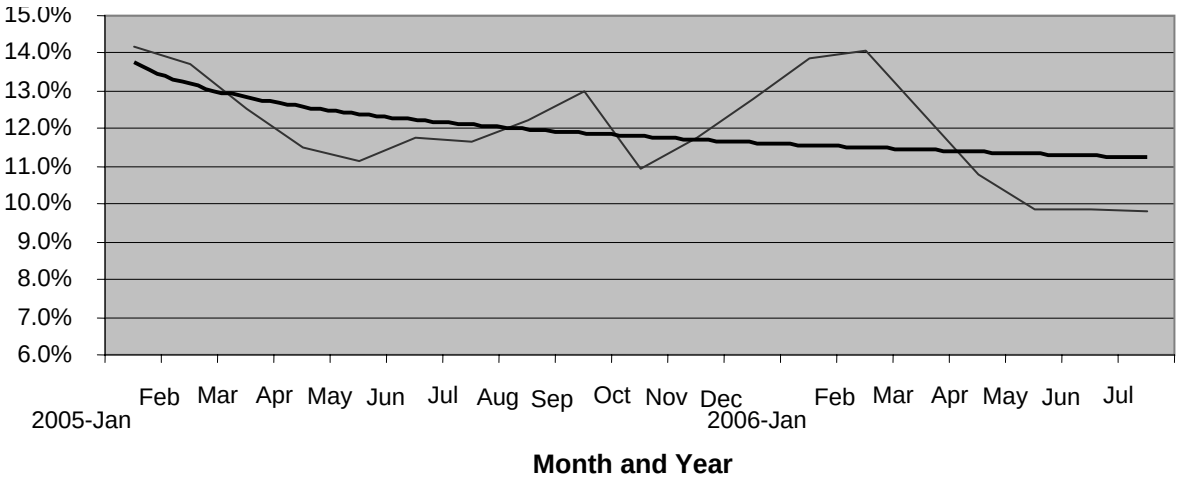
Housing markets are slowing down across nearly all Florida MSAs, but they are slowing most in the southwest and southeast coastal areas. Statewide sales of existing single-family homes are declining, as are sales of existing condominiums. In the second quarter of 2006, sales of condominiums and single-family homes dropped 33 and 27 percent, respectively, compared to the second quarter of 2005. Over the same period, the price of single-family homes rose nine percent, while the price of condominiums rose just one percent, far from the double-digit price increases seen in Florida during 2005. Adjusted for inflation, the average home is worth less than it was a year ago.

The Florida housing market is also slowing relative to the U.S. housing market as a whole. This is illustrated by a decrease in Florida's share of total U.S. building permits, as shown in Figure 7.

[18] Morris, A. Davis and Jonathan Heathcote. 2004. The price and quantity of residential land in the United States. Federal Reserve Board of Governors and Georgetown University. Version of July 2004.

[19] Joint Center for Housing Studies of Harvard University, *The State of the Nation's Housing*, 2005, p. 19

Figure 7. Florida Share of US Single-family Building Permits, 2005-06



Source: U.S. Census Bureau.

The cooling of the housing market in Florida is further illustrated in Table 1, which displays single-family existing homes sales from May-July 2005 to May-July 2006.

Table 1. Florida Single-Family Existing Homes Sales, 2005-06

State and MSA	May-Jul 05	May-Jul 06	% change
Statewide year-to-date	390,023	292,795	-24.9
Statewide	71,766	51,220	-28.6
Daytona Beach	4,301	2,699	-37.2
Ft. Lauderdale	3,403	2,444	-28.2
Ft. Myers-Cape Coral	3,632	2,578	-29.0
Ft. Pierce-Port St. Lucie	2,084	1,432	-31.3
Ft. Walton Beach	1,386	1,015	-26.8
Gainesville	1,300	1,033	-20.5
Jacksonville	4,928	4,670	-5.2
Lakeland-Winter Haven	1,764	1,450	-17.8
Melbourne-Titusville-Palm Bay	2,391	1,672	-30.1
Miami	3,598	2,432	-32.4
Naples	1,511	814	-46.1
Ocala	1,677	1,515	-9.7
Orlando	10,347	7,979	-22.9
Panama City	661	520	-21.3
Pensacola	1,792	1,545	-13.8
Punta Gorda	1,262	899	-28.8
Sarasota-Bradenton	3,190	1,945	-39.0
Tallahassee	1,567	1,502	-4.1
Tampa-St. Petersburg-Clearwater	15,454	9,619	-37.8
West Palm Beach-Boca Raton	4,167	2,643	-36.6

Source: Florida Sales Report produced by Florida Association of Realtors and the University of Florida, Real Estate Research Center.

From the fourth quarter of 2005 to the fourth quarter of 2006, sales of existing homes in Florida sales of existing homes fell by 36 percent, according to the National Association of Realtors. Only Florida and Nevada saw declines of more than 30 percent. During the fourth quarter of 2006, prices of single-family homes fell in over half of the 149 largest MSAs in the country. "The biggest declines were in Florida—Sarasota-Bradenton (down 18 percent), Palm Bay-Melbourne (17 percent) and Cape Coral-Ft. Myers (11.7 percent)."[20]

Both the short-run trials and the long-run potential of the Florida construction market are illustrated by an article in the London Financial Times, describing the purchase of Florida Rock, a producer of asphalt and cement, by Vulcan Materials, the largest U.S. company in the construction materials industry.[21] In spite of the fact that "the deal comes at a sensitive time for the construction market in Florida, where the residential housing market has suffered a painful boom and bust," Vulcan offered $68 a share or $4.6 billion, a 45 percent premium over Florida Rock's closing stock price. Don James, Vulcan's CEO said, "There has been a correction in housing in many markets but we have to have a long-term focus and while we can't really predict how long the downturn will last, the factor that's important is that the demand for aggregates is going to continue to grow in Florida."

We agree with James that after a period of turmoil, Florida's fundamental strengths will reassert themselves, leading to recovery of the housing industry and rising real estate prices.

[20] Vikas Bajaj, "Home Prices Fall in More than Half of Nation's Biggest Markets," *New York Times*, February 16, 2007.

[21] James Politi, "Vulcan cements $4.6bn deal with rival Florida Rock," London *Financial Times*, February 20, 2007.

References

Bureau of Labor Statistics. Household data on employment status of the civilian non-institutional population by age, sex, and race, 2005.

Bureau of Labor Statistics. Monthly seasonally-adjusted labor force participation, for January 1990 to May 2006, and annual projections for 2007 to 2014.

Del Negro, Marco and Christopher Otrok. 2005. Monetary policy and the house price boom across U.S. states. Federal Reserve Bank of Atlanta, Working Paper 2005-24, October.

Doms, Mark. 2004. The boom and bust in information technology investment. Federal Reserve Bank of San Francisco. *Economic Review*.

Federal Reserve Bank. 2006. Statistics: Releases and historical data. Survey of Consumer Finances, June 5, 2006. Federal Reserve Board, *Federal Reserve Bulletin* 2006.

Gendell, Murray. 2001. Retirement age declines again in 1990s. Bureau of Labor Statistics. *Monthly Labor Review*, October.

Glaeser, Edward L. and Joseph Gyourko. 2002. The impact of zoning on housing affordability. Harvard Institute for Economic Research, Discussion Paper 1948.

Glaeser, Edward and Joseph Gyourko. 2006. Housing cycles. Working Paper, April 22.

Glaeser, Edward L., Joseph Gyourko, and Raven E. Saks. 2003. Why is Manhattan so expensive? Regulation and the rise in house prices. National Bureau of Economic Research, Working Paper 10124, November.

Glaeser, Edward L., Joseph Gyourko, and Raven E. Saks. 2005. Why have house prices gone up? Harvard Institute for Economic Research, Discussion Paper 2061, February.

Gutsman, Alan L. and Thomas L. Steinmeier. 2002. Retirement and the stock market bubble. NBER Working Paper Series, Working Paper 9404, December.

He, Wan and Jason P. Schachter. 2003. International migration of the older population: 1995 to 2000. *Census 2000 Special Reports*, August. http://www.census.gov/prod/2003pubs/censr-10.pdf (accessed February 26, 2007).

Joint Center for Housing Studies of Harvard University. 2005. The state of the nation's housing.

Krainer, John. 2003. House price bubbles. Federal Reserve Board of San Francisco, *Economic Letter*, Number 2003-06, March 7.

Krainer, John. 2004. House prices and fundamental value. Federal Reserve Board of San Francisco, *Economic Letter*, Number 2004-07, October 1.

McCarthy, Jonathan and Richard W. Peach. 2004. Are home prices the next "bubble"? Federal Reserve Board of New York, *Economic Policy Review*, December.

Morris, A. Davis and Jonathan Heathcote. 2004. The price and quantity of residential land in the United States. Federal Reserve Board of Governors and Georgetown University. Version of July 2004.

Office of Federal Housing Enterprise Oversight. (2005). House price index: Manipulatable data for the Metropolitan Statistical Areas (MSAs). March.

Passel, Jeffrey S. and Roberto Suro. 2005a. Rise, peak, and decline: Trends in U.S. immigration 1992-2004. Pew Charitable Trust: Pew Spanish Center. September.

Passel, Jeffrey S. and Roberto Suro. 2005b. Unauthorized migrants: Numbers and characteristics. Pew Hispanic Center. June.

Perry, Marc J. 2006. Domestic net migration in the United States: 2000 to 2004. *Population Estimates and Projections*, April. http://www.census.gov/prod/2006pubs/p25-1135.pdf (accessed February 26, 2007).

Quigley, John M. 2006. Froth in the Silicon Valley housing market? The Berkeley Electronic Press: *Economist's Voice*, April. http://www.bepress.com/ev/vol3/iss5/art1 (accessed February 26, 2007).

Saiz, Alberto. 2003. Immigration and housing rents in American cities. Federal Reserve Bank of Philadelphia. Working Papers Number 03-12, June.

Social Security Administration. 2006. OASDI Trustees Report. Tables IV.B2 and V.C4.

U.S. Census Bureau. 2003. County-to-county in-migration of the population by age, 1995-2000. Census 2000, August http://www.census.gov/population/www/cen2000/ctytoctyflow.html (accessed February 26, 2007).

U.S. Census Bureau. 2003. Domestic migration across regions, divisions and states: 1995-2000. Census 2000 Special Reports, August.

U.S. Census Bureau. 2005. Population profile of the United States: Dynamic version; Age and sex distribution. http://www.census.gov/population/pop-profile/dynamic/AgeSex.pdf (accessed February 26, 2007).

U.S. Department of Transportation. Federal Highway Administration. 2006. *Highway Statistics 2004*. Quick Find-Roads, March 23. http://www.fhwa.dot.gov/policy/ohim/hs04/

Wiatrowski, William J. 2001. Changing retirement age: Ups and downs. Bureau of Labor Statistics. *Monthly Labor Review*, April.

Appendix A

Regression 1[22]: Percentage Change in House Prices 1996Q1 to 2000Q4

Variable[23]	Observations	Mean	Std. Dev.	Min	Max
q4_2000_q1_1996	315	1.258	0.254	-0.213	1.982
hightechjobs99	315	-1.824	0.280	-3.428	-0.524
roadspop95	291	0.957	0.289	-0.334	1.722
retiring95_00	316	-1.924	0.237	-2.624	-1.003
latitude	316	7.573	0.064	7.329	7.787
janavtmp	316	1.508	0.185	0.633	1.857
julavtmp	316	1.880	0.033	1.766	1.972
coast	316	0.161	0.368	0	1

Source	SS	df	MS		
				Number of obs =	289
				F(7,281) =	9.53
Model	3.663	7	0.523	Prob > F =	0.000
Residual	15.436	281	0.055	R-squared =	0.192
				Adj R-squared =	0.172
Total	19.099	288	0.066	Root MSE =	0.234

q4_2000_q1_1996	Coef.	Std. Err.	t	P>|t|
hightechjobs99	0.196	0.050	3.91	0.000
roadspop95	0.005	0.048	0.11	0.912
retiring95_00	0.215	0.063	3.43	0.001
latitude	-0.414	0.471	-0.88	0.380
janavtmp	-0.100	0.123	-0.82	0.415
julavtmp	-1.946	0.694	-2.81	0.005
coast	0.141	0.047	2.99	0.003
constant	8.938	4.618	1.94	0.054

[22] All variables except "coast" are logarithms.
[23] q4_2000_q1_1996 = variation (as percentage) in house prices through the period 1996q1 – 2000q4.
hightechjobs99 = share in total employment of jobs in computer related occupations, engineering, and life and physical sciences in 1999.
roadspop95 = miles of highways and expressways per 100,000 habitants in 1995.
Retiring95_00 = share in total population of 1995 of in-migrants 55-69 years old between 1995 and 2000.
latitude = data for the principal city in the MSA.
janavtmp = January average temperature, data for the principal city in the MSA (1998).
julavtmp = July average temperature, data for the principal city in the MSA (1998).
coast = MSAs on coast (Gulf of Mexico, Pacific ocean, Atlantic ocean).

Appendix B

Regression 2[24]: Percentage Change in House Prices 2000Q4 to 2005Q4

Variable[25]	Observations	Mean	Std. Dev.	Min	Max
q4_2005_q4_2000	316	1.610	0.267	1.083	2.157
hightechjobs04	316	-1.534	0.233	-2.297	-0.855
roadspop03	293	0.957	0.288	-0.317	1.772
retiring95_00	316	-1.924	0.237	-2.624	-1.003
latitude	315	7.574	0.064	7.329	7.787
janavtmp	316	1.509	0.186	0.633	1.972
julavtmp	315	1.880	0.032	1.766	1.971
coast	316	0.161	0.368	0	1

Source	SS	df	MS		
				Number of obs =	292
				F(7, 284) =	20.47
Model	6.742	7	0.963	Prob > F =	0.000
Residual	13.361	284	0.047	R-squared =	0.335
				Adj R-squared =	0.319
Total	20.102	291	0.069	Root MSE =	0.217

q4_2005_q4_2000	Coef.	Std. Err.	t	P>|t|
hightechjobs04	0.006	0.056	0.10	0.921
roadspop03	-0.098	0.045	-2.16	0.032
retiring95_00	0.334	0.059	5.64	0.000
latitude	0.686	0.413	1.66	0.098
janavtmp	0.350	0.111	3.15	0.002
julavtmp	-1.625	0.629	-2.58	0.010
coast	0.229	0.043	5.32	0.000
constant	-0.357	4.066	-0.09	0.930

[24] All variables except "coast" are logarithms.
[25] q4_2005_q4_2000 = variation (percentage) in house prices through the period 2000q4 – 2005q4.
Hightechjobs04 = share in total employment (2004) of jobs in computer related occupations, engineering, and life and physical sciences.
Roadspop03 = miles of highways and expressways per 100,000 habitants in 2003.
Retiring95_00 = share in total population of 1995 of in-migrants 55-69 years old between 1995 and 2000.
latitude = data for the principal city in the MSA.
janavtmp = January average temperature, data for the principal city in the MSA (1998).
julavtmp = July average temperature, data for the principal city in the MSA (1998).
coast = MSAs on coast (Gulf of Mexico, Pacific ocean, Atlantic ocean).