Real Estate in the U.S. Economy

My aim today is to review the basic facts on the size and cyclicality of the real estate sector of the U.S. economy. Especially given the serious problems evident today in the residential side of this sector, it is important to maintain a longer-run perspective on this important industry. Real estate exhibits regularities over the business cycle; studying this history may help us to better understand the current situation. Finally, I will discuss some of the current problems in the industry and lessons that may benefit future policymakers, consumers and businesses.

Before proceeding, I want to emphasize that the views I express here are mine and do not necessarily reflect official positions of the Federal Reserve System. I appreciate comments provided by my colleagues at the Federal Reserve Bank of St. Louis. Kevin L. Kliesen, economist in the Research Division, provided special assistance. However, I take full responsibility for errors.

DEFINING REAL ESTATE AND ITS ECONOMIC EFFECTS

Real estate comprises many important aspects of economic activity, both direct and indirect effects on the level and composition of real gross domestic product (GDP). There are many ways to define the real estate sector. I will concentrate mostly on private construction activity as it flows into the GDP accounts. This definition encompasses construction activity to serve both the business and household sectors. However, because a household's residence is usually the largest single asset it owns, I'll also briefly discuss recent trends in the value of household real estate wealth, and place this wealth in the context of household financial wealth.

Besides new construction, real estate is a long-lived asset and therefore has important balance sheet effects. For example, a permanent increase in household net worth arising from increases in real house prices likely spurs some increase in household expenditures on goods and services. Economists generally agree that there is a wealth effect on household behavior, but there is much less agreement on its magnitude.

An increase in demand for housing structures, all else equal, leads to an increase in housing starts and thus new construction—known in the national accounts as residential fixed investment. Currently, residential fixed investment comprises a little less than 5 percent of GDP. There are a myriad of direct and indirect effects associated with real estate that spill over into other aspects of the economy, such as the demand for lumber, labor and other commodities used in the construction of structures or in remodeling activity.

Beyond the residential sector, there is a sizable nonresidential component in the real estate economy. The determinants of new construction of nonresidential structures are quite different from the determinants of residential structures investment. Because a commercial or industrial structure is a long-lived asset, firms will only undertake this investment if its rate of return is at least equal to its opportunity cost—that is, the rate of return on the next best use of its financial capital.

Many public policies affect real estate. Fiscal policy affects the real estate economy through

policies that change the cost of capital and the return on capital. These types of effects range from land use regulations—zoning restrictions and the like—to changes in property tax rates, depreciation rules or temporary tax credits designed to spur commercial or industrial construction activity. Revisions in the tax code, as the 1986 Tax Reform Act showed, can result in dramatic changes in incentives to build structures. Other innovations, such as those in the mortgage financing area, can also produce dramatic effects. On the residential side, as we have witnessed over the past few years, changes in public policies and financial market innovations that allow a larger percentage of the population to purchase their own home have greatly enhanced residential real estate activity.

Econometric models can estimate approximate effects on the overall economy from changes in real estate activity. Still, economists know that our knowledge is incomplete. It is no secret that the downturn in residential real estate activity is more severe than most forecasters expected only a few months ago.

TRENDS IN RESIDENTIAL HOUSING WEALTH

According to the flow of funds data published by the Board of Governors of the Federal Reserve System, household real estate assets totaled about $20.6 trillion dollars at the end of 2006. Thus, with mortgage liabilities totaling about $9.8 trillion, household net real estate wealth—which I'll simply call net housing wealth from now on— totaled a little less than $11 trillion at the end of 2006.[1] If we benchmark net housing wealth to GDP, as Figure 1 in your handout shows, we can see that it fluctuates over time—rising for extended periods and falling for shorter periods. Indeed, net housing wealth as a share of GDP fell

from 78 percent in 1987 to 60 percent a decade later. This share rose to an all-time high of nearly 85 percent in 2005, and then slipped slightly in 2006.

A useful perspective arises from expressing aggregate data in real, or inflation-adjusted, per capita terms. Figure 2 shows per capita real net housing wealth, which has risen rather sharply over the past decade.[2] After remaining at about $25,000 per person from 1991 to 1997, real per capita net housing wealth rose by more than 60 percent to $41,600 in 2005. Although significant, household real net housing wealth is still only about half of the level of tangible financial assets held by households. At the end of 2006, as seen in Figure 3, real household financial assets totaled about $37 trillion, or nearly $186,000 per person. By contrast, the value of household real estate assets totaled nearly $18 trillion at the end of 2006, or about $78,500 per person.[3]

REAL ESTATE IN THE GDP

Real GDP is the broadest measure of final goods and services produced within the geographic boundaries of a country in a particular period. Figure 4 shows expenditure shares of the major components of GDP since 1950. The structures share, roughly 10 percent, has remained fairly constant for the past 25 years. Moreover, many other goods and services are tied in part to the production of structures in some fashion, such as furniture, utilities and roads.

Figure 5 plots private fixed investment in nonresidential structures and residential structures as a percentage of total private fixed investment. Expenditures on residential structures are usually larger than on nonresidential structures. Currently, residential fixed investment comprises about 30 percent of total private fixed investment, with nonresidential structures comprising about

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[1] Nominal flow of funds data for the household sector are taken from Table B.100 (Balance Sheet of the Household and Nonprofit Sector).

[2] Real per capita household real estate assets are divided by the civilian noninstitutional population, ages 16 and over.

[3] The values in Figure 3 are measured in gross, rather than net terms. From 1995 to 2006, real household liabilities increased by about 111 percent.
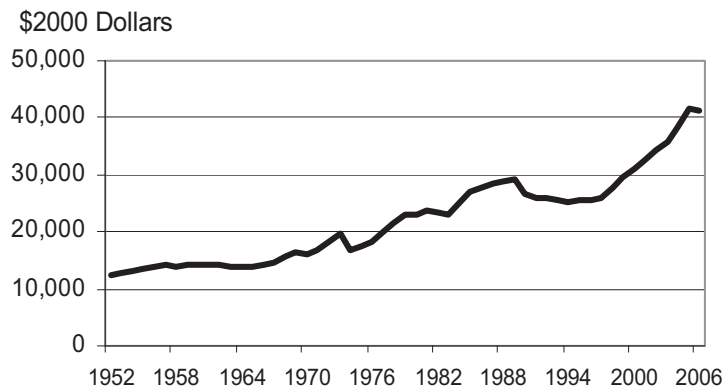
Figure 1

Nominal Household Net Real Estate Assets as a Percent of GDP
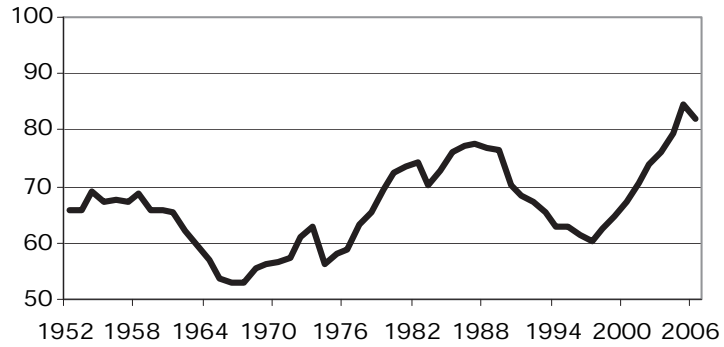
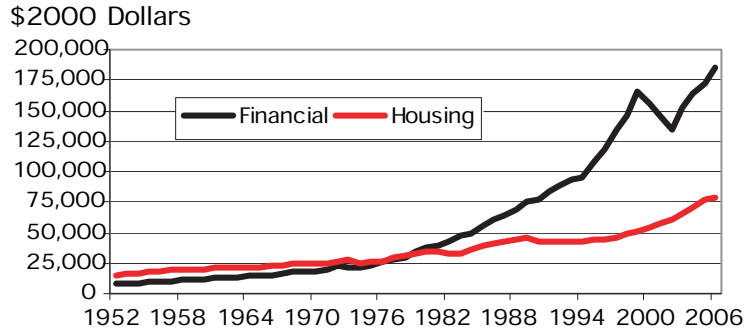SOURCE: Board of Governors of the Federal Reserve System and author's calculations.

Figure 2

Real Per Capita Net Household Real Estate Assets

SOURCE: Board of Governors of the Federal Reserve System and author's calculations.
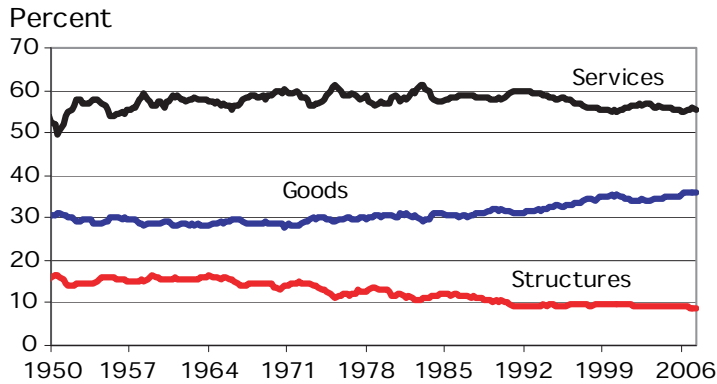
Figure 3

### Real Per Capita Gross Household Financial and Real Estate Assets

$2000 Dollars

SOURCE: Board of Governors of the Federal Reserve System and author's calculations.

Figure 4

Real GDP Shares by Major Type of Product

Percent

SOURCE: Bureau of Economic Analysis and author's calculations. Data are quarterly through 2007:Q2.

Figure 5

Shares of Nominal Fixed Investment by Type
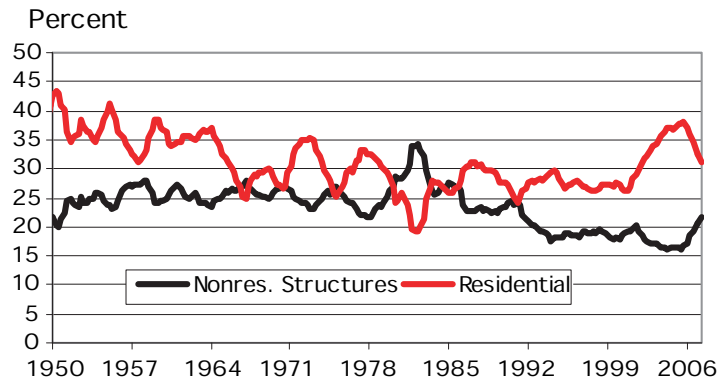
Percent

SOURCE: Bureau of Economic Analysis and author's calculations. Data are quarterly through 2007:Q2.

20 percent.[4] The remaining 50 percent is fixed investment in equipment and software.[5] From a long-term perspective, the significant jump in the share of residential fixed investment from 2000 to 2006 was highly unusual.

Table 1 reveals a more detailed composition of construction spending in the private and public sectors. The table lists the value of construction put into place, as published by the U.S. Bureau of the Census. These are the key source data that feed into national income and product accounts for fixed investment in residential and nonresidential structures. Through August 2007, construction spending has totaled a bit less than $1.2 trillion at a seasonally adjusted annual rate, with private construction outlays comprising a little more than three-quarters of the total and public construction outlays the remaining one-quarter. The table also shows how these expenditure shares have changed over the past decade, in five-year increments.

In general, there has been a modest upward shift in the share of residential and public con-struction at the expense of nonresidential con-struction. If we dig a little deeper, we find shifts in construction shares similar to the structural changes that are occurring in the economy. For example, since 1997 there have been modest increases in the share of construction outlays devoted to lodging, health care, communications and power, with modest declines seen in com-mercial and office construction, amusement and recreation, and manufacturing.

We can gain additional insight by examining the share of payroll employment and after-tax corporate profits of the construction industry relative to other large, private industries. Table 2 shows the seven largest industries, ranked by their employment share through August 2007. These seven industries comprise about 70 percent of total payroll employment. In 2007, the number of jobs in the construction industry totaled 7.7 million. Although construction was the seventh largest employer, the industry comprises only about 5.5 percent of total nonfarm payroll jobs.

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[4] I have calculated shares from nominal data. Comparisons of dollar magnitudes over time are best made from inflation-adjusted, or real, magnitudes.

[5] Real values calculated with chain-type price weights are not additive, which means that dividing one real series by another to obtain shares is not advisable, especially the further away one gets from the base year.

Table 1

Total Construction Put Into Place

	2007 Value, $ Billions	Percent of Total, 2007	Percent of Total, 2002	Percent of Total, 1997
Total	1,166.7	100.0	100.0	100.0
Private	886.2	76.0	75.5	76.6
Residential	551.2	47.2	48.2	44.1
Nonresidential	335.0	28.7	27.3	32.5
Lodging	25.8	2.2	1.2	2.0
Office	53.4	4.6	4.1	5.0
Commercial	81.0	6.9	6.8	8.1
Health Care	36.4	3.1	2.6	2.7
Educational	15.7	1.3	1.5	1.3
Religious	7.6	0.7	1.0	0.9
Amuse. & Recrea.	8.6	0.7	0.9	1.3
Transportation	8.3	0.7	0.8	0.9
Communications	25.1	2.2	2.1	1.9
Power	35.2	3.0	3.8	2.5
Manufacturing	36.0	3.1	2.6	5.7
Public	280.5	24.0	24.5	23.4
Public Safety	9.0	0.8	0.9	#N/A

NOTE: 2007 values are year-to-date averages of monthly figures.
SOURCE: Bureau of the Census and author's calculations.

In fact, construction's share was about half that of manufacturing's and about 60 percent smaller than the largest sector, education and health services. While construction's share of total nonfarm payroll employment has increased slightly since 1998, the two largest industries, which are in the services sector, have seen their shares increase by larger amounts.

In our market economy, profits are an important signaling mechanism for the allocation of economic resources. Strong profits signal rising returns in an industry and tend to attract additional capital. Table 3 also shows the seven largest industries by their domestic corporate profit share since 1998.[6] These seven industries comprised about 75 percent of total corporate domestic profits in 2006.[7] By profit share, the construction industry is the sixth largest domestic industry. However, like most of the other six major industries, the construction industry has seen its share of corporate domestic profits fall since 1998. By contrast, profit shares have risen strongly for the finance and insurance industry and, since 2002, for the information industry. From 1998 to the peak year of 2005, construction industry after-tax profits rose by about 19 percent per year on

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[6] Corporate profit data are based on the North American Industrial Classification System (NAICS), which are only available since 1998. Prior to 1998, they are based on the old Standard Industrial Classification (SIC) system, and thus are not strictly comparable.

[7] In 2006 (the latest data available), domestic profits comprised 81 percent of total after-tax corporate profits. The profit share of foreign firms located in the United States totaled 19 percent of total after-tax profits.

Table 2

Top 7 Private Industries by Employment Shares, 1998 to 2007, Ranked by 2007 Shares

	2007	2002	1998
Education & Health Services	13.27	12.43	11.47
Profess. & Business Services	12.97	12.26	12.03
Retail Trade	11.17	11.53	11.60
Manufacturing	10.22	11.71	13.95
Leisure & Hospitality	9.80	9.20	8.92
Financial Activities	6.14	6.02	5.93
Construction	5.56	5.15	4.88
Total of Listed Categories	69.13	68.29	68.77

SOURCE: Bureau of Labor Statistics, Current Employment Statistics survey.

Table 3

Top 7 Industries by Domestic Corporate Profit Shares, 1998 to 2006, Ranked by 2006 Shares

	2006	2002	1998
Finance and Insurance	20.32	22.00	10.29
Manufacturing	17.18	1.97	21.58
Management of Companies	10.70	21.04	10.37
Retail Trade	8.86	14.32	13.01
Wholesale Trade	7.81	9.82	9.58
Construction	5.13	10.06	8.42
Information	4.84	-3.12	-0.40
Total of Listed Categories	74.84	76.09	72.85

SOURCE: Bureau of Economic Analysis.

average, but they fell by 21 percent in 2006 and will surely fall again in 2007.

THE CYCLICALITY OF REAL ESTATE

One of the most significant changes in the U.S. economy over the past quarter century has been the marked reduction in economic volatility. Following the terminology of the Great Depression and the Great Inflation, this period of increased stability has been termed "The Great Moderation."

The Great Moderation—this period of relatively stable GDP growth—has been accompanied by a lower average level and reduced volatility of long-term interest rates. The more stable financial environment makes it easier for firms and households to plan for the future.

The Great Moderation has also made the job of forecasters somewhat easier. Forecast errors for real GDP growth and inflation have been smaller than before. While no single factor can explain this decline in volatility, economists have pointed to several factors, such as better monetary policy, structural changes in the economy, such as just-

in-time production, and a rising share of employment in the less volatile services industries.

Over the past 25 years, U.S. business expansions have become longer and recessions less severe. The current economic expansion, which began in November 2001, is nearly six years old. On average, post-World War II expansions lasted only a little more than four years. Despite the longer expansions and milder recessions, it is still the case that fluctuations in investment spending by households and businesses account for a large share of GDP fluctuations over the business cycle.[8]

To understand typical experience since the Korean War, consider Figure 6. Each line shows the average contribution to real GDP growth (in percentage points) eight quarters before and after each cycle peak from 1953 to 2001. There are three lines representing the contribution to real GDP growth from residential fixed investment (housing), nonresidential structures (commercial and industrial), and business equipment and software investment. These are the major components of private fixed investment.

Residential investment typically turns down—that is, contributes negatively to real GDP growth—well before the other two investment components. The figure shows that, on average, housing peaks about three quarters before a recession starts. Second, of the three investment components, housing makes the largest negative contribution to growth during the recession, and on average this negative contribution occurs concurrent with the business cycle peak. Housing's contribution to growth then becomes progressively less negative and, on average, turns positive three quarters after the onset of the recession.

For recent business cycles, however, the timing of real estate's contribution to real GDP growth both before the onset of the recession and during the recession is considerably different from earlier experience.[9] For instance, in the 2001 recession, housing declined prior to the business cycle peak in March 2001, registering its largest negative contribution to real GDP growth in the second and third quarters of 2000. In contrast with the typical pattern, however, housing was then a net positive contributor to real GDP growth over the first three quarters of 2001.

The contribution of business structures investment to GDP growth typically hits its zenith one quarter before the recession starts, but it does not begin to contribute negatively to real GDP growth until two quarters after the recession starts. Investment in business structures does not begin to contribute positively to real GDP growth until nearly two years after a recession starts. The lag reflects the long lead times associated with large projects, such as office buildings.

Finally, the contribution from business investment in equipment and software exhibits characteristics of the other two components. Like residential investment, equipment and software spending makes its largest contribution to real GDP growth three quarters before the recession starts, but then turns sharply negative one quarter into the recession. In Figure 6, the largest average contribution from equipment and software spending occurs one quarter into the recession, about 0.75 percentage points; it remains at about that level for another quarter. But like business investment in structures, equipment and software investment does not begin to make a positive contribution to real GDP growth, on average, until nearly two years after the cycle peak, by which time the recovery is well under way.

Figure 6 makes clear that housing both leads the economy into recession and out of recession. Moreover, while housing's drag on the economy during the recession is larger than the other two investment components, its recovery is also larger: A year and a half after the recession starts, housing's average contribution to real GDP growth is 1 percentage point—more than double the sum of the other two components.
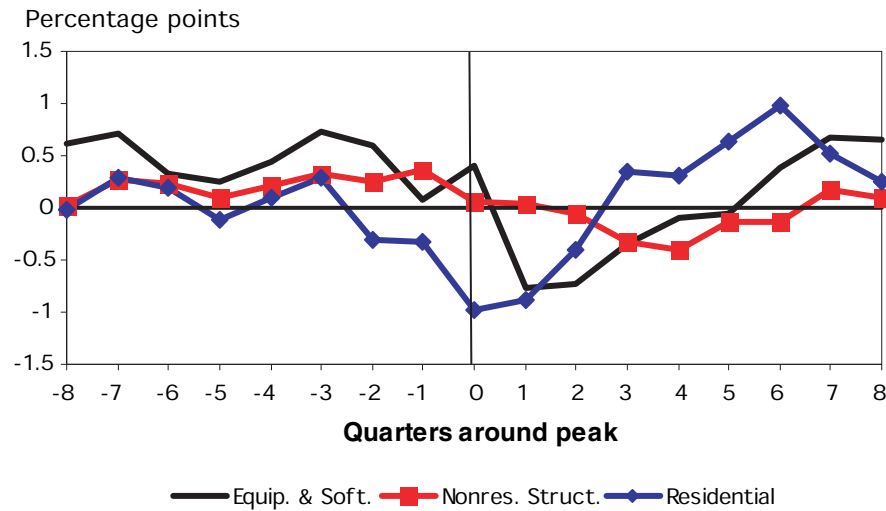
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[8] See Zarnowitz (1999).

[9] See Leamer (2007).

Figure 6

Average Contribution to GDP Growth: Components of Private Fixed Investment

Percentage points

Quarters around peak

— Equip. & Soft. —■— Nonres. Struct. —◆— Residential

NOTE: Peak quarters begin with 1953:Q3 and extend to 2001:Q1.
SOURCE: Author's calculations based on data from the Bureau of Economic Analysis.

CURRENT PROBLEMS IN REAL ESTATE AND LESSONS LEARNED

Current difficulties afflicting the real estate sector have, to date, been confined to the residential sector; business outlays for structures have been quite strong. Since its peak in 2005:Q4, real residential fixed investment expenditures have declined by 19 percent. Over the same interval, real business investment in structures has increased by 21 percent. If you plot these two series on a chart, they would look like scissors: one line going up and one line going down—and their slopes would be quite steep.[10] Indeed their slopes suggest that the current rates of change are not sustainable. Housing will not continue to fall at double-digit rates, and outlays for business structures will not continue to increase at double-digit rates.

Unfortunately, recent events suggest that housing will remain weak for several more quarters; stabilization may not begin until well into 2008. Probably the most important statistics in this regard are the number of unsold new homes still on the market relative to their current sales rate and the recent trends in house prices. Figure 7 shows that the inventory-to-sales ratio of unsold new and existing single-family homes has risen sharply since early 2005. The current level of inventories relative to sales is about double the average levels from 1999 to 2005.

Some potential homebuyers are no doubt delaying purchase because they expect house prices to fall. As seen in Figure 8, prices have decelerated sharply nationwide. According to the price index published by the Office of Federal Housing Enterprise Oversight (OFHEO), through the second quarter of 2007 prices are still a bit above year earlier levels.[11] However, another

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[10] Part of the strength in structures investment reflects increased drilling and mining activity in the energy sector. This is undoubtedly a response to higher energy prices. However, this component is only about 15 percent of total structures outlays.

[11] The OFHEO index plotted in Figure 8 is for purchases only; that is, it excludes house prices valued for refinancing activity.
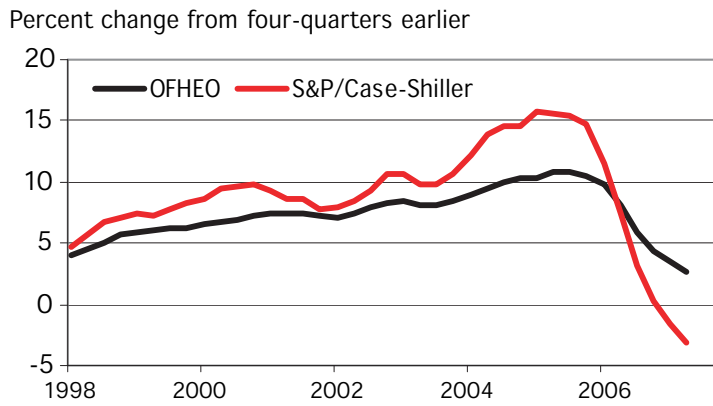
Figure 7

Inventory to Sales Ratio: New and Existing Single-Family Homes
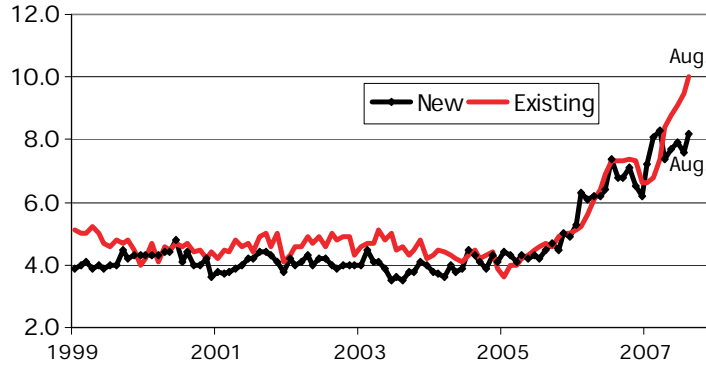
Figure 8

U.S. House Price Indexes

Percent change from four-quarters earlier

NOTE: Data are through 2007:Q2.

measure of national house prices—the S&P/Case-Shiller price index (SPCSI)—actually declined 3 percent in the second quarter from a year earlier. A subset of this measure, indexes based on house prices in the 10- and 20-largest U.S. markets, suggests that prices have declined even more in the third quarter. In July 2007, the 10-city composite has declined 4.5 percent from 12 months earlier and the 20-city composite has declined about 4 percent.

A decline in home prices on a national average basis is relatively rare. In fact, using OFHEO data, there has been no such decline over four quarters since the inception of the purchases only OFHEO index in 1991 or since 1975 using OFHEO's total index, which includes refinancings. It appears that we are in uncharted territory, and, given that fact, a forecast of house prices must be regarded as highly uncertain.

According to the latest Blue Chip survey, the Consensus expectation is for the S&P/Case Shiller house price index in December 2007 to be 5.6 percent below that from a year earlier and for the index to fall an additional 3.9 percent in 2008. The Blue Chip consensus forecast also projects that real residential fixed investment will decline 15 percent this year and by another 7.6 percent in 2008.

CONCLUDING REMARKS

The financial market turmoil that began in August hit hard an already struggling housing market. Financial markets appear to be stabilizing, but they have not returned to normal and are still fragile. Most forecasters have reduced their expectations for GDP growth and believe that downside risks have risen. However, the employment report for September, the latest available at this time, does not suggest that the downside risk is occurring. As an aside, the substantial upward revisions to data released in the August report remind us that it is a mistake to place too much weight on any one report.

Although this episode of financial turmoil is still unfolding, my preliminary judgment is that

there are no new lessons. Weak underwriting practices put far too many borrowers into unsuitable mortgages. As borrowers default, they suffer the consequences of foreclosure and loss of whatever equity they had in their homes. It is painful to have to move, especially under such forced circumstances. Investors are suffering heavy losses. There is no new lesson here: Sound mortgage underwriting should always be based on analysis of the borrower's capacity to repay and not on the assumption that a bad loan can be recovered through foreclosure without loss because of rising property values.

The other aspect of the current financial turmoil that reaffirms an old lesson is that it is risky to finance long-term assets with short-term liabilities. Consider a portfolio of any sort of long-term assets or assets carrying substantial credit risk, such as securities collateralized with subprime mortgages. Financing such a portfolio with commercial paper makes the firm vulnerable to the risk that holders of the commercial paper will refuse to roll over maturing issues. Over the past few months, firms that structured their portfolios this way found themselves faced with exactly this problem. No manufacturing firm would ever finance a portfolio of fixed assets with commercial paper; once market sentiment became distrustful of subprime assets, these assets lost value and became no more marketable than investments in factory buildings.

The Federal Reserve has neither the power nor the desire to bail out bad investments. We do have the responsibility to do what we can to maintain normal financial market processes. What that means, in my view, is that we want to see restoration of active trading in assets of all sorts and in all risk classes. It is for the market to judge whether securities backed by subprime mortgages are worth 20 cents on the dollar, or 50 cents, or 100 cents. Obviously, the market will judge different subprime assets differently, based on careful analysis of the underlying mortgages. That process will take time, as it is expensive to conduct the analysis that good mortgage underwriting would have conducted in the first place. Although there is a substantial distance to go,

restoration of normal spreads and trading activity appears to be under way, and we can be confident that in time the market will straighten out the problems. We do not know, however, how much time will be required for us to be able to say that the current episode is over.

Thank you. I'd be delighted to take your questions.

REFERENCES

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