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# *Strategic Analysis*

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## ARE HOUSING PRICES, HOUSEHOLD DEBT, AND GROWTH SUSTAINABLE?

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### Introduction

Rising home prices and low interest rates have fueled the recent surge in mortgage borrowing and enabled consumers to spend at high rates relative to their income. Low interest rates have counterbalanced the growth in debt and acted to dampen the growth in household debt-service burdens. As past Levy Institute strategic analyses have pointed out, these trends are not sustainable: household spending relative to income cannot grow indefinitely.

In this report, we follow up on a number of points brought out in our last strategic analysis (Godley et al. 2005). We focus on the residential real estate market and examine the effects of possible changes in current trends in the price of real estate on the financial condition of households and their spending behavior. After reviewing some recent perspectives on the state of housing prices, household debt, and economic growth, we investigate the level of housing prices in relation to rental and vacancy rates. We examine the level of debt of the household sector and show that even with the sustained deterioration in household balance sheets, borrowing has grown radically in recent years. Despite low interest rates the burden of servicing this debt has reached new heights. Rising home prices have done little to improve the equity position of households, and any fall in housing prices will worsen matters. We show that the precarious financial position of households stems largely from loose lending standards and the heightened cash-out refinancing of recent years. Noting that when and where housing prices have fallen, borrowing and growth have slowed, we turn our attention to the plausible effects of a slowdown in housing prices on household spending, economic growth, and sectoral balances. We show that the optimistic forecasts of the Congressional Budget Office rely on sustained private-sector borrowing. We then simulate the impact of a drop in house prices and reduced borrowing and conclude that GDP

\*The authors wish to acknowledge comments from Wynne Godley. All errors remain with the authors.

growth will slow. We anticipate that as the private-sector balance improves, and the foreign-sector balance stabilizes, the government deficit will grow. In our last scenario we explore the possibility of offsetting the reduced private-sector demand with increased government spending to maintain existing growth and employment levels. We show that if private expenditures slow, the government deficit must grow to maintain existing employment and growth rates, implying a growing foreign deficit.

## Housing Prices

Previous Levy Institute reports (Shaikh et al. 2003; Papadimitriou et al. 2002) and other economists, such as Baker (2002), Case et al. (2004), and Leamer (2003), have been warning for some time that housing was excessively priced. Our October 2003 Strategic Analysis (Shaikh et al. 2003), for example, showed the housing price-to-earnings ratio to be above its previous peak in 1989 and close to its peak in 1979. Since that time, housing prices have further appreciated.

Many central bankers around the world have viewed the run-up in housing prices cautiously. They see the world economy as vulnerable to an economic slowdown and increasingly prone to financial instability because of inflated home prices. For years they have seen the increase in housing prices contributing to large financial imbalances and have openly spoken of bubbles bursting and asset prices falling (Srejber 2002; Bollard 2004). They note that house price appreciation has permitted consumer-spending growth to outstrip income growth. They identify the consumption made possible by mortgage equity withdrawal as a key factor driving recent economic growth (Large 2004). Federal Reserve Governor Donald Kohn (2005) has also spoken openly about the unsustainability of spending imbalances and “asset-price anomalies,” but differs in his perspective on its resolution.

While a few domestic economists and some foreign central bankers have been warning about the dangers of housing price bubbles for years, Federal Reserve Chairman Alan Greenspan has disputed its existence. As late as October 2004, Greenspan was adamant that a national housing bubble did not exist and was unlikely to form. He argued that the nature of the residential real estate market, with its large transactions costs, impedes speculative trading and restrains the development of price bubbles. More recently he noted the possibility of “froth” in

some “local” markets. While recognizing that housing prices in some local markets may be high, Greenspan maintains that high real estate prices do not pose a significant risk to growth. In March 2003, he characterized any analogy to stock market bubbles as a “large stretch.”

Despite debt burdens that have grown dramatically in recent years, Greenspan views the finances of households as sound. In October 2004, he argued that measures of household financial stress, such as the debt-service ratio and financial-obligations ratio, were not worrisome. He noted at that time that such measures had flattened in recent years, owing to low interest rates. While debt levels and debt-service ratios appear high, these levels may be manageable when viewed from a balance-sheet perspective. The higher level of assets has been cited as evidence that the household sector is in good financial shape and that there is still a substantial pool of available home equity (Greenspan 2004a, 2005a).

A popular perspective on housing prices has been advanced by Glaeser, Gyourko, and Saks (2005), who contend that limits in supply explain the rise in housing prices in recent years. They suggest that rising physical costs of construction, increasing land prices, and regulatory barriers to new construction are driving the rise in house prices. Some research at the Federal Reserve attributes the growth in housing prices to local policies that limit supply rather than to national policies (Del Negro and Otrok 2005).

Yet another popular view is that demographic factors drive demand and price trends in housing. It is thought that the relationship between housing demand and housing prices is at least partially tied to the generation entering its house-buying years. With the baby-boom generation well past its initial house-buying years and younger large demographic cohorts only now on the verge of housebuying, the recent past is anomalous. This suggests that the movements in recent housing prices are not tied to demographic trends. Using demographic data, N. Gregory Mankiw and David N. Weil (1990) mistakenly forecasted that housing prices would fall over the period in which they rose.

Others, such as Federal Reserve economists Jonathan McCarthy and Richard W. Peach (2004), think houses are similar to financial assets such as stocks and bonds and are valued accordingly. They contend that the low nominal mortgage interest rates justify current housing prices (2004, p. 6). But if it is true that home prices are valued by the discounted present

value of forecasted future net income flows, with the current interest rates used for discounting, then even modest increases in interest rates should induce large declines in housing prices.

According to many indicators, houses are overpriced. For instance, consider the price-to-rent ratio—the price of a house divided by its rent. The Joint Center for Housing Studies publishes data on median homebuyer costs and median renter contract costs. Figure 1 shows the price-to-annualized-rent ratio in the United States from 1976 to 2004, providing a useful reference point for evaluating when home prices appear high and low.<sup>1</sup> If the measured quality of the median owner-occupied home today is improving faster than the measured quality of renter-occupied homes, as McCarthy and Peach (2004, p.7) suggest, then this measure may overstate the movement in the prices of homes relative to the rent they bring in. The price-to-rent ratio<sup>2</sup> increased from just under 14 in 1985 to just over 20 in 2004. There appears to be a cyclical pattern until the late 1990s. The past data suggest that the national housing cycle should take eight to ten years and the half cycle should last four to six years.

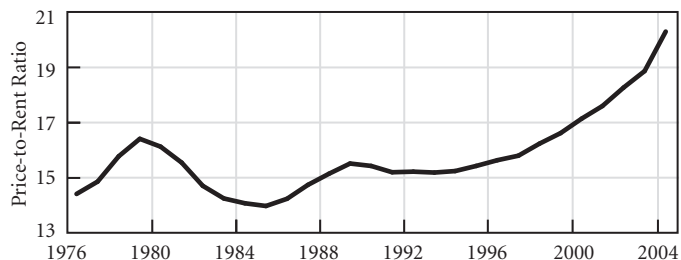
Given the patterns seen in the late 1970s, 1980s, and early 1990s, we would have expected the price-to-rent ratio to have turned in the late 1990s. From the trough of 1993 to the still unknown peak, more than 12 years have passed. Based on previous patterns, the turning point is at least seven years overdue. The price-to-rent ratio in 2004 was 34 percent higher than the trough in 1993 and 24 percent higher than the last highest peak in 1979. Furthermore, housing prices appreciated in 2005.

In the peaks and troughs of the last two cycles, housing prices have been characterized by overshooting. On the upside, mortgage lenders may be too lenient. Whatever the factors that contribute to the momentum that leads to overshooting in housing prices, adjustments typically occur over four- to five-year periods.

The price-to-rent ratio is affected by either the movement in home prices or that in rents. In order for the ratio to fall, either home prices must fall or rents must rise.

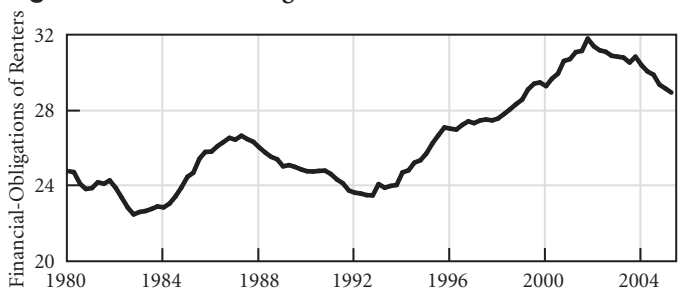
Renters do not have much room to make additional rental payments. The Federal Reserve publishes a series called the financial-obligations ratio (FOR) for renters, which is an estimate of debt-service payments and financial obligations divided by the disposable personal income of renters. As Figure 2 shows, during the 1980s the financial-obligations ratio for

**Figure 1 Housing Price-to-Rent Ratio**



Sources: Joint Center for Housing Studies of Harvard University and U.S. Bureau of Labor Statistics

**Figure 2 Financial-Obligations Ratio of Renters**



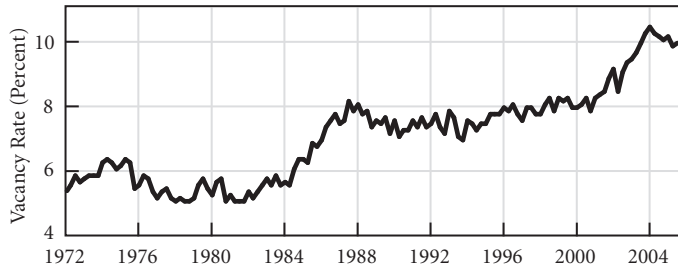
Source: Federal Reserve

renters ranged from 22.35 percent to 26.55 percent. During the 1990s, the FOR for renters rose from 24.65 percent in the first quarter of 1990 to 29.41 percent in the last quarter of 1999. In the last five years, the FOR for renters has ranged from 28.87 percent to 31.75 percent. In the third quarter of 2005, the ratio stood at 28.87 percent. This suggests that while renters may be able to manage modest increases in rent, they do not have the disposable income necessary to make appreciably higher rental payments.

Moreover, residential landlords have less power to raise rents today than in the past because vacancy rates are at historic highs. In the 1970s and 1980s, vacancy rates, as shown in Figure 3, varied from 5 percent to 7.7 percent. In the 1990s, vacancy rates varied from 7.2 percent to 8.1 percent. In the last five years, vacancy rates have climbed steadily from around 8 percent in 2000 to near 10 percent in 2005, which suggests that the stock of rental housing exceeds demand. The rental market favors renters.

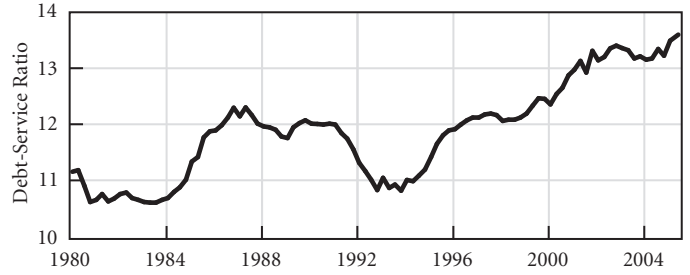
The prices of homes depend largely on the effective demand for them. The affordability index of the National Association of

**Figure 3 Rental Vacancy Rates**



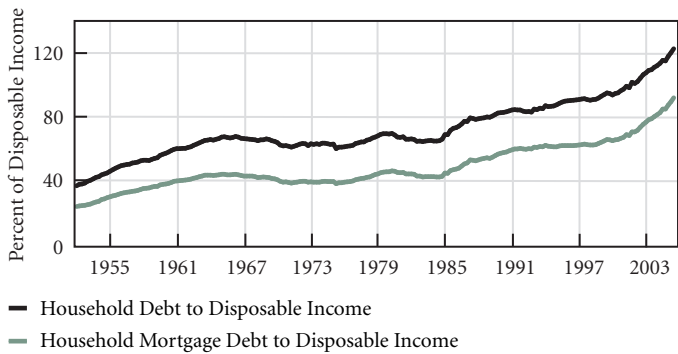
Source: U.S. Bureau of the Census

**Figure 6 Debt-Service Ratio**



Source: Federal Reserve

**Figure 4 Household-Sector Debt and Mortgage Debt to Disposable Income Ratios**



— Household Debt to Disposable Income  
 — Household Mortgage Debt to Disposable Income

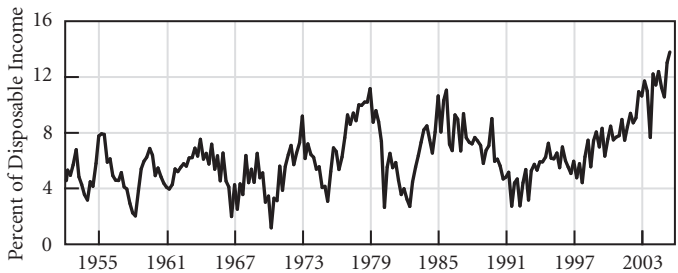
Source: Federal Reserve Flow of Funds

**Figure 7 Household-Sector Financial-Asset-to-Liability Ratio**



Source: Federal Reserve Flow of Funds

**Figure 5 Household-Sector Borrowing as Percent of Disposable Income**



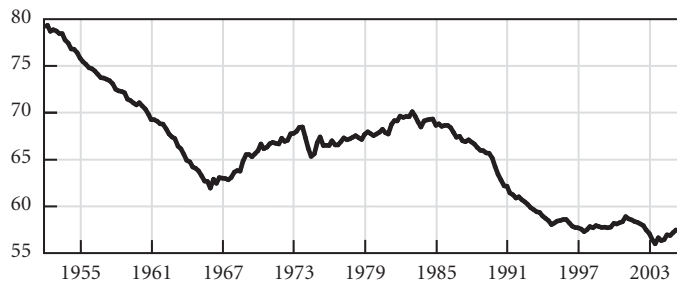
Source: Federal Reserve Flow of Funds

Realtors has fallen in the last three years (2005). In August 2005, it reached its lowest point since September 1991. This has occurred while mortgage rates fell to their lowest levels in decades. High prices, high vacancy rates, and low affordability suggest that it is unlikely that home prices will continue to appreciate at recent rates.

**Financial Condition of the Household Sector<sup>3</sup>**

The debt burden of U.S. households continues to rise. For the decades of the 1960s and 1970s, the compound annual growth rate of debt to income increased by less than 1 percent. Household debt to disposable income, shown in Figure 4, remained below 70 percent until 1985. In the 1980s and 1990s, the debt-to-income ratio grew at a compound annual growth rate of less than 1.25 percent. By the end of the 1990s, it was still below 95 percent. Since 2000, the ratio has increased at a compound annual growth rate in excess of 5 percent. The top line in Figure 4 shows the steep upward trend since the beginning of 2000. Today this ratio is near 122 percent. The pattern of the

**Figure 8 Household Equity as a Ratio to Total Household Real Estate**



Source: Federal Reserve Flow of Funds

ratio of mortgage debt to income, the lower line in Figure 4, mirrors the pattern of the total debt-to-income ratio.

Recent borrowing by the household sector has reached unprecedented levels. Figure 5 shows the household sector's borrowing as a percent of its disposable income. During the 1990s, borrowing by households fell to normal levels, but from 2000 onwards, borrowing as a percent of income has grown rapidly.

In the third quarter of 2005, it reached an historic high of 13.67 percent. In 2004, the household sector borrowed \$1.01 trillion. In the first three quarters of 2005, the household sector borrowed \$831 billion. This contrasts with the period prior to 2000, during which the household sector never borrowed more than \$487.5 billion in a year.<sup>4</sup>

Despite low interest rates, which effectively reduce debt payments, debt-service burdens have reached record highs. Figure 6 shows the trend in the debt-payments-to-disposable-personal-income ratio. Since 2000, the debt-service ratio has

been well above 12 percent. In the third quarter of 2005, the ratio hit a record 13.55 percent.

Evidence from the Flow of Funds data suggests household liabilities have risen more rapidly than household financial assets. Furthermore, the liability side has grown so fast that the balance sheets of the household sector continue to deteriorate. Figure 7 shows the overall household sector's financial-asset-to-liability ratio, which in the third quarter of 2005 hit an historic low. The effect of falling stock prices is clearly shown in the drop after 2000. Despite rapid house price appreciation, equity in real estate as a percent of total real estate assets has fallen modestly, as shown in Figure 8. While the ratio appears to have stabilized since the mid 1990s, the rapid appreciation in housing prices has had little effect.

A fall in real estate prices reduces household equity. At the end of the third quarter of 2005, U.S. household real estate was estimated to be worth \$19.11 trillion, while mortgage debt stood at \$8.19 trillion, leaving total equity at \$10.92 trillion. Table 1 shows the potential effect of a drop in national housing prices on household equity. A 5 percent drop would lead to a \$960 billion dollar loss in equity. A 10 percent drop would reduce it by \$1.91 trillion dollars. A 20 percent drop would eliminate \$3.82 trillion dollars in equity, representing a 35 percent loss. This suggests that given the highly leveraged position of households, even a modest drop in housing prices would reduce their wealth considerably.

Rising home prices and low interest rates have stimulated many homeowners to use cash-out refinancing for consumption spending. The percentage of Freddie Mac refinanced loans that had higher new loan amounts was 74 and 72 percent

**Table 1 Estimated Effect of a Drop in Housing Prices on Household Equity**

	Percent Drop					
	0	5	10	15	20	25
A. New levels in trillions of dollars						
Household real estate	19.11	18.15	17.20	16.24	15.29	14.33
Household mortgage debt	8.19	8.19	8.19	8.19	8.19	8.19
Household equity	10.92	9.96	9.01	8.05	7.10	6.14
B. Loss in trillions of dollars						
	0.00	0.96	1.91	2.87	3.82	4.78
C. New level of household equity as percent of household real estate						
	57.14	54.89	52.38	49.58	46.43	42.86

Sources: Flow of Funds and authors' calculations

respectively for the second and third quarters of 2005 (Freddie Mac 2005). For the previous three quarters, the percentage was close to 60 percent. This contrasts sharply with the data for 2003, in which roughly 40 percent of the loans that were refinanced had higher loan amounts. The median time elapsed to refinance has dropped considerably from the late 1990s, when loans were being refinanced nearly every five years. In recent years, the median refinancing period has dropped to two and one-half years. In the mid to late 1990s, the volume of cash-out refinancing from Freddie Mac ranged from \$21.7 to \$72.4 billion. Since 2001, the volume of cash-out refinancing has risen dramatically. In 2001, \$135.5 billion was cashed out. Cash-out refinancing from Freddie Mac amounted to \$170.5 billion in 2002, \$224.4 billion in 2003, and \$182 billion in 2004. Much of this cash-out refinancing has been made possible by the growth in housing prices.

Households are financially stretched, and falling or flat housing prices will reduce their capacity to borrow and spend.

A series of missteps may have contributed to the excessive growth in housing prices, household borrowing, and household spending in recent years. In February 2004, Federal Reserve Chairman Alan Greenspan, in a speech to credit unions, suggested that traditional mortgages were costing American homeowners tens of thousands of dollars. He counseled homeowners to finance their homes with adjustable-rate mortgages. Subsequent to Mr. Greenspan's speech, many U.S. households financed their homes with nontraditional adjustable-rate mortgages. In 2004, 47.8 percent of homes purchased in California were bought with interest-only adjustable-rate mortgages (Streitfeld 2005). Interest-only loans were used in about one-third of all purchases nationally (Streitfeld 2005). While interest-only mortgages allow the homeowners to defer principal payments for a number of years, they still have to pay the full interest owed. The interest-only mortgages delay the amortization of loans and subject homeowners to higher future payment obligations.<sup>5</sup>

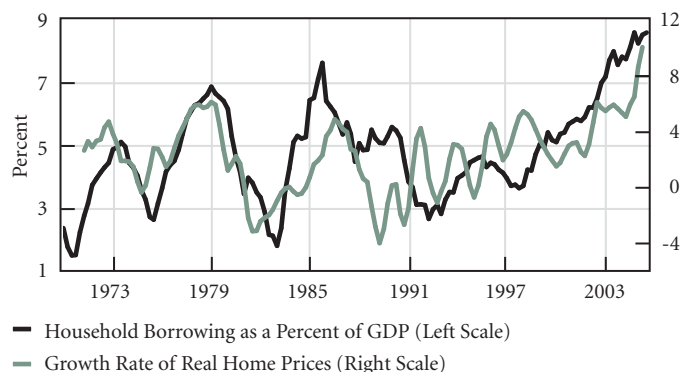
Anecdotal evidence suggests that falling credit standards have played a role in pushing housing prices higher. Of home buyers who financed their home purchases in the first six months of 2005, more than 38 percent made down payments of 5 percent or less of the purchase price. In 2000, a little over 30 percent purchased their homes with so little down (Christie 2005). Similarly, the percentage of buyers paying 20 percent down declined from 39.1 percent in 2000 to 33.7 percent in the first six months of 2005.

**Figure 9 Nominal Interest Rates for 30-Year Fixed-Rate Mortgages**



Source: Federal Reserve

**Figure 10 Household Borrowing and Home Prices**



Sources: Federal Reserve Flow of Funds, National Association of Realtors, and BEA

Despite the increase in measures that suggest higher risk, interest rates have fallen steadily and remain low. Figure 9 shows nominal interest rates for mortgages. Currently mortgage rates are near 30-year lows.

Until recently, homeowners typically chose to finance their homes with fixed-rate, 30-year mortgages. Homeowners didn't need to worry about being exposed to external events that might affect their payment obligations. Interest-only loans were uncommon, and variable-rate mortgages were less popular. The nontraditional mortgages of today are different from past mortgages in that debt-service requirements can rise unexpectedly. When interest rates rise or when interest-only periods elapse, payment obligations rise. Homeowners may be forced to reduce their spending to meet the increased payment obligations. Some may be forced to sell their homes. The volume of homes for sale could grow because of recent trends in nontraditional mortgages putting further downward pressure on housing prices.



There is a positive correlation between household borrowing and the growth in real home prices. Figure 10 shows household borrowing as a percent of GDP and the real growth in home prices since 1970. The two paths follow one another closely. The peaks in housing prices are nearly matched by peaks in household borrowing. Similarly, the troughs in real home prices are nearly matched by troughs in household borrowing. The late 1970s experienced rapid growth in both real home prices and borrowing. Lower household borrowing followed falling housing prices in the early 1980s.

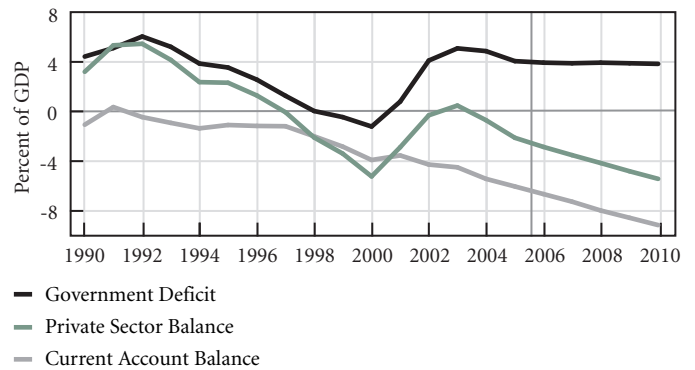
Around the world, where housing markets have declined, output growth has slowed. In the Netherlands, house prices appreciated through the 1990s before stalling in 2002. This was followed by a recession (Cave 2005). In Britain, house prices appreciated for a decade before stalling last year. GDP in Britain is currently growing at less than 2 percent. In Australia, house prices have started to stall, and household consumption has slowed (Cave 2005). Similarly, in other countries, consumption-led growth is being impaired by slowdowns in housing prices.

Next, we explore the implications of plausible changes in housing prices on the projected growth path of the internal- and external-sector balances of the U.S. economy. We align our key model variables to the path projected by the Congressional Budget Office (CBO) budget projection (August 2005) and create a CBO Scenario with which we compare alternative scenarios.

The CBO Scenario entails a rise in government expenditures and tax revenues in the last quarter of 2005 and a stabilization of government deficits thereafter. It also assumes a moderate increase in interest rates in 2006, followed by stable rates. In addition to the variables projected by the CBO, we assume that house prices continue to rise relative to a general price index of private expenditure, following a moderate trend. We keep exchange rates constant at their current (December 2005) level for our five-year simulation period.

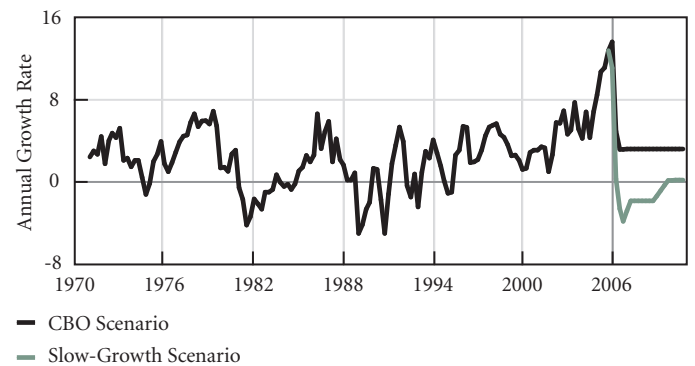
The assumptions above mean that both the public sector and the external sector will not provide additional stimulus to growth. We believe stable exchange rates will not reverse the trend in the U.S. current account deficit. The latest figures give credence to our view. Only increased private spending relative to income is left to stimulate GDP. We therefore adjust our assumptions on household borrowing so that GDP growth in our model replicates the CBO estimates. We find that in order for GDP to follow the growth path projected by the CBO between 2005 and 2010, household borrowing must rise at an unsustainable pace,

**Figure 11 CBO Scenario: Main Sector Balances**



Sources: BEA and authors' calculations

**Figure 12 Real Median Price of Existing Family Homes**

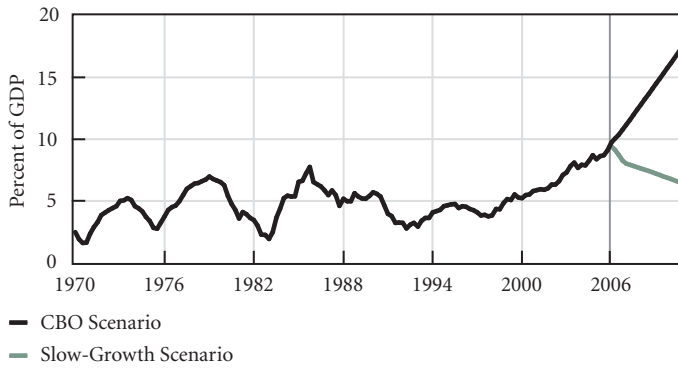


Sources: National Association of Realtors, BEA, and authors' calculations

driving the debt-to-income ratio of the household sector to unprecedented levels. This translates into a private-sector deficit as a percent of GDP that grows to over 4 percent by 2008. The corresponding current account deficit as a percent of GDP grows to over 8 percent by 2008. The government deficit stabilizes below 4 percent of GDP, as depicted in Figure 11.

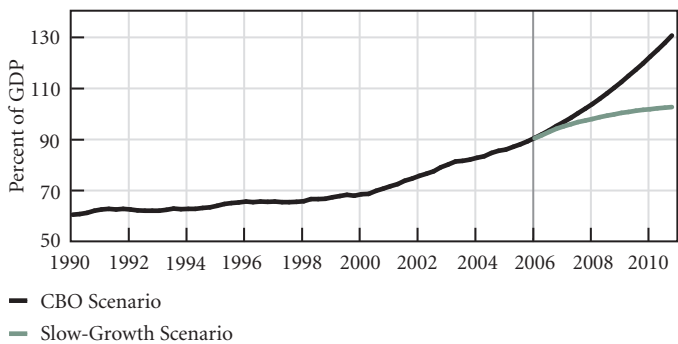
In order to estimate the impact of a drop in house prices, we assume that house prices decline following a pattern similar to the downturn that occurred during the early 1980s. We call this the Slow-Growth Scenario. This assumption implies a drop in the price of houses relative to a general price index of about 8 percent over a three-year period. We assume the slowdown starts in the first quarter of 2006, but we have no strong position on the timing of the slowdown, which may start later. Figure 12 shows the projected paths of real-housing-price growth rates for a Slow-Growth Scenario, compared to the CBO Scenario.<sup>6</sup>

**Figure 13 Household Borrowing**



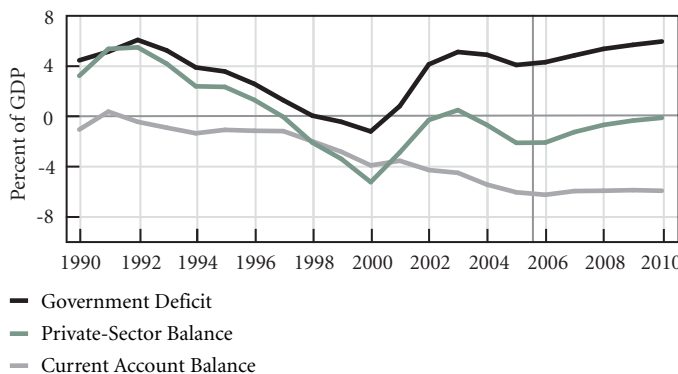
Sources: Federal Reserve, BEA, and authors' calculations

**Figure 14 Household Debt Outstanding**



Sources: Federal Reserve, BEA, and authors' calculations

**Figure 15 Slow-Growth Scenario: Main Sector Balances**



Sources: BEA and authors' calculations

Much of the household borrowing of the last few years has been made possible by rising housing prices. We assume that borrowing will revert to earlier patterns as house price appreciation reverses. In this alternative scenario, household borrowing slowly declines and household debt as a share of GDP stabilizes by the end of the simulation period. Borrowing and debt as a percent of GDP are shown in Figures 13 and 14. Under these assumptions, the impact on GDP growth is substantial. If housing prices decline in a pattern similar to that of the early 1980s, and household borrowing declines slowly back to 2000 levels, we calculate the cumulative drop in GDP over the simulation period to be over 5 percent, compared with the CBO Scenario.

In the CBO Scenario sustained growth is fueled by private expenditure, which together with stable government deficits imply a rising foreign deficit reaching 8 percent of GDP by 2008, as shown previously in Figure 11. But we think the continued deterioration of the private-sector balance is less plausible, given the already high debt-to-income ratios of households. Under our alternative assumptions about housing prices and borrowing, the private sector slowly moves back to balance. This is shown in Figure 15.

In our Slow-Growth Scenario, no assumptions are made about changing government expenditure. Falling GDP implies falling tax revenues, which in turn increases general government deficits as a percent of GDP. The U.S. current account balance stabilizes, because lower private expenditure and GDP growth also imply lower imports.

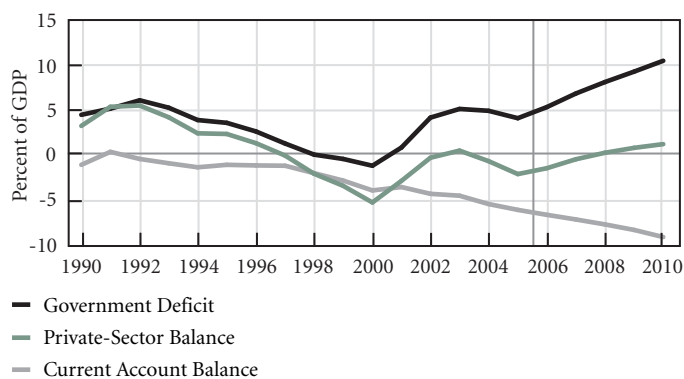
According to our projections, the return to balance of the private sector slows growth in output, which translates into increased unemployment. Unless action is taken to stop the drop in demand for domestically produced goods and services, the increase in unemployment stemming from the slowdown in house prices and borrowing can only be countered by fiscal policy.

A third scenario, the Fiscal-Policy Scenario, is envisioned in which there is an increase in general government spending to counterbalance the reduced demand from the drop in private expenditure (Godley et al. 2005).

Under this scenario, our estimates show the government deficit reaching 10 percent of GDP by the end of the simulation period just to keep unemployment at the same level as in the CBO Scenario. This is shown in Figure 16. Faster growth in GDP and income sustains the adjustment process for the private-sector balance, which returns to surplus, but growth in demand increases imports, and the current account balance deteriorates.



**Figure 16 Fiscal-Policy Scenario: Main Sector Balances**



Sources: BEA and authors' calculations

Our projections in Figure 16 reflect recent data on household debt, which has substantially increased in the third quarter of 2005, and trade figures that show a larger than expected deterioration in the trade balance. If policies aimed at redressing U.S. imbalances are postponed, the costs of adjustment will increase. In this scenario, we have shown that fiscal policy aimed at sustaining growth and employment implies a government deficit that may not be politically feasible. The remaining alternative, as pointed out in our previous strategic analyses, is policies aimed at addressing the U.S. trade imbalance.

Our analysis and simulations suggest that much of the recent growth in GDP can be attributed to house price appreciation and private-sector borrowing. In our view, the projection for sustained GDP growth expected by the Congressional Budget Office depends on rising house prices and sustaining the current borrowing trends of households. As we have seen, the development and promotion of unconventional mortgages and the loosening of credit standards over the last few years have enabled unprecedented borrowing by households. Despite the rapid appreciation in home prices, the financial position of households has deteriorated. The economic trends we have discussed, including dramatic home price appreciation and unprecedented growth of borrowing relative to income by households, cannot continue indefinitely.

## Notes

1. Landlords have operating expenses such as property taxes, management fees, and repairs that make their income from rental properties less than the rent they receive. Since rent is always greater than earnings, the price-to-rent ratio is always greater than earnings, the price-to-rent ratio is always less than the corresponding price-to-earning ratio. Direct comparison of real estate with other asset classes, such as stocks, cannot be made using stock-flow ratios such as the price-to-rent ratio unless the appropriate expenses are accounted for. However, examining the price-to-rent ratio through time can provide a useful reference point for evaluating when home prices appear high or low.
2. For this figure, we use data reported from the Joint Center for Housing Studies of Harvard University (2005). For housing prices, we use the estimates from the National Association of Realtors for the median existing single-family home indexed to 2004 prices reported in Table A-1. For rental rates, we use the contract rental costs reported in Table A-2. We adjust these from 2001 to 2004 prices and annualize them. Had we adjusted for vacancy rates, the recent upward movement would be more pronounced.
3. For much of the empirical work that follows, we use the Flow of Funds Household and Nonprofit Organization Sector. Since nonprofit organizations represent only a small portion of this sector, we included them in what we call the household sector.
4. During the 1990s, borrowing as a percent of income ranged from 2.6 percent to 8.2 percent. Since that time, borrowing as a percent of income has been greater than 7.53 percent in every quarter. In 2004 and 2005, it was above 10 percent in every quarter.
5. Other types of nontraditional loans that lower monthly payments, such as the 40-year mortgage, have grown in popularity (“40-Year Mortgages Hit the Mainstream,” Bankrate.com, 2005). <http://moneycentral.msn.com/content/Banking/Homefinancing/P119865.asp>
6. Our measure is obtained from the annual growth rate of the ratio between the “median price of existing single-family homes” and the deflator for private expenditure. The former measure is published by the National Association of Realtors and has been seasonally adjusted.

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