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ASSET AND DEBT DEFLATION IN THE UNITED STATES

How Far Can Equity Prices Fall?

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The inevitable adjustment of debt to a sustainable level that is consistent with current asset prices, and of saving to a level that represents a higher proportion of disposable income, will be a long and painful retrenchment process. The process whereby a higher saving ratio is triggered by lower net wealth has already started. Thus, retrenchment by the private sector could turn a double-dip recession into a protracted recession.

U.S. equity prices have been falling since March 2000. In terms of magnitude, the current bear market resembles the mid-1970s plunge in equity prices, but it differs in terms of causes and the factors that should be used to monitor its progress. The 1970s bear market (a supply-led business cycle) was the result of soaring inflation caused by a surge in oil prices that eroded household real disposable income and corporate profits. Today's bear market, however, is caused by asset and debt deflation, which triggered the bursting of the "new economy" bubble.

There have been three asset and debt deflation episodes that have led to recession in the 19th and 20th centuries:[1] the depression of 1876–90 (associated with the railway bubble), the depression of 1929–40 (associated with the electricity and automobile bubble), and deflation in Japan that began in 1989 (associated with the electronics bubble) and has not yet ended. In all three cases it took more than a decade to eliminate the serious imbalances in the economy. As shown by the recent experience in Japan, there are sharp, short-lived rallies in a secular bear market, giving rise to

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false hopes that the bear market has ended. During an asset and debt deflation, the nonbank private sector retrenches when the huge debt acquired during the rosy years of rising asset prices is inconsistent with falling asset prices. The process of reducing debt by saving and curtailing spending is long and results in a secular bear equity market. Asset and debt deflation, in this instance associated with the telecommunications and Internet bubble, is exactly what is happening today in the United States.

The 2001 recession, which was the result of an inventory correction associated with the bursting of the new economy bubble, was very mild. The forces that could drive the economy back into recession are related to imbalances in the corporate and personal components that affect the balance sheets of the commercial banks. The final stage of the asset and debt deflation process involves a spiral between the banks and the nonbank private sector as banks cut lending and induce a credit crunch, thereby worsening the economic health of the nonbank private sector, a factor which further deteriorates the banks' balance sheets.

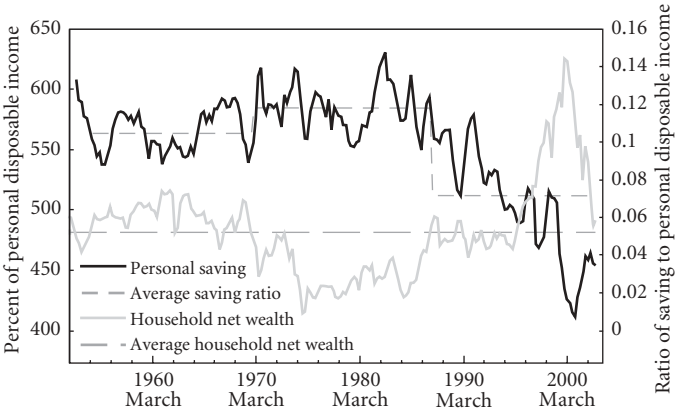
This brief examines how far U.S. equity prices could fall during the current asset and debt deflation. It begins by reviewing how equities are valued and then discusses the impact that a double-dip recession and property market crash could have on equilibrium equity prices as represented by the S&P 500 Index.

Valuing Equities

Since the current bear market has its roots in asset and debt deflation, traditional methods of valuing equity markets based on supply-side factors are inappropriate. The valuation method used in the brief, therefore, is based on the degree of imbalance in the personal balance sheet (i.e., the extent to which assets and liabilities or net wealth deviate from their means). Net wealth is defined as assets (tangible and financial) less liabilities (mainly mortgages and consumer credit).

Figure 1 shows household net wealth as a percentage of personal disposable income. Net wealth was higher than its mean in the golden years of the 1950s and 1960s, when business cycles were led by demand, and lower in the 1970s and the first half of the 1980s, when business cycles were led by supply (e.g., the oil shocks of 1973–74 and 1979). Net wealth bottomed at the end of 1974 at 413 percent of personal disposable income and did not start to recover until mid 1984. During the new economy bubble, net wealth soared to 626 percent of personal disposable income by the fourth quarter of 1999. The bubble burst in March 2000, with the plunge of the Nasdaq, and net wealth fell to 491 percent of personal disposable income by the end of 2002. According to the Federal Reserve's flow of funds accounts (March 2003), the ratio of net wealth to personal disposable income consists of equity (282 percent), property (186 percent), other net wealth (129 percent), and liabilities (minus 106 percent). The dominance of equity in calculating net wealth is overwhelming.

Figure 1 Household Net Wealth

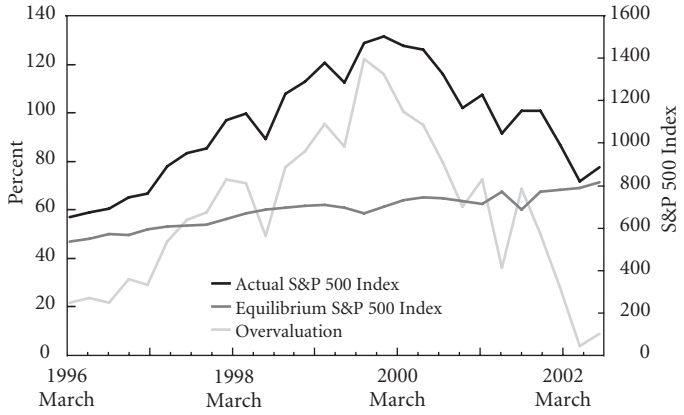


Source: NIPA, Flow of Funds, and authors' calculations

The ratio of personal saving to personal disposable income is also shown in Figure 1. When asset prices rise more than expected, households more easily meet their target real wealth and, therefore, relax their effort to save. Consequently, saving, as a percent of personal disposable income, falls when real wealth rises more rapidly than anticipated, and vice versa. Since asset prices move procyclically, this feature implies a negative relationship between real wealth (expressed as a percent of disposable income) and the saving ratio. Figure 1 strongly supports this view.

The preferred method of valuing equities from a long-term perspective is to determine corresponding values when net wealth returns to its historical mean. This method assumes that the whole adjustment process is borne by equities for any given level of personal disposable income.

Figure 2 S&P 500 K-Model Long-Term Valuation



Sources: Bloomberg.com, Karakitsos (2002), and authors' calculations

Using quarterly data from 1996 to 2002, Figure 2 shows the results of applying the preceding valuation methodology to the S&P 500. The fair value of the S&P 500 increases through time as disposable income rises. However, the rate of increase in asset prices was much more rapid than the rate of increase in disposable income and this disparity resulted in a bubble. At the peak of the bubble, in the fourth quarter of 1999, the S&P 500 was overvalued by 122 percent.[2] Subsequently, in spite of three years of falling equity prices, the S&P 500 was still overvalued by 9 percent at the end of 2002, when its fair value is now estimated to have been 810.

In the first quarter of 2003, the S&P 500 was undervalued as a result of the expected economic consequences of the Iraq war, but it became slightly overvalued during the rally that followed the onset of war. Does this rally herald the beginning of a new bull market?

The Case for Predicting a Double-Dip Recession and Property Market Crash

Figure 3 shows the underlying forces behind the personal component imbalance. Whereas the ratio of financial assets to personal disposable income fell from 515 percent in March 2000 to 375 percent by the end of 2002 (almost three years after the bubble burst), debt continued to soar to 106 percent of personal disposable income. The discrepancy between falling financial wealth and soaring debt is due to the widely held belief that the fall in equity prices is temporary. This belief has been bolstered by a rise in property prices that has cushioned the fall in equity prices.

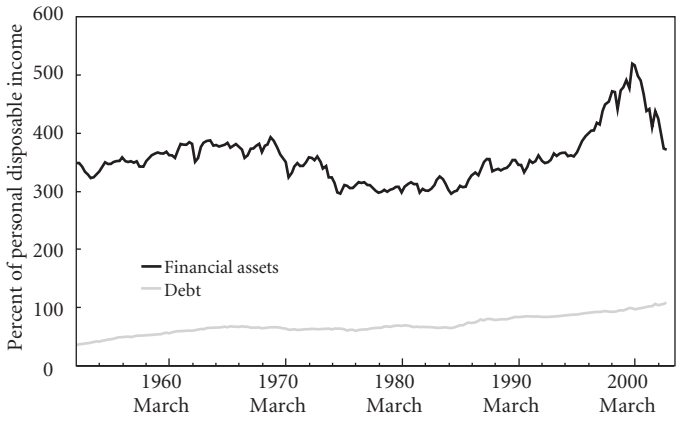
The inevitable adjustment of debt to a sustainable level that is consistent with current asset prices, and of saving to a level that represents a higher proportion of disposable income, will be a long and painful retrenchment process. Figure 1 shows that the process whereby a higher saving ratio is triggered by lower net wealth has already started. Thus, retrenchment by the private sector could turn a double-dip recession into a protracted recession.

Two avenues could return the economy to the path of asset and debt deflation and a secular bear market:

1. Despite the end of the Iraq war, the economy fails to recover and goes straight into recession.
2. The economy experiences a cyclical upturn lasting, possibly, until the end of 2004 (after the presidential elections) and then falls into recession in 2005. Imbalances in the economy result in a jobless recovery with very low investment (Arestis and Karakitsos 2003a, 2003b).

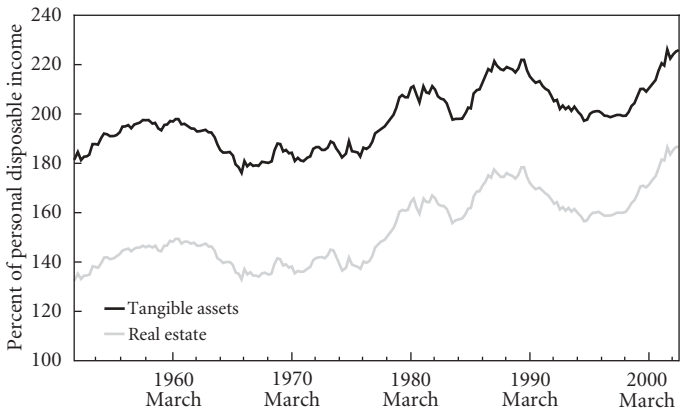
An equity market crash occurs as soon as investors perceive that a rise in interest rates will cause a recession. A property market crash lags one or two years behind an equity market crash because it takes time for tight monetary policy to erode real personal disposable income. Moreover, the shift from equity to property, after an equity market crash, contributes to the lag. If the forthcoming recession is deep, the likelihood of a substantial fall in property prices is very high.

Figure 3 Financial Assets and Debt of the Personal Component



Sources: NIPA, Flow of Funds, and authors' calculations

Figure 4 Tangible Assets and Real Estate



Sources: NIPA, Flow of Funds, and authors' calculations

Figure 4 shows that there has been a property market decline with every recession. As a result of the 1990–91 recession, real estate fell 22 percentage points (from 178 percent to 156 percent of personal disposable income between the end of 1989 and December 1994). This decline was significantly higher than the recession average of 13 percentage points.

The 2001 recession differs from all other recessions of the post–World War II era in that it was caused not by monetary tightening but by excessive inventories accumulated during the euphoria of the new economy bubble. The U.S. monetary authorities correctly envisaged the risks of asset and debt deflation when the Nasdaq collapsed in March 2000. Lower interest rates not only increased the lag between an equity market crash and a property market crash, they also fueled the property market bubble as portfolios shifted from equities to property. Nevertheless, a substantial fall in real personal disposable income will ultimately trigger the collapse in property prices that will characterize the next recession. Thus far, the equity markets have not priced in the combined effects of a deep and protracted recession and a simultaneous decline in property prices.

The dynamic relationship between the equity and property markets has been formalized in a model of the U.S. economy (Karakitsos 2002). This model was used to estimate the effect of a double-dip recession and a property market crash on the equilibrium equity prices of the S&P 500 Index. The model used monthly data for the February 1988 – March 2003 period and the E-Views computing package for estimation and simulation purposes.

The Impact of a Double-Dip Recession

Three scenarios were simulated to assess the likely impact of a double-dip recession on the equilibrium value of the S&P 500: a deep recession and a severe property market crash, a modest recession and a typical property market crash, and a mild recession with no property market crash.

Scenario I: A Deep Recession and a Severe Property Market Crash

According to this scenario, real estate would fall by 25 percentage points of personal disposable income (from 186 percent to 161 percent), and would remain 8 percentage points higher than its 50-year historical mean (153 percent). Net wealth would decline by 73 percentage points, to 418 percent of personal disposable income, in little more than a year after the shock in property prices, and would approach the all-time low, which occurred in 1974 (*see* Figure 1).

A decline in net wealth would trigger a rise in the saving ratio when consumers realized that the fall in equity prices would be permanent, lost hope of a recovery, and attempted to pay back their debts. According to the model, the saving ratio would rise to 8.4 percent of disposable income in little more than a year after the shock in property prices.

A rise in the saving ratio would deepen the recession, as previous support of the economy from personal consumption dissipated. The macro model suggests that the depth of the recession would reduce GDP by approximately 2.9 percent and industrial production by 7 percent. Investment in equipment and software would plunge by 9 percent and corporate profits would fall by 23 percent, figures similar to the 2001 recession. The dollar is forecast to depreciate 30 percent from its mid-2002 value. The growth rate of the money supply would decline to 5 percent as the commercial banks' deteriorating balance sheets forced them to cut lending, thus creating a credit crunch. Inflation would fall to zero. The average price-earnings ratio of the stocks in the S&P 500 would fall to 18.7 (its mean value for the past 20 years), while dividend yields would rise to their mean value of 3.2 percent. Credit risk would remain at its current high level (3.2 per-

cent). The 10-year Treasury Note yield would rise to 4.58 percent in spite of the recession, as a result of the depreciation of the dollar and the deteriorating federal deficit. Under this scenario, the S&P 500 equilibrium value is estimated to fall to 600.

Sensitivity of Scenario I Simulation

The plausibility of the first scenario depends on the sensitivity of the equilibrium value of the S&P 500 to its determinants, which can be combined into two groups: current and expected corporate profits, and equity risk premium. The effect of current corporate profits is small. The effect of expected corporate profits, which are captured by the exchange rate, industrial production, investment, and inflation, is more important.

In the first scenario, a dollar depreciation of 30 percent is necessary for corporate earnings to recover. An increase in industrial production leads to expectations of rising profits and to a higher S&P 500. More inflation leads to higher corporate earnings, whereas a rise in the equity risk premium lowers the equilibrium S&P 500. A 1-percentage-point fall in credit risk leads to approximately an 11.5-percent increase in the equilibrium value of the S&P 500.

The sensitivity analysis shows that there are only three important factors that influence the equilibrium value of the S&P 500: the exchange rate, industrial production, and credit risk. The overall sensitivity analysis suggests that the equilibrium value of the S&P 500 is approximately 600, plus or minus 10 percent.

Scenario II: A Modest Recession and Typical Property Market Crash

The alternative scenario of a modest recession and a typical property market crash would lead to an equilibrium value for the S&P 500 of 675, a 13-percent improvement. In this scenario, the property market crash would be approximately 15 percentage points, a figure typical of real estate declines in the 1960s and 1980s. The second scenario can only be defended using the assumption that lower interest rates would cushion the property market crash. A critical factor in this second scenario is that credit risk would fall by a 0.5 percentage point compared with its current value.

Scenario III: A Mild Recession and No Property Market Crash

In this scenario, the recession would be so mild that there would be no property market crash. The recession would be caused by corporate sector weakness with no investment recovery. The personal component of the private sector would suffer as its real disposable income weakened, owing to fewer jobs and lower wages. The personal component would not retrench, however, because the effects of the mild recession would be offset by lower interest rates.

Credit risk would decline by 1 percentage point compared with the first scenario and a 0.5 percentage point compared with the second scenario. It is estimated that the equilibrium value of the S&P 500 would be 805, an improvement of 34 percent over the first scenario.

Summary and Conclusions

Using quarterly data and the long-run (steady-state) personal balance sheet, the S&P 500 is estimated to have been fairly valued at 810 by the end of 2002. Using monthly data and a different approach that emphasizes current and expected earnings as well as the equity risk premium, the S&P 500 is estimated to be fairly valued at 901. At the peak of the bubble, the S&P 500 was overvalued by 122 percent. Three years of falling equity prices, however, have eliminated any overvaluation, and the S&P 500 was slightly undervalued several times during the course of 2002.

The equity markets may move to lower levels in the next two years, since they have not priced in the possibility of a double-dip recession or a property market crash. In the first, most likely, scenario, recession would trigger a severe property crash of approximately 25 percentage points of personal disposable income and the S&P 500 would fall to 600. This means that there could be a 33-percent drop (from 901) in equity prices this year or in 2005. Although this drop appears excessive, it is based on neutral rather than pessimistic assumptions.

The overall conclusion is that the U.S. economy and, by implication, the world economy may not have seen the worst yet, in terms of recession. Under certain conditions, a double-dip recession is highly probable.

Notes

1. Throughout the 17th and 18th centuries, there were many recessions caused by asset and debt deflation. Most notable are the "tulipmania," which occurred in the middle of the 17th century, and the Mississippi and South Seas bubbles of the early 18th century (Garber 2000).

2. In an earlier working paper, the peak of the Internet bubble was located as occurring in March 2000, which coincides with the bursting of the Nasdaq bubble. However, the extensive July 2002 revision of NIPA data, back to 1999, accounts for the transfer of the peak to an earlier quarter and for other differences between the brief and Working Paper no. 368. It should be noted that although such revisions amount to rewriting history, they reflect the discrepancy between data available as events unfolded and the more realistic figures that became available later.

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Philip Arestis is Institute Professor of Economics at The Levy Economics Institute. Previously, Arestis was professor and chair of economics departments at a number of universities in the United Kingdom, and secretary of the standing Conference of Heads of University Departments of Economics (CHUDE). His recent publications have addressed, among other topics, current monetary policy, fiscal policy, the relationship between finance and growth and development, the regime-switching approach to the European Monetary System, capital stock in wage and unemployment determination, the "Third Way," inflation targeting, threshold effects in the U.S. budget deficit, and the role of Minskian economics and financial liberalization in the southeast Asian crisis. His recent work has appeared in the *Cambridge Journal of Economics, Eastern Economic Journal, Economic Inquiry, Economic Journal, International Review of Applied Economics, Journal of Money, Credit and Banking, Journal of Post-Keynesian Economics, Manchester School,* and *Scottish Journal of Political Economy.*

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