

Double Bubble: The Implications of the Over-Valuation of the Stock Market and the Dollar

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Executive Summary

The stock market is over-valued by close to 50 percent, according to most economists who have examined stock prices and trends in corporate profits. The dollar may be over-valued by 30 percent, or more, as evidenced by the large and growing United States current account deficit. These over-valuations present extraordinary misalignments, in which major markets are seriously out of line with their long-term values. These misalignments, and the inevitable adjustments, will have enormous consequences for the United States economy.

This paper examines the evidence that both the stock market and the dollar are significantly over-valued. It then examines the implications of the adjustment process whereby each moves towards a more sustainable level. The paper also examines some of the interactive effects of the adjustments occurring simultaneously-- which is quite probable, since investors are likely to flee the dollar and the stock market at the same time. Finally, the paper briefly discusses some policy prescriptions for dealing with the current situation.

The case for the over-valuation of the stock market is very straightforward. The ratio of stock prices to corporate earnings is close to twice its historic average. This extraordinary price to earnings ratio is occurring at a time when the profit share of GDP is already at a post-war high-- which means that it is likely that profits will grow less rapidly than GDP in the future. The projections from the Congressional Budget Office show profits falling by a total of 4.0 percent over the next ten years, after adjusting for inflation. Unless the price to earnings ratio rises ever higher (an unrealistic prospect), stocks will not even be able to match the return from government bonds, given the current price to earnings ratio.

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The only way that stocks can again provide returns that include a significant risk premium over government bonds is if they first fall by close to fifty percent in price. At a lower price to earnings ratio, stocks will have a higher dividend yield. Currently the dividend yield (including money paid out as share buybacks) is close to 2.0 percent. If stock prices fell by fifty percent, the dividend yield would rise to 4.0 percent, which is approximately the historic average. This would allow the total return on stocks (dividends plus capital gains) to be more in line with the historic average.

It is important to note that there is no plausible growth path for profits under which current stock valuations would make sense. Even if profits grew far more rapidly than CBO projects, stocks would still be providing returns which would be far below their historic average, and not much above the returns available on government bonds.

The over-valuation of the dollar can be determined based on the large current account deficit that the United States is presently running. If the trade deficit stays at the level reached in the first quarter of 2000, the current account deficit for the year will be over \$460 billion, or 4.8 percent of GDP. Trade deficits of this magnitude are not sustainable. If the trade deficit were to remain constant as a share of GDP, by 2010 the ratio of U.S. net foreign debt to GDP would be nearly 70 percent, and the annual current account deficit would be over 6.0 percent of GDP.

The paper shows that plausible differences in the future growth rates of the United States and its major trading partners are not likely to correct the trade and current account imbalances any time soon. Rather, it will be necessary to have a large fall in the value of the dollar, in order to raise U.S. exports close to balance with the volume of imports. Standard estimates of elasticity imply that the necessary fall in the value of the dollar would be between 20 and 30 percent measured against the currencies of major trading partners.

The decline in the stock market will have dramatic demand and supply-side effects. On the demand side, a decline in stock prices would mean a loss of wealth of approximately \$9 trillion, or more than \$30,000 for every person in the country. Using standard estimates of the size of the wealth effect, this implies a reduction in annual consumption of between \$270-360 billion a year. In addition, a collapse of stock prices is likely to significantly reduce investment by high-tech firms that were relying on the stock market for financing. With this sort of fall-off in demand, it will be very difficult to avert a severe recession.

Collapsing stock prices will also have a direct effect on the federal budget. CBO projections assume more than \$900 billion in taxes on capital gains over the next decade. This could fall close to zero with a serious correction in the stock market. The loss of capital gains tax revenue, combined with the impact of an economic downturn, could lead to large budget deficits. Under these circumstances, if Congress insists on running a balanced budget by raising taxes and/or cutting spending, it will lead to an even larger falloff in demand.

On the supply-side, stock options have increasingly been used as part of workers' pay packages, particularly in the high-tech sector. If these options are seen as being worthless, it could lead to considerable disruptions in the labor market as workers seek to have options replaced with

straight salary increases. Insofar as firms are forced to shift from options to wage and salary payments, it will reduce profits. This could amplify a downturn in the stock market.

The decline in the value of the dollar will have a significant inflationary impact on the economy. Standard estimates of the pass-through of exchange rate changes imply that the overall rate of inflation will increase by 1.4 to 2.1 percentage points as a result of the decline in the value of the dollar. This would mean that the current 3.0 percent rate of inflation would rise to between 4.4 and 5.1 percent, as a result of the impact of the falling dollar.

The interaction between the collapse of the two bubbles could make matters better or worse, depending on the policies pursued. If the Federal Reserve Board is prepared to tolerate the resulting inflation, the fall in the dollar could provide a very important source of stimulus, as net exports rise to offset the decline in consumption. On the other hand, if the Federal Reserve Board insists on fighting any increase in the rate of inflation, it would mean raising interest rates, even as the economy is sinking into a recession. Such a policy could support the dollar for a period of time, but it would only delay the necessary adjustment.

The most important policy conclusion from this analysis is that it has been irresponsible to allow these bubbles to grow to the extent they have grown. There are significant short-term gains from an over-valued stock market and dollar. The former creates an illusion of wealth; at the same time the resulting consumption and investment to some extent creates real prosperity. Similarly, an over-valued dollar allows people in the United States to buy goods and services around the world at a substantial discount compared with a situation where the dollar is properly valued. This increases the purchasing power of workers' paychecks.

But such bubbles are not sustainable, as this paper demonstrates. The long-term costs of the inevitable corrections are likely to dwarf the short-term benefits that have been derived from the bubbles. The Federal Reserve Board and the Clinton Administration should have acted long ago to try to deflate the twin bubbles. The nation will very likely pay a substantial price for this policy failure.

In the case of both bubbles, it would be desirable to have a quick adjustment process. This will stop the damage from getting worse.

Introduction

Recent discussions of the economy have been dominated by congratulatory comments lauding the "new economy." These comments are appropriate to some extent, given the extraordinary growth of the last four years, and an unemployment rate below 4.0 percent for the first time in thirty years. However, it is more important to look to the future than the past. The near-term future of the U.S. economy is going to be determined to a very large extent by how it responds to two big bubbles sitting in its midst: the stock market and the dollar.

The deflating of these bubbles will have significant short-term and medium-term economic consequences. If we approach the situation unprepared, it is possible that the process of deflation will derail economic growth for some time into the future, as happened to Japan in the nineties. The damage from bubble deflation can be minimized if we first recognize the problem, and then develop strategies to deal with it.

This paper lays out the simple logic explaining the nature of the over-valuation of both the stock market and the dollar. The argument presented here relies only on simple arithmetic, accounting identities, and the standard economic growth assumptions used by the Congressional Budget Office and other actors in national policy debates. The only difference in this analysis is its effort to make consistent projections across the various sectors of the economy.

The first section of this paper explains the over-valuation of stock market. The second section does the same for the dollar. The third section discusses the possible impact of the inevitable correction in both markets. The fourth section includes some general policy prescriptions and a brief conclusion.

The Over-Valuation of the Stock Market: Bringing Arithmetic to Wall Street

The fact that the stock market is hugely over-valued has been recognized for some time by most of the economists who have studied it (see Baker 1997, 1999; Diamond 1999, and Shiller 2000). The basic arithmetic is quite simple. Historically, people have valued a share of stock at \$15 for each dollar of earnings or profits. In other words, the stock of a company that had earnings of \$1 per share would sell for \$15 dollars. After the market run-up of the last five years, shares of stock were selling for more than \$30 for each dollar of earnings.² This basic arithmetic suggests that stocks were over-valued by one hundred percent, or more.

There are two possible responses to this logic. First, as some of the more extreme proponents of the new economy have argued, profits may no longer be relevant to stock prices. According to this view, in the new economy stock prices have their own dynamic, and they're not affected by profits. While some people may believe this, the implication is that the market is completely irrational. If stock prices are not determined by profits, current or future, then a stock can come to hold any price at any time. Microsoft shares can as easily sell for \$1.50 as \$500. There

² The recent plunge of the NASDAQ has brought the price to earnings ratio down to just under 28 to 1.

are few serious people that would want to be identified with a position like this, and even fewer who would keep their money in the stock market if they actually believed it.

The second sort of response is that in the new economy, profits are growing at a much faster pace than they have historically. Even if current share prices don't make sense measured against current profits, they do make sense when measured against future profits. This raises the simple question of how fast we should expect profits to grow.

Whatever the new economy proponents might believe about profit growth, the Congressional Budget Office (CBO) believes something very different. CBO projects that corporate profits will be 4.0 percent lower in real terms (adjusting for the impact of inflation) in 2010, than in 1999.³ This means that if stock prices grow at the same pace as corporate profits, they will actually decline at the rate of approximately 0.4 percent annually over the next decade, adjusting for inflation. This would leave the current price to earnings ratio unchanged, so that in 2010 the price to earnings ratio would still be approximately 30 to 1.

This gradual decline in the stock market is not a very plausible scenario. Stocks on average currently pay dividends (including share buybacks) of approximately 2.0 percent a year. Adding this dividend payout to the 0.4 percent annual decline in share prices gives a real return of approximately 1.6 percent. Currently, inflation-indexed government bonds pay approximately 4.0 percent interest. An inflation-indexed government bond is among the safest assets in the world, it is therefore not likely that many people would be willing to hold shares of stock if they thought the return would be 2.4 percentage points lower (4.0 percent on government bonds, compared to 1.6 percent on stocks) than what they could get on completely safe government bonds. In other words, if investors saw the future in the same way as CBO, they would dump their stocks and buy government bonds.

Historically, stocks have provided a premium of approximately 4.0 percentage points over government bonds, because people attached a much higher risk to holding stock. If CBO is correct about its profit projections, then the only way that stocks can provide this return in the future is if stock prices rise considerably more rapidly than corporate profits. However, this possibility seems highly unlikely.

The implication of stock prices outpacing profit growth is that the price to earnings ratio will rise above its current record high level to levels that appear ridiculous on their face. The arithmetic here is straightforward. The current return on government bonds is approximately 4.0 percent above the rate of inflation. If stocks provide a return that is 4.0 percentage points above the return on bonds, then they would give a return that is 8.0 percent above the rate of inflation. Since

³ This figure is obtained by deflating CBO's projection for corporate profits in the year 2010 (\$1060 billion) by the projected growth in the CPI over the next ten years, and comparing it with the estimated level for 1999 (\$840 billion). This figure refers to domestically generated profits of both foreign and domestic corporations. The profit of domestic corporations can grow more or less rapidly, depending on the relationship between the foreign earnings of domestic corporations and the domestic earnings of foreign corporations. In recent years, the latter has grown slightly more rapidly, although the net impact on the growth rate of profits of domestic corporations has been small. Over any reasonably long period (e.g. ten years) it is unlikely that the growth rate of profits of U.S. corporations will diverge significantly from the growth rate of profits generated in the United States.

only 2.0 percent of this return is coming from dividends, stock prices would have to rise 6.0 percent annually, in excess of the rate of inflation. Since profits are actually projected to fall over the next ten years, the average price to earnings ratio would nearly double in this scenario, until it was over fifty to one by 2010.

Table 1 shows the path of the average price-to-earnings ratio for stocks under two scenarios. Both assume that stocks provide a 7 percent annual real return, or 3 percentage points more than the return currently available on inflation-indexed bonds. The first scenario, on the left side, is based on the CBO's projections for profits over the next decade.

Table 1: Trends in Price to Earnings Ratios

| | Based on CBO Profit Projections | | Based on 3% Annual Profit Growth | |
|------|---------------------------------|-----------------|----------------------------------|-----------------|
| | Implied P/E Ratio | Dividend Yield* | Implied P/E Ratio | Dividend Yield* |
| 1999 | 27.6 | 2.2% | 27.6 | 2.2% |
| 2000 | 30.0 | 2.0% | 28.3 | 2.1% |
| 2001 | 32.2 | 1.9% | 29.1 | 2.1% |
| 2002 | 34.8 | 1.7% | 29.8 | 2.0% |
| 2003 | 37.1 | 1.6% | 30.6 | 2.0% |
| 2004 | 39.1 | 1.5% | 31.5 | 1.9% |
| 2005 | 41.1 | 1.5% | 32.4 | 1.9% |
| 2006 | 42.8 | 1.4% | 33.3 | 1.8% |
| 2007 | 44.6 | 1.3% | 34.3 | 1.7% |
| 2008 | 46.5 | 1.3% | 35.3 | 1.7% |
| 2009 | 48.6 | 1.2% | 36.4 | 1.6% |
| 2010 | 51.1 | 1.2% | 37.5 | 1.6% |

* Dividend yield includes money spent to buy back shares.

Source: CBO 2000, Federal Reserve Board, National Income and Products Accounts and author's calculations.

The price to earnings ratios in this scenario seem rather implausible, to say the least. By 2010, dividend payouts would have fallen to slightly more than 1.0 percent of the share price.⁴ This means that in order to give a risk adjusted return that is competitive with government bonds and other financial assets, price to earnings ratios would have to rise even more rapidly in years after 2010. No economist has been willing to embrace this view of stock prices.

⁴ The dividend payout is tied to profit growth. Firms typically pay out 50-60 percent of their profits as dividends or share buybacks. They use the rest of their profits to finance new investment. If they tried to pay out a larger portion of their profits as dividends or buybacks, then they would either have to curtail investment or borrow additional money. Either action would slow future profit growth leaving returns no higher in the long-term. Since dividends payouts are more or less fixed as a percentage of profits, when the price to earnings ratio rises, the dividend payout rate falls proportionately.

It is possible that profit growth will be more rapid than CBO is projecting, but this takes us out of the realm of the current policy debate in Washington. The people who are arguing over how to use the federal budget surplus cannot take the CBO projections as authoritative in discussing budget numbers and then discard them when they turn to the stock market. If CBO numbers are the basis for debates over the budget, then they also must provide the basis for debates over the economy. Any other approach is simply dishonest and doesn't deserve to be taken seriously.

Of course, even ignoring the CBO numbers, it really is not possible to produce plausible projections of economic growth that make sense of current stock prices. The right side of Table 1 shows the path of price to earnings ratios and dividend yields, assuming that the economy and profits both grow at a 3.0 percent annual rate. Even in this case the price to earnings ratio rises to implausible levels by the end of the ten-year period.

The record stock valuations of recent years have depressed the dividend yield to close to 2.0 percent. Historically, the dividend yield has been between 3.5-4.0 percent, 1.5-2.0-percentage points higher than its current level. This means that in order to get the historic rate of return on stocks, prices would have to rise at a rate that is 1.5-2.0 percentage points more rapid than they have in the past. Since economic growth has averaged close to 3.5 percent in the past, this would imply an annual growth rate of 5.0-5.5 percent. Few, if any, economists believe that the economy can sustain this rate of growth for any significant period of time.

In short, there is no plausible scenario in which the stock market can provide anything close to its historic returns, given its current price to earnings ratio, and plausible projections of future growth. There is only one way for the stock market to restore the historic relationship between stock returns and the returns on other financial assets: there must be a plunge in stock prices.

If stock prices fell by 50 percent, then the dividend payout rate would double to approximately 4.0 percent. This would be within the historic range for dividend payouts. If the economy then grew at its average rate over past years of approximately 3.5 percent, then stock prices could rise at 3.5 percent annually, which is in line with the past record on stock returns. However, if the economy grows by considerably less than 3.5 percent, as projected by the Congressional Budget Office, then it may be necessary for the market to decline even further, so that the dividend yield could rise enough to offset a slower increase in stock prices.

To sum up, the conclusion that the stock market must decline by close to fifty percent rests on only two assumptions. First, that investors will demand some compensation for the risks associated with holding stocks compared with relatively safe assets like government bonds. Second, that the ratio of share prices to corporate earnings cannot rise indefinitely. Based on these two assumptions, and the Congressional Budget Office's growth projections, it is possible to conclude that the stock market must decline by close to fifty percent. Only then will stocks be able to provide their historic rates of return.

The Over-Valued Dollar: Getting High is Not the Answer

The willingness of economists and policy analysts to ignore the over-valuation of the dollar is nearly as striking as their lack of attention to the stock market bubble. Here also, the high dollar has often been treated as though it were an end in itself, a symbol of the strength of the U.S. economy compared with the rest of the world. The resulting trade and current account deficits have received little attention, nor has the obvious fact that these deficits are unsustainable over a long or even medium time horizon.

As with the stock market, the arithmetic on the dollar is straightforward. The United States has been running trade deficits for some period of time. This means that, as a nation, we have been buying more goods and services than we have been selling. More importantly, the United States has also been running current account deficits. This measure, in addition to trade, includes international income flows from past investments, both from foreigners investing in the United States, and from U.S. corporations and citizens investing abroad. When the current account is in deficit, it means that the United States is effectively borrowing from abroad.

There is no problem if the United States runs modest current account deficits.⁵ For example, the United States could run a current account deficit that is equal to 1.5 percent of GDP (\$140 billion at present) forever. This would lead to a slow accumulation of debt from its current level, but eventually the debt would stabilize as a share of GDP (at approximately 30 percent), since the foreign debt and the economy would be growing at the same rate. In this way, the current account deficit can be thought of as being similar to the budget deficit. Modest deficits can be sustained indefinitely. If the debt grows no more rapidly than the economy, then the country can run deficits, whether in the budget or current account, indefinitely.

The problem occurs when the United States runs large current account deficits, as it is doing at present. The current account deficit for 1999 was \$338.9 billion, or 3.7 percent of GDP. But it had grown rapidly over the course of the year, and has continued to grow into the current year. In the fourth quarter of 1999, the current account deficit was running at an annual rate of just under \$400 billion. The trade data for the first quarter of 2000 show that the trade deficit was running at a \$335 billion annual rate, or 3.5 percent of GDP. Data for the current account for the first quarter are not yet available, but extrapolating from the 4th quarter numbers, the trade deficit in the first quarter implies that the current account deficit is running at an annual rate of \$440 for the quarter, or 4.5 percent of GDP.

It is easy to see that this rate of accumulation of foreign debt cannot be sustained for long (just as budget deficits of this magnitude could not be sustained). At the end of 1999, the total value of foreign owned assets in the United States was approximately \$1.9 trillion greater than the value of foreign assets owned by U.S. citizens and corporations. In other words, the net indebtedness of

⁵ At least there is no problem for the United States in this story. In standard economic models, the borrowing implied by a current account deficit is a drain from a finite supply of world savings. This means that the United States, one of the richest nations in the world, is pulling away resources that otherwise could have been lent to developing nations to foster their growth. There are reasons for questioning the basic logic of this economic model, but those who accept it should be troubled by the implication that the United States is pulling away a huge amount of resources from the world's poor.

the United States was approximately 20 percent of GDP. If the United States continued to run trade deficits at its current rate (3.6 percent of GDP), the level of indebtedness would grow at an increasing rate. The debt accumulates more rapidly each year, because as the debt grows, the amount of interest paid each year increases as well. With the trade deficit staying at its current size relative to GDP, the net indebtedness of the United States would increase to nearly 70 percent of GDP by the end of 2010, or more than \$10 trillion. The size of the annual current account deficit would rise to more than 6.0 percent of GDP, or nearly \$800 billion a year.⁶ There are few, if any, economists who would view this level of foreign indebtedness as plausible.

Table 2: Projections for U.S. Foreign Indebtedness

| | Net Foreign Debt | Trade Deficit | Current Account Deficit | Current Account Deficit as share of GDP | Net Foreign Debt as a share of GDP |
|------|--------------------------|----------------------|--------------------------------|--|---|
| | Billions of 2000 dollars | | | | |
| | | | | | |
| 1999 | \$1,846.4 | \$267.5 | \$338.9 | 3.7% | 19.9% |
| 2000 | 2307.9 | 348.9 | 461.5 | 4.8% | 23.8% |
| 2001 | 2781.6 | 359.8 | 473.6 | 4.7% | 27.8% |
| 2002 | 3285.0 | 370.0 | 503.5 | 4.9% | 32.0% |
| 2003 | 3818.0 | 379.6 | 533.0 | 5.1% | 36.2% |
| 2004 | 4381.9 | 389.3 | 563.9 | 5.2% | 40.5% |
| 2005 | 4978.7 | 399.7 | 596.8 | 5.4% | 44.8% |
| 2006 | 5610.0 | 410.4 | 631.3 | 5.5% | 49.2% |
| 2007 | 6277.5 | 421.5 | 667.5 | 5.7% | 53.6% |
| 2008 | 6982.9 | 432.9 | 705.4 | 5.9% | 58.1% |
| 2009 | 7728.5 | 445.1 | 745.7 | 6.0% | 62.5% |
| 2010 | 8516.6 | 457.9 | 788.0 | 6.2% | 67.0% |

Source: CBO 2000, National Income and Product Accounts, and author's calculations.

If the United States is to avoid this path, then its trade deficit must come down from its current level. But there is no way for the trade deficit to come down to more sustainable levels without a significant decline in the value of the dollar. A lower dollar would make imports more expensive, causing people in the United States to buy fewer goods and services from other countries. It would also lower the price of U.S. goods for foreigners, leading them to buy more of our exports. In this way a decline in the value of the dollar can bring the United States trade deficit back towards balance and leave the current account deficit at a manageable level.

⁶ This calculation assumes the 2.8 percent average rate of GDP growth in the latest CBO projections (CBO, 2000). It also assumes a 5.0 percent average real return on foreign assets in the United States.

It is important to recognize that a decline in the dollar is the only plausible way for the nation to move towards a more manageable current account deficit. It is often claimed that the soaring trade deficit is attributable to the rapid growth in the United States in recent years, and that when foreign growth picks up, the trade deficit will be brought down. A simple, back-of-the-envelope calculation shows that plausible differences in growth rates will have relatively little effect on the trade deficit.

For example, suppose that our trading partners experienced growth that averaged a full percentage point faster than the 2.8 percent rate projected by CBO for the United States over the next five years.⁷ This would mean that foreign economies would grow by 20.5 percent over the next five years, while the U.S. economy expanded by 14.8 percent. If imports in all nations expand at twice the rate of GDP (a 1.0 percent increase in GDP leads to a 2.0 percent rise in imports), this would mean that U.S. exports would rise by 41.0 percent over the next five years (20.5 times 2), while U.S. imports would increase by 29.6 percent (14.8 times 2). However, the United States currently imports much more than it exports. A 29.6 percent increase in U.S. imports would be an increase of slightly over \$400 billion in today's dollars. By contrast, the 41 percent increase in U.S. exports would be approximately \$425 billion. The net effect would be that the trade deficit would decline by approximately \$25 billion as a result of this difference in growth rates. This would leave an annual trade deficit that is still almost \$300 billion a year, or close to 3.0 percent of GDP.

⁷ This would be an extraordinary accomplishment. Approximately 60 percent of U.S. exports go to other industrialized nations, such as Canada, Europe, and Japan. Throughout most of the nineties, these nations experienced extraordinarily weak economic growth, from which they are now recovering. However, most of these nations have labor forces that are barely growing, or in some cases shrinking. It will be very impressive if they can even match, on average, the U.S. growth rate over the next five years. If the industrialized nations managed to match the U.S. growth rate over this period, then this condition would require that the developing nations which are trading partners with the United States have growth rates that average 2.5 percentage points higher than the United States, or 5.3 percent annually over the next five years. While it is possible that the developing nations could maintain such a rate of growth, they have not been able to do so for any comparable period in the last two decades. Maintaining a 1.0 percentage point difference in growth rates for five years is therefore not an easy target.

Table 3: Projections for U.S. Foreign Indebtedness, Assuming Rapid Foreign Growth

| | Net Foreign Debt | Trade Deficit | Current Account Deficit | Current Account Deficit as share of GDP | Net Foreign Debt as a share of GDP |
|------|--------------------------|----------------------|--------------------------------|--|---|
| | Billions of 2000 dollars | | | | |
| | | | | | |
| 1999 | \$1,846.4 | \$267.5 | \$338.9 | 3.7% | 19.9% |
| 2000 | 2307.9 | 348.9 | 461.5 | 4.8% | 23.8% |
| 2001 | 2752.1 | 330.3 | 444.2 | 4.4% | 27.5% |
| 2002 | 3211.8 | 326.2 | 459.7 | 4.5% | 31.2% |
| 2003 | 3682.4 | 318.4 | 470.7 | 4.5% | 34.9% |
| 2004 | 4162.3 | 308.2 | 479.9 | 4.4% | 38.5% |
| 2005 | 4650.3 | 296.3 | 488.0 | 4.4% | 41.9% |
| 2006 | 5144.3 | 281.8 | 493.9 | 4.3% | 45.1% |
| 2007 | 5641.5 | 264.4 | 497.2 | 4.2% | 48.2% |
| 2008 | 6139.0 | 243.6 | 497.5 | 4.1% | 51.1% |
| 2009 | 6633.9 | 219.7 | 494.9 | 4.0% | 53.7% |
| 2010 | 7122.0 | 191.8 | 488.2 | 3.8% | 56.0% |

Source: CBO 2000, National Income and Product Accounts, and author's calculations.

It is possible to work with slightly different numbers -- the difference between foreign growth and U.S. growth could be slightly higher, or the ratio of import growth to GDP growth could be somewhat more than 2.0 -- but it is not possible to construct a plausible scenario in which the U.S. trade deficit is quickly brought down to sustainable levels through differences in growth rates. This leaves a fall in the value of the dollar as the only alternative for bringing the trade and current account deficits back to manageable levels.

It is not possible to determine with precision how large a decline in the value of the dollar would be needed to bring the trade deficit close to balance at present, but the range would probably be in the neighborhood of 20-30 percent.⁸ This was the magnitude of the decline that the dollar experienced in the late eighties. This decline in the dollar appeared to be moving the United States towards more manageable trade deficits from the record levels hit in the mid-eighties, even prior to the onset of the recession in 1990. (There is a considerable lag between the change in the value of

⁸ There are two reasons why it is difficult to determine the magnitude of the decline in the dollar which will be needed to bring the trade deficit to manageable levels. The first reason is that the impact of changes in exchange rates is not fully passed on in prices. Recent evidence suggests that approximately half of the impact of these changes is passed on prices (see Menon 1996 and Hooper and Mann 1989). There is also a considerable degree of uncertainty about the elasticity of demand for imports.

the currency and its full impact on trade, so it is difficult to determine the full effect of the decline in the dollar's value from 1986 to 1989.)

Part of the reason why it is difficult to determine the exact size of the decline in the dollar that will be needed is that it is not clear exactly how large a current deficit can be sustained in the future. However, one point is clear: the longer it takes to bring about the adjustment in the value of the dollar, the larger it must eventually be, since the United States is currently accumulating debt at an extraordinarily rapid pace.

A simple example can show this point. If a current account deficit of 1.5 percent of GDP is the maximum that can be sustained in the long-term, and if the United States immediately adjusted to this deficit level, it could still have an annual trade deficit of approximately 0.5 percent of GDP. However, if the country continues to accumulate debt at its current pace, in two years it would require balanced trade in order to keep the current account deficit under 1.5 percent of GDP. In other words, the annual interest costs resulting from the additional debt accumulated in two years would be equal to approximately 0.5 percent of GDP.⁹

The Consequences of a Plunging Stock Market

The United States doesn't have enough experience with crashing stock markets or a declining currency to be able to determine with much certainty what the effects will be. However, it is possible to say a few things about what is likely to happen as a result of the deflation of these bubbles.

The demand side implications of a stock market crash are likely to be dramatic. If the market were to decline by 50 percent, it would destroy approximately \$9 trillion of paper wealth (more than \$30,000 per person). A generally accepted rule of thumb is that every dollar of stock market wealth increases annual consumption expenditures by three to four cents. This means that a 50 percent decline in the stock market would reduce annual consumption expenditures by between \$270-360 billion, or approximately 3.0 percent of GDP. If this happened in a short period of time, it would virtually guarantee a steep recession.

Compounding the impact on the household sector is the fact that consumers have built up an extraordinary amount of debt over the last decade. The ratio of non-mortgage debt to disposable income stood at 20.8 percent at the end of the first quarter of 2000. This is more than 2 percentage points above the previous peak in 18.6 percent in 1990. The increase in household debt over this cycle is actually understated by this data since it excludes car leases. Car leasing grew from very low levels in 1990 to the point where nearly one in three new cars is leased rather than sold. Since the lease obligation is very similar to a car loan, the effective debt burden is probably at least 2.0 percentage points higher than indicated by this data. This level of indebtedness should raise concerns about a large number of personal bankruptcies in the event of a stock crash. In any event, it will certainly slow the pace of new spending in the aftermath of a crash.

⁹ There are other reasons for not wanting to maintain a large trade deficit. Most notably, the implied loss of manufacturing jobs reduces the demand for less skilled workers, thereby increasing wage inequality.

On the business side, a sharp decline in stock prices will lead to a substantial reduction in investment. Although firms are net buyers of stock, many firms, particularly in the high tech sector, are issuing stock to finance investment. If share prices plummet, then this source of financing will quickly disappear. A second, perhaps equally important effect, will be the impact of the decline in share prices on corporate pension funds. Over the course of the market's run-up, large firms with traditional defined benefit pension plans had to make little or no contribution to these plans. A stock market crash would reverse this pattern; firms will have to again make substantial pension contributions, which will be a drain on profits and cash flow. This could lead to further reductions in investment.

A market crash will also lead to a large reduction in government revenue. In 1999, the federal government collected approximately \$91 billion in capital gains taxes. The Congressional Budget Office projects that it will collect approximately the same amount each year over the next decade. If the market crashes, tax collections on capital gains would fall almost to zero. This would leave a shortfall of close to \$900 billion in projected revenue over the next decade, in addition to the lost revenue due to the recession. If a future Congress and President remain committed to balancing the non-Social Security budget, even in the wake of this sort of downturn, it will require huge tax increases and spending cuts, further constricting demand.

In addition to having a large impact on the demand side of the economy, a stock market crash could also have a substantial effect on the supply-side as well. The main reason is that a significant segment of the workforce now expects to receive a substantial portion of their compensation in the form of stock options. In extreme cases, such as Internet start-ups, the wage or salary that workers receive might be the smaller portion of their expected compensation; they anticipate that most of their compensation will come from cashing in on stock options. If these options suddenly become worthless, it is likely to reduce the willingness of many of these people to work. This is especially true for those who have already managed to cash out significant gains in the stock market. This could radically reduce the number of people willing to work in some crucial areas, such as computer programming and software design.

There is no easy way to try to quantify the potential magnitude of this effect, primarily because there is no reliable data on how many workers are being paid partly with stock options, nor how large a share of their compensation is accounted for by such options. However, a recent survey by the Federal Reserve Board (Lebow et. al., 1999) provides some insight into the prevalence of stock options. The survey found that just over a third of the firms questioned include stock options in compensation packages for at least some of their employees. Disproportionately, the firms using options were large and fast growing ones. The study found that options were still relatively rare among lower paying occupations, but 32.8 percent of the professionals and managers in the firms surveyed received a portion of their compensation in stock options. The value of these options has increased enormously in recent years. The crude extrapolations in the study put the exercise value of the stock options at more than 1.6 percent of total labor compensation in 1998, while the realized

value of the capital gains on these options in 1998 was more than 9.2 percent of compensation¹⁰. Both figures are more than three times as high as their 1994 share.

This data suggest that a general loss of value of stock options will significantly reduce the compensation package for a large group of well-paid workers. It is likely that firms will be forced to at least partially offset this loss through straight salary or some other form of compensation. Insofar as this is the case, it could lead to a very substantial reduction in corporate profits. For example, if corporations paid out an additional amount in salary equal to the exercise value of options issued in 1998 reported in the Federal Reserve Board survey, it would reduce after-tax corporate profits by more than 10 percent.

Based on the anecdotal evidence about the prevalence of options in certain high tech sectors, and the Federal Reserve Board survey, it is reasonable to believe that the supply-side impact of most options suddenly becoming worthless will be quite large. The adjustment process may involve a considerable period of time, since it raises issues about the implicit risk that workers were assuming in accepting a portion of their compensation in stock options. It is likely that many workers were assuming more risk than they understood.

This raises a second likely supply-side effect from a downturn in the stock market. According to accounts in the business press, many firms have engaged in questionable accounting procedures in order to meet profit expectations (e.g. see " Levitating Earnings: An Act Or a Fact?" by Gretchen Morgenson, *New York Times*, May 13, 2000, Section 3 page1). Shareholder lawsuits over misrepresentations by management are already commonplace, but this will surely be a huge growth industry in the context of a general collapse of the market. Given the huge sums involved, it is reasonable to believe that considerable resources will be devoted to pursuing lawsuits over accounting procedures. Such lawsuits will pose a drag on the economy both directly due to the resources which will be required to pursue them, and more importantly, because they may preoccupy the management of hundreds of major corporations through many years of legal proceedings.

The Impact of a Dipping Dollar

The impact of the falling dollar on the economy is likely to also be large, although not compared to a stock market crash. The basic story is quite simple: a falling dollar will result in an increase in the rate of inflation. The arithmetic on this is straightforward. If the dollar falls by 20 to 30 percent, then the price of goods imported into the United States will rise by 20 percent, other things equal. It is usually assumed that the impact of changes in currency prices is not fully passed on to consumers, but instead a certain portion of these changes is absorbed by middlemen. If half of the impact of a lower dollar is passed on in higher prices, then the price of imported goods and services would rise between 10-15 percent, depending on the size of the fall in the dollar. Imports currently account for just over 14 percent of GDP, so this would imply an increase in the overall

¹⁰ The exercise value of an option is an estimate of the market value of the option at the time it is issued to the worker. In other words, in principle it should be the value that the worker could sell the option for at the time they acquire it. This is distinct from the actual capital gain they may receive when they sell their stock.

inflation rate of between 1.4 and 2.1 percentage points. In other words, if the current rate of inflation is 3.0 percent, it will rise to between 4.4 to 5.1 percent as a result of the decline in the dollar, but it is not likely that the Fed would do so.

This is not a disastrous increase in the rate of inflation, but it is not clear how financial markets and the Federal Reserve Board would view this sort of acceleration. If they viewed the higher inflation with alarm, then it would make matters considerably worse. Panic in financial markets or the deliberate actions of the Federal Reserve Board could raise interest rates, depressing demand and possibly throwing the economy into a recession. The more responsible path would be to accept an outcome that was made inevitable by the earlier run-up in the value of the dollar. If the Fed was to try to squeeze this additional inflation out of the economy, it would almost certainly require a severe recession. It is worth noting that the Fed raised interest rates and brought on a recession in 1990 in response to a rise in the core inflation rate that was just 1.4 percentage points over the entire period from 1986 to 1990.

To a significant extent, the Federal Reserve Board's response will determine who is forced to absorb the impact of the lower dollar and the higher import prices. If the Federal Reserve Board raises interest rates, slowing demand and raising the unemployment rate, then workers will probably be forced to absorb most of the impact in the form of lower real wages. On the other hand, if the economy is allowed to continue to operate at a high level of output, then it is likely that firms will absorb a portion of the higher import costs out of profits.

The Interaction of Bursting Bubbles

If the stock market and dollar bubbles burst at roughly the same time, as seems likely, there will be both positive and negative interactions. On the positive side, the most important effect will be that the decline in the dollar will give a large demand side stimulus to offset the lost consumption and investment demand caused by the falling stock market. If the dollar falls enough to bring the trade deficit close to balance, the increase in net exports would be close to 3.5 percentage points of GDP, an amount that is approximately equal to the prospective falloff in consumption. However, it is important to note that the adjustment in trade patterns is likely to be slow -- consumption can falloff far more quickly -- so it is unlikely that any turn around in net exports will occur with enough speed to avert a recession.

On the negative side, a simultaneous collapse in the stock market and the dollar could amplify both effects. On the stock market side, one reason that investors (both foreign and domestic) held dollars was because they considered the United States stock market a good place to invest their money. Insofar as this ceases to be the case, it is likely to lead investors to increasingly place their money in assets denominated in foreign currencies. This can speed the decline in the dollar.

The falling dollar may lead to larger declines in the stock market, because it could lead to an erosion of profits. If workers are able to achieve wage gains to offset higher import prices, which in turn are not fully passed on in higher prices, it will lead to a reduction in profit margins. If profit

margins fall from their current level (which are near post-war highs), this should further depress stock prices.

The Fed's policy response takes on even greater importance in the context of both bubbles bursting simultaneously. If the Fed makes combating inflation its top priority, which may include trying to support the value of the dollar, then it could make the impact on the stock market and the economy far worse. The Fed would be forced to raise interest rates at a time when the economy is already seeing a large falloff in demand. If this keeps up the value of the dollar, it would be denying the economy the stimulus it would otherwise receive from the rise in net exports. Furthermore, the rise in interest rates would push the stock market even lower, possibly below its long-term equilibrium values. This strategy could lead to prolonged and severe downturn, although it may limit the extent to which the economy suffers from higher inflation.

Limiting Bubble Damage

There are no easy solutions to the problems that have been created by the stock and dollar bubble. The United States will be very lucky if it can avoid a severe recession as the bubbles deflate. While it is impossible to know all the ramifications of the collapse of these bubbles until they actually take place, there are some general points that can be made about economic policy.

The first and most important point is that the sooner the adjustment occurs, the better. The longer they are allowed to persist, the worse are the imbalances created by these bubbles. For example, if the myopia in the stock market persists, the record high price-to-earnings ratios could go even higher in the short-run, making the inevitable correction even larger. The macroeconomic implications of a larger adjustment would be correspondingly greater.

It is important to recognize that there are large economic costs associated with stock values being so inflated. Among these is a massive misallocation of investment. The companies with the most inflated stock prices are being given an opportunity to pull away capital from other companies that could put it to much more productive uses. In addition, in many cases, the gains from inflated stock prices will simply end up as the luxury consumption of entrepreneurs who managed to find suckers to buy their stock. This sort of "crowding out" of productive investment through the stock market is every bit as harmful to economy as the crowding out that can result from large budget deficits. The fact that economists have been largely quiet about the former, but virtually obsessed with the latter can only be explained by political considerations -- not economic logic.

Inflated stock prices also place an enormous cost on individuals in their efforts to save. With the stock market at approximately twice its proper value, anyone purchasing stock at present is effectively paying a 50 percent "bubble tax." In other words, one dollar invested in the stock market at present will get approximately the same return as fifty cents invested at a more normal time. This is huge drain for workers who are trying to save for retirement or their children's education. They are putting their savings in the stock market, but can effectively expect to see half of it disappear in the not very distant future. The sooner the market is brought back in line with the economy, the sooner this bubble tax will end.

Remarkably, in public policy debates on issues such as Social Security, many economists and policy analysts have assumed that any tax increase at any time would be an unconscionable hardship. Apparently, they consider it much better to have workers lose large sums of money in financial markets than to have any amount taxed away by the government. Again, there may be a political rationale for this perspective, but it cannot be justified by any economic perspective that concerns itself with workers' living standards.

As far as the dollar bubble is concerned, the main reason for an early deflation is to limit the damage done by the debt build-up. The higher the dollar goes, and the longer it stays there, the more foreign debt the nation accumulates. As the debt goes higher, the annual interest burden increases, and the trade deficit that would be consistent with a stable and sustainable current account deficit gets smaller. In short, the longer the adjustment process takes, the larger it will have to be.

Also, the growing trade deficit corresponds to a loss of jobs and production facilities. Insofar as factories in the United States lay off workers or close altogether, not because they are uncompetitive, but simple because of a temporary misalignment of currencies, this is an unnecessary loss for both the workers and the economy. The loss to the workers is apparent. From the standpoint of the economy, there are real costs to laying off workers and shutting factories that would be profitable if currencies were properly aligned. The laid off workers may never return to the same jobs. Factories that are closed for a period of time are expensive to reopen. The further the United States moves along a path of unsustainable trade deficits, the more costly it will be to reverse this course.

Thus, in the case of both bubbles, it would be desirable to have a quick adjustment process. This will stop the damage from getting worse, and allow the economy to start working through the mess created by allowing the bubbles to grow unfettered for so many years.

There are a couple of other policy considerations that deserve mention here. First, the economy is virtually certain to be facing a recession in the wake of the stock market collapse, as consumption and investment decline along with the market. As the economy shrinks, and as revenue from capital gains taxes plummets, the budget will move toward deficit. It will be extremely important that the Congress and the President allow this to happen, rather than trying to cut spending and increase taxes to meet targets for paying down the debt or balancing the budget. The economy will desperately need the stimulation provided by deficits at that point, any effort to prevent deficits from occurring will be a drag on economic growth, and raise the rate of unemployment.

As was noted earlier, the fall in the dollar will create inflationary pressure in the economy, probably raising the overall rate of inflation by between 1.4 and 2.1 percentage points annually. An increase in inflation of this magnitude will prompt concern in financial markets. But trying to squeeze out this inflation through monetary policy would be the wrong way to go. This would amount to deliberately raising the unemployment rate enough so that workers' bargaining power is weakened to the point that they have to accept cuts in real wages. There is no economic or moral

rationale for this course of action. The Federal Reserve Board should try to pursue a monetary policy that allows workers and corporations to share the burden created by higher import prices. This could mean some reduction in the rate of real wage growth, but it should also mean some reduction in corporate profit margins. It is not the job of the Federal Reserve Board to ensure that corporate profits remain at post-war highs indefinitely.

In proscribing policy for other nations, the United States government, along with the I.M.F. and World Bank, often advocate policies which are seen as leading to short-term pain, arguing that these policies provide long-term benefit for the economies affected. In most cases, the short-term pain has been apparent, while the long-term gain has not. In the case of the double bubbles, there are sound economic reasons to believe that both long-term gains, as well as short-term pain would result from ending this unsustainable pattern of growth. It will be interesting to see if the United States is willing to accept the pain for gain strategy it recommends so enthusiastically for others.

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Appendix

Table 1 -- To get the base price to earnings ratio in table 1, the price side was obtained by adjusting the value of outstanding equities that appears in line 10 of table L.4 in the March 2000 Flow of Funds Accounts (\$18,876.7 billion) for the decline in the stock market between the end of 1999, and the time of the writing of this paper (May 29, 2000). Using the Wilshire 5000 index as a proxy for the movement of the market as a whole, the decline over this period was 7.3 percent. The earnings side was obtained by taking corporate profits with inventory valuation and capital consumption adjustment (NIPA table 1.14 line 20) and subtracting corporate tax liabilities (line 23). The before tax profit figure for 1999 was \$892.7 billion, tax liability was \$259.4 billion, which gives after-tax earnings of \$633.3 billion.

Table 2 -- The net foreign debt in column 1 is the sum of the net investment position at market value of the United States at the end of 1998 in table B-105 of the Economic Report of the President (-\$1,537.5 billion), plus the Commerce Department's estimate of the current account deficit for 1999 (-\$338.9 billion). The trade deficit figures in column 2 assume that the deficit remains constant at the 3.6 percent share of GDP it reached in the first quarter of 2000. It uses the growth GDP path projected by CBO. The current account deficit shown in column 3 is the sum of the trade deficit, plus net transfers (military and foreign aid) of 0.4 percent of GDP, plus negative net interest payments which are assumed to be 0.4 percent of the net foreign debt accumulated by the end of the previous year. Columns 4 and 5 express the current account and net foreign debt as percentages of the GDP projected in CBO 2000.

Table 3 -- This table is constructed in the same way as table 2 except that it is assumed that imports grow at twice the rate of GDP, whereas exports are assumed to grow at a rate that is 0.2 percentage points more rapid than the growth rate of imports.