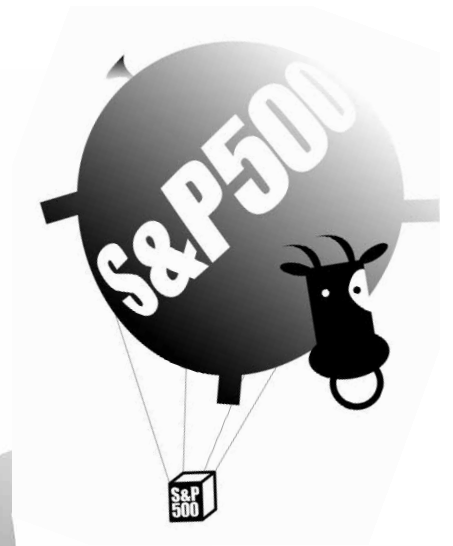




In the





long term...

Did the dramatic falls in equity prices in 2001 herald the start of a new bull market? Sushil Wadhwani looks at past evidence and finds that expectations remain high by historic standards.



All the world's major equity markets are now above the levels at which they stood before the tragic events of September 11 last year. They seem to be reflecting the consensus forecast that an economic recovery will begin in the United States by the middle of 2002.

Despite a succession of surveys in the second half of 2001, which suggested a significant weakening of confidence in the future in both the US and in Europe, and despite September 11 and its consequences, the markets appear to be willing to "look through" the valley in earnings associated with recent economic weakness to the sunlit uplands that are expected to result from the significant monetary and fiscal stimulus that has been injected. Traditionally, stock markets bottom before recessions end, so it is not that unusual to have weak business confidence and stock market rallies co-existing. The key question, though, is

whether the markets are right to expect an economic recovery in the US by then.

The equity markets appear to be relying on a significant recovery in profits this year. For example, the Institutional Brokers' Estimate System (IBES) consensus is for a 14.4% increase in operating earnings by 2002. Not only is this forecast dependent on an economic recovery, but it also assumes that profits will rise significantly faster than GDP. Yet firms have little power to raise prices as capacity utilisation is at an 18-year low and nominal GDP growth has slowed to just under 2% per year. On the other hand, unemployment is still low by long-term historical standards and workers appear to be able to secure real wage increases significantly in excess of productivity growth. This implies a squeeze on profitability, because firms are likely to respond by scaling back on their investment and employment plans, which could then feed back into consumption.

Figure 1 US and Euro Area Manufacturing Prices

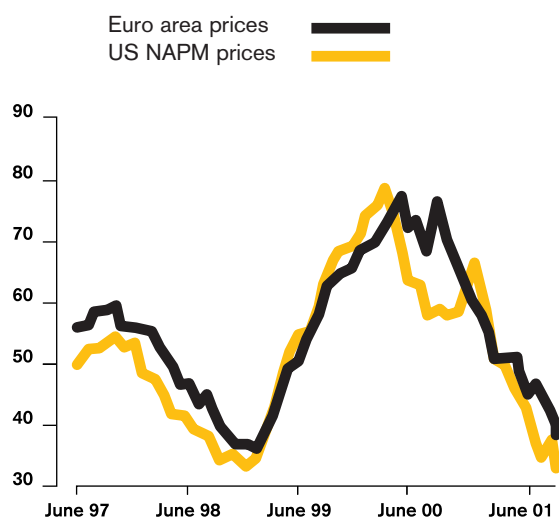
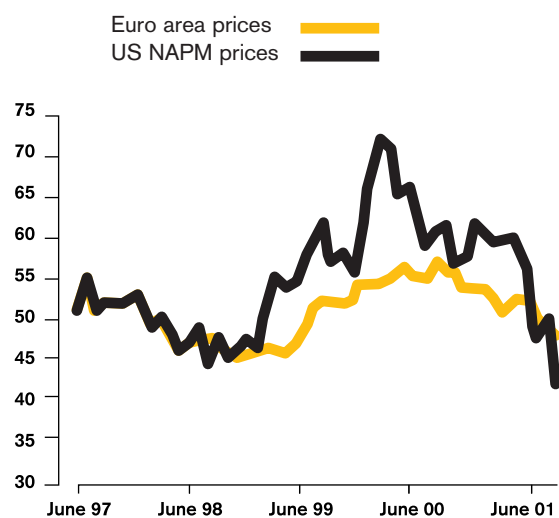


Figure 2 US and Euro Area Non-Manufacturing Prices





The market is still trading at a relatively high multiple of earnings

Figures 1 and 2 display the responses to questions on pricing embedded in recent Purchasing Managers' Index (PMI) surveys. They point to inflation pressures being extremely low. (NB on the right-hand scale 50 reflects the "no change" level.) Both manufacturing and services are now in deflation territory. Note also that the price of oil and industrial metals fell by around 20% last year. In addition, capacity utilisation in the US and Japan has not been lower since the early 1980s. For all these reasons, it is likely that global inflation will remain low over the next year or so.

Against this background, the key question is whether current stock market valuations pose a risk to the global economy. Global stock markets have fallen significantly since their peaks in 2000. Table 1 shows that the declines in the major equity indices from their peak values have ranged from over 20% for the FTSE100 to around 60% for the NASDAQ. It is, therefore, tempting to believe that stock markets are now more likely to rise than fall again.

Normally, the bottoms of bear markets are associated with clear signs of the purging of the excesses that built up during the euphoria associated with the preceding bull market. However, Figure 3 shows that the current price/earnings ratio for the S&P500 index in the US remains high by long-term historical standards. While it is true that current earnings are at cyclically depressed levels, Figure 4 (computed using a 10-year moving average of past earnings) suggests that the market is still trading at a relatively high multiple of earnings. These high absolute valuations have led some commentators to argue that the US stock market is still vulnerable to a further significant decline. If they are right, this could have an important impact on global growth.

It must be noted that P/E ratios have been high by historical standards for some years. Several Wall Street strategists have argued that these higher levels have been appropriate because interest rates and inflation have been low, so that holding equities has become less risky. So let us look further into this equity valuation debate.

Consider a simple valuation model for stock prices

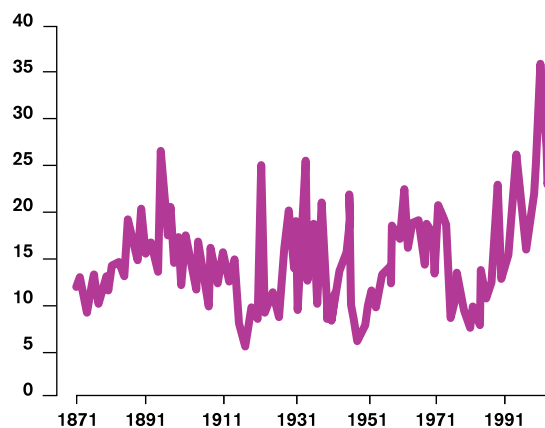
$$DY + g = r + rp$$

where DY = dividend yield, g = expected long-term, real growth rate of dividends, r = real interest rate, and rp =

Table 1 Stock Market performance since the peak

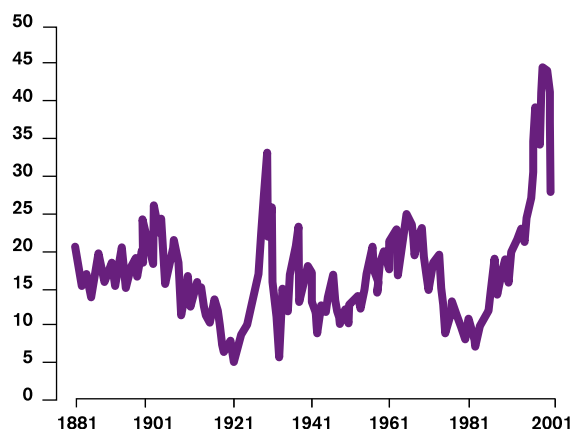
	FTSE100	S&P500	DAX	CAC	NIKKEI	NASDAQ	EUROSTOXX
Peak	6930.2	1527.5	8046.0	6922.3	50833.2	5048.6	466.2
15 Nov 2001	5238.2	1142.2	5006.3	4577.3	10489.9	1900.6	307.5
% change	-24.4	-25.2	-37.8	-33.9	-49.6	-62.4	-34.0

Figure 3 S&P500 Price-Earnings Ratio (Trailing Earnings)



Source: Shiller dataset for 1871-1968, thereafter S&P Composite P/E ratio

Figure 4 S&P500 Price-Earnings Ratio (Ten Year Average of Earnings)

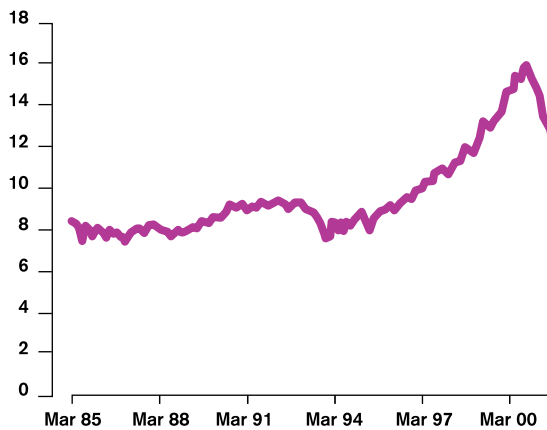


Source: Shiller dataset for 1871- early 2001

There is a significant variation in the rate of productivity growth over time

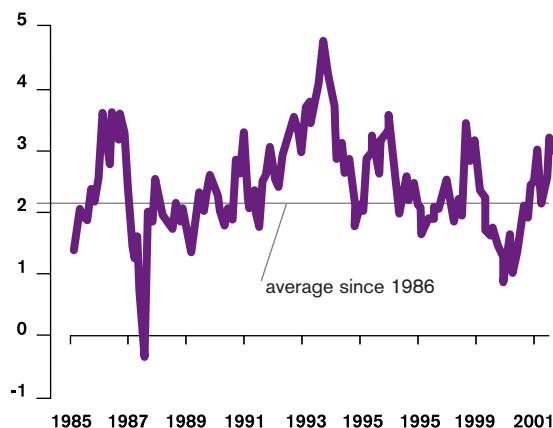


Figure 5 Consensus expectations of S&P500 Real Earnings Growth



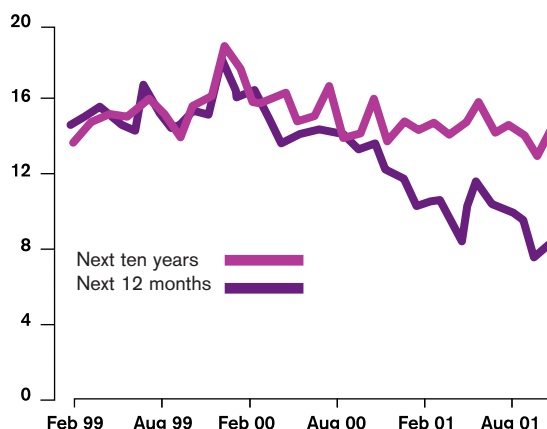
Note: IBES nominal earnings expectations deflated by University of Michigan survey based on 5-10 year inflation expectations.

Figure 6 Implied ERP*



* Computed using 3 stage Dividend Discount Model based on long-term earnings expectations.

Figure 7 UBS Paine Webber/Gallup Survey of Expected Returns



equity risk premium. (This is known in the literature as Gordon's (1962) growth model and is just a steady-state version of the dividend discount model.)

In the US last November, when the S&P500 index was 1142, DY was 1.4% and r was 3.3% (i.e. the yield on US Treasury Inflation-Protected Securities). We can initially assume that g was 2%, which is approximately equal to the long-term average growth rate of real dividends in the US from 1926 to 2000. These figures yield an estimate of the equity risk premium (ERP) of 0.1%, which is extraordinarily low by long-term historical standards. The actual ERP between 1926 and 2000 was about 7% and some calculations of the ex ante estimates of ERP for the same period suggest a value of around 4%. It is a widely held view that the appropriate level of the ERP has fallen since World War II and some estimates of the ex ante risk premium suggest that it has averaged around 2.4% since 1965. However, even if one just assumed that the ERP needed to rise from its present level to 2.4%, that would imply that the dividend yield would have to jump from 1.4% to 3.7%, which in turn would imply a very significant decline in the S&P500, indeed to around 430! Fortunately, the above analysis needs to be qualified.

There is significant variation in the rate of productivity growth over time, i.e. although the long-term growth rate of labour productivity in the US is about 2% a year, there have been significant periods when actual productivity growth has been maintained at a rather higher level. For example, it averaged nearly 3% a year from 1948 to 1973 and just under 4% from 1917 to 1927. Given that US productivity growth appears to have accelerated in the mid-1990s, it is reasonable when valuing stocks to allow now for at least a period of above-average dividend growth. Here it is to be noted that analysts had become significantly more optimistic about medium-term earnings growth prospects during the last two decades. Figure 5 displays the consensus forecast for real earnings growth three to five years ahead. This rose from around 8% a year in the mid-1980s to a peak of almost 16% a year in 2000, though it has fallen back to around 12% a year now.

If one assumes that the longer-term earnings growth forecasts are an accurate guide for the next four years and that the economic growth rate will gradually diminish towards its long-term average of 2% a year over, say, an eight-year period, then the implied ERP today is around 2.7% (see Figure 6). (Incidentally, for the period where such data on long-term earnings expectations have been available, there is no evidence of these expectations being biased. This is in contrast to the data on expectations of earnings one year ahead, where analysts appear to have been over-optimistic.)

This kind of calculation actually makes the US stock market today look undervalued. Achieving an ex ante risk premium of 2.4% on this basis would imply a rise in the S&P500



In the long term, earnings growth must match GDP growth

index to around 1285. In fact, the post-1985 average for the implied ERP is even lower (2.1%), which would support an even higher implied value for the S&P500.

At first sight, one might take some comfort from the fact that the ERP appears to have risen from around 0.5% at the market peak in 2000 (see Figure 6) to a value above its post-1985 average. However, in the last long bull market investors increased their expectations of equity returns. It is important that investor expectations for returns on the stock market should be consistent with the ERP. Specifically, with long-term bond yields of around 4.75%, an ERP of 2.5% implies a long-term return on equities of 7.25% a year. This level of return is, though, considerably lower than what investors say they expect to earn.

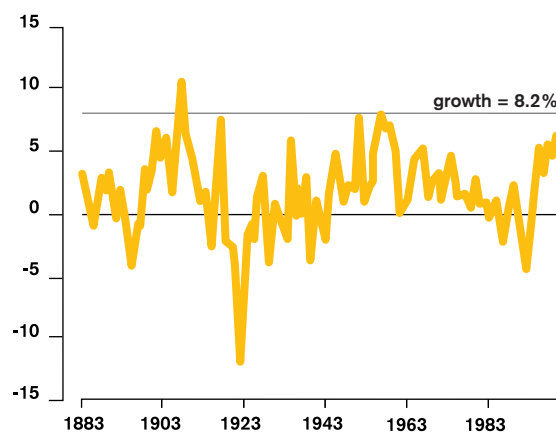
Specifically, the UBS Paine Webber/Gallup poll of investor attitudes asks individuals to forecast the annual rate of return on the stock market over the next 10 years. The October 2001 survey suggested an expected annual return of around 15%! Figure 7 shows that the expected return has fallen a little (it was as high as 19% a year in December 1999), but it remains more than twice as high as is implied by the current constellation of interest rates, ERP and expectations of earnings growth. The mismatch between what the stock market is likely to deliver and what individual US investors expect is a potential source of concern about the medium-term viability of existing valuations.

Of course, the recent bear market has had some impact on expected returns. In the last two years, while expected returns one year ahead have fallen significantly, 10-year forecasts have moved relatively little (see Figure 7). Individual investors appear to believe that the current bear market is only going to have a relatively temporary effect on the path of equity returns. Their longer-term expectations for returns are still extraordinarily high by historic standards.

A related concern about possibly over-exuberant expectations is associated with the fact that analysts still expect earnings growth over the next four years to average almost 15% a year in nominal terms, or around 12% in real terms. In the long term, earnings growth must match GDP growth and not even the most ardent advocate of the New Economy in the US believes that the economy is likely to grow faster than 4% a year. Since 1875, a rate of real earnings growth of 12% a year over a four-year period has been exceeded only about 10% of the time. Hence, the next four years would have to be unusually good in terms of corporate earnings growth in order to match the expectations of analysts.

While this is possible, it is not particularly reassuring that the current optimism of stock market pundits is predicated on such a rare level of growth. Further, the 2.7% estimate of the current ERP is based on a three-stage dividend discount model, where real earnings growth only falls from its elevated level gradually over the next four years. I have

Figure 8 Real Earnings Growth
(12 year Average Growth Rate)



implicitly assumed an average growth rate of real earnings of around 8.2% a year over the next 12 years. Yet, as Figure 8 shows, this has been a very unusual event during the last 125 years. To be precise, this rate of earnings growth has only been exceeded about 1% of the time.

Thus, although global stock markets fell significantly from the peaks of 2000, it is not as yet possible to assert that all the previous "excesses" have been purged. However, if clear signs of an economic recovery do emerge, none of these "excesses" are necessarily inconsistent with a significant move up in equity prices in the short term. It behoves us to recall that equities rallied by almost 60% in the 17 months following the lows reached in October 1998, even though levels of the ERP and long-term earnings expectations were not significantly different from today's. Valuation considerations only matter on a longer-term basis. An economic recovery producing a significant bounce in profits and share prices is unlikely to lead anyone to question their current, longer-term expectations about earnings and equity returns.

If, on the other hand and for whatever reason, the recovery is delayed, then we might see an adjustment as investors come to re-evaluate their expectations about longer-term earnings growth and returns and this could have a significant impact on the outlook for growth and inflation.

So far as forecasting inflation in the UK is concerned, we also face significant uncertainties in relationship to the supply potential of the economy. Most existing macroeconomic forecasting models produce forecasts of inflation that depend on some assessment of demand pressures relative to supply potential. In practice, however, assessing the true degree of supply potential is very hard. We have had to make some difficult judgments about, among other things, the level of spare capacity and the degree of



competitive pressure. One way of assessing whether our assumptions about these key, but hard-to-measure, variables are appropriate is to look at the performance of the equation that helps predict prices that is embedded in the Bank of England's Medium-Term Macro-econometric Model (MTMM).

There has been a tendency since about 1998 for actual prices to turn out to be below what the MTMM equation predicted. These errors have been both economically and statistically significant. Much of the "art" of forecasting lies in the judgments that are made. Different assumptions about whether or not these post-1998 errors would persist can have a large effect on the inflation forecast. If one assumes that they are relatively transient, then the forecast would tend to follow the prediction produced by the equation. If, instead, one felt that the factors that explain these errors were likely to endure, then this could lead to a significantly different inflation forecast.

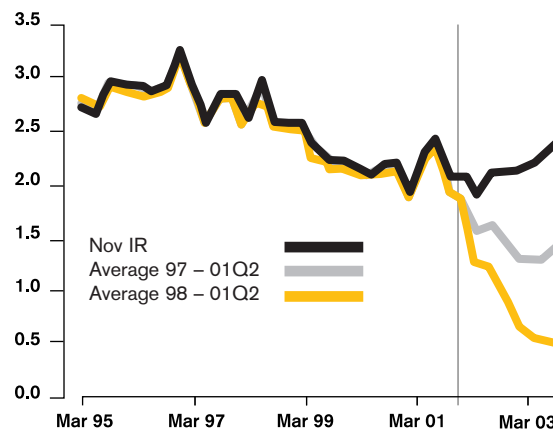
In deciding what assumptions are appropriate, we have to take into account the upward revisions to the historical capital stock data that were unveiled by the Office of National Statistics (ONS) in September 2001. The new measure of the capital stock had a significant effect on the MTMM measure of capacity utilisation.

This new measure has the inherent plausibility of being rather closer to the survey data and implies that we are operating below full capacity. The previous measure implied that we were operating above full capacity. The revised calculation of capacity utilisation has the considerable advantage that it reduces the size of the previous price forecasting errors. One is normally more confident about projecting the future when one understands the past better. Since this alternative explanation of past price forecasting errors is of a more enduring character, it has had the effect of reducing the medium-term inflation forecast produced mechanically by the model.

Moreover, even though the new capital stock data produce smaller forecast errors from the price equation, there is still some tendency to over-predict price inflation since 1998. And these forecasting errors are still economically significant. If, for example, we project into the future the average forecast error for inflation made over the post-1998 period, then in a mechanical sense Figure 9 shows that the implied path for inflation would have been quite different from what was published by the Bank of England in its November 2001 Inflation Report, with a difference in the inflation projection for two years ahead being much as 1.8 percentage points. Of course, fortunately, the published inflation forecast is not just based on an econometric model.

This suggests that there may still be important missing or poorly measured variables in the MTMM price equation. Candidate explanations include the possibility that the capital stock remains inadequately measured. We still

Figure 9 Alternative 'Inflation Forecasts'



need to investigate alternative conceptual measures of this stock. More generally, the evidence that prices have in fact been below what the equation predicts is consistent with the growth rate of potential output being higher than we have assumed.

It is also the case that the equation does not currently allow the world price of competitor goods to influence domestic pricing and, thereby, potentially fails to pick up any effects from the intensification of competitive pressure that has occurred as the ratio of world prices to domestic prices has fallen in recent years. (There is survey evidence that an intensification of competitive pressures since mid-1997 has been perceived to have had an important effect on profitability.)

It may be that we need to revisit the conceptual measure of capacity utilisation that is used in the model. In any case, while there are considerable uncertainties, my personal judgment is that the current published best collective projection for the UK economy is systematically overstating the degree of inflationary pressure, though only by around 0.5%.

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