ECONOMIC SCENARIOS.COM
Issue 3
Essential Economic Analysis for Strategic Thinkers

What could be the impact of the WorldCom and other US corporate failures?

Key points

- United States and global prospects should be downgraded.
- Annual US real GDP growth could initially be 1.7 per cent lower than otherwise.
- Impact on investment rather than consumption is the key.
- Repercussions could last several years.
- Major impact is from reappraisal of the equity risk premium.
- Asian markets are not hit as hard as those in the United States and Europe.
- Real US 10 year bond yields could fall by up to 220 basis points below baseline.

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The giant US telecommunications company WorldCom overstated earnings by a massive US$3.8 billion. The company has filed for bankruptcy. Coming hard on the heels of the collapse of Enron and financial scandals at Xerox and Tyco, among others, investors have backed away from the market. America's Dow Jones index has lost 20 per cent of its value between mid-May and mid-July this year. This loss of confidence in equities and the sharemarket slump, if sustained for a couple of years, will have major implications for the US economy and hence the global outlook. This newsletter explores three scenarios flowing from the string of corporate governance failures in the United States. A downward reappraisal of economic prospects is warranted, itself having implications for asset values.

The economics of the failures in US corporate governance

The string of auditing failures and corporate fraud in the United States could impact on the economy in three ways.

The main way that WorldCom and other corporate fraud affects the economy is through the reappraisal of the equity risk premium (the risk premium on equities over more secure investments such as bonds). As investors reappraise risk, so the optimal allocation of investment changes — both at home and abroad. With these reallocations there are big changes in asset prices and large movements of capital. Changing asset prices affects variables such as tax revenue and consumer wealth, and all have flow-on effects that have to be considered. While equities fall in value, other assets like real estate can rise and it becomes a quantitative issue whether the gains offset the losses. Critical here is whether the reappraisal of the equity risk premium is confined just to the United States or whether it is a global phenomenon. Because of the close links of global equity markets and some similar corporate collapses in Europe, we simulate a global reappraisal of equity risk that varies across countries.

Using these scenarios

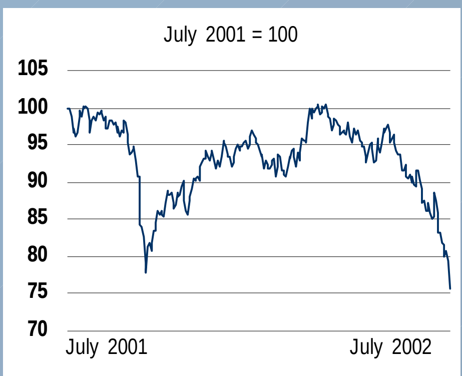
Nobody can foretell the future. If they could, they wouldn't tell you about it. These scenarios are not predictions or forecasts. To make profitable investments from this information you also need to decide how likely the events portrayed here are, and what is already priced in the markets. The value of this material is in the insights it offers into the economic effects of various possible events.

Second, is that the profits and productivity growth reported over the last few years was overstated. That is, the US economy may not be as big as previously thought and so projections about future growth should be made from a lower base. New figures released by the Commerce Department on July 31 show the economy was shrinking for the first nine months of 2001. The economy had performed worse than people thought. If the level of growth is lower than thought, this will affect the optimum level of capital in the economy. This effect is confined to the United States.

The third channel of influence, by which the corporate governance failures affects the economy, is through the extra regulation and costs that will be imposed on business in the aftermath. The high profile corporate fraud cases have led to a chorus for reform. Congress has obliged. It has passed new legislation strengthening corporate governance that President Bush has signed into law. But each new layer of regulation also carries compliance costs, and far greater scrutiny will now be given to audit reports for corporate America.

Transaction costs have risen in the United States and will be reflected in lower productivity than otherwise might be the case. This lower productivity growth affects the entire economy including asset prices, investment levels, the real exchange rate and the trade balance. Changes in these variables have flow-on effects for other variables such as economic growth and consumer spending.

1 **US Dow Jones**



The scenarios

Scenario 1: A rise in the equity risk premium

This scenario reflects the loss of confidence in equities by investors. The shock here is a reappraisal of equity risk in the aftermath of the string of corporate governance failures in the United States and Europe that leads to a rise in the equity risk premium. The change in equity risk premium is for an initial spike upwards of 8 per cent which scales down to 7 per cent in year 2, 6 per cent in year 3 and so on, until eight years later when the equity risk premium is back to where it was prior to the string of corporate collapses. This profile of change in equity risk premium is chosen to give an initial fall in equity values of approximately 20 per cent.

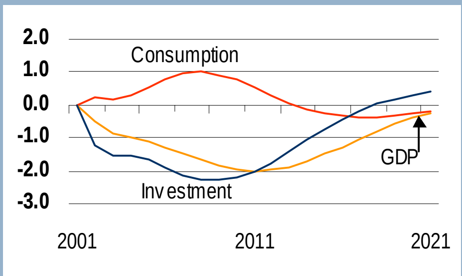
The scenario is therefore an initial rise in the premium on equities over bonds which gradually dissipates over time as confidence by investors in the integrity of corporate reports is restored. This pattern of change in equity risk premium is assumed for the United States, the United Kingdom, Germany, the rest of the European Monetary System and the rest of OECD[1]. There are obvious close links between the financial centres of London and New York, and in European markets some similar corporate collapses, such as the French based media giant Vivendi, have also occurred.

[1] For definitions of countries included in the model refer to www.economicscenarios.com and the links to www.msgpl.com.au and the MSG3 model for details. Version 48i of the MSG3 model is used for all three scenarios.

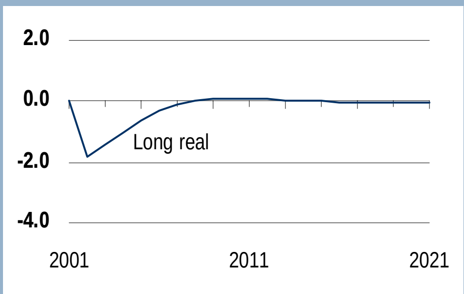
SCENARIO 1: A RISE IN THE EQUITY RISK PREMIUM

(Percentage deviation from baseline)

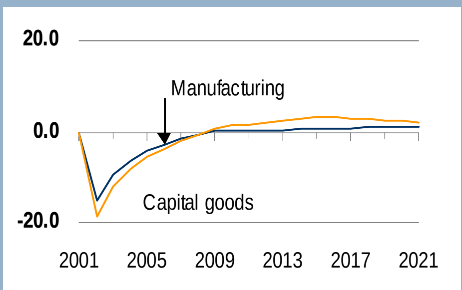
2 Real GDP, consumption and investment, USA (per cent of GDP)



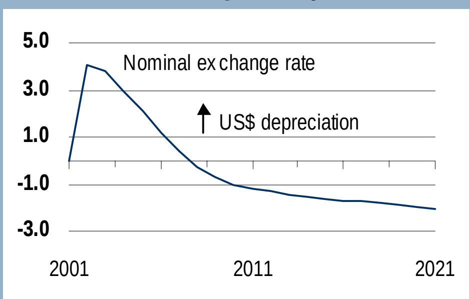
3 Interest rates (percentage point change), USA



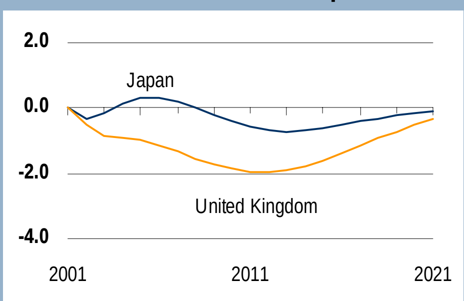
4 Tobin's q (percentage point change)



5 Nominal exchange rates yen/US$



6 Real GDP in the UK and Japan



Some contagion of loss of confidence in equity markets is also assumed for Japan, high and low income Asia, Australia and LDCs. The rise is half that assumed for the United States and Europe. The reason for the smaller change in risk premium for Japan and other Asian markets is that these countries had their own reappraisal of equity risk in the aftermath of the bursting of the Japanese bubble in the early 1990s and the Asian financial crisis of the late 1990s.

The effects of this scenario are shown in the charts on this page. With the rise in equity risk premium in the United States and Europe there is a large reallocation of capital, some of which finds it way abroad. The US dollar depreciates against the yen, but only slightly with Europe.

The significant effect from the rise in equity risk premium is that the required return on invested capital is now higher. That implies there is too much invested capital in place which means a large drop in investment to get to the desired level of capital stock and rate of return. Investment, as a per cent of GDP, falls by over 2 per cent below baseline between 2005 and 2009. Since investment is roughly 10 per cent of GDP in the United States, the drop in investment is around 20 per cent. This large drop in investment in the United States causes the level of GDP to fall by up to 2 per cent below baseline by 2009.

Of some note is that there is little change in real consumption — a small increase, in fact. This does not mean that wealth effects are insignificant. To the contrary, there are wealth effects stemming from the fall in equity prices, but these are offset by the positive wealth effects from rising asset prices elsewhere — most notably real estate. One of the 'surprises' in recent popular commentary on the US economy is the resilience of the consumer who has kept the economy going — albeit more slowly than earlier. The value in using a formal and integrated framework to examine questions such as the fall-out from the failures in corporate governance is that different influences on variables like real consumption can be assessed.

With the shift out of equities and into bonds and real estate, bond prices rise. Real yields on 10 year bonds fall with the pattern reflecting two things. One is the shock imposed, which implies confidence returns in corporate governance and the initial rise in the equity risk premium dissipates over time. Second, is that the asset reallocation cannot occur instantly — there are adjustment costs in this model. Real yields on 10 year bonds reflect the geometric average of short yields (including years beyond, not shown here) and fall by 180 basis points below baseline initially before gradually recovering. Tobin's *q* for capital intensive industries falls by nearly 20 percentage points below baseline in 2002 before recovering gradually.

Effects on third countries are interesting. For European economies, typified by the United Kingdom, a similar set of economic changes happen as with the United States. The required rate of return on capital is now higher due to the shift in investor sentiment about the riskiness of capital invested versus bonds, and there is a fall in investment and real GDP. The fall in GDP adds to the fall in US activity and vice versa.

For other countries such as Japan, there are two opposing effects operating. One is the negative effect from both the slower real activity in

America and Europe and the fall in the equity risk premium. But there is also a positive stimulus from the reallocation of capital from America and Europe to other parts of the world which now look *relatively* less risky. This small additional investment is sufficient to offset the negative effects in some years and gives the resulting dynamic pattern of change from baseline for real GDP in Japan shown in chart 6.

Scenario 2: A reappraisal of the initial level of productivity in the United States

Given the downward revisions to historical data in the United States, in this scenario we simulate a reappraisal of the initial level of productivity, implying an economy that is 2 per cent smaller but (for now) with the same underlying trend in productivity growth. Using 2001 as the benchmark, it is assumed the *level* of productivity is 2 per cent smaller forever.

The effects on the US economy are shown in the charts on this page. Because the level of productivity is lower, the capital stock in place is too great, so this runs down over time. Too much capital stock means investment (expressed as per cent of GDP) falls — close to 1 per cent below baseline a decade out. With the run down in capital stock and lower investment, GDP falls and the new level of GDP eventually settles at 2 per cent below baseline. Note that the figures in chart 7 are deviations from baseline in the level of GDP. The year-on-year growth rate of GDP from baseline is shown in chart 8. The rate of economic growth is 0.75 per cent lower in 2002. By 2015 there is little difference between baseline and simulated rate of economic growth. Because there are less goods produced, the relative price of US goods rises, so the exchange rate (US$/yen) appreciates.

There are few implications for long term real interest rates from this rebasing of the economy and there are only small implications for Tobin's *q*. Consistent with the run down in capital stock, the decline in asset values for the capital intensive goods is greater than the decline in Tobin's *q* for the non-energy sector.

Scenario 3: A lower rate of productivity growth

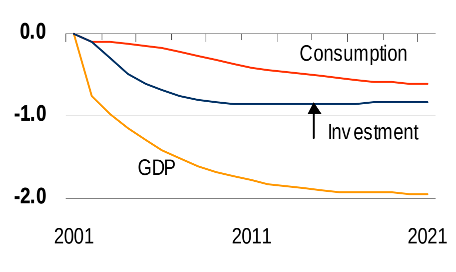
Extra regulation, scrutiny and compliance costs are one outcome flowing from the string of corporate governance failures. These extra recurring costs reduce productivity growth. Here we look at a 1 per cent fall in productivity growth below baseline represented as a drop in labor augmenting technical change. This effect in terms of growth rates lasts for ten years but then disappears. Note, this simulation is about the rate of growth of productivity, whereas scenario 2 was about the initial level of productivity.

The interesting feature of this scenario, shown on the charts on the next page, is that the lower labor productivity initially causes the relative return on capital to rise. There is a substitution by firms to replace the now less productive labor with capital and so investment rises in the short term. Investment, as a per cent of GDP, peaks at 1.6 per cent above baseline in 2005. Ultimately, the lower productivity has a cost to growth

SCENARIO 2: A REAPPRAISAL OF THE INITIAL LEVEL OF PRODUCTIVITY IN THE UNITED STATES

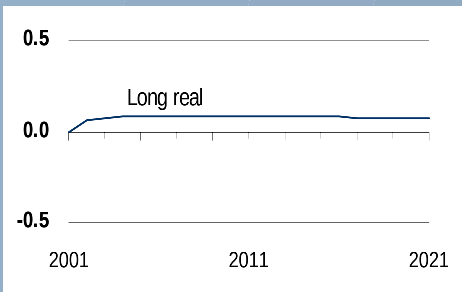
(Percentage deviation from baseline)

7 **Real GDP, consumption and investment (per cent of GDP)**

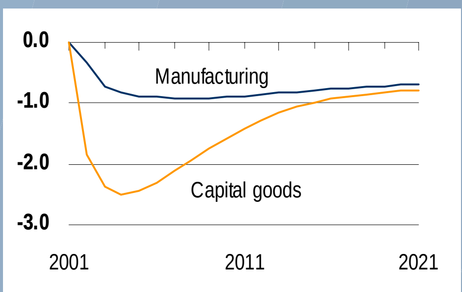


8 **GDP growth rate: difference from baseline, per cent**

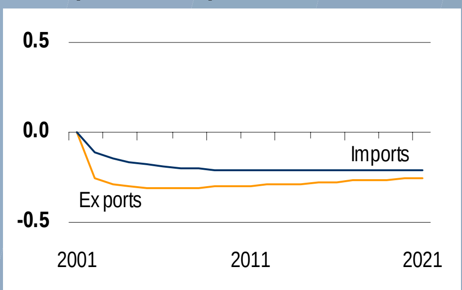
9 **Interest rates (percentage point change)**



10 **Tobin's q (percentage point change)**

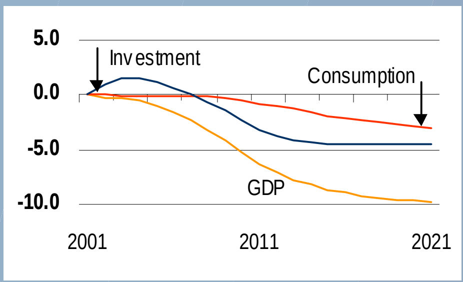


11 **Exports and imports (per cent of GDP)**

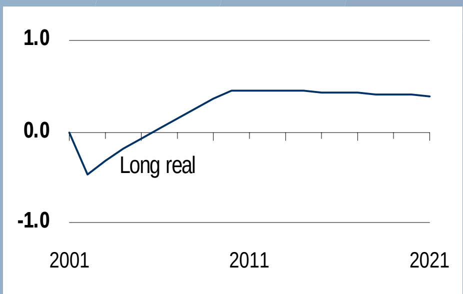


SCENARIO 3: A LOWER RATE OF PRODUCTIVITY GROWTH
(Percentage deviation from baseline)

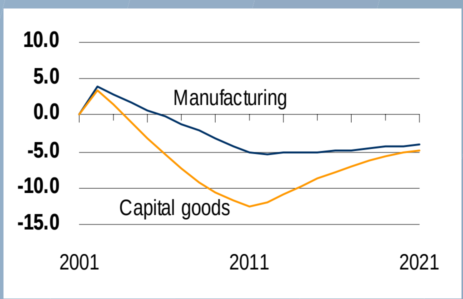
12 **Real GDP, consumption and investment (per cent of GDP)**



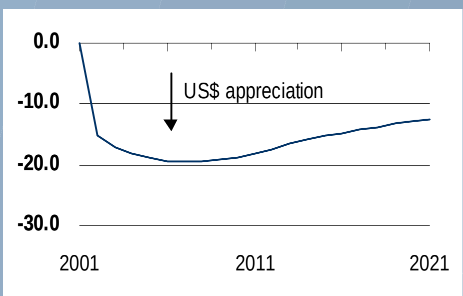
13 **Interest rates (percentage point change)**



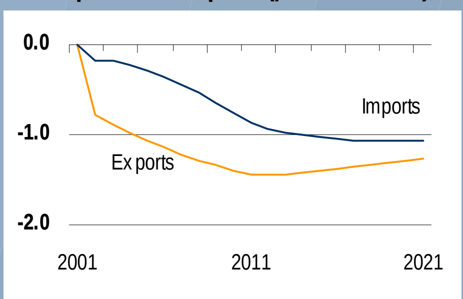
14 **Tobin's q (percentage point change)**



15 **Nominal exchange rate, yen/US$**



16 **Exports and imports (per cent of GDP)**



so investment tails off beyond 2005. It is a case of two effects at work — a substitution or relative price effect and an 'income' effect as the economy grows more slowly in later years. To reflect the initial rise in investment, Tobin's *q* for capital intensive goods rises by 340 basis points above baseline before tailing off as investment falls. Tobin's *q* for capital intensive goods ends up nearly 12 percentage points below baseline.

As the economy is less productive than before and less goods are produced, there is a rise in the relative price of US goods — hence a relative appreciation of the US dollar which is shown in the charts as a US$/yen real exchange rate. The appreciation of the exchange rate means there is a drop in the level of exports from the United States but the effect is small. The level of real exports as a per cent of GDP from the United States could be 1 per cent lower than baseline by 2004. Since exports comprise around 7.5 per cent of GDP, the fall in exports could be 7.5 per cent below baseline.

Putting it all together

The previous scenarios show many different influences — some reinforcing each other while others offset each other. The net effect is shown on the charts on page 6. The dominant effect on the results is the reappraisal of the equity risk premium. In later years, the small decline in annual productivity growth accumulates so that a decade out, the level of real GDP could be 11 per cent below what it might otherwise be. Note that this is the difference in levels and does not mean the United States goes into recession — it all depends on the baseline growth rate. The annual rate of growth of real GDP is 1.7 per cent lower than baseline in 2002. Taking, for example, the June OECD projection of real GDP growth for the United States of 2.5 per cent for 2002 as the base, growth could be 0.8 per cent. That is, the rate of growth of the United States economy could be cut to a third but a recession would be avoided.

Real 10 year bond rates could fall initially by up to 220 basis points below baseline. The bilateral US$/yen real exchange rate could appreciate by 10 per cent above baseline. Again, there are positive and negative forces at work here as explained earlier.

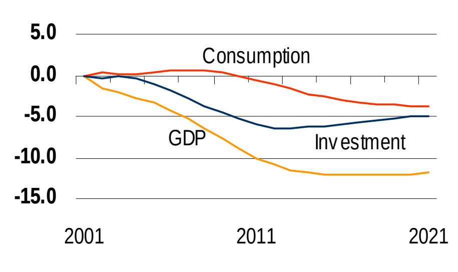
The sharemarket, as represented by Tobin's *q* could be much lower than baseline — again the small offsetting initial positive force from the lower productivity is outweighed by the negative effects from the reappraisal of the equity risk premium. The result is a large initial drop in Tobin's *q*. The dynamic pattern of change from baseline shown in chart 19 is the combination of these influences, the dominant effect being the reappraisal of the equity risk premium.

All other major economies are adversely affected by the corporate governance failures in the United States and in Europe and, as represented by the scenarios chosen here, the major effect is on the United States.

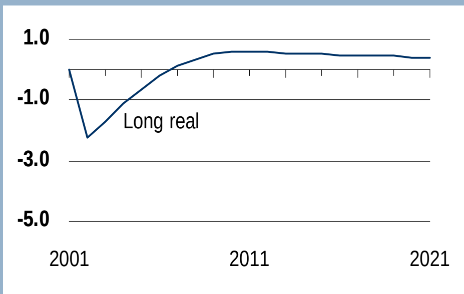
The major economies of Japan, Germany and the United Kingdom all experience a fall in the level of their GDP which is over 4 per cent below baseline a decade out for Germany, shown in chart 21. The initial decline in the *rate* of real economic growth is around 0.5 per cent for Germany and the United Kingdom and half that for Japan.

COMBINED EFFECT
(Percentage deviation from baseline)

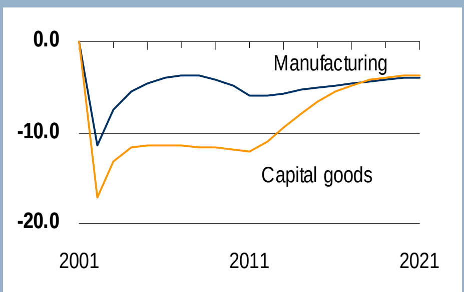
17 **Real GDP, consumption and investment (per cent of GDP)**



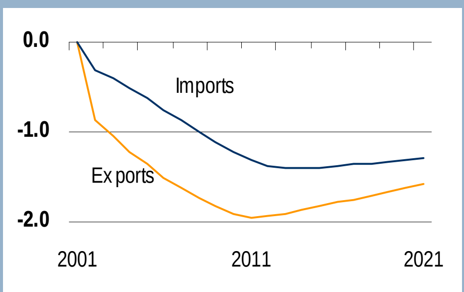
18 **Interest rates (percentage point change)**



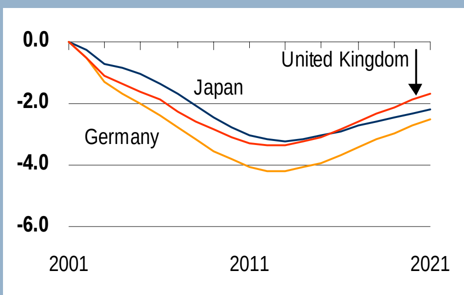
19 **Tobin's q (percentage point change)**



20 **Exports and imports (per cent of GDP)**



21 **Real GDP in Japan, Germany and UK**



Accordingly, the decline in Tobin's *q* for capital goods in Germany and the United Kingdom is roughly double the initial 13 percentage point decline below baseline for Japan.

Implications

The scenarios suggest a significant reappraisal of the US and world economies is warranted in light of the corporate governance failings and loss of confidence in equity markets by investors. This reappraisal is already happening to an extent, and the notion that the US economy could be in for several years of lower growth is widely discussed in the media.

The level of exports, imports, domestic production, investment, the share market and real interest rates are all lower than before and the effects last several years. How much of this knowledge is already priced in the market is difficult to say since there is even talk of a 'double dip' recession. The analysis here — if the scenarios chosen are a reasonable representation of the widespread failures in corporate governance — suggests that a double dip recession is unlikely but that economic growth will be significantly lower than previously thought. Had the string of corporate failures not occurred, economic growth in the United States could have been 1.7 per cent higher in 2002.

Also of significance, is that on the basis that there has only been some partial reassessment of the equity risk premium in Asian markets, some of these markets may look relatively better than those of Europe or the United States.

These findings are sensitive to the level and pattern of movements in the equity risk premium. Clearly, a lower reappraisal of equity risk would have lower effects, and a sharper recovery in confidence would see the downward revisions of key variables of a shorter duration. Also important, is the extent to which the reappraisal of equity risk premium is a worldwide phenomenon.

The more the loss of confidence in equity markets is confined to the United States, the greater the cost to the US economy and the lower cost to other countries. It could even be that some third countries gain if the equity risk reappraisal was confined just to the United States. In our view, the scenarios we have chosen here best represent events[2].

Given the downgrading of prospects warranted by events, some further stimulus — such as bringing forward the scheduled 2004 tax cuts or lowering interest rates by the Federal Reserve — could be forthcoming and would alter outcomes.

The overriding conclusion is that the failures of corporate governance warrant a downgrading of US and world economic prospects, and the adverse effect could last several years with investment being sluggish. Changes in investment are more important to prospects than changes in consumption. A double dip recession in the United States should be avoidable — depending on the view of baseline economic growth.

[2] Alternative scenarios could be run — simply contact the authors.