

Glenn Stevens: Risk and the macroeconomy

Address by Mr Glenn Stevens, Deputy Governor of the Reserve Bank of Australia, to the 2006 Securities & Derivatives Industry Association conference, Melbourne, 27 May 2006.

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I am pleased to be here in Melbourne to take part in your conference.

There seems no better issue to discuss with a group of securities and derivatives professionals than risk and its pricing. This is quite topical since, as you would be well aware, the extent of additional return paid to investors to take on risk seems to have been unusually low in recent years.

There are several questions that naturally arise, and which I would like to address.

First, how does the recent period compare historically? Compensation for risk is low compared with the 1980s and 1990s, but what can we learn from a longer-run comparison?

Second, to what extent can it be claimed that the underlying economic outcomes, which presumably have a major bearing on investors' perceptions of risk, are less "risky" or volatile than they used to be?

Third, what are the odds that this apparently benign environment will persist? What factors might prompt a change?

What is risk?

To begin, it is perhaps important to be clear what we mean by "risk", and how it differs from "uncertainty", a distinction first made by Frank Knight¹ in 1921.

He wrote:

"The practical difference between the two categories, risk and uncertainty, is that in the former the distribution of the outcome in a group of instances is known (either through calculation *a priori* or from statistics of past experience), while in the case of uncertainty this is not true, the reason being in general that it is impossible to form a group of instances, because the situation dealt with is in a high degree unique."

Risk can be priced, on the assumption that the probabilities in the future will be those inferred from the past. In Peter Bernstein's² excellent book *Against the Gods*, the early development of thinking about risk is presented as arising from the study of games of pure chance – where the odds are precisely calculable. The classic response to the chance-like characteristics of life is insurance. Actuaries draw up tables of life expectancy for a population based on historical experience, and insurance companies, with reasonable confidence, price policies. The probability and likely cost of certain other events – fires, car accidents, etc. – is sufficiently calculable that, over time, risk can be priced.

In the case of *uncertainty*, we don't or can't know the parameters of the distribution. Events that have no known parallel in recent history, where there is no basis for determining expected frequency or impact, will not easily be amenable to pricing. An avian flu pandemic, for example, could result in a frequency and severity of illnesses and a number of deaths that is outside any recent historical experience, with important implications for life and health insurance providers.

In fact, many economic and financial processes produce outcomes that do not come from any known statistical distribution, because the human interactions which drive them are not like the turn of a roulette wheel or throw of a dice. In such a world, quantification and formal management of risk can go only so far; there will always be some possibilities that simply can't be priced.

These issues are quite important, and will intrude into our discussion later on. But for now, let me turn to what the quantitative evidence can offer us.

¹ Frank H. Knight (1921), *Risk, Uncertainty and Profit*, Houghton Mifflin Company, Boston.

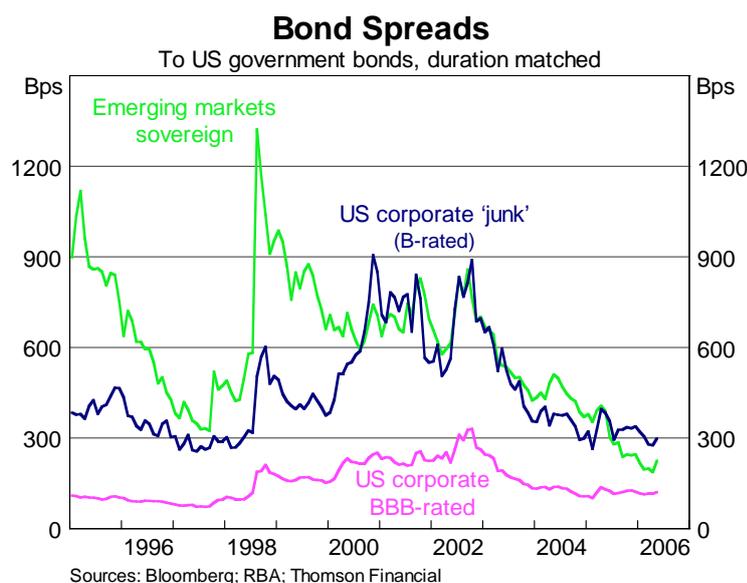
² Peter L. Bernstein (1996), *Against the Gods*, John Wiley & Sons Inc., New York.

Risk Pricing

The place to start is with the level of long-term rates on highly rated sovereign debt. Given that the likelihood of default by such countries is remote, what is being priced here, essentially, is the rate and variability of future inflation. For those of us whose economics awareness dates from some time in the 1970s or later, it certainly seems that long-term interest rates globally have in recent years been unusually low. In the United States, 10-year Treasury note yields were below 5 per cent over several years, which stands out compared with the history of the preceding few decades. Furthermore, it is historically unusual for these rates to have been low and pretty steady at a time when the Fed is raising short-term rates. That this would coincide with a sizeable US budget deficit, and a US current account deficit of unprecedented magnitude, was certainly not anticipated by any observer I can recall. It was labelled a “conundrum”³, and “an intriguing financial phenomenon”⁴ by successive Fed chairmen.

Long-term interest rates in other major centres – Japan and Europe – have been even lower than US rates. As recently as 2003, Japan’s rates were the lowest on record anywhere that we could find over several centuries. These yields too have risen somewhat from those levels, but remain very low by standards of the past couple of decades.

Because sovereign yields in major countries have been low, so have those for most private borrowers and many emerging-market sovereign borrowers in capital markets. But there has also been considerable compression in risk spreads for both corporate and emerging-market sovereign debt, which takes them back to levels that were observed in the mid 1990s. Many observers have a feeling of discomfort about all this – since, on some previous occasions, spreads this low quickly gave way to much higher pricing for risk in the face of some event, like the Asian crisis, the LTCM episode or the global downturn of 2000-01. All too often, risk has – in hindsight – been underestimated in good times and overestimated in bad times.

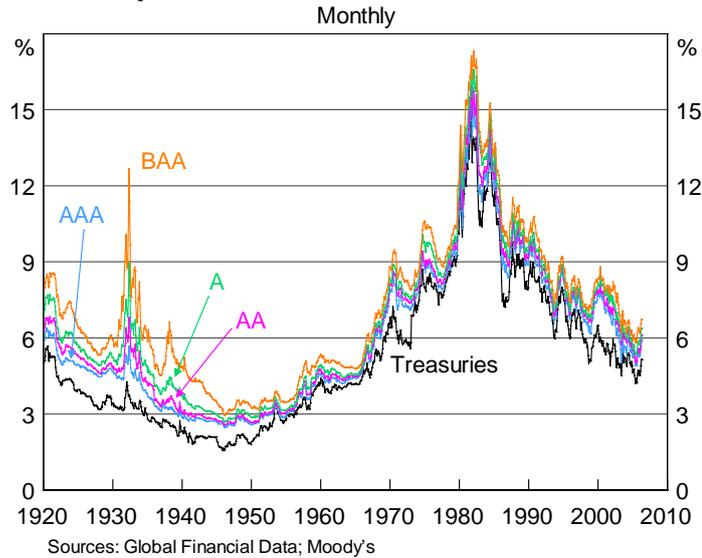


Against the backdrop of the past century, on the other hand, recent levels of long-term US interest rates do not look especially low; they look quite within the range of historical experience, especially experience when inflation was low. The 1970s and 1980s look more like the outlying period. Nor have spreads, for US corporate debt at least, been all that low when viewed from this longer perspective. There were lengthy periods in the mid part of the 20th century when spreads were as low as or lower than they are today.

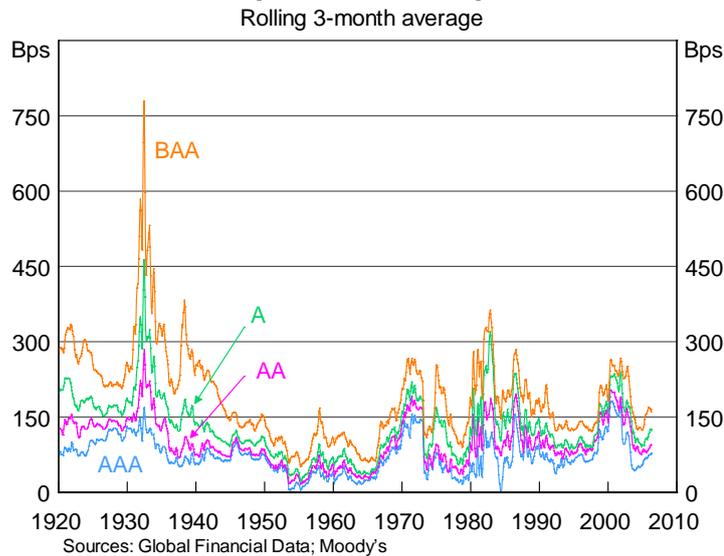
³ Greenspan, at <http://www.federalreserve.gov/boarddocs/hh/2005/february/testimony.htm>.

⁴ Bernanke, at <http://www.federalreserve.gov/boarddocs/Speeches/2006/20060320/default.htm>.

US Corporate and Government Bond Yields



US Corporate Bond Spreads



It is more difficult to get consistent data for emerging market yields and spreads over history. But a study released a few years ago by the IMF suggested that, on average, emerging market spreads in the 1990s were much higher – twice as high or more – as in the period of globalisation and free capital flows leading up to World War I.⁵

Now it could immediately be objected that the world of today is a vastly different place from that of these historical episodes, so that any comparison is not valid. During World War II and up to 1951, US bond rates were effectively pegged by the Fed under the monetary procedures then in place. Hence, the bond market was not really a market.⁶ The US corporate debt market was not so regulated but it was a vastly reduced market in size in this period, after the extremely high rates of default in the

⁵ Paolo Mauro, Nathan Sussman and Yishay Yafeh (2000), 'Emerging Market Spreads: Then Versus Now', IMF Working Paper, WP00/190, November (available at <http://www.imf.org/external/pubs/ft/wp/2000/wp00190.pdf>).

⁶ This ended with the 1951 "Accord" between the Federal Reserve System and the US Treasury. See http://www.richmondfed.org/publications/economic_research/the_fiftieth_anniversary_of_the_treasury_federal_reserve_accord/ for details.

period of the Great Depression.⁷ The peak number of US corporate borrowers rated by Moody's in the mid 1920s was not surpassed until 1997.⁸ So while those bonds that were in the market from the end of World War II until the early 1970s paid quite low spreads, it is not clear to what extent this provides a reasonable basis for comparison with the larger and more active market of today.

On the other hand, it is a natural human tendency to think that the world we face is unprecedented in its risk and complexity compared with the past, when it probably is not.⁹ It has to be said as well that the 1970s and 1980s were also, historically, rather an unusual period. This era saw a major outbreak of price inflation, which had hitherto been seen only during wars. Inflation was not only high, but highly variable, and policy-makers struggled to formulate an effective response. This was extremely disruptive for fixed-income markets, and for financial asset pricing generally. Nominal yields rose to unheard of levels.¹⁰ The business cycle downturns of this period seemed to be much more damaging than earlier post-World War II recessions. In general, it was a period of considerable macroeconomic instability.

That instability has subsided considerably since then, as I shall show in a moment. But the echoes of the 1970s and 1980s – an intellectually formative period for most of us here – took a long time to fade; just as nominal interest rates took time to recognise rising inflation, they took time to recognise what was clearly, in hindsight, a fundamental regime shift in inflation which occurred in most countries in the mid 1980s.

So in assessing the level of interest rates or spreads for reasonableness, it can be difficult to find a period of history that can serve as a neutral basis for comparison. While the mid 20th century might not be ideal as a benchmark, the 1970s and 1980s are surely quite unsatisfactory. Perhaps the safest conclusion is that no historical period can be assumed unambiguously to be a good benchmark for pricing. Each period is different and we need to make efforts to understand the forces at work in economies and financial markets at the time.

Economic variability

That brings me to the second set of questions: is there any evidence, at a macroeconomic level, that economies are less volatile than they were in the past?

The answer is clearly yes. A host of studies have documented a decline in the variability of GDP growth not only in the United States but also in a number of developed economies, even though there are still periodic recessions.¹¹

⁷ One authoritative study found that one-tenth of investment grade and over one-third of speculative grade corporate borrowers defaulted between the end of 1931 and the end of 1935. See W. Braddock Hickman (1958), *Corporate Bond Quality and Investor Experience*, Princeton University Press for National Bureau of Economic Research.

⁸ David T. Hamilton, Praveen Varma, Sharon Ou and Richard Cantor (2006), 'Default and Recovery Rates of Corporate Bond Issuers, 1920-2005', Moody's Investors Service.

⁹ Is the world a more risky place today than it was 50 or 60 years ago? I am not sure that it is. We can point to the threat of terrorism, the impact of globalisation on various business models, avian flu and so on. But without wishing to downplay the importance of those factors, the earlier era included World War II, the Korean and Vietnam wars, the broader cold war with its threat of nuclear conflict, and intense political uncertainty and risk in various countries. In late-1940s Australia, for example, the Federal Government sought to nationalise the banking system – presumably a source of considerable risk for the owners of the time. There were also major technology changes in that era, which would have destabilised some important existing business models. For example, the development of air transport, and its acceleration (literally) with the development of the jet aircraft in the 1950s, would have changed the outlook for railroads and ocean travel dramatically. The advent of transistors was, by the 1960s, transforming the electronics sector long before the PC or the flat-panel screen arrived. Arguably the world was no less "risky", or more precisely, a no less *uncertain* place in those days.

¹⁰ Bernstein writes (*op cit*, pp. 334-335): "In the early 1970s, long-term interest rates rose above 5 per cent for the first time since the Civil War and have dared to *remain* above 5 per cent ever since". This was written in 1996. Long-term US rates have, of course, subsequently traded as "low" as below 4 per cent and are currently about 5 per cent. This territory presumably looks much more familiar to people who remember the 1950s and 1960s.

¹¹ See <http://www.kc.frb.org/publicat/econrev/PDF/3q05summ.pdf>
<http://www.federalreserve.gov/pubs/feds/2005/200554/200554pap.pdf>
<http://www.cepr.org/pubs/new-dps/dplist.asp?dpno=5413>
<http://www.phil.frb.org/files/wps/2003/wp03-22.pdf>
<http://www.nber.org/papers/w12079.pdf>

Much of this literature has tended to compare the period since the mid 1980s with the preceding couple of decades. But in fact, for the US at least, a decline had been under way long before then. Work conducted by one of my RBA colleagues, John Simon,¹² documents a long-term trend decline in US output volatility dating from the early 1950s, which was interrupted by the 1970s' and early 1980s' instability.

Variability of Real GDP*								
	United States			OECD			Australia	
	Average growth %	Standard deviation % pts		Average growth %	Standard deviation % pts		Average growth %	Standard deviation % pts
1951-69	4.0	2.55		n.a.	n.a.		4.5	2.37
1970-85	3.0	2.76		3.2 [#]	1.91 [#]		3.1	2.01
1986-2005	3.1	1.26		2.8	0.90		3.4	1.53
1996-2005	3.3	1.27		2.7	0.78		3.7	0.94

* Based on annual data
[#] Data are for 1971-85

Variability of Core CPI Inflation*								
	United States			OECD			Australia	
	Average rate	Standard deviation		Average rate	Standard deviation		Average rate	Standard deviation
1958-69	2.5	1.67		n.a.	n.a.		n.a.	n.a.
1970-85	6.7	2.91		10.1 [#]	1.92 [#]		8.7	3.16
1986-2005	3.0	1.08		4.9	2.18		3.6	2.25
1996-2005	2.2	0.43		3.2	1.10		2.4	0.46

* Based on December quarter on December quarter data
[#] Data is 1978-85

An even more remarkable feature of the past 15 years is the trend decline in both the rate of inflation and the variability of inflation. The average rate of inflation since the mid 1990s in the US has been about one-third of what it was in the period 1970-85, while the volatility of inflation has fallen to about one-seventh of its previous value. Quite similar results have been observed in Australia. For the OECD group, the trend is similar though less pronounced.

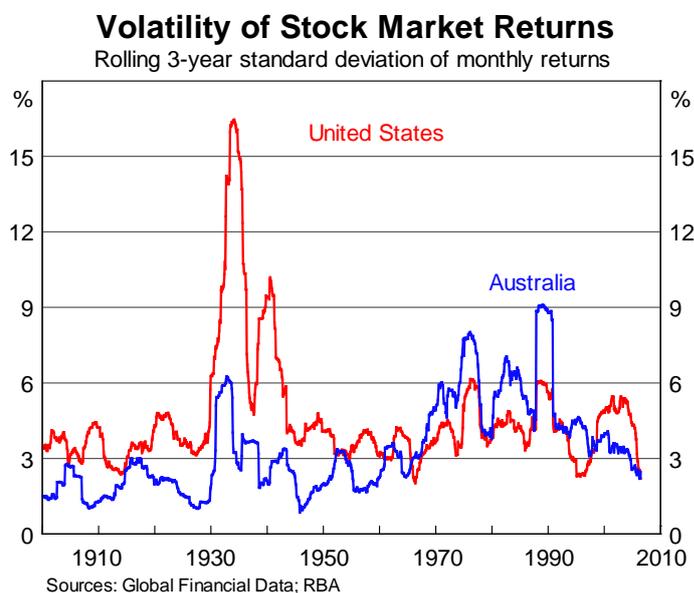
These trends are surely of great importance for financial pricing. There will always be individual businesses that fail because of technological obsolescence, flawed strategies and so on – idiosyncratic risk remains. That is why the list of firms in the Dow Jones 30 or the ASX top 50 is rather different today from a decade or two ago.¹³ But insofar as the probability of default usually rises sharply in a business cycle downturn, it must matter that the size of year-to-year fluctuations in economic activity is half what it once was. And the value of re-attaining virtual price stability around the world, dramatically reducing one source of uncertainty over the future value of nominal claims, should not be underestimated. High and variable inflation is a powerful deterrent to people parting with their money for long periods. To the extent that the term premium in long-term interest rates reflects compensation for both the level and the volatility of expected future inflation, one could expect those premia to be reduced if we have returned to a world of near price stability. An alternative way to make

¹² Olivier J. Blanchard and John A. Simon (2001), 'The Long and Large Decline in US Output Volatility', MIT Department of Economics Working Paper 01-29, April (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=277356)

¹³ For the Dow Jones 30, 15 of the current companies were present in May 1986. For the ASX 50, 18 were there in 1988.

the same point is to note that a more stable world means less variation in policy interest rates, which presumably reduces premia built into longer-term rates to compensate for expected future variability in short rates.

That having been said, the evidence for this greater macroeconomic stability producing less volatile returns to equity or bond investors to date is mixed. Volatility in returns to equity holders, measured by rolling standard deviations of quarterly accumulation index returns, displays pronounced cycles. But there is little obvious tendency for equity returns volatility in the US or Australia to be systematically lower since the early 1990s (though for Australia it was lower than the peak levels of the mid 1970s). Volatility in bond returns tended to remain reasonably high in the US in this period, notwithstanding the improvement in inflation stability.¹⁴ If this indicates continuing volatility in subjective discount rates, it may have limited the extent to which volatility of equity returns could fall.¹⁵ Were macroeconomic stability to continue, it is conceivable that long-term interest rates might also become more stable; that would presumably carry some implications for equity (and other asset) valuations. But whether that occurs or not remains to be seen. Indeed at present we seem, if anything, to be seeing something of a pick-up in short-term volatility in many asset classes.

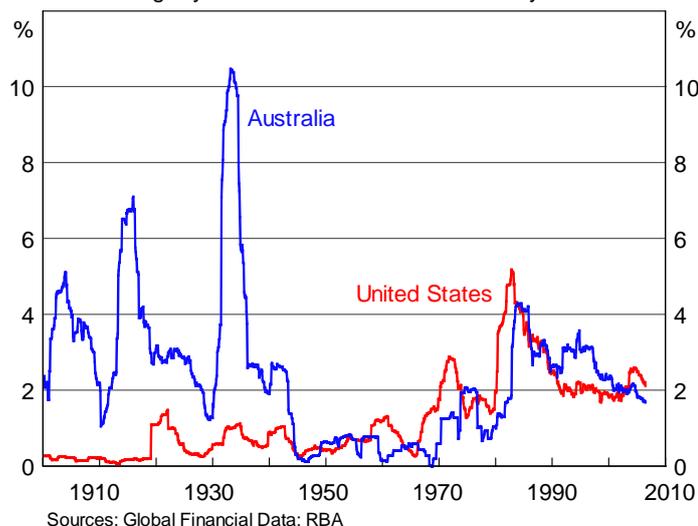


¹⁴ The data suggest that volatility of returns to holders of US Treasuries soared during the economic instability of the late 1970s and early 1980s, as the US fought and ultimately broke a serious inflation. In Australia's case, an apparent rise in volatility in the 1980s mainly reflected the bond market becoming a real market again, rather than a captive arrangement for investors. Volatility of returns these days is comparable to the US results.

¹⁵ On this point, see remarks by Roger Ferguson, November 2005, at <http://www.federalreserve.gov/boarddocs/speeches/2005/200511152/default.htm>. Strictly speaking, the volatility of equity returns is related not just to the volatilities of the flow of earnings and discount rates, but also the *co-variance* between earnings and discount rates.

Volatility of 10-year Government Bond Returns

Rolling 3-year standard deviation of monthly returns



The evidence for enhanced stability for emerging markets is not so easy to come by. But it could be said, I think, that the fundamental position of a number of emerging-market countries has improved since the late 1990s. They have increased growth and greatly reduced inflation. The median credit rating of the countries in the JPMorgan EMBI has risen by two notches. Recent work by the IMF suggests that such factors can account for part, though not all, of the decline in spreads in recent years.¹⁶ Of course, the fact that this has been a period of quite stable economic outcomes and low yields in developed countries, hence prompting a search for yield elsewhere, has been a big advantage to emerging-market borrowers. But a number of these countries do seem to have been using the benign conditions to strengthen their financial resilience. One of the periodic tests of that resilience appears to be under way at present.

Key Indicators for Emerging Markets*			
	1995	2000	2005
GDP Growth (%)	2.7	3.8	4.1
Inflation (%)	21.4	7.0	4.1
S&P Credit Rating	BB+	BB+	BBB

* Median values for group of countries in JPMorgan EMBI Global
Sources: Bloomberg, IMF *World Economic Outlook*

This very brief look at some of the key facts cannot claim to be a comprehensive analysis. Nonetheless, a marked improvement in macroeconomic conditions in many countries – not just lower volatility of growth, but also a vast reduction in inflation and inflation variability – after the upheavals of the 1970s and early 1980s would seem to have been an important factor conditioning financial pricing for “risk” over recent years. That this might show up in yields and spreads, which look a bit more like they were in the 1950s and 1960s, and less like they were in the 1970s and 1980s, is not that surprising. We cannot be sure, of course, whether the *extent* of the change has been appropriate, but we can at least see some logic for its direction.

Can it last?

The final question, then, is whether this apparently benign state of affairs can persist.

¹⁶ See ‘Main Drivers of Emerging Market Bond Spreads: Fundamentals or External Factors?’, (Box 1.5), *Global Financial Stability Report*, International Monetary Fund, April 2006, pp. 28-31 (available at <http://www.imf.org/External/Pubs/FT/GFSR/2006/01/index.htm>).

In particular, given that long-term yields and spreads have recently been at levels seen for lengthy periods after World War II through until the 1960s, is it possible that the prospective environment for capitalist economies is actually like it was during that period? The post-war era was a period when there were still business cycles, but there was a long-astoring and pretty robust secular expansion in economic activity and global trade, with relatively little instability. Granted, in Europe and Japan there was the rebuilding and “catch-up” after wartime devastation, which no longer needs to occur. But in its place is catch-up by China, India and a range of smaller economies which are engaging in the international economic and financial system. The openness of that system, if we are able to maintain it, arguably offers as much scope for strong growth accompanied by price stability as did the post-war world.

Or is it the case that people are underestimating the likelihood of less stable times in the future? Is there, just around the corner, some event that will usher in a period of instability, triggering a wholesale reappraisal of economic and financial prospects, and hence appetite for risk? In that scenario, some of the financial exposures that were taken on in a mood of optimism over the past several years could be unwound, possibly quite disruptively.

One’s answer to such questions hinges to a considerable extent on what one thinks was behind the enhanced stability of the past decade and a half. Better macroeconomic policies, better microeconomic policies, globalisation, technological advance, good luck – all of these can plausibly be argued to have played a role. People can make their own assessments of the likelihood of a continued role for such factors (presumably one should not rely much on luck!).¹⁷

The truth, however, is that our capacity to predict even the near-term future is limited. Grappling with the question of whether we are in a new epoch – and pricing accordingly – is an even bigger ask. Following World War II, the main fear among the economics fraternity in many countries was of another depression and deflation akin to the 1930s, as the demand provided by defence expenditures tailed off and military personnel re-entered the civilian labour force.¹⁸ In fact, partly as a result of that policy preoccupation, the economy expanded strongly through the 1950s and 1960s, and it was inflation, not deflation, that ultimately turned out to be the problem – a problem which then took quite some time (in Australia’s case, two decades) to sort out.

That should, if nothing else, make us cautious about long-term prediction. But the end of the long post-war boom also highlights something else. We can see now that during that period, businesses, wage earners, industrial tribunals and policy-makers gradually adapted their behaviour as they came to assume that the long expansion could continue indefinitely. As they did, they sowed the very seeds of the expansion’s demise. The oil price rises of the mid 1970s were a shock, but the other problems on the supply side of market economies had been developing for some time.

And that, perhaps, points to the relevant question to pose at present. It is *possible* that the world is in for another period of stability like the 1950s and 1960s. But even if it is, even if some of the “risks” of economic life, insofar as we can quantify them, *are* actually lower, or can be better managed, people will adjust to that. So the question is: might not the behaviour of borrowers, lenders, investors and price setters, in response to perceived lower risk, itself work to increase the probability of instability in future?

This, of course, is the question posed about the tendency of households in some countries (including Australia) to take on much more debt. In enjoying – rationally, based on lengthening experience – the opportunities afforded by a more stable macroeconomic environment and a more complete and liquid set of capital markets, are they in the process gradually impairing the very resilience to economic shocks which helped to produce the stability in the first place? It is not saying anything new to note that this is a significant source of uncertainty for policy-makers: there is no historical dataset to draw on in estimating how households might respond to a macroeconomic downturn under conditions of

¹⁷ As others have pointed out, though, improvements in these various areas do not make for *continuing* reductions in risk premia and rises in asset valuations – only a one-time adjustment. It is important that people understand that point, rather than just extrapolating trends. See Paul Tucker (2006), ‘Uncertainty, the Implementation of Monetary Policy and the Management of Risk’ (available at <http://www.bankofengland.co.uk/publications/news/2006/056.htm>).

¹⁸ See, for example, Joseph D. Coppel (1962), *International Economic Instability – The Experience After World War II*, McGraw Hill, pp 1-2; Richard N. Cooper (1993), in Michael Bordo and Barry Eichengreen (eds), *A Retrospective on the Bretton Woods System*, University of Chicago Press, p 105.

much higher leverage. Nor, for lenders, could historical rates of default on mortgages be assumed to be a good guide to the future, since that dataset is derived from an era of different behaviour. It cannot be assumed that future outcomes will be drawn from the same distribution.

Questions could well extend – once again – to some corporate entities before much longer, given the re-emergence of leveraged buy-outs, which leave the cash-flow positions of the corporations more precariously balanced. At least here there is, admittedly, more historical experience as a guide to likely subsequent behaviour.

Of perhaps more immediate relevance, considerable sums of money have been risked over recent years in various manifestations of the search for yield, which depended on a degree of stability and predictability in global short-term interest rates that was unlikely – even with a more stable macroeconomy – to last for a long time. While I believe central banks will continue to control inflation over the years ahead, this does require short-term rates to move: they cannot stay low and steady permanently. Market action around the world over recent weeks reflects, in part, some adjustment to previous assumptions about the likely degree of short-term rate variation in major countries which were overly sanguine.

There are also some challenging questions associated with the very rapid growth seen in credit derivative markets in recent years. Generally speaking, this should be promoting the more efficient pricing of credit risk and helping to shift it away from its intrinsic origin in businesses and their bankers to a broader set of holders who really want it. From the perspective of economic and financial stability, such a trend is to be welcomed. But even leaving aside the question of whether some investors know what they are actually getting into, the amount of leverage that can be embedded in such products is a potential source of trouble. There is also considerable uncertainty about whether, under conditions of stress, liquidity in these markets will be such as to allow risk-holders to manage their positions.

I have made it almost to the end of my presentation without mentioning “global imbalances”. It is time they received a mention, though not in the way you probably would expect. While there are some risks posed by the possibility of disorderly changes to interest rates, exchange rates, American consumption patterns and so on, I think the biggest risk stemming from the imbalances is of another kind. It is that the wrong conclusions will be drawn, based on partial or simply wrong analysis, with the result that structural problems in various countries will not be addressed, and/or that protectionism will flourish, under the guise of attempts to affect bilateral “imbalances”. That would undermine the global openness that has helped to produce the enhanced stability we have been enjoying.

Conclusion

It is frustrating that we cannot offer a definitive assessment of the adequacy or otherwise of pricing for risk. Taking a long historical perspective, it is not unreasonable to claim that risk – at least aggregate economic variability – really is lower, in some important dimensions, than it was 10 or 20 years ago. Certainly the 1970s and early 1980s – a period which deeply affected financial markets for a very long time – were themselves unusual and not a good benchmark for judging pricing. Yet notwithstanding this evidence, experienced hands almost invariably have an uneasy feeling about developments. In part, that unease reflects a conviction that the business cycle (and the cycle of greed and fear in markets) has not gone away. But it also reflects a recognition that behavioural changes are occurring, in response to the environment we face, which could elevate risks or create new ones. At some point, the financial structure emerging as a result of this behaviour will be tested. But exactly when the bell might ring to signify a new phase of the game, and what event might be the catalyst, we cannot say. In other words, life remains uncertain.

That is a good reason why, as my US colleague, Tim Geithner,¹⁹ suggested recently, thoughtful managers will surely be using the good times to strengthen resilience, and will be wary of the “late cycle” tendency for risk management and credit standards to become lax. Even if the future is pretty stable, there will still be a business cycle. Some occasional counter-cyclical behaviour gives us the best chance of continuing the stable, steady conditions – and good returns for investors – that markets seem so confidently to expect.

¹⁹ Timothy F. Geithner (2006), “Risk Management Challenges in a Changing Financial Environment” (available at <http://www.bis.org/review/r060407a.pdf>).