RESERVE BANK OF AUSTRALIA

Speech

Uncertainty and Risk Aversion – Before and After the Pandemic

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Introduction

Good morning. This is an audience that has much lived experience with the topic I would like to address today – the role of uncertainty and risk aversion in decision making. I will begin with some perspectives on how uncertainty and risk aversion may have been impacting key parts of the global economy and financial markets in the period between the global financial crisis (GFC) and the start of the pandemic. I will then switch gears to discuss where some of these issues may or may not be relevant to the domestic outlook as we emerge from a once-in-a-century shock.

Uncertainty and risk aversion are difficult concepts to pin down – they can't be observed directly and can mean different things in different contexts. Today I will discuss uncertainty mostly in the one-sided sense of how people perceive the likelihood of bad outcomes, while referring to risk aversion, or 'animal spirits', in relation to how people act in the face of uncertainty. One way to consider it is as follows: uncertainty reflects perceptions or beliefs while risk aversion is about behaviours. The bottom line is that when uncertainty and risk aversion are high, the resulting caution by households and firms can drive up savings relative to investment, and therefore have important implications for the economy and asset prices.

Uncertainty, Risk Aversion and Some Anomalies Before the Pandemic

In the decade or so bookended by the GFC and the onset of the pandemic, some anomalies emerged at the intersection of international macroeconomics and finance. Of most relevance for today's discussion were the following:

- First, why were neutral interest rates so low, beyond what could be explained by factors like population and potential GDP growth, or the returns to capital?
- Second, why was capital investment, and corporate risk-taking more generally, so subdued when profits were high and financing terms were so accommodating?
- Third, why were investors prepared to pay a premium for so-called 'safe assets' at a time of high corporate profitability and low volatility?

There were a number of plausible explanations for these questions when addressed in isolation. But my reading was that risk-based explanations had a particularly important role in helping to reconcile all 3 anomalies. Namely, a heightened sense of uncertainty and risk aversion was contributing to an increased desire for saving over investment. This affected economic activity and risk premiums, particularly in large advanced economies, in unusual ways.

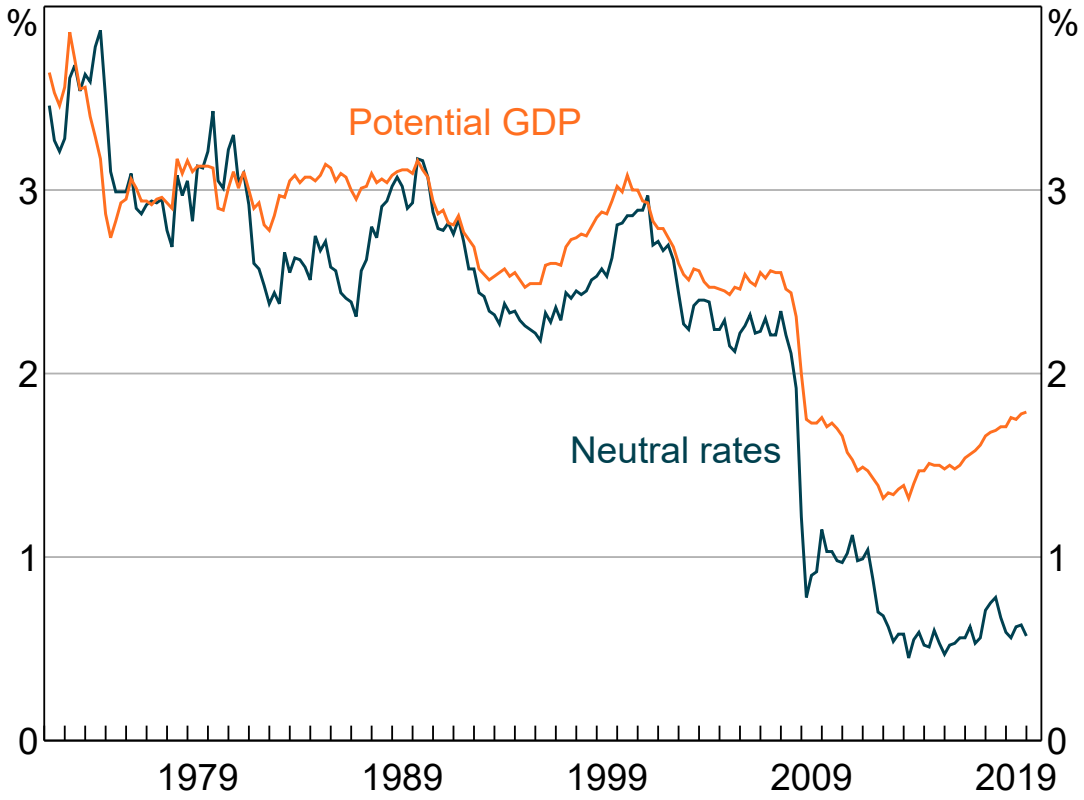
Unusually Low Neutral Interest Rates

When Swedish economist Knut Wicksell set out more than a century ago the concept of a neutral rate of interest – the real interest rate that aligns savings with investment and is neither stimulatory nor contractionary for the economy – he saw it as determined by 'productivity and thrift'. Over recent decades the neutral rate has become an important benchmark around which central banks set monetary policy. But translating the idea of a neutral rate into practical applications is challenging and there is no single best way to estimate it. For decades up until the GFC, most estimates of the neutral rate in advanced economies tracked fairly closely to projections of potential GDP growth based on population and productivity trends; that is, 'r' was close to 'g'. But following the GFC, an unusually large and persistent wedge between r and g opened up in major advanced economies (Graph 1). A broadly similar pattern was also evident in Australia.[1] While slow moving patterns in demographics and productivity could help to explain the general downward trend in neutral rates over recent decades, they couldn't account for the magnitude of the decline after the GFC.

Graph 1

Neutral Interest Rates and Potential GDP Growth*

Select advanced economies

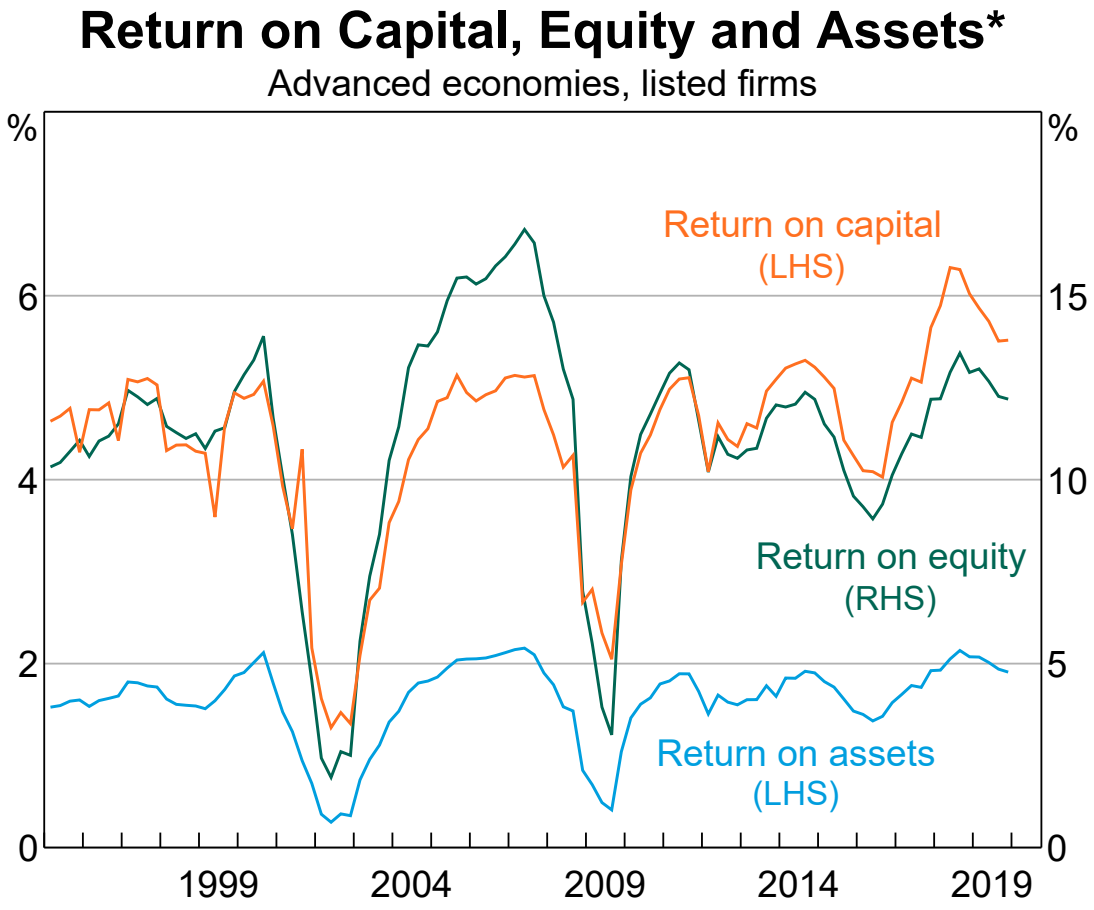


* United States, euro area, United Kingdom and Canada; PPP-weighted; last data point December 2019

Sources: Holston, Laubach and Williams (2017); RBA

The stubbornly low level of neutral interest rates in the post-GFC period was difficult to reconcile along another dimension. As Wicksell also noted many years ago, high returns to capital should strengthen firms' desire for investment relative to saving and thus raise the neutral rate. But the low level of neutral rates was at odds with the elevated returns to capital generated by firms in many advanced economies in the post-GFC period (Graph 2). [2]

Graph 2



* Last data point December 2019

Source: Bloomberg

Prior to the pandemic, a growing literature began to establish that part of this wedge between neutral rates on the one hand, and potential growth or the return to capital on the other, could be attributed to elevated uncertainty and risk aversion.[3] To be clear, other factors also likely contributed to the downward trend in neutral rates.[4] But a key takeaway was that for any rate of potential growth, neutral rates will be lower when uncertainty and risk aversion are high.

Subdued 'Animal Spirits' in the Corporate Sector

A second anomaly in the post-GFC period was subdued risk-taking by firms in large advanced economies. This was despite equity valuations and profits rebounding, estimates of potential growth stabilising and financing conditions remaining accommodative. This cautiousness found expression in many ways, none more so than in the preference for returning cash to shareholders over long-lived capital investment. As a case in point, during the strong US investment cycle of the 1990s, capital expenditure by firms listed on the S&P1500 exceeded the combined value of stock buybacks and dividend payments by around 60 per cent. But just prior to the pandemic, spending by these firms on buybacks and dividends was more than 1½ times that on capex.[5]

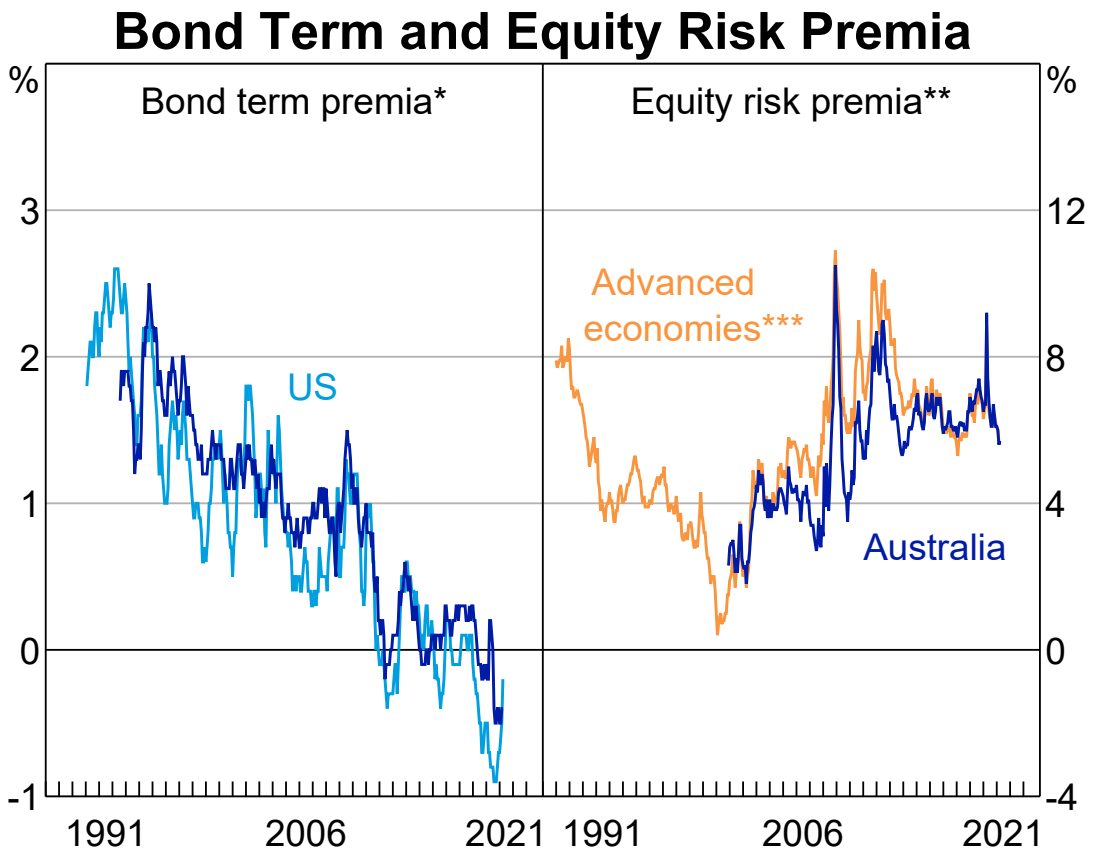
As with the decline in neutral rates, a number of factors were likely at play here. These included: reduced innovation and competition because of dominant 'super star' firms; subdued expectations of future demand; low capacity utilisation; and the trend towards less costly and less capital intensive

investment. But researchers also established a key role for uncertainty.[6] The intuition is straightforward. There are few ways for firms to insure against high uncertainty, and because long-term investment decisions are lumpy and costly to reverse, it can shorten investment horizons or hold back investment entirely. When uncertainty is high, there is value in firms holding out for more information before investing. This can be magnified where shareholders reward company management for adopting risk averse strategies in response to uncertainty, like prioritising cost control or the return of cash over new investment. As this audience would be aware, in Australia the period of low capital investment prior to the pandemic was concentrated in non-mining firms, as the mining sector embarked on a record level of investment in response to high commodity prices in the years either side of the GFC.

Unusually Strong Demand for Safe Assets

Unusually strong demand for safe assets offered another way to view the effects of uncertainty and risk aversion in the years after the GFC. Global investors were prepared to pay a premium to hold liquid and highly-rated bonds, as reflected in term premia on sovereign debt turning negative for the first time (Graph 3). Risk premia in 'plain vanilla' corporate credit markets was also unusually low, compared to the less liquid and more complex structured credit markets and the more volatile equity markets. And measures of 'tail risk' in equity derivative markets remained persistently high.[7] The anomaly here was that this was a time of generally subdued economic and financial market volatility and healthy corporate profits. New banking regulations and central bank asset purchases clearly contributed to the bid for safe assets over this period, but safe asset demand also reflected investor willingness to pay a premium for the insurance-like properties of liquid and highly-rated fixed income securities.[8] This could be seen in a few ways.

Graph 3



* 10-year yield less expected future cash rates over 10 years

** Real yield on equities less real bond yield

*** PPP-weighted average of US, euro area, UK and Canada

Sources: Bloomberg; RBA; Refinitiv; St Louis Fed

First was the shift in risk appetite in large financial institutions. Severe volatility in funding status after the GFC prompted pension funds in large advanced economies to increase exposure to fixed income securities with stable cash flows. And bank and non-bank lenders came to place very high value (beyond that required by regulation) on the collateral and liquidity risk management functions performed by high-quality fixed income securities. Second was the perceived recession-hedging properties of sovereign bonds in an environment of low inflation. This perception became ingrained from the late 1990s onwards as stock and bond returns became negatively correlated, most notably during the equity market crashes of 2000–02 and 2007–08 when US Treasuries fully offset the decline in equities (Graph 4). Assets that payoff in recessions are highly valuable for their consumption smoothing properties, and so can attract demand even at low or negative yields. A third source of safe asset demand, pre-dating the GFC and discussed later, was connected to the shift in global wealth to investors with relatively high risk aversion.

Graph 4

US Bond and Equity Returns*

During equity market downturns

* Cumulative total returns

Source: Bloomberg

Why Was Uncertainty and Risk Aversion Elevated Before the Pandemic?

Having outlined how uncertainty and risk aversion could have been affecting some key parts of the global economy and financial markets in the decade after the GFC, let me now offer some suggestions as to what may have been behind this. I should be clear that it is not possible to be definitive here, but 4 candidates seem plausible:

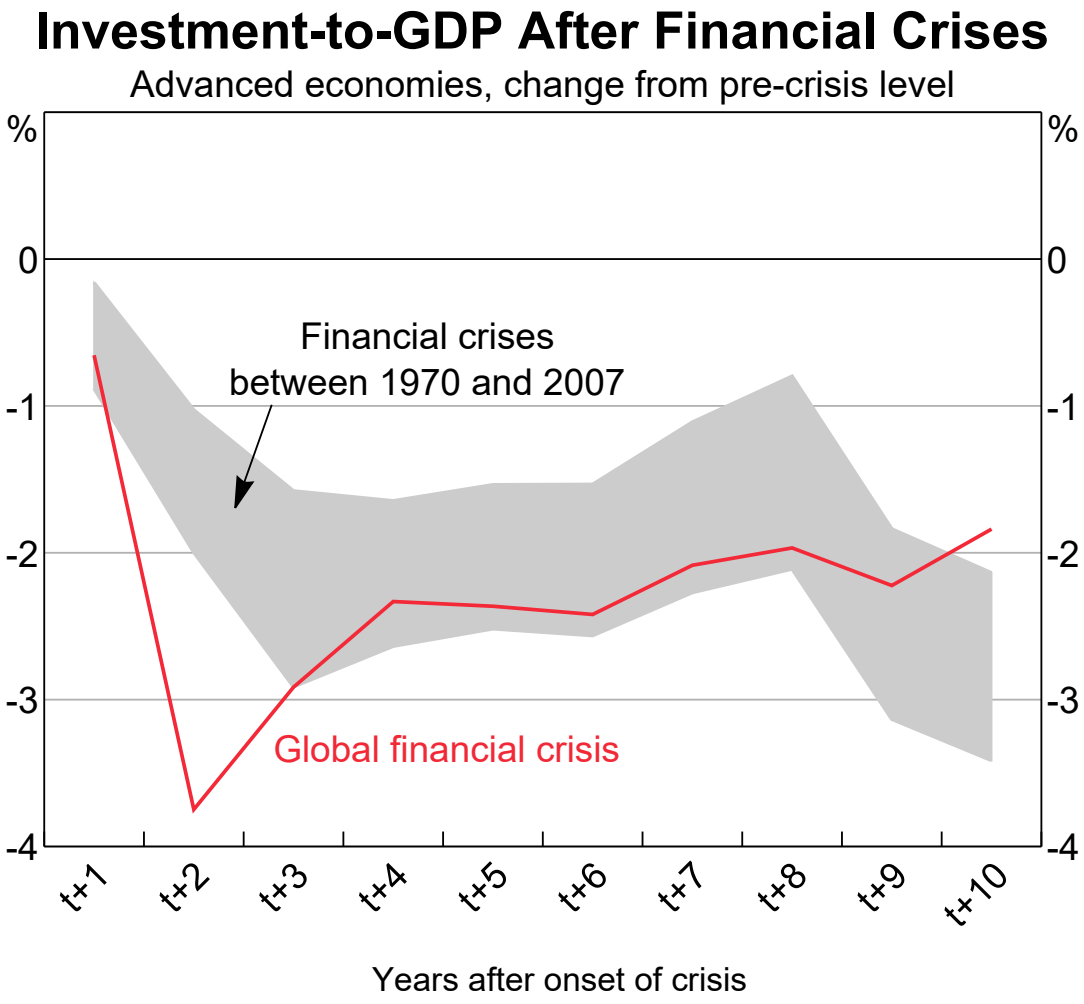
- Lingering insecurity stemming from severe crises ('rare disasters') in key parts of the global economy.
- Fears of a household debt overhang in some large advanced economies.
- International trade and political uncertainty.
- The increasing global influence of risk averse investors.

First was the impact on risk perceptions and risk appetite following the severe crises between the late 1990s and the early 2010s. It is possible that by the end of this period – which spanned several emerging market financial crises, the GFC and the euro area debt crisis – the way that people in the worst affected regions perceived the risk of rare disasters had changed. This connects to a concept

that psychologists refer to as 'dread risk' and what financial economists call 'rare disaster risk' when trying to explain asset price puzzles.[9] The basic idea here is that rare traumatic events that can impact society at large – think of wars, depressions and financial crises – can leave a lasting and possibly exaggerated sense of fear and insecurity for many years afterwards.

The Great Depression offered an early window into this sort of dynamic. In their classic account, Milton Friedman and Anna Schwartz documented the intense pessimism among households and businesses that played a key role in explaining not just the severity but also the persistence of the downturn.[10] Researchers subsequently documented how so-called 'Depression Babies' and corporate managers of the 1930s were highly risk averse throughout their lifetime.[11] Later, business investment was found to remain persistently low in a number of advanced economies following financial crises in the decades prior to the GFC – a similar phenomenon unfolded after the GFC (Graph 5).[12] Another example included the 1987 global stock market collapse, which permanently changed how markets priced the probability of crashes. A decade on, a series of crises in emerging markets prompted some countries to accumulate holdings of foreign reserves far in excess of what the IMF deemed necessary for self-insurance purposes. On a different note, Bob Shiller's analysis suggested that the public tends to believe the probability of large market crashes is much higher than can be supported by historical data, and that intensive unbalanced media coverage after rare adverse events can magnify this disconnect.[13] Given the severity of the GFC, it seems at least plausible that it too altered perceptions of and attitudes to risk for a number of years afterward, particularly in the worst affected economies.

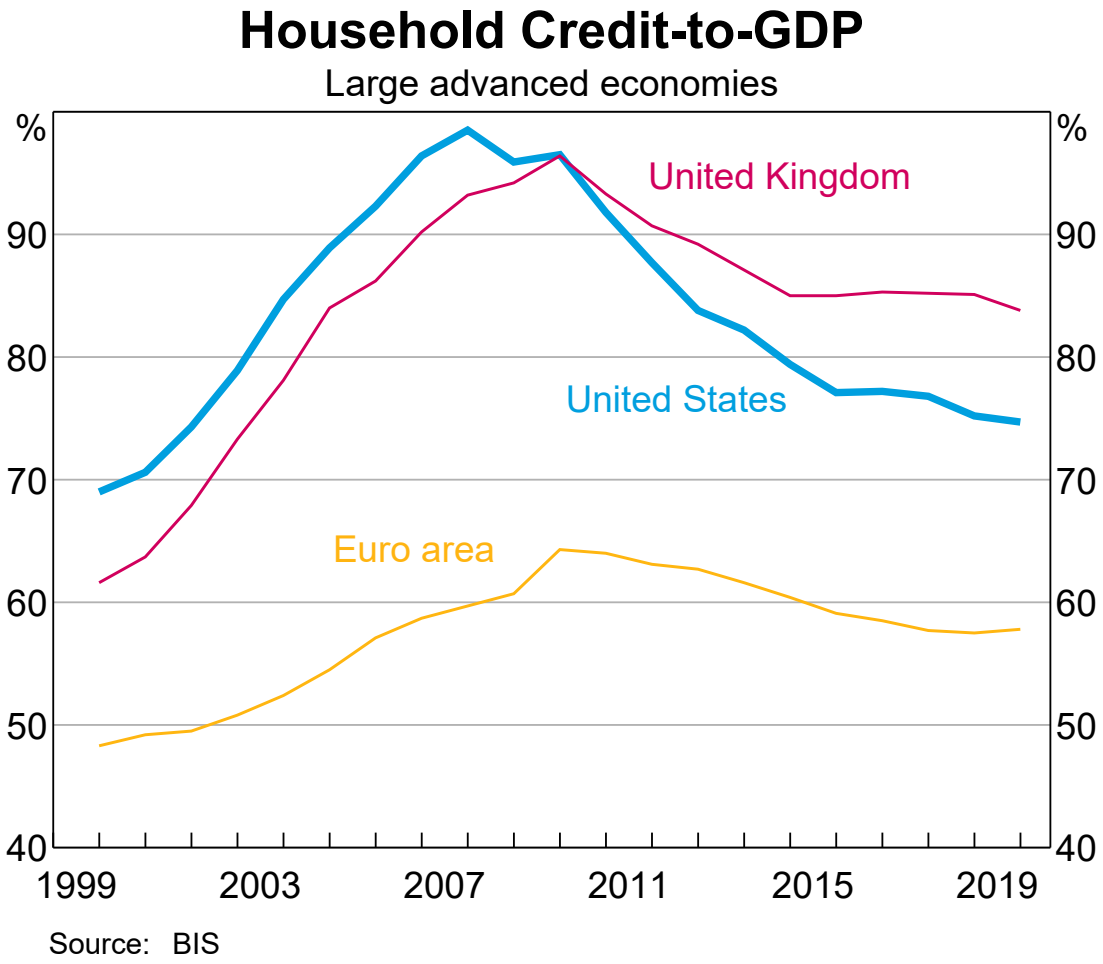
Graph 5



Sources: IMF; Laeven and Valencia (2012); RBA

A second issue that may have been contributing to a heightened sense of uncertainty and risk aversion following the GFC related to fears of a debt overhang among households in large advanced economies. Some households may have felt uncomfortable that their balance sheets were not as resilient to shocks as they would have liked, following the earlier increase in debt. Job insecurity or reduced expectations of wages growth may have contributed to the sense of unease. In aggregate, household sector deleveraging continued for years after the GFC despite record low interest rates, particularly in the large advanced economies most affected by the crisis (Graph 6).

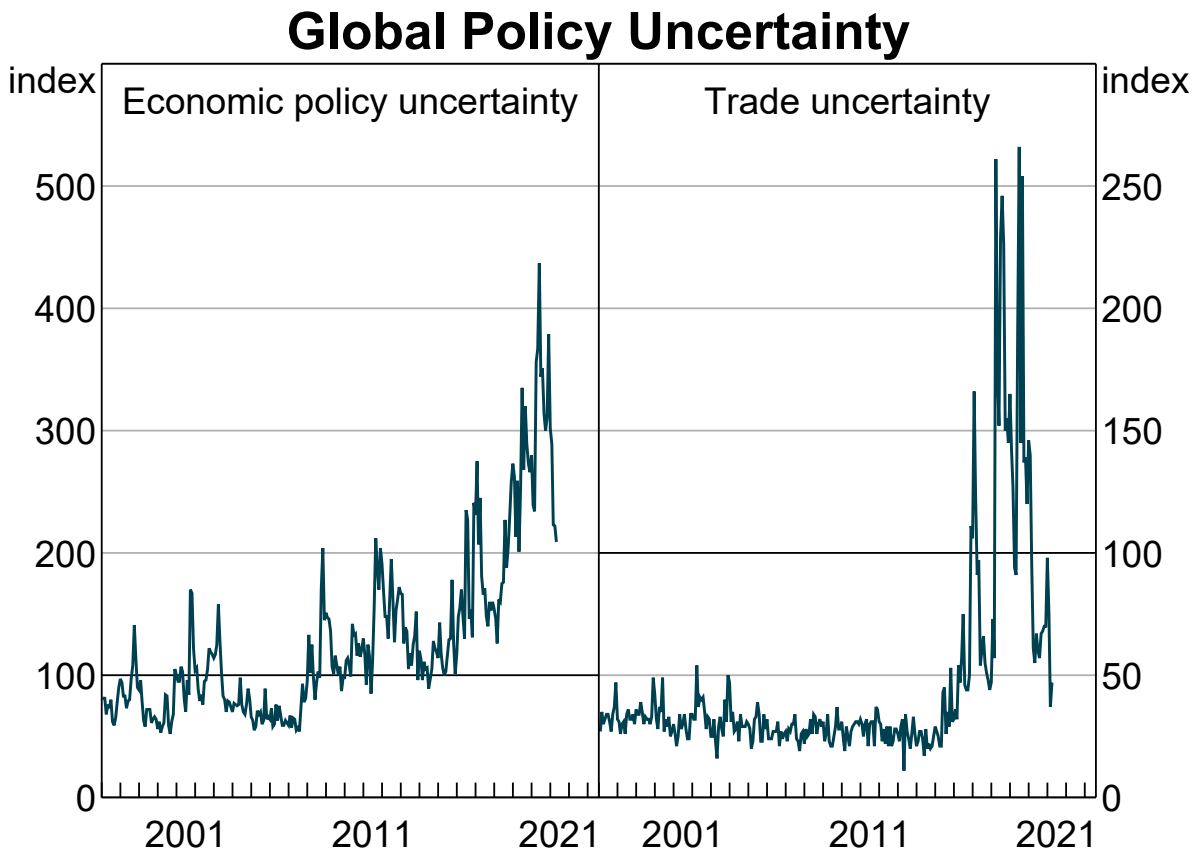
Graph 6



Source: BIS

Some years after one might have expected the psychological effects of the GFC to be dissipating, another source of uncertainty loomed. News reports and other sources appeared to indicate a substantial increase in global trade and policy uncertainty (Graph 7). This could have reflected any number of developments – intensifying strategic rivalries, trade wars, a resurgence in populism, Brexit and climate policy uncertainty among them. This 'uncertainty shock' was cited as having a role in depressing business investment, domestically and abroad.[14] That said, it is hard to think that political and trade uncertainty was any higher than in the 1970s, when during the Cold War period the Bretton Woods exchange rate system unravelled and severe volatility in inflation and oil prices plagued the global economy.

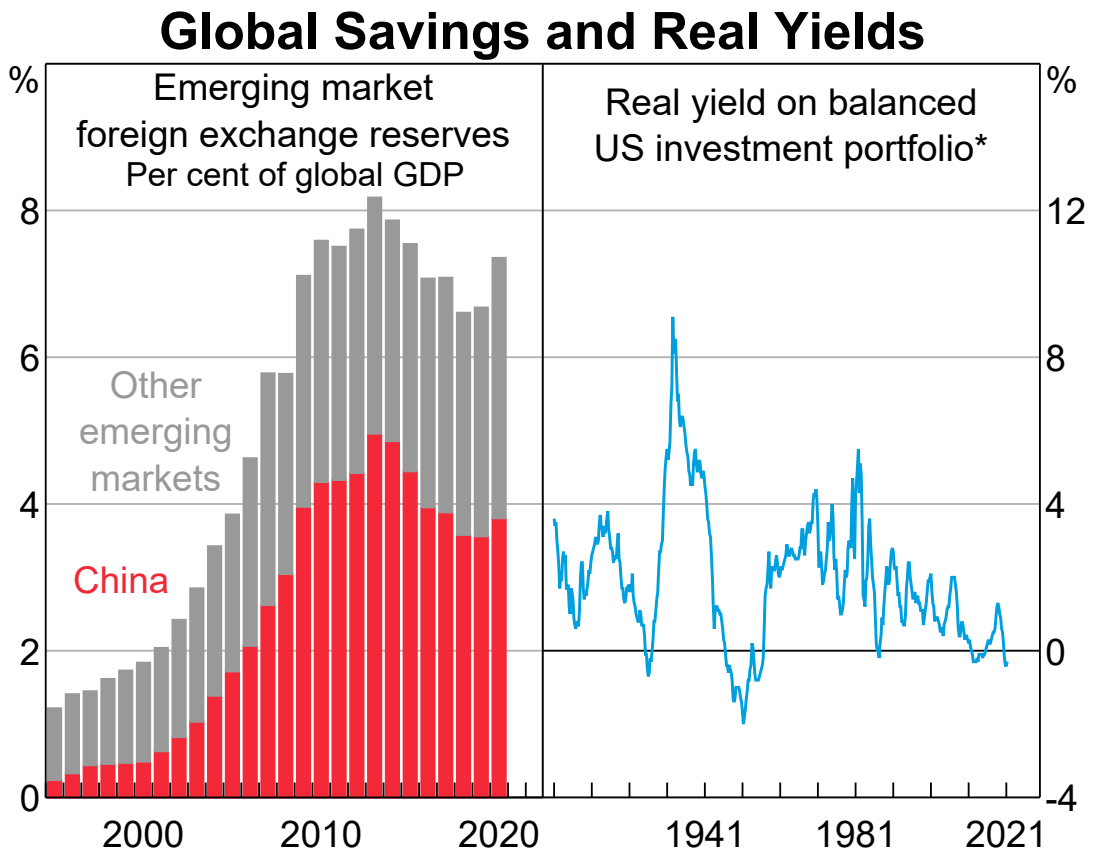
Graph 7



Sources: Baker, Bloom and Davis (2015); Caldara et al (2019)

A fourth slower moving factor either side of the GFC connected to the growing influence of risk averse investors, principally central banks in emerging market economies and retirees in advanced economies.[15] Emerging market economies, which have comprised a rapidly growing share of global economic activity, responded to the crises of the late 1990s by saving far more than they invested and consumed. One way to see this was in their central bank reserve holdings increasing from 1.5 to 8 per cent of global GDP, much of which was invested in safe assets (Graph 8, left panel). At the same time, the growing share of households in or approaching retirement age in advanced economies (and whose risk aversion would ordinarily increase with age) had to contend with heightened 'longevity risk' – the risk of running out of savings – as prospective investment returns declined to historically low levels and defined benefit pension schemes came under strain (Graph 8, right panel).[16] To hedge against this uncertainty, some households would have seen it as rational to consume less and save more.

Graph 8



* Based on equally-weighted portfolio of cash, bonds and equities

Sources: IMF; Robert Shiller Database; St Louis Fed

After the Pandemic – Some Questions for the Domestic Outlook

It is reasonable to ask here: how might the pandemic connect to the issues experienced in key parts of the global economy in the years beforehand? And what could be some implications for the Australian economy in the period ahead?

At face value the pandemic would seem to have all the hallmarks of a rare disaster. The international experience might suggest that this could have lasting effects on perceptions of risk and animal spirits here too in Australia. While it is encouraging that measures of global economic policy uncertainty have receded over recent times, it is at least possible that some Australian households and firms seek to repair their balance sheets for a considerable period, as occurred in a number of advanced economies after the GFC.

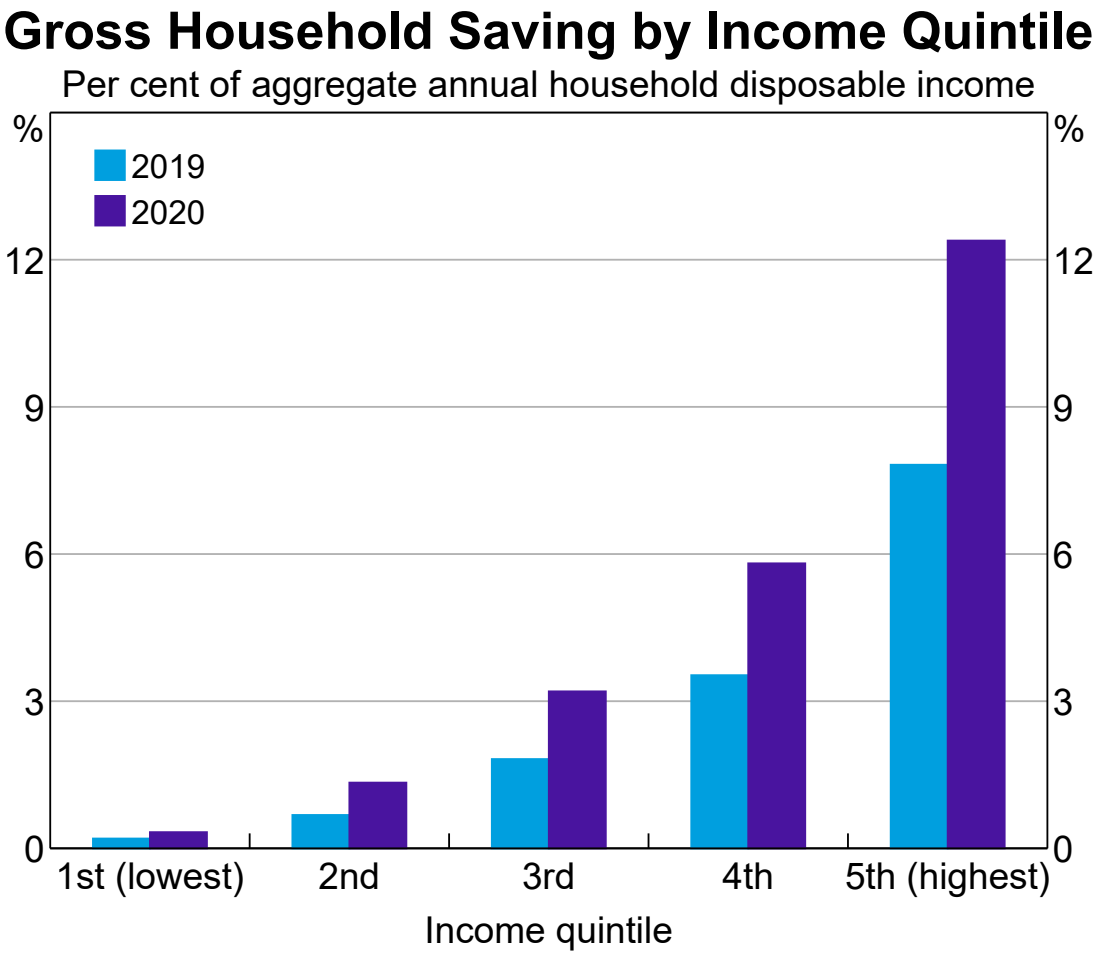
In recognition of this possibility, a 'downside scenario' for the domestic economy was outlined in the Bank's recent set of forecasts published in the May Statement on Monetary Policy. This scenario reflected a situation where private consumption and investment remained subdued in the years ahead partly due to lingering uncertainty and insecurity. With households preferring to direct more of their income to strengthening their balance sheets, including by paying down debt, private consumption and investment would be weak. In turn, unemployment would remain above pre-pandemic levels and inflation would remain low over the next few years. And in countries that have

been more severely affected by the pandemic than Australia, it could be the case that a high degree of caution lingers for some years.

But there are at least 2 material differences between the current episode and past severe shocks that point to a brighter outlook in Australia.

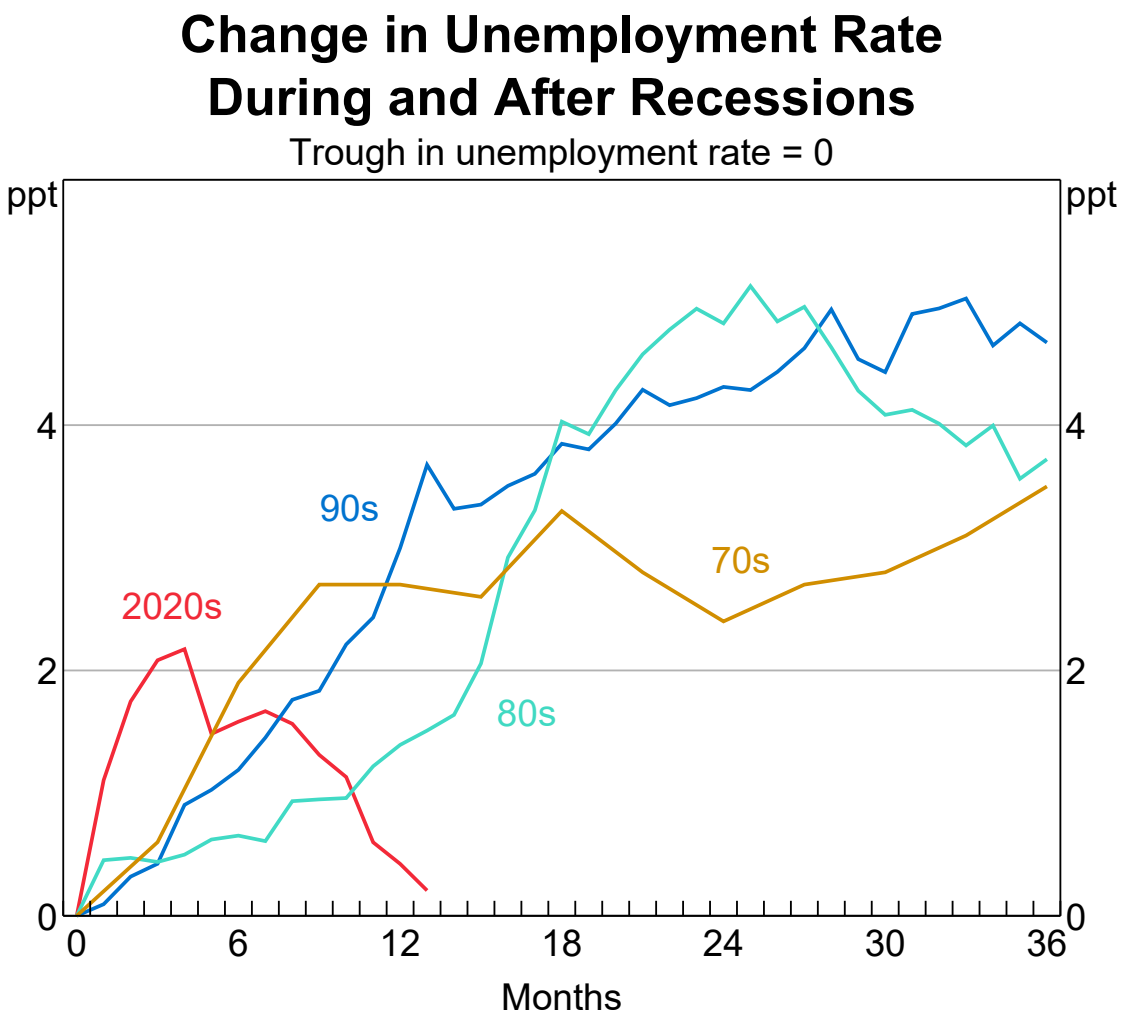
First, the origins of the shock have been substantially different from rare disasters of the past. The contraction last year was precipitated by a severe and sudden supply shock, where a global health crisis necessitated state-mandated shut downs of significant parts of the global and domestic economies. Restrictions on consumption contributed to the increase in household savings across income cohorts in Australia (Graph 9), and a similar pattern has been observed globally. Large scale disruptions of this nature distinguish the current episode from past global crises where private demand, and parts of the financial system, collapsed under the weight of years of accumulating imbalances involving too much debt and inflated asset prices. These same factors weighed on the post-crisis recoveries for years. But reflecting the unique nature of the COVID-19 shock, the recent experience domestically and abroad has been that economic activity has snapped back after restrictions have been lifted. Indeed the speed of the recovery in activity and the labour market in Australia bears little resemblance to past downturns (Graph 10). This should give us some hope that less economic scarring will result.

Graph 9



Sources: ABS; RBA; Roy Morgan Single Source

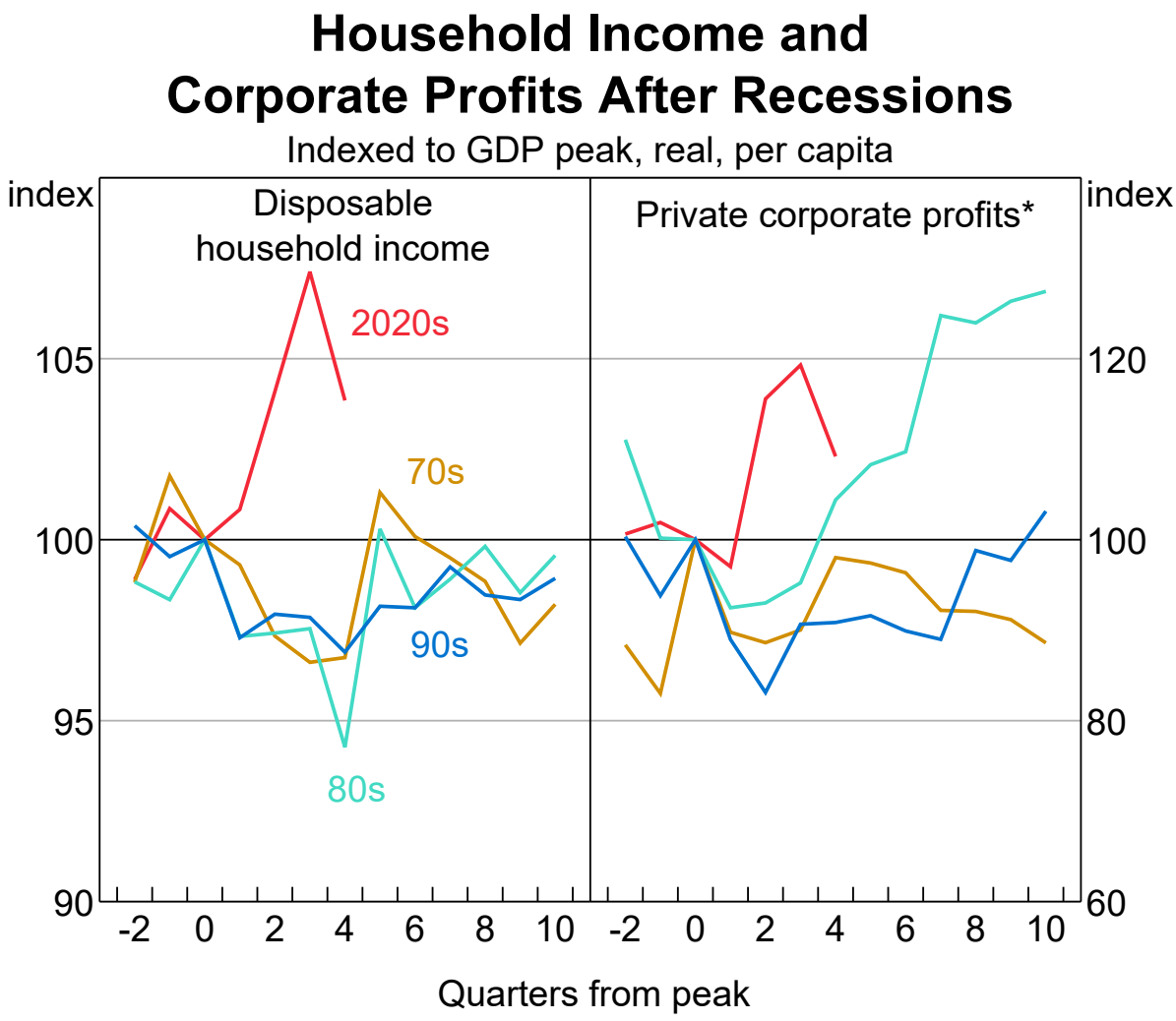
Graph 10



Sources: ABS; OECD; RBA

A second reason why the path ahead may be different from typical post-crisis recoveries is because many Australian household and business balance sheets are in better shape than before the pandemic. This is a result of the unusual size and composition of the policy response in Australia. The increase in household income during the pandemic is unprecedented as far as past downturns go, and policy has also supported business balance sheets through a difficult period (Graph 11).

Graph 11



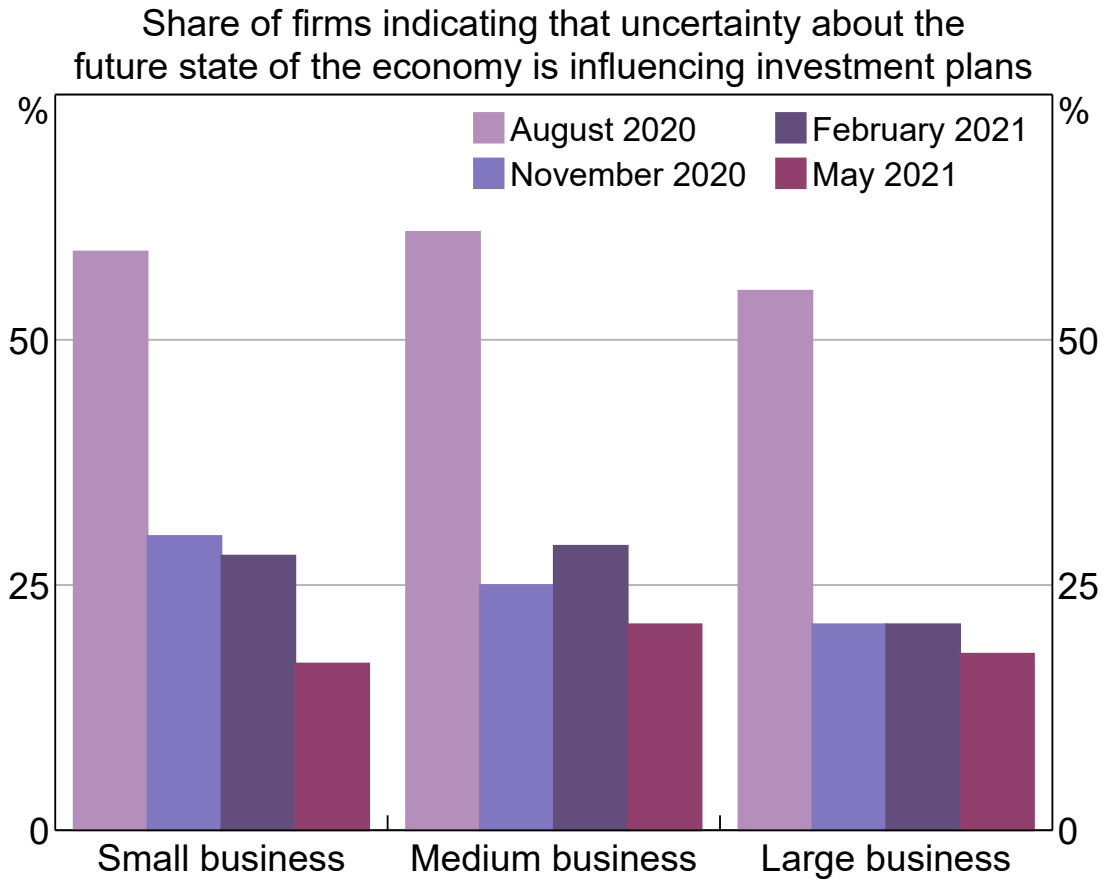
* Gross operating surplus excluding financial corporations

Sources: ABS; Centre for Population; RBA

One implication is that it is possible many Australian households and businesses feel more financially secure than is typically the case after a severe shock. Precautionary behaviour could therefore be less of a drag on the economy. On this note, it has been encouraging to see consumer and business confidence bounce back strongly, and fewer Australian firms report that economic uncertainty is affecting investment plans compared to earlier in the pandemic (Graph 12).

Graph 12

Economic Uncertainty and Investment Plans*



* Based on 1200–1300 respondents

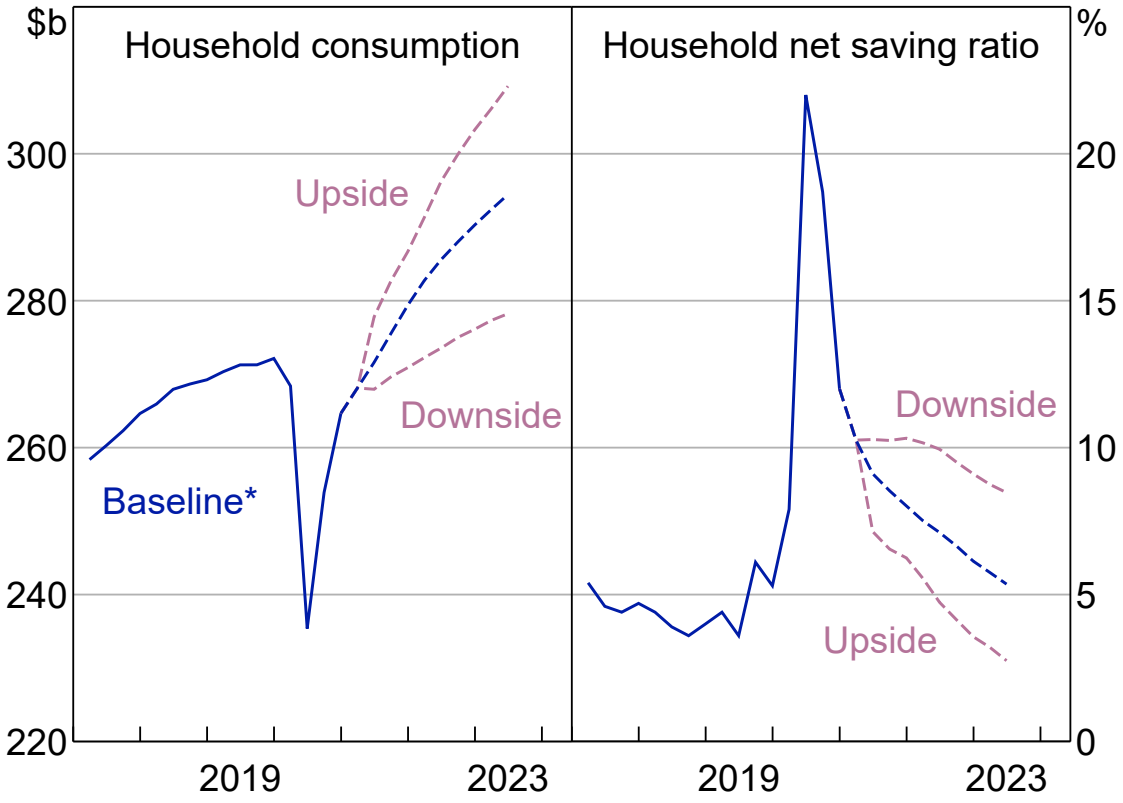
Sources: ABS; RBA

The possibility that private consumption and investment could pick up even more strongly in the period ahead than our baseline forecasts suggest is reflected in the 'upside scenario' in the May Statement. It envisages households substantially increasing spending, partly as they feel more secure about the recovery (Graph 13). A key question here is whether households, having survived the worst of the pandemic in reasonable financial shape, embark on a period of unusually strong ('revenge') consumption, supported by their significant savings from last year and higher asset prices. Private investment and employment would likely be stronger in such a scenario, with higher income spurring on stronger consumption and investment in a reinforcing cycle. Were this to eventuate, the unemployment rate would decline at a faster pace and to a lower level than assumed in the baseline scenario, and inflation would pick up more rapidly.

Graph 13

Household Consumption and Saving

Forecast scenarios



* Dashed lines represent forecasts

Sources: ABS; RBA

Conclusion

To sum up, I have suggested that risk-based issues were among those contributing to the increased appetite for saving over investment globally before the pandemic. There are reasons to suspect that uncertainty and risk aversion could continue to have an important bearing on the global outlook as we emerge from the shadow of a once-in-a-century shock. Here in Australia, it would seem premature to completely rule out the possibility of an overhang of cautious behaviour by households and firms, as seen internationally following previous shocks like the Great Depression and the GFC.

However, the unusual origins of the COVID-19 shock, and the fact that in Australia at least, many household and business balance sheets are in better condition today than before the pandemic, suggests the domestic economy could follow a quite different trajectory compared to past rare disasters experienced abroad. This is consistent with our central scenario for the Australian economy and the surprising strength in the domestic recovery to date.

Endnotes

[1] For an Australian perspective, see R McCririck and D Rees, 2017, 'The Neutral Interest Rate,' RBA Bulletin, September, pp. 9–18. The international data presented in Graph 1 are drawn from K Holston, T Laubach and J

Williams, 2017, 'Measuring the Natural Rate of Interest: International Trends and Determinants,' Journal of International Economics 108, Supplement 1 (May): pp. 39–75.

[2] For recent perspectives in the US and Euro area respectively, see E Farhi and F Gourio, 2018, 'Accounting for Macro-Finance Trends,' Brookings Papers on Economic Activity; and J Hutchinson and A Saint-Guilhem, 2019, 'The Wedge between the Return on Capital and Risk free Rates,' Banque de France, Eco Notepad.

[3] For instance, see J Hamilton, E Harris, J Hatzius and K West, 2016, 'The Equilibrium Real Funds Rate: Past, Present and Future,' IMF Economic Review, 64(4), pp. 660–707; S M Hartzmark, 2016, 'Economic Uncertainty and Interest Rates, Review of Asset Pricing Studies, 6(20), pp. 179–220; J Kozlowski, L Veldkamp and V Venkateswaran, 2018, 'The Tail that Keeps the Riskless Rate Low,' NBER Macroeconomics Annual, 33, pp. 253–283; and G Vlieghe, 2017, 'Real Interest Rates and Risk,' Speech at the Society of Business Economists' Annual Conference, London, Bank of England.

[4] A non-exhaustive list includes: restrictive fiscal policy; cross-border spillovers when international capital flows freely and exchange rates are floating; frictions such as new regulations that impede monetary policy transmission; rents from monopolistic competition, which reflects the rise of 'super star' firms; and changes in consumption preferences, as ageing households have become more patient and thus accepting of low rates.

[5] Based on data reported in L Zeng and P Luk, 2020, 'Examining Share Repurchasing and the S&P Buyback Indices in the U.S. Market,' S&P Global.

[6] See E Farhi and F Gourio, 2018, 'Accounting for Macro-Finance Trends,' Brookings Papers on Economic Activity; R Banerjee, J Kearns and M Lombardi, 2015, 'Why is Business Investment Weak,?' BIS Quarterly Review, March; M Bussière, L Ferrara and J Milovich, 2015, 'Explaining the Recent Slump in Investment: The Role of Expected Demand and Uncertainty', Banque de France Working Paper No. 571; and C Lewis, N Pain, J Strasky, and F Menkyna, 2014, 'Investment Gaps after the Crisis,' Economics Department Working Paper 1168, OECD, Paris.

[7] See for instance the Chicago Board of Exchange's 'Skew Index'.

[8] The fixed income market themes discussed here have sometimes been linked to the idea of a 'safe asset shortage' as in RJ Caballero, E Farhi and PO Gourinchas, 2017, 'The Safe Assets Shortage Conundrum,' Journal of Economic Perspectives, 31(3), pp. 29–46. However, it is worth noting that as a share of GDP, the publicly available supply of government bonds in reserve currency-issuing advanced economies increased significantly after the GFC even after adjusting for domestic central bank holdings. Additionally, central bank asset purchases resulted in the private sector swapping their holdings of bonds for reserves, meaning it was duration exposure rather than the stock of safe assets held by the private sector that declined.

[9] For a related discussion on dread risk, see A Haldane, 2015, 'Stuck,' Speech at Open University, Bank of England. The concept of rare disaster risk was originally proposed in 1988 to help explain why the risk premium on equities was so high (see T A Reitz, 1988, 'The Equity Risk Premium: A Solution,' Journal of Monetary Economics, 22(1), pp. 117–131). But it took until the mid to late 2000s for interest in the topic to be revived, following the GFC and the analysis in R J Barro, 2006, 'Rare Disasters and Asset Markets in the Twentieth Century,' The Quarterly Journal of Economics, 121(3), pp. 823–866.

[10] M Friedman and AJ Schwartz, 1963, A Monetary History of the United States, Princeton University Press, New Jersey.

[11] For instance, see U Malmendier and S Nagel, 2011, 'Depression Babies: Do Macroeconomic Experiences Affect Risk Taking?', Quarterly Journal of Economics, 126(1), pp. 373–416; U Malmendier, G Tate and J Yan, 2011, 'Overconfidence and Early-life Experiences: The Effect of Managerial Traits on Corporate Financial Policies,' Journal of Finance, 66(5), pp. 1687–173; and J R Graham and K Narasimhan, 2004, 'Corporate Survival and Managerial Experiences During the Great Depression,' Working Paper, Duke University.

[12] Based on data reported in IMF, 2014, 'Perspectives on Global Real Interest Rates', Chapter 3, World Economic Outlook, April.

[13] See W Goetzmann, D Kim and R J Shiller, 2017, 'Crash Beliefs from Investor Surveys,' NBER Working Paper 22143.

[14] For international perspectives, see S Baker, N Bloom and SJ Davis, 2016, 'Measuring Economic Policy Uncertainty,' The Quarterly Journal of Economics, 131(4), pp. 1593–1636; and D Caldara, M Iacoviello, P Molligo, A Prestipino and A Raffo, 2019, 'The Economic Effects of Trade Policy Uncertainty,' Journal of Monetary Economics, 109(1), pp. 38–59. For an Australian application, see A Moore, 2016, 'Measuring Economic Uncertainty and Its Effects', RBA Research Discussion Paper No 2016–01.

[15] See for instance R Hall, 2017, 'Low Interest Rates: Causes and Consequences,' International Journal of Central Banking, 13(3), September, pp. 103–118, and R Hall, 2017, 'The Role of the Growth of Risk-Averse Wealth in the Decline of the Safe Real Interest Rate,' NBER Working Paper.

[16] For a recent empirical treatment of how the willingness to take risk decreases with age, see T Dohmen, A Falk, BHH Golsteyn, D Huffman and U Sunde, 2017, 'Risk Attitudes Across the Life Course,' The Economic Journal, 127(10), pp. 95–116.