The Long Run:

Low probability, high impact scenarios for the
Australian economy and financial markets

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Actuaries Institute

About the Actuaries Institute

The Actuaries Institute is the peak professional body for Actuaries in Australia. The Institute provides expert comment on public policy issues where there is uncertainty of future financial outcomes.

Actuaries have a reputation for a high level of technical financial expertise and integrity. They apply their analytical and risk management expertise to allocate capital efficiently, identify and mitigate emerging risks and to help maintain system integrity across multiple segments of the financial and other sectors. This unrivalled expertise enables the profession to comment on a wide range of issues including life insurance, health insurance, general insurance, climate change, retirement income policy, enterprise risk and prudential regulation, the digital economy, finance and investment and health financing.

The Actuaries Institute acknowledges the traditional custodians of the lands and waters where we live and work, travel and trade. We pay our respect to the members of those communities, Elders past and present, and recognise and celebrate their continuing custodianship and culture.

About the profession

Actuaries use data for good by harnessing the evidence to navigate into the future and make a positive impact. They think deeply about the issue at hand, whether it's advising on commercial strategy, influencing policy, or designing new products. Actuaries are adept at balancing interests of stakeholders, clients, and communities. They are called upon to give insight on complex problems, they will look at the full picture. Actuaries analyse the data and model scenarios to form robust and outcome centred advice.

About this paper

This Green Paper was commissioned by the Actuaries Institute and prepared by independent economist Michael Blythe with contributions from actuaries Hugh Miller and Douglas Isles and the Actuaries Institute Public Policy and Professionalism team. Michael was the Chief Economist for Commonwealth Bank of Australia for many years.

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1 Executive summary

Context

Uncertainty is an ever-present feature of the economic, financial and social environment. And ways need to be found to deal with that uncertainty. One technique is scenario analysis.

The aim of this Green Paper, through a collaboration between the Actuaries Institute and independent economist Michael Blythe, is to share insights about scenario analysis and identify some plausible alternative futures that actuaries could consider as part of their professional work. These alternative futures are likely to be highly relevant for many other professionals and in many industries given the interconnectedness of the economy. These alternatives may result from significant shocks or structural breaks and what may happen as economic theory and policy evolve over time.

This paper is structured in two parts:

▶ Sections 2-4 look at scenario analysis in detail – including its origins and evolution, the theory and practice. Readers familiar with such content should move directly to sections 5-8.
▶ Sections 5-8 establish a baseline scenario for the Australian economy over the next fifteen years and discuss how the alternative future scenarios may diverge from the baseline, including scenarios of stagflation, a major house price decline and an embrace of Modern Monetary Theory (MMT) by policymakers. The scenarios are presented as mutually exclusive, although they need not be.

Part 1: The origins, theory and practice of scenario analysis

At its core, scenario analysis is applying knowledge and judgements about probabilities and financial impact over a long-term in a business or organisational context. Actuaries, and others, have long used this analysis to assist decision makers develop responses to potential outcomes. As a tool, it reduces the shock value of future events and increases the ability to take advantage of new opportunities offered.

Scenario analysis delivers the most benefit by investigating potential futures that may be low probability but high impact. These are the 'shocks' that cause the greatest disruption and require the greatest adjustments. Understanding the implications and having a game plan in place are powerful supports for decision makers.

"Actuaries regularly need to consider plausible long-term outlooks for the Australian economy and financial markets as part of their professional work. Much of that work involves making predictions and understanding the risks they carry."

Hugh Miller, Principal, Taylor Fry

There are numerous insurance-related examples where actuaries apply scenario analysis. For example, what does a collapse of housing prices do to mortgage insurance liabilities? What does a persistent bout of wage or price inflation do to workers compensation liabilities or insurance premiums? How do persistent low cash and bond rates impact on a life insurer's solvency and their ability to offer competitive products to customers?

Actuaries also use scenario analysis in many other sectors of the economy to determine:

▶ How climate change will impact business and its disclosures;

▶ How damaging ongoing threats of cyber risk could be for a business, not only operationally but also reputationally and so for their solvency;

▶ How different economic scenarios impact retail purchasing patterns and other parts of the value chain; and

▶ How many 'excess deaths' (higher than expected under normal conditions) there will be due to the ongoing pandemic and the implications for the wider health system.

These are scenarios that actuaries engage with to ensure the financial or other promises an organisation makes to customers are honoured in all but the most highly unlikely circumstances and for which it is prohibitively expensive to provision.

Scenarios can also identify the need for new business models or highlight potential public policy implications. If under plausible scenarios a business model is found unsustainable, change is clearly required – to the service or product offered, the public policy or regulatory settings in the market, or both.

Part 2: The baseline and alternative futures

The baseline scenario in this paper is the central case at the time the analysis begins. This baseline reflects the economy as it stood in 2022. Once the near-term drivers have run their course the economy and markets converge on longer-term parameters. For example, CPI is 2½%, wages growth 3¼%, nominal Gross Domestic Product (GDP) 4¾% and the 10-year bond rate 3½%. Most importantly, a recession is avoided.

Scenario 1: Stagflation The first alternative future is a stagflation scenario (high inflation and high unemployment). It is a plausible scenario in the current environment (high energy and food prices, supply chain pressures, strong demand, earlier reflationary policy settings) and clearly the current direction of global risk. This scenario looks at how the economy may evolve if stagflation takes hold. It has expansionary fiscal policy, too loose monetary policy and supply side constraints combine to drive a wage price spiral. Inflation peaks at around 9%.

The eventual solution is a severe recession, including high unemployment and high long-term government bond yields. While long-term parameters eventually settle around the same baseline growth rates, the economy is 5% smaller than the baseline by the end. Consumer wage expectations are a crucial variable to watch to assess the risk of this scenario taking hold.

There are three alternative futures being considered in this paper – all plausible and all with vastly different outcomes for Australians.

Scenario 2: A major house price correction The second alternative future is a major correction in house prices. This scenario is a perennial favourite and worth considering given the exposure of the financial system and households to housing.

Interest in this scenario has been refreshed due to the:

▶ Current slowdown in the housing market;

▶ High levels of household debt;

▶ Budget pressures;

▶ Stagnant wages growth; and

▶ Bank exposures to housing and rising interest rates.

This scenario looks at the implications of a 30% drop in dwelling prices, which is well beyond all current mainstream projections. The price decline is triggered by an overly aggressive RBA tightening cycle that leads to a cascading effect across the economy and financial system. The RBA is forced to reverse course and combined with a shift to expansionary policy settings, the economy is lifted out of recession. Again, while most key economic variables converge back to the baseline projections towards the end of the scenario, the economy is smaller than in the baseline by the end, this time by 2%. The unemployment rate and debt servicing ratio are crucial variables to watch in this scenario.

Scenario 3: Adoption of Modern Monetary Theory (MMT) The final alternative future is the adoption of MMT. This is a 'new paradigm' scenario. Full adoption of MMT is unlikely but we have moved some way in that direction, so it is worth considering the implications. MMT focuses on achieving full employment by funding government expenditure through creating money rather than issuing debt. It is not well suited to dealing with the resultant boost to inflation. The eventual solution involves a return to a more traditional policy mix to enable recovery out of recession (which is beyond the projection period in how this scenario has been designed).

Key economic variables necessarily converge back to the baseline projections towards the end of the scenario. The economy is 3% larger than in the baseline by the end because of the strength of the MMT economic boom and notwithstanding the subsequent recession. A key variable to watch in this scenario is M3 growth over and above nominal GDP growth. A positive value is a leading indicator of rising inflation rates and the need to revert to traditional policies. On that note, the role played by government bonds in providing a risk-free rate is challenged in this scenario.

While these alternative future scenarios appear bleak, involving a significant recession at some point, optimistic alternative scenarios are plausible. For example, major microeconomic and labour market reforms to lift productivity could transform stagflation into a new era of shared prosperity. These have not been explored in this paper given the balance of risks is currently to the downside and good practice keeps alternative scenarios to a manageable number.

Scenario analysis – what is it and why do it?

2

The future, they say, is 'uncertain'. At times of great stress, we have been known to observe that 'the future is more than usually uncertain'. Sage advice. But probably not all that helpful for those that need to deal with that uncertainty.

2.1 Dealing with uncertainty

We prepare forecasts to provide a roadmap to the future based on what we know now. And how we think the key economic drivers will evolve. We conduct 'sensitivity analysis' to test the robustness of those assumptions. We put 'confidence intervals' around those central forecasts to highlight the uncertainty. We conduct scenario analysis to investigate potential outcomes beyond the scope of our baseline forecasts. And we have even found ways to measure uncertainty.

The *Economic Policy Uncertainty Research Organisation* develops indices of policy uncertainty for countries around the world. They construct measures of uncertainty based on news coverage (Chart 1). The chart highlights the importance of unexpected 'shocks' in driving uncertainty. And explains why forecasts often end up off track. These shocks leave decision makers scrambling to respond when the unexpected happens.

Chart 1 – Australian Policy Uncertainty
(news-based index | 1998-2012=100)

Source: PolicyUncertainty.com
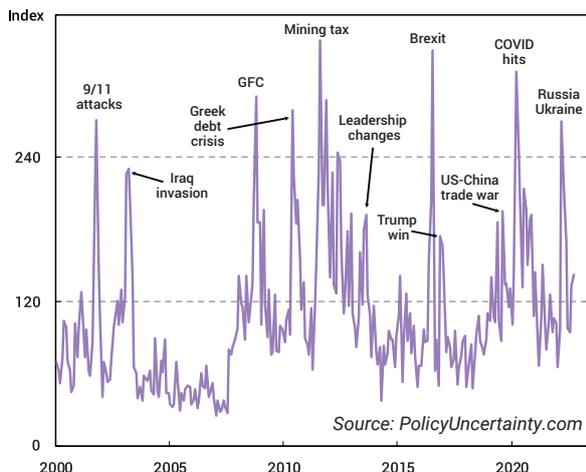
Many of these unexpected shocks can produce lasting change. The 9/11 attacks changed the geopolitical backdrop dramatically and permanently. The Global Financial Crisis changed much of the way financial organisations are managed and regulated. The impact of the COVID pandemic is still playing out.

Financial markets have also proved adept at constructing measures of uncertainty. We follow, for example, measures of market volatility that capture the alternating bouts of fear and greed driven by uncertainty. The VIX index of US stock market volatility is one example (Chart 2).

We regularly take the pulse of business and consumers to track how these important sectors are responding to uncertainty. The NAB Business Survey and the WBC/Melbourne Institute Survey of Consumer Sentiment are important examples.

Chart 2 – VIX Volatility Index (S&P 500 volatility)

Source: CBOE
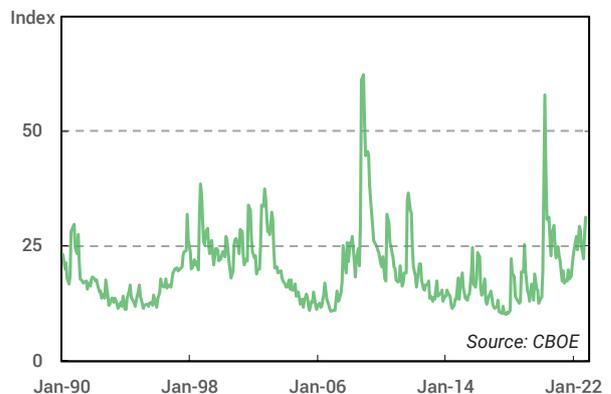
"It may sound like it's an economic jungle out there, but we do take steps to try and tame that jungle."

Policy makers shift policy settings to deal with the risks thrown up by uncertainty. They impose rules and regulations to dampen uncertainty.

Some examples include households taking out insurance against uncertain events or fixed rate home loans. Businesses have a broad range of tools to help as well from hedging to inventory management.

What would help decision makers is a 'war book' on how to anticipate change and how to respond to a range of potential outcomes. 'War gaming' is one way to develop this war book. And this is essentially the definition of scenario analysis.

More formally, scenario analysis is used to evaluate possible future events – or scenarios – and what the potential outcomes of those events could be. In that way decision makers can develop responses to those outcomes. The shock value of future events is reduced. And the ability to take advantage of the new opportunities offered is increased.

The choice of military terminology is deliberate. Scenario analysis was first used by the US military in the 1950s. It stemmed from the work by Hermann Kahn of the RAND Corporation. His big idea was 'future-now thinking'. Kahn used a mix of standard analysis and imagination to write stories about how the future might look. He borrowed the term scenario from Hollywood to help describe those stories.

The combination of the military and Hollywood terminology explains why scenarios often have catchy titles. So 'Groundhog Day' is a military operation in Afghanistan, a movie and a popular scenario name!

Scenario analysis migrated from a military concept into the business sector in the 1970s. Pierre Wack of Royal Dutch Shell Oil pioneered the approach in the commercial world.

One scenario Shell developed was the transfer of pricing power in oil markets from oil companies to oil producers. Shell was well prepared for the mid-1970s Organization of the Petroleum Exporting Countries (OPEC) oil price shock. Many other companies took the lesson of scenario planning to heart after that world-changing event.

2.2 Scenario analysis: pros and cons

The advantages of scenario analysis became increasingly clear over time. This approach highlighted:

▶ The dangers of assuming that the future would be a straight-line extrapolation of the past and that the rate of change between now and then would be slow. Change is often a step function that happens quickly. The supply-chain disruptions caused by COVID-related lockdowns are a recent example. The idea that 'just-in-time' inventory management was sound practice was proved wrong almost overnight and a rapid switch to 'just-in-case' inventory management was required.

It is also one of the reasons why *past peformance is not necessarily indicative outure returns* is now a standard disclaimer in the financial world.

▶ The risks from cognitive biases, especially confirmation

bias. This bias involves putting more weight on developments that confirm our existing beliefs. Or twisting the interpretation of those developments to fit in with our beliefs. This behaviour can magnify the impact of 'shocks' when they happen. The tendency to blame 'special factors' when interpreting economic data that does not fit in with the consensus is an example. The outcome is often a delayed recognition that the economy has changed direction.

The acceleration in inflation rates in 2021 and 2022 was initially seen as a reflection of special factors, like supply-chain disruption, that would prove transitory. But inflation proved entrenched. And central banks responded with aggressive interest rate rises.

▶ The benefits of identifying key drivers is knowing what is important. What are the most powerful drivers provides a checklist of what to watch. Recognition of the risks to the financial system from excessive credit growth, for example, has allowed the construction of early warning indicators. Regulators like the Australian Prudential Regulation Authority (APRA) routinely monitor key variables like debt-income-ratios and loan-to-value ratios when assessing financial stability risks.

▶ The ability to test decisions.

▶ The benefits of looking beyond the current forecasting horizon. Many forecasts look at just the next two-three years leaving events and risks over the horizon are ignored. The Gorgon LNG project, for example, commenced construction in 2010. That construction took six years to complete at a cost estimated at US$54billion. The project has a lifespan of more than forty years. The business, political and economic environment in 2009-2012 had little relevance for this long-lived, expensive project. Scenario analysis was an essential planning tool as a result.

▶ The need to test the 'new paradigm'. History is littered with events that were hailed as the new paradigm. Australia, for example, was widely criticised in the late 1990s as an 'old' economy that relied too much on resources. The 'new' (hi-tech) economy was the place to be and Australia needed to restructure. What followed was the tech-wreck of the early 2000s and the biggest commodity boom of all time as the Chinese economy took off. Scenario analysis would have allowed the risks from alternative outcomes to be teased out.

Even genuine new-economy milestones, like railways in the 1800s, would have benefited from scenario analysis. The assumption that new economy benefits would grow indefinitely often results in 'booms' followed by the inevitable 'busts'.

The constraints of the 'house view' where our leaders – political, business, social – set the view of the way ahead. Challenging those views is often contentious and can have consequences. The path of least resistance for most is to go along with that view. Scenario analysis allows contrarian views to be tested in a non-threatening way allowing decision makers to be better prepared for when the central view goes off track.

Scenario analysis is not perfect. There are some downsides including:

- Scenario analysis can paralyse decision making. The main drivers of this paralysis are having too many scenarios and a mistaken belief that scenarios are forecasts.

- Scenarios are views of alternative futures. Like forecasts, they rely on the underlying assumptions or story. The story may be incomplete and therefore the scenario may play out against other influences that change the potential outcomes.

  For example, a high inflation scenario, may contain aggressive central bank action that rapidly brings inflation rates back down to official targets. But if high inflation rates flow through to wages and labour costs, inflation may prove more resistant to higher interest rates. Central banks have to go harder, damaging labour markets and growth potential. Unemployment is higher and growth is slower. Stagflation may be the outcome instead.

- Scenarios can encourage complacency. A view that we have covered all possibilities can take hold. But there remains what former US Secretary of Defence, Donald Rumsfeld, famously called the *"Unknown unknowns – the ones we don't know we don't know."* We can still be caught out by unexpected events that have not been war gamed. The future is indeed uncertain.

- An associated risk is that scenario analysis becomes a box-ticking process. The analysis can end up in a filing cabinet and promptly become forgotten once complete.

- Scenario analysis is resource intensive and time consuming. It is also a skilled business. These observations explain why it is better resourced governments and big business that are the main scenario planners.

2.3 Types of scenarios

There are a number of scenario types. Diagram 1, from the Futures Strategy Group, summarises the range and where they sit across the operating environment and management response. The focus has changed over time. Some types

have developed an industry focus. Others have fallen out of favour.

**Figure 1 – Scenario types**

Source: Future Strategy Group
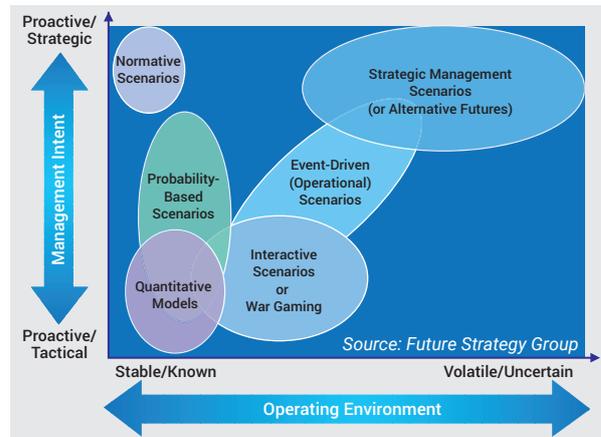
- Quantitative models, for example, are favoured in financial markets who want 'hard numbers.' Evaluating merger and acquisition (M&A) projects is one example of a specific focus.

- Probability-based scenarios came to be favoured in engineering and utilities where critical business parameters are well understood. This approach has reportedly been little used since the 1980s.

- Interactive scenarios are favoured by those involved in marketing and competitor analysis. It is all about reaction functions.

- Normative scenarios have the end point specified rather than evolving out of the assumptions. These scenarios are more about how to get to that end point and have quietly morphed into vision statements.

- Event-driven scenarios, as the name suggests, reflect the analysis of particular risk events. They tend to be short-term in duration and narrow in focus. They tend to have a public health and safety focus. Health scenarios driven by the COVID pandemic are an example.

Today, the scenario focus had coalesced around strategic management scenarios or 'alternative futures.' This focus is most closely related to the vision of Hermann Kahn and Pierre Wack as discussed in Section 2. It is best placed to deal with the volatility and uncertainty that underlies the need for scenario analysis. It also the most proactive and strategic approach for management to deploy.

2.4 Scenario analysis: who uses them and some example

Scenario analysis is now the favoured tool used by strategists across government and industry. The Corporate Strategy Board Member survey, for example, shows that scenario analysis is used by some 35% of respondents when thinking about the future (Chart 3). Previous planning favourites like SWOT analysis and brainstorming are rated further down the list.

Chart 3 – Strategy tools (% of respondents using tool)

Source: Corporate Strategy Board member survey
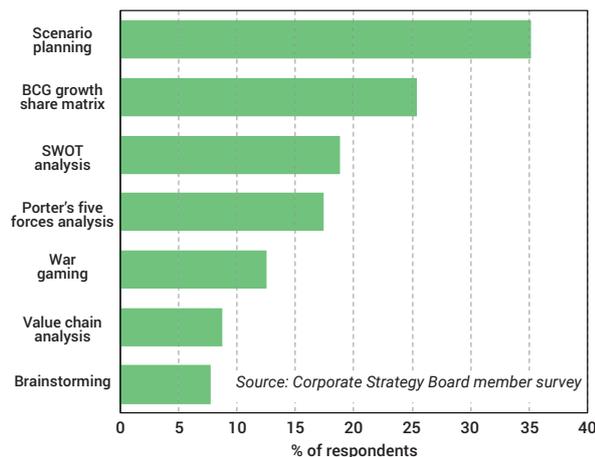
Governments routinely include some scenario analysis in their planning. The March 2022 Commonwealth Budget for example, considers the impact of some alternative health scenarios related to the COVID pandemic. Treasury strategists tell two stories. One where a new COVID variant of concern poses a more challenging health environment And another where an improved health situation boosts confidence.

The scenario results deliver two very different paths for economic actively relative to the baseline as outlined in Chart 4. Having constructed these scenarios, the Treasury is well placed to assess the impact on key Budget aggregates if the health backdrop changes. This approach

Chart 4 – Budget Real GDP Scenarios (Dec 2019 = 100)

Source: Budget
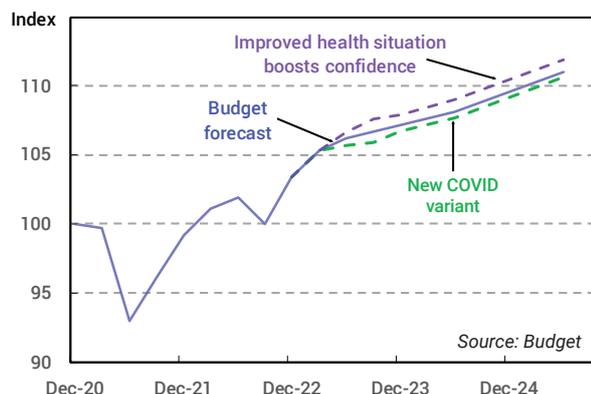
allows the development of policy responses well in advance of knowing whether these responses are required. As any scout will tell you, *"Be Prepared."*

The *Government's Intergenerational Report* is another example of scenario analysis. The Report projects a baseline for the economy and fiscal parameters over the next 40 years. It examines how variations in demographic, technological and other structural trends may affect the economy. These scenarios can identify the risks to government revenue and spending.

The prudential regulator, APRA, subjects the Australian banks to any number of stress scenarios to test their underlying resilience. House price collapses are a favourite scenario underlying APRA attempts to 'blow up the banks.' The good news thus far, is the banks have proved to appear resilient to these shocks.

APRA is also considering the impact of climate change for financial stability, and more generally the Australian Securities and Investments Commission (ASIC) and Australian Stock Exchange (ASX) have disclosure requirements for businesses regarding their climate-related risks.

For APRA, this consideration forms part of its Climate Vulnerability Assessment (CVA). The CVA stresses the importance of considering, and modelling, the potential impact of climate-related risks under different scenarios.

In a similar vein, the 2022 Commonwealth Bank full-year results presentation noted that:

Climate scenario analysis is a tool that we will increasingly use to inform our strategy and decision making.

To further improve our insights, we will continue to build our internal capabilities to conduct climate scenario analysis on a regular basis and with expanded scope.

2.5 Actuaries and scenarios

"Actuaries use scenario analysis extensively. The economic models developed by economists and others are inputs into that analysis. To complete the circle, actuaries develop their own models and simulations in their work."

For actuaries, scenario analysis plays an important role as much of their work involves making predictions and understanding the risks they carry. Capital and solvency considerations are central to business planning and can be significantly affected by both internal and external factors.

Liabilities are often long-term, which means there is a higher degree of uncertainty around forecasts and an increased sensitivity to assumptions. How business decides to cover (or fund) those liabilities includes through pricing/premium decisions, amongst other factors. Many Actuaries advise businesses that participate in highly competitive financial services markets where balancing shorter-term competitive pressures with long-term sustainability is crucial. In insurance, this uncertainty goes to the heart of the current debate around affordability, availability and sustainability.

Actuaries also advise on liabilities that offer limited opportunity to hedge or diversify. For example, mortgage insurance carries high systemic risk, even if the portfolio is spread across Australia. Similarly natural disaster risks represent large potential costs that cannot be properly treated without regard to loss distributions and scenario planning.

Actuaries also use scenario analysis to advise businesses on some of the earlier mentioned less traditional shocks, such as the COVID pandemic on insurers, climate related risks on financial institutions[1], and cyber risk for businesses in general[2].

The broader macroeconomy adds to these considerations in a way that benefits from scenario testing. What does a persistent bout of wage or price inflation do to a workers compensation portfolio? Or a general insurance book? How do persistent low cash and bond rates impact on a life insurer's solvency and their ability to offer competitive products to customers? What does a housing bust do to mortgage insurance liabilities?

Plausible economic scenarios are therefore a useful tool to test how much an economic event can stretch a business. And what measures should be taken to make businesses more resilient in the face of uncertainty.

Plausible economic scenarios are a useful tool to test how much an economic event can stretch a business.
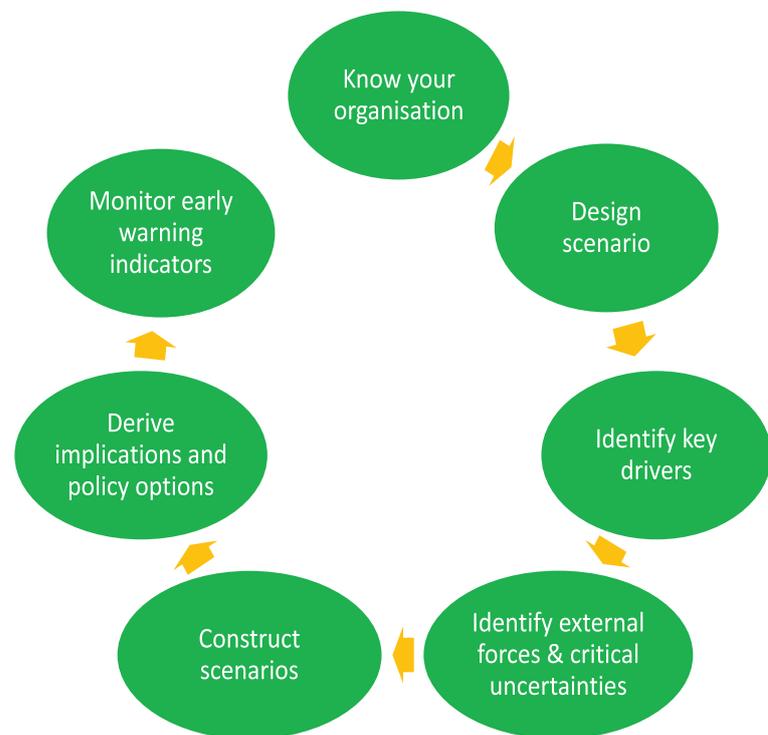
3 Scenario analysis – how to do it?

Developing a scenario involves a series of tasks. As shown in Diagram 2 shows a stylised representation of the typical scenario planning process. There is a steady progression from knowing what matters to choosing a scenario to identifying key drivers, risks or uncertainities to fleshing out the scenarios to analysing potential implications and responses.

Figure 2 implies the starting point for scenario analysis is a deep understanding of the company, organisation and environment.

Figure 2 – The Scenario Process

The starting point for any scenario is the underlying economic concept.

Know your organisation

Design scenario

Identify key drivers

Identify external forces & critical uncertainties

Construct scenarios

Derive implications and policy options

Monitor early warning indicators

This understanding is essential to identifying the pressure points and ultimately designing the desired low-probability-high-impact scenarios. The same understanding helps in identifying the key drivers that would produce the alternative future envisaged in the scenario. And it helps in understanding the risk and uncertainties around those key drivers. This risk and uncertainty analysis should include the external environment – that is beyond the narrow confines of the company, organisation or sector.

The construction of the scenario then follows based on the appropriate balance of quantitative and qualitative techniques. Some scenarios will lend themselves to hard-edged modelling. Others will be more illustrative in nature.

The final steps involve analysing and developing policy options to the alternative future. And ongoing monitoring of progress towards or away from that alternative future.

The step-by-step process may be logical and linear. But scenario practitioners have, over the years, identified a series of 'rules' to ensure the process is effective and efficient.

3.1 Know your organisation and environment

The idea of scenario analysis is to investigate the implications of alternative futures. There is an infinite number of these alternatives. They must have some relevance as potential operating environments for business and policy makers. A scenario investigating the implications of increasing extreme weather events in the Northern Territory, for example, probably means little for the operating environment of a public transport operator in Melbourne. But it would be relevant for a company providing insurance cover against those weather-related risks.

Scenarios will be little more than thought bubbles without the appropriate internal support. For example, in the corporate world, the C-suite must want the results so they can consider the implications and plan accordingly.

Managers must be involved. Managers are closer to the coalface so can have some real-world input. Managers are the ones that should be looking for the early warning signs so they need a sense of inclusion. Managers will be responsible for implementing policy if the scenario comes into play, so they need to take ownership.

3.2 Design the scenario

Scenario analysis delivers the most benefit by investigating potential futures that may be low probability but high impact. These are the 'shocks' that cause the greatest disruption and require the greatest adjustments. Understanding the implications and having a game plan in place are powerful supports for decision makers.

Scenarios that represent small deviations from the status quo are less useful. By definition, they are 'small' and business exposure should be low. These variations are probably better handled through sensitivity analysis around the current business plan.

There is a tendency to try and cram an economic scenario into the standard business forecasting period of two-to-three years. And in some cases that may be the appropriate. Many planners are reluctant to look beyond that two-to-three-year horizon because of the increasing uncertainty. But that is the reason we do scenario analysis – to investigate that uncertainty, what it may mean and how to respond.

To return to the Gorgon LNG project and its 40-year-plus lifespan, most of the risk lies beyond the standard

forecasting horizon. The optimal time horizon for scenario analysis is 15 years or more according to the experts. Users become more comfortable with scenario analysis and can understand the logic behind it over longer timeframes. Organisations like the Organisation for Economic Co-operation and Development (OECD) often run scenarios that stretch out for 40 years. Demographers run their projections out for up to 100 years.

Actuaries and economists have a need for long-run projections as well. Drivers of change can emerge unexpectedly and those drivers can have an impact in the short-term. But many of the more significant changes occur over the longer run – or at least beyond the standard two-three-year forecasting timeframe. Scenario analysis allows strategists to scope out those longer-term possibilities They have the techniques and skills to perform the analysis.

A central component of scenario analysis identified in Section 1 was the idea of writing stories about how the future may look. This story makes real what is otherwise no more than a dry set of numbers enlivened by the occasional chart. The story also makes the analysis more accessible to those that commissioned the work and the managers that have to implement recommendations.

A story is also important as a device for embedding a scenario into the corporate memory. Scenarios are long-lived beasts but can be soon forgotten against the day-to-day background noise.

The same reasoning lies behind the suggestion that scenarios have catchy names. Potential users are unlikely to get past the name of a report entitled 'An investigation of some potential implications for inventory management practices arising from the COVID-related disruptions to global supply chains.' But a report titled 'Global Stranglehold' sounds worthy of a read and has a better chance of an extended shelf-life.

Scenarios are often presented in upside-average-downside terms. This approach is something of a three-card trick. The typical decision maker will choose the middle outcome, and that scenario gets most of the attention. But any average scenario probably reflects an extrapolation of business-as-usual. It misses the key point of investigating alternative futures.

There are two solutions to this problem:

▶ **Produce more than three scenarios:** This approach forces decision makers to think about more than the average or business-as-usual scenario. But it increases the complexity of the analysis and the workload on the analysts. As outlined in Section 2, too many scenarios can cause policy paralysis.

▶ **Develop a baseline scenario:** There needs to be a central case or baseline that reflects the most likely outcomes.

The focus can then shift to alternative futures encapsulated in the surrounding scenarios. Developing a baseline is the preferred approach when conducting scenario analysis.

3.3 Identify key drivers

Restaurant reviewers typically sing the praises of smaller menus. They allow the chef to focus on what they do best. It contributes to a more efficient kitchen and greater cost control.

Analysts should keep this lesson in mind when identifying the key drivers and critical uncertainties for use in developing a scenario. A simple calculation makes the point. A combination of three drivers each with three critical uncertainties will deliver 27 possible scenarios.

Some of these 27 combinations will be so unlikely or internally inconsistent that they can be excluded. Even then, there are likely to be too many moving parts. The preferred approach is to limit the number of key variables and uncertainties included in any scenario. If that is not possible, then it is normally a sign that more scenarios are required.

There is also a limit to the number of scenarios. The Shell Oil experience with scenario analysis in the 1970s makes the point. They found that managers could only effectively deal with three scenarios at any one time. Managers would pick one scenario on which to focus when presented with more than three choices.

The key drivers or assumptions powering scenarios, must lead to logical and consistent outcomes. Scenario planners may be 'playing the role of God' as they design alternative futures but the laws of economics, science and common sense still hold.

There is a need when thinking about key drivers to avoid the concept of trend. Trends change over time. If they didn't, then projected outcomes would become unsustainable. The I.T. sector, for example, cannot grow faster than the overall economy indefinitely. At the limit, I.T. would account for 100% of economic activity.

3.4 Identify external forces and critical uncertainties

The natural tendency in scenario analysis is to focus on the drivers that are important for the company, industry and sector. This makes sense given that a lot of scenario analysis is about estimating the impact on the company bottom line. But many of the drivers of change in business operating environments are external in nature. The Russia-Ukraine War, for example, is not an industry specific event. Nevertheless, it has changed the operating environment through its impact on energy and other prices.

PESTLE analysis is a useful tool in this stage of scenario analysis. It considers the key external factors (Political, Economic, Sociological, Technological, Legal & Environmental) that can redefine the future.

3.5 Constructing the scenarios

There are a range of techniques to quantify scenarios. Assumptions are important and estimates by others can be deployed. Existing trends are helpful for the near term. The historical experience can give a feel for the extremes of the cycle – although these extremes can always be breached. Modelling can help.

Whatever method, or combination of methods is used, the key requirement is consistency. The figuring needs to pass the 'pub test' and be seen as a reasonable approximation of potential outcomes. Scenarios that involve a severe recession but envisage only a small rise in unemployment, for example, look internally inconsistent.

Scenarios run over long timeframes. It makes sense when quantifying these scenarios to let the current business cycle run its course. What happens after that point is more important.

The Commonwealth Budget is an interesting case study. The Budget is based on a fully fleshed out set of forecasts for Years 1-3. But figuring thereafter are projections based on a series of assumptions about key drivers. These assumptions see economic growth converge with potential GDP growth. Unemployment converges to full employment. Inflation returns to the midpoint of the Reserve Bank of Australia's (RBA's) 2-3% target band.

The point about the long-term scenario analysis is that it is often envisaged as a series of straight lines. Organisation for Economic Co-operation and Development (OECD) long-run projections for Australian GDP growth, for example, level out at 2¼%pa and stay there all the way out to 2060 (Chart 5).

Chart 5 – Australia: Real GDP (annual % change)

Source: OECD
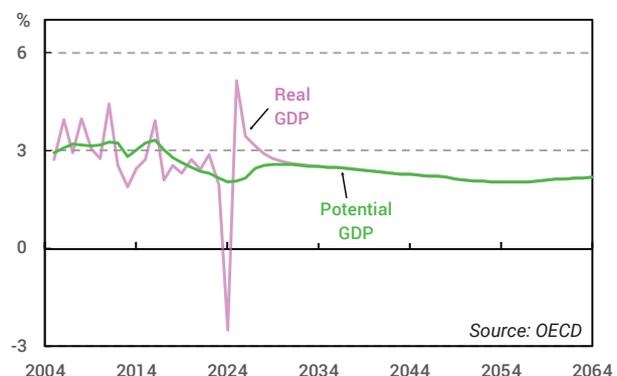
The real world, however, does not move in straight lines.

Actual GDP growth over the past couple of decades has been quite volatile (pink line on left-hand-side of Chart 5).

In essence, actual growth has fluctuated around potential. But it makes no sense to try and impose a business cycle on the outer years of a scenario. Nobody can say with any certainty that there will be a global recession in 2032 followed by a boom in 2033.

Longer-run scenario outcomes should be interpreted as an average around which the real world will cycle.

Scenarios may be all about future possibilities. But the past can be useful as well.

And that does not mean just the recent past. There are lessons in the distant past as well. By some reports the author Mark Twain famously once quipped that *"History doesn't repeat itself, but it often rhymes."*

Interest rates are a case in point. A few years ago the Chief Economist at the Bank of England, Andy Haldane, commented that interest rates had never been as low as they were then. When challenged on that call, he assembled a group of experts who produced a time series for interest rates going back for more than 5,000 years as seen in Chart 6.

Chart 6 – Interest Rates (over the (very) long run)

Source: Bank of England
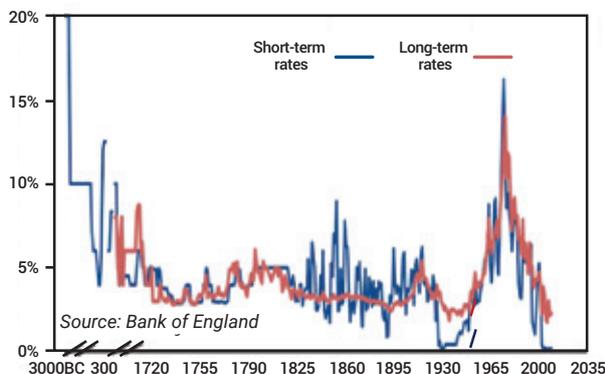
The chart shows that Haldane was right in his call about record low interest rates. But his research also revealed that interest rates are normally low.

Apart from a brief period at the height of the Babylonian Empire, the real aberration in interest rates was the 1975-2005 period. Interest rates were high during that period as a reflection of the high inflation rates at the time. What the economic historians like to call the Great Moderation from the mid-1980s, however, tamed inflation and interest rates returned to their normal (low) levels.

So, it's 'back to the future' from here. Interest rates are rising, and that process has further to run. But the lesson from

history is that a rerun of that high interest rate period is unlikely as rates will remain low relative to that period.

This conclusion applies to policy interest rates as well. An upswing in the global monetary policy cycle started in 2022. The size and speed of increases in policy interest rates was unusual. But expected terminal rates in 2022 remained well below the peak levels seen in the 1980s and 1990s.

3.6 Analyse results, prepare responses, watch early warning indicators

Presenting results is an important part of scenario analysis. When we think about the outlook it is typically in terms of growth rates and levels. How fast will GDP grow? What will be the unemployment rate? What is the likely level for the Aussie dollar?

Scenario analysis can deliver this sort of figuring. But the peculiar nature of scenario analysis favours a different format. The preferred analysis involves a baseline and has longer-run projections converging on flat lines. Deviations from the baseline are the better presentation approach against that backdrop.

Scenario analysis is all about how the operating environment can change in alternative states. How that future state compares with the baseline is key and deviations from the baseline nicely summarise the direction and magnitude of the shift.

The deviations-from-trend approach is also presentationally more attractive. A series of tables and charts that show everything flat lining can damage confidence in the results.

Quantifying the results of our low-probability-high-impact scenarios does not mean we can declare 'mission accomplished.' The point of the analysis is to reduce uncertainty and risk by envisaging future states and develop responses to these potential futures.

A related task is to monitor developments and assess whether the alternative future is moving from a scenario to the real world. Identifying early warning indicators is a key part of scenario analysis. As a result, regularly monitoring these indicators is a way to retain the scenario analysis in the corporate memory. And an indication of when deploying developed strategies is needed.

To emphasise, the most useful scenarios are low probability but high impact outcomes. Low probability means that the chances of a scenario coming to fruition are low but this failure to eventuate does not mean that they were 'wrong'. And there is no disgrace in preparing a scenario that does not eventuate. But lessons can be learned from revisiting old scenarios that can inform the development of new alternative futures.

4

How actuaries and economists can collaborate for scenario analysis

Actuaries and economists have developed an impressive array of techniques to deal with uncertainty. They can produce a reasoned, internally consistent view of the future. But they are often not right. Hence the well-worn line about being able to 'tell you tomorrow why the things they said yesterday did not happen today.'

This observation does not mean there is no value in thinking about the future but rather there needs to be a realistic understanding of what economists can and cannot do.

The real world is replete with examples of developments that make little sense. Why does the stock market rally when unemployment rises? The rise may lessen the chances of higher interest rates but it damages future profitability. How can oil prices dip below zero and how can central banks deliver negative interest rates? (Chart 7). How can a Danish bank offer a 20-year fixed-rate home loan at 0%? The list goes on.

Chart 7 – Oil & Policy Rates
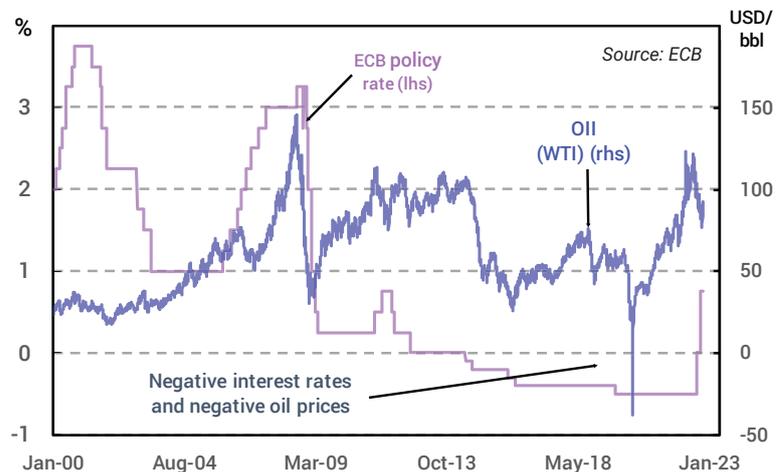
Forecasts are best used for short-term analysis. We know where we are in the economic cycle and should have a good idea on the direction of key policy settings. We know how the various parts of the economic story should interact on a theoretical and observed basis. The short-term focus promotes agility and forecasts must be adapted to changing circumstances.

Economists do understand that the economy rarely moves in-synch with their forecasts. The end point may be right. But the path taken to get there may be quite different from that envisaged.

Economists try and highlight the uncertainty around their forecasts and how that uncertainty increases the further away from the starting point we get. The RBA, for example, used to provide forecasts as a range rather than a point estimate. For example, GDP growth in 2018 was expected to be somewhere in a 2½-3½% range. But it means that the economy could be growing below trend or maybe above trend. Unemployment could rise or maybe fall as a result. This approach is not particularly useful for most scenario planners. But there are exceptions. Actuaries, for example, often have specific reporting requirements where forecast ranges are a useful input.

The RBA also provide fan charts to show 'confidence intervals' around forecasts for some of the key economic variables like GDP growth, unemployment and inflation highlighted in Chart 8.

Chart 8 – Headline Inflation Forecast*
Year Ended

Source: RBA Monetary Policy – November 2022.
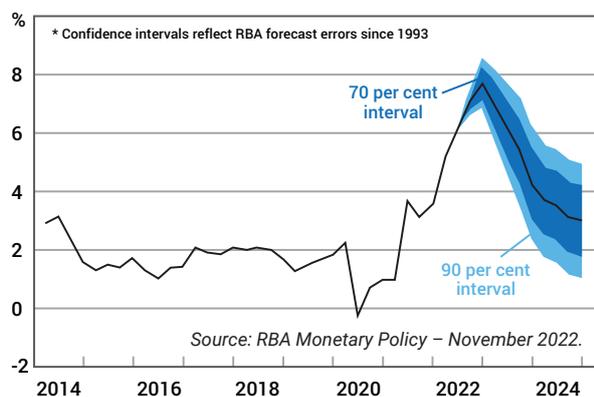
The RBA believes that fan charts *"provide an effective means of publicly communicating the uncertainty surrounding the economic outlook and some of its potential implications for future monetary policy."* Much of the rest of the populous, however, is dubious:

▶ They expect forecasters to have the courage of their convictions and want point estimates;

▶ When forecasters provide ranges, the automatic tendency is to construct point estimates by taking the midpoint of the range; and

▶ Experience suggests that fan charts are not well understood and mainly of interest to policy experts.

Again, there are exceptions to these conclusions yet the simplicity of point estimates will appeal to many scenario planners.

There are some forecasts that are absolutely business critical. The cost of getting these forecasts wrong is high but does

not help accuracy. For example, GDP forecast errors flow through to estimates of government revenue and other key fiscal measures. This criticality is why we conduct sensitivity analysis. The implications of deviations from the central forecast can be discerned in advance and policy options can be assessed, regardless of whether or not they are required.

To move beyond the near-term, projections are needed. Projections are really measures of central tendency, around which the economy will cycle over time.

Economics has a long history but it is not a static discipline. One newish approach is offered by behavioural economics. This approach combines ideas from economics and psychology to explain how and why people behave the way they do in the real world. It brings economics a step closer to the real world. And it should provide a valuable tool for those interested in scenario analysis.

The rest of this Green Paper looks at various future alternatives for the Australian economy over the next fifteen years. In line with good practice, the first scenario is the baseline.

The alternative future scenarios include:

▶ **Stagflation:** Stagflation is a plausible scenario in the current environment (high energy and food prices, supply chain pressures, strong demand, earlier reflationary policy settings).

▶ **House Price Collapse:** This scenario is a perennial favourite. But it is worth looking at given the exposure of the financial system and households to housing. Interest in this scenario has been refreshed given the current downturn in the housing market, high levels of household debt, budget pressures, stagnant wages growth, bank exposures to housing and rising interest rates.

▶ **Adoption of Modern Monetary Theory (MMT):** This is a 'new paradigm' scenario. Full adoption of MMT is unlikely but we have moved some way in that direction, so it is worth considering the implications.

5

The baseline scenario

Decent growth in consumer spending is an essential component of avoiding recession.

5.1 The business cycle plays out

The baseline scenario for the Australian economy involves elevated downside risks. Yet in the baseline the expected modest GDP growth suggests that the Australian economy will avoid a recession.

Decent growth in consumer spending is an essential component of avoiding recession. RBA forecasts, for example, have consumer spending accounting for three-quarters of GDP growth over the next three years. The consensus also shows business capex playing a role. But residential investment declines as the earlier boom unwinds. And public spending slows after the rapid growth associated with the pandemic. The external sector plays a relatively neutral role in net terms in the growth profile.

The starting point is one where the economy is operating below potential in an output sense. But the labour market is tight. The standard assumption against this somewhat unusual mix is that the economy can grow above potential for a while until the output gap is closed. This growth delays any negative impact on the labour market. And it allows some rise in wages growth. An eventual rise in unemployment limits how fast wages can grow and eventually contributes to some slowing in inflation.

Policy settings contribute to the overall outcome. Monetary policy is moving into restrictive territory. Fiscal policy is focused on budget repair. These settings limit the upside to GDP growth. And contribute to the slowing in inflation rates.

For some perspective, Year 0 in the scenario can be thought of as 2021.

5.2 Longer-run projections

Once these near-term influences have run their course, the longer-run projections for the Australian economy come into play over the rest of the 15-year scenario horizon.

There are a variety of techniques or rules-of-thumb that have been developed for quantifying the longer-run baseline projections.

One useful starting point is what is called the 3-Ps: population, participation and productivity. Trends in the 3-Ps ultimately drive economic activity, jobs and incomes. They create the wealth needed to fund a country's longer-run objectives and deal with the longer-run challenges such as climate change and the ageing population. And they provide a framework for policy makers. The idea is:

▶ The size of a country's population determines the demand for goods and services.

▶ The participation of that population in the labour force is a key driver of what an economy can supply.

▶ Productivity largely determines the income earned by the population.

The 3-Ps determine potential GDP growth. That growth determines employment levels. And the unemployment rate is typically assumed to converge with the non-accelerating inflation rate of unemployment (NAIRU) – or more conveniently described as 'full employment.'

From an Australian perspective, the current mix of the 3-Ps involves:

▶ Weak population growth.

▶ An elevated participation rate.

▶ Productivity growth towards the low end of the range (Chart 9).

Looking ahead, population growth will recover as migration resumes after the COVID-induced slowdown. Participation will remain at high levels but the ageing population will take a toll as retirement looms for many. Productivity is the key unknown. The standard assumption is that productivity growth will recover to somewhere around its long-run average, but this outcome is not certain. Assistant Minister for Competition, Dr Leigh, argues that the impetus for reform must be maintained. In other words, 'We know what to do.' But there is a reluctance to put the necessary policy changes in place. The easy changes are done.

Chart 9 – Australia: the 3-Ps (rolling 3-year average)

Source: ABS
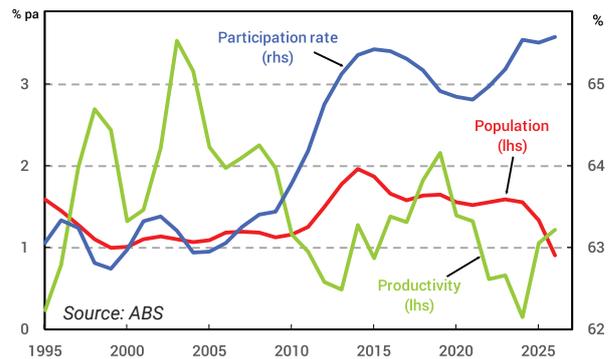
Policy settings in the baseline are framed in terms of government and central bank objectives. So fiscal settings are outlined in the government's *Medium-Term Fiscal Strategy*. The strategy aims at balancing the budget over the course of the cycle. And stabilising and then reducing the debt:GDP ratio.

The RBA's policy rates are expected to converge on *neutral* – the rate where monetary policy settings are neither restrictive nor expansionary. The RBA's inflation target provides the long-run projection for consumer prices. Wages growth projections need to be consistent with that inflation target as a result.

Financial variables are expected to converge on 'fair value.' This value reflects the longer-run levels of the key economic variables that drive interest and exchange rates over time.

They include:

▶ RBA actions.
▶ Inflation rates.
▶ Commodity prices.
▶ Interest rate differentials.
▶ Current account balances.

5.3 Critical uncertainties

The main domestic risks come from potential policy errors – too fast a fiscal consolidation or a too aggressive monetary policy response to elevated inflation rates. Rising interest rates are a particular risk given high levels of housing debt.

Financial markets have the cash rate peaking around 4%. Some sensitivity analysis shows a cash rate around that level would push debt servicing back around 2008 highs – a time of significant household stress.

Housing dominates bank balance sheets. Therefore, an aggressive rate response that damages housing affordability would potentially lead to large falls in house prices creating financial stability risks. For these reasons, the baseline scenario assumes that the RBA stops when the cash rate reaches 3%.

Externally, the risk of a global recession is rising. The risks stem from the lingering impact of the COVID-19 pandemic, an aggressive global monetary policy tightening cycle, the fallout from the Russia-Ukraine War and geopolitical disturbances more broadly. Threats to the Chinese economy stem from the lengthy lockdowns and ongoing issues in the real estate sector. Cost-of-living pressures are a risk to consumer spending everywhere. Financial market volatility is a threat to business and consumer sentiment everywhere.

Some of these key variables are inherently unobservable or can only be identified with the benefit of hindsight.

The neutral cash rate is a good example. Even the RBA is uncertain where neutral lies. RBA Governor Lowe, for example, puts neutral somewhere within a range of 2½-3½%. A recent speech by RBA Assistant Governor Ellis put the range at more like 3-4%.

Beyond this uncertainty, the risk is that the monetary authorities do not fully appreciate the extra leverage that interest rates now have on the economy as a result of the big increase in household debt. Some simple estimates show that a 3.5% cash rate would push household debt servicing back up to 2008 highs - a time of significant household stress. The monetary authorities are not aiming to push households into extreme stress.

Similarly, housing dominates bank balance sheets. An aggressive interest rate response that damaged affordability could lead to large falls in house prices. And that would be a financial stability risk. The monetary authorities are not aiming to generate risks to financial stability.

These risks mean that the baseline scenario is centred around a neutral cash rate at the lower end of the range at 2¾%.

The full employment rate, or NAIRU, is also contentious. The standard assumption for many years was that a 5% unemployment rate represented full employment. However, more recent estimates by the Commonwealth Treasury put full employment at 4½-5%. The RBA Governor has talked about a lower number – maybe with a 3 in front of it. The reality is that the current 3.5% unemployment rate has not generated a wage boom, implying full employment is lower than the Treasury estimate. The baseline scenario places full employment at 4%.

The baseline concludes that wages growth has to run around 3¼% to be consistent with the RBA's 2-3% inflation target. One implication is that the wages share of GDP will continue the decline evident since 2000. A rising terms of trade has directed a larger share of income towards corporates and government. This continued decline is unsustainable indefinitely. So, what happens with the wages/jobs mix that drives the wages share over time is a critical uncertainty to monitor.

The longer-run projections, and their basis, is summarised in Table 1. Table 2 provides more details on the key baseline outcomes. A Chart Gallery of key outcomes is available later in this section.

Table 1: Long-run parameters

Variable	Assumption	Comment
The 3-Ps		
Population	1.2%pa	ABS long-term population projections
Participation	64.9%	Intergenerational Report assumption
Productivity	1¼%pa	Long-run average
The real economy		
Potential GDP	2½%pa	A function of the 3-Ps
Output gap	0%	Output gap closes from Year 6
Unemployment rate	4%	NAIRU estimate of full employment
The nominal economy		
CPI	2½%pa	Midpoint of RBA's 2-3% target
GDP deflator	2¼%pa	Function of CPI and terms-of-trade
Wages	3¼%pa	Consistent with RBA CPI target
Nominal GDP	4¾%pa	Real GDP + GDP deflator
Financial variables		
Cash Rate	2¾%	Within neutral range of 2½-3½%
10-year bond yield	3½%	Fair value based on cash rate and yield curve
AUD/USD	USD0.75	Fair value based on commodity prices and Aus-US interest rate spread
Earnings Yield	6%	Function of RBA cash rate
Equity risk premium	5%	Earnings yield less real 10-year bonds
Budget balance	0% of GDP	Balance over the course of the business cycle
Commonwealth Government net debt	37% of GDP	Stabilising as a % of GDP
Source: ABS, RBA, IGR, Budget, Author's calculations		

Table 2: Baseline: key outcomes

	Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Av Yrs 6-15
Real GDP Growth Rate (%pa)	4.9	4.0	2.3	1.7	2.0	2.0	2.4
CPI Inflation rate (%pa)	2.9	6.8	4.4	2.3	2.4	2.5	2.5
Unemployment rate (%)	5.1	3.5	4.2	4.0	4.0	3.9	4.0
Risk free rate (10yr bonds) (%)	1.5	2.4	3.8	3.6	3.6	3.6	3.6
Equity risk premium (%)	5.5	9.9	7.9	5.4	4.5	4.7	4.8
Source: Author's calculations							

5.4 What to watch

The key early warning indicator in the baseline scenario is unemployment. Labour market data gives a monthly snapshot on how the positive and negative economic forces are playing out. The unemployment rate is a key input into the ability and appetite of consumers to spend, a leading indicator of business capex, a driver of wages and inflation and a determinant of macro policy settings. (Charts 10-13).
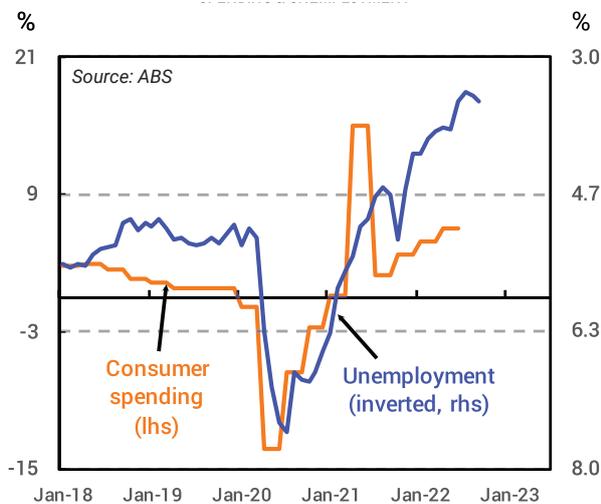
Chart 11 – Cash Rate and Unemployment
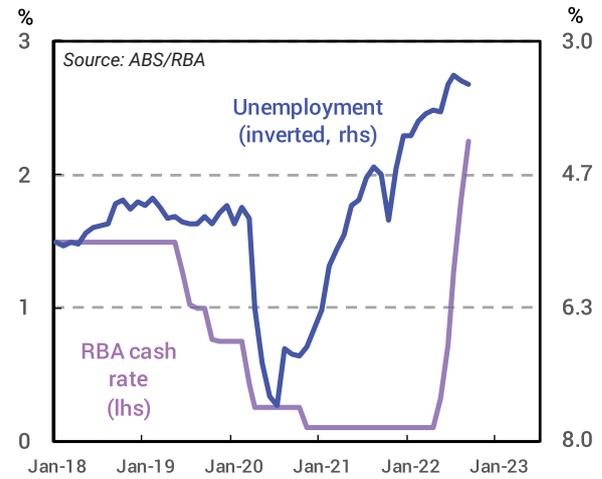

Chart 12 – CAPEX Plans and Unemployment
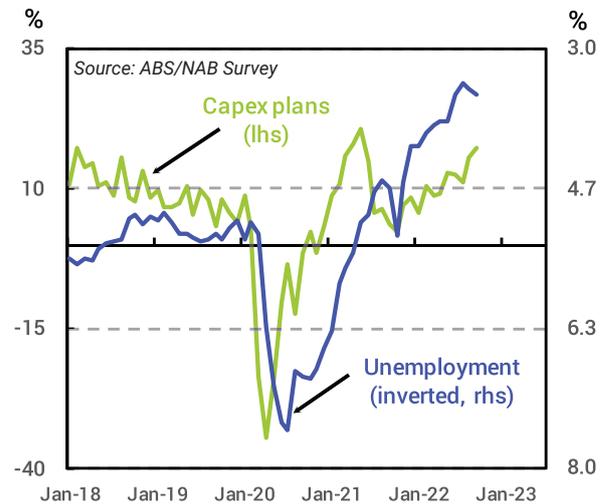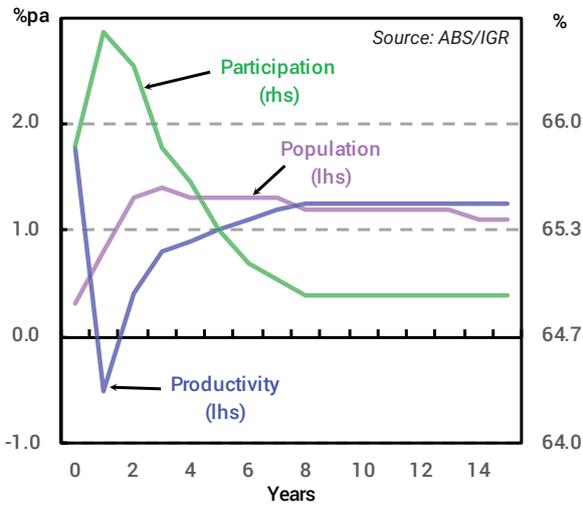

Chart 10 – Spending and Unemployment

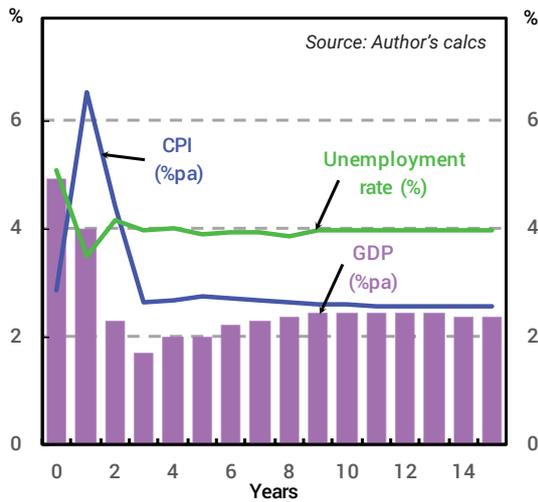**Chart 13 – Wages and Unemployment**

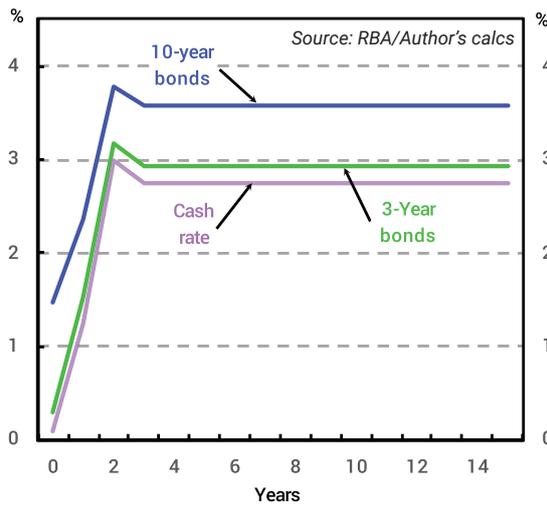# Baseline scenario: chart gallery

Baseline: 3-Ps

%pa

Source: ABS/IGR

Participation (rhs)

Population (lhs)

Productivity (lhs)

Baseline: Potential GDP (annual % change)

Source: Author's calcs
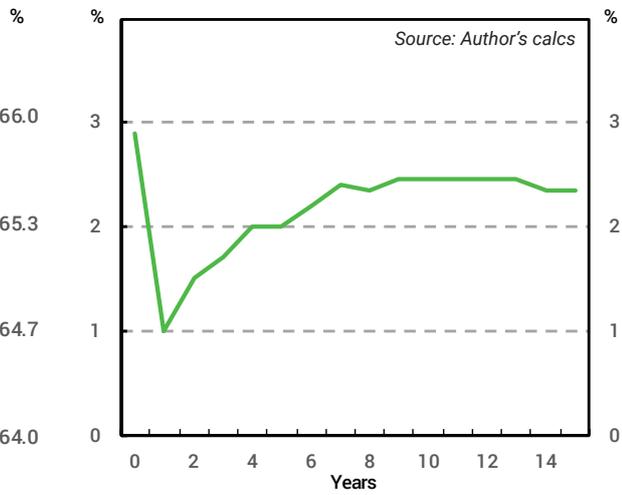
Baseline: Key Indicators

Source: Author's calcs

CPI (%pa)

Unemployment rate (%)

GDP (%pa)

Baseline: Interest Rates

Source: RBA/Author's calcs

10-year bonds

Cash rate

3-Year bonds

Baseline: Financial Indicators

Source: Author's calcs

Earnings yield

Equity risk premium

Real 10-year bonds
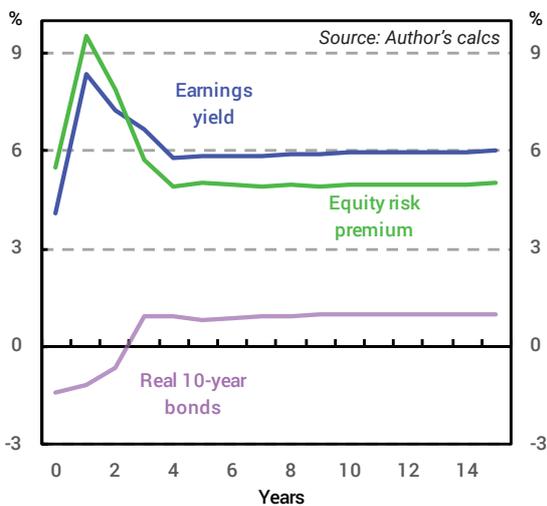
Baseline: Fiscal Indicators (% of GDP)

Source: Author's calcs

Net Government Debt (rhs)

Budget Balance (lhs)
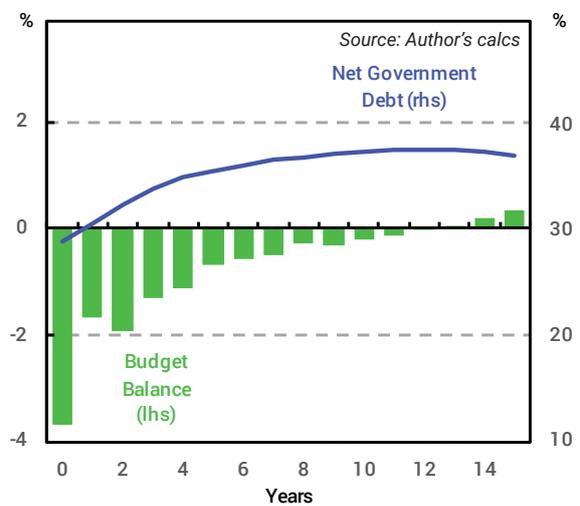
Stagflation: 'Reliving the Seventies' Scenario

<div style="text-align:right;font-size:200%">6</div>

- This scenario looks at how the economy may evolve if stagflation (high inflation and high unemployment) takes hold.

- Expansionary fiscal policy, too loose monetary policy and supply-side constraints combine to drive a wage price spiral. The eventual solution is a severe recession.

- This scenario is the current direction of global risk.

- While long-term parameters eventually settle around the same baseline growth rates, the economy is 5% smaller than in the baseline by the end.

- Consumer wage expectations are a crucial variable to watch.

6.1 Know your environment

There have been any number of painful economic shocks since the golden age of post-war economic growth came to an end in the early 1970s. The most painful, however, was the stagflation of the 1970s. This pain reflected:

- Stagflation marking the end of the certainty of the previous decades that respectable growth rates and full employment were the norm. And that policy settings could be tweaked to achieve that end.

- The lengthy duration of stagflation. The stagflation era persisted from 1973 to 1982.

- The severe policy-induced recession of the early 1980s that was a key part of the eventual cure for stagflation. The other part of the cure was the Thatcherite/Reaganite supply-side reforms.

The term stagflation was coined by UK Chancellor, Iain Macleod, in 1965 when he noted the combination of stagnant economic growth and high inflation besetting the UK at the time. *"We have a sort of 'stagflation' situation"* he noted.

Chart 14 – The Misery Index

Source: ABS
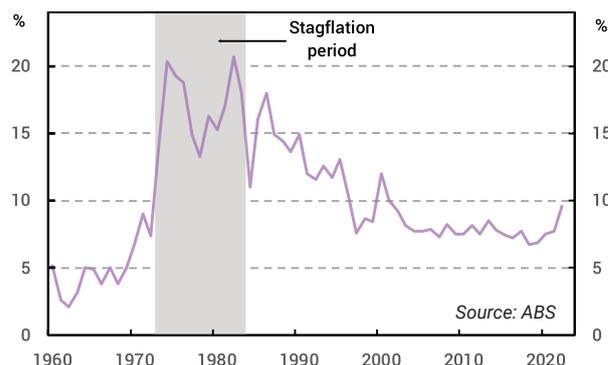
The impact was best captured by economist Arthur Okun who developed the Misery Index seen in Chart 14. The index adds inflation and unemployment rates to derive a measure of economic misery.

'Misery' was certainly elevated during the stagflation period (Chart 14). And it has risen again in 2022 as inflation rates lifted and progress in reducing unemployment stalled.

Stagflation has proved a powerful concept that lives on in our collective memories. It is notable that Google searches for stagflation spike every time there is an economic shock. Recent examples include the global financial crisis of 2007-2009, the initial pandemic shock, and in 2022 as recession fears lifted.

The stagflation of the 1970s reflected a combination of poor economic policy settings and a supply-side shock. With all the benefit of hindsight, policy makers kept interest rates too low for too long, at a time of expansionary fiscal settings. Overlaying this policy backdrop was the OPEC oil shock that dramatically increased oil prices.

6.2 Designing the scenario

Elements of the stagnation precursors are evident again today:

▶ Fiscal settings moved in a strongly expansionary direction as part of the response to the pandemic threat. The fiscal impulse was probably the largest of any outside periods of war. RBA estimates put that impulse during the acute phase at around 12% of GDP. Measures worth a further 6% of GDP were directed at supporting the recovery phase.

▶ Inflation rates have accelerated sharply. But initially the lift was seen as temporary, and the RBA continued to 'promise' that interest rates were unlikely to rise before 2024. The monetary authorities had to play catch up in 2022 as inflation rates accelerated to a peak. Official forecasts have inflation running above the RBA's 2-3% target into 2025.

▶ A rolling series of supply-side shocks hit the economy. The pandemic disrupted global supply chains. The Russia-Ukraine War resulted in an energy price shock and impacted global food prices. Adverse weather events compounded the impact on Australian food prices. Pressures on the cost of living and business input prices pushed consumer and business sentiment lower.

The stagflation scenario assumes these influences prove more persistent that those envisaged in the baseline scenario.

6.3 Identifying the key drivers

The key scenario driver that keeps the stagflation story in play is the exposure of the limits to economic policy.

The ability to lift interest rates to levels sufficient to kill inflation is limited by the expansion of household debt. Household debt stands at a record high of 188% of household disposable income. The interest-rate sensitivity of the Australian economy has increased. Too aggressive of a lift in interest rates would push households into financial stress. This stress, and the impact on the housing market, would strain bank balance sheets and pose a threat to financial stability.

The ability to withdraw fiscal stimulus is limited by the need to reduce the cost-of-living pressures on households. The ability of the fiscal authorities to help prevent damage to the labour market is limited by already-high levels of government debt.

Supply-side constraints are proving surprisingly intractable in many areas. Their persistence further underwrites the stagflation scenario.

The persistence of uncomfortably high inflation rates eventually damages inflation expectations and contributes to the emergence of a wage-price spiral. The 'vicious circle' that develops is one of ongoing inflation and 'high' interest rates (although not high enough to push inflation rates back down to the RBA's 2-3% target.

An extended period of 'high' interest rates sees consumers and businesses cut spending. Economic growth stagnates and unemployment rises. The labour market fallout is intensified as business responds to higher input costs, including wages, by cutting employment.

6.4 Identifying external forces and critical uncertainties

There are some longer run issues in the stagflation scenario that could lead to even worse outcomes.

The main risk is the damage to potential growth rates. In the 3-Ps framework that underlies the scenario analysis:

▶ Population growth could slow if high unemployment discourages migration to Australia.

▶ Participation rates could fall if the lack of jobs sees jobseekers give up and leave the labour market.

▶ Productivity growth could slow in a high-interest-rate-slow-growth environment that discourages capital spending and risk taking.

Outcomes will also depend on whether stagflation is an Australian phenomenon only, or whether it is a feature of the global economy more broadly. The stagflation drivers are common across many economies at present. So global stagflation is the direction of risk.

Against that global risk backdrop, the Australia economy would underperform. It would be a negative for commodity prices, damaging Australian incomes. Higher unemployment would follow.

Commodity prices are a key fundamental input into the Australian dollar. A lower currency would boost import prices and add to upside inflation pressures. The Aussie dollar is, however, something of a double-edged sword. The currency sinks at times of global stress but that fall is a powerful shock absorber for the Australian economy. It keeps exports competitive and offsets some of the weakness in USD commodity prices.

Chart 15 – Selected Indicators
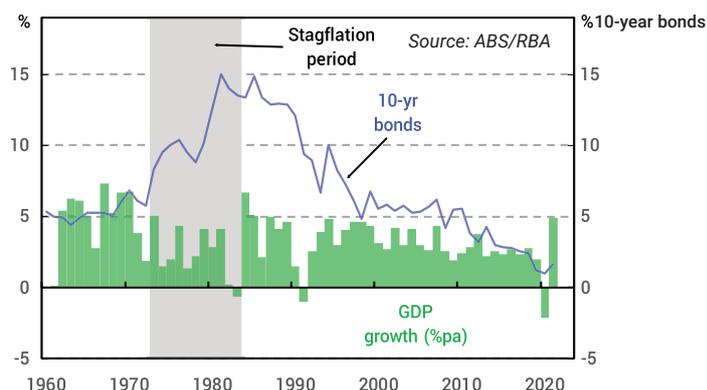
The key uncertainty relates to the toleration of policy makers for stagflation. The lessons of history are there for all to see. Policy settings need to be contractionary enough to squeeze inflation out of the system and supply-side reforms are needed to boost productivity and lift potential economic growth rates.

6.5 Constructing the scenario

For illustrative purposes, the stagflation scenario assumes policy makers tolerate stagflation for about half the scenario period and then respond aggressively to fix the problem (significantly less than the time that stagflation was tolerated in the 1970s). It also assumes that stagflation is a global event. These assumptions require imposing a business cycle in the second half of the scenario period. This imposition is not best practice. But, as in the 1970s, an extended period of stagflation will eventually force policy makers' hands.

The scenario does highlight the cost of stagflation. The economy at the end is 5% smaller than envisaged in the baseline and the unemployment rate is higher throughout the scenario period. The initial mix of drivers has the RBA lifting policy interest rates by enough to slow GDP growth and lift unemployment but not enough to tame inflation. Contradictory policy settings do not help the inflation story.

The RBA is tightening but the fiscal authorities are lifting spending in the face of the cost-of-living crisis. One outcome is that wages growth picks up, sustaining inflation rates well above the baseline. By Year 6, the level of the CPI is 20% above baseline levels.

Fiscal settings mean that budget deficits exceed those in the baseline and the government debt:GDP ratio continues to rise. The RBA, inflation and budget mix means interest rates are higher than in the baseline. Equity risk premiums rise during stagflation periods given uncertainty about the macroeconomy and company profitability.

Policy makers eventually respond with an aggressive lift in interest rates resulting in a recession and a spike in the unemployment rate towards double digits. Inflation rates slow and policy settings start easing back to 'normal' levels. A recovery begins and a large output gap allows a period of above-trend growth, falling unemployment and ongoing slowing in prices growth.
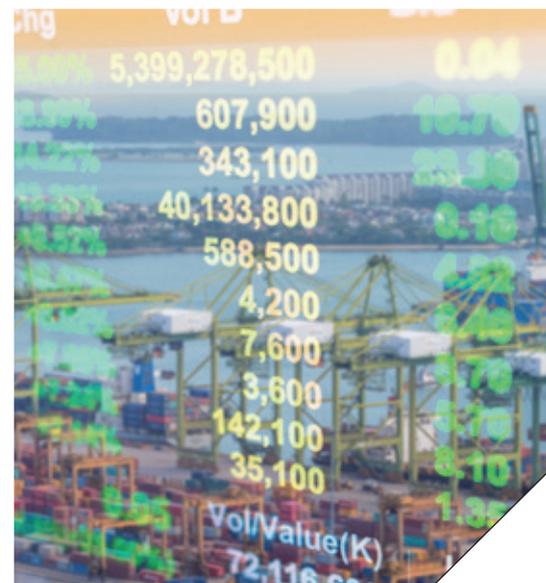
The key variables ultimately converge towards the longer-run parameters outlined in the baseline in Table 1.

6.6 Analysing results, responses and what to watch

The main lesson from this scenario is that stagflation is very damaging across the economy and can persist for an extended period. Policy makers need to respond quickly and aggressively. The cost of such a response falls well short of that if stagflation is allowed to take hold.

The scenario also highlights the importance of maintaining the reform effort to increase economic resilience and boost productivity. Managing supply is just as important as trying to manipulate demand.

**Policy settings need to be contractionary enough to squeeze inflation while boosting productivity and growth rates.**

Stagflation is only possible if policy makers fail to respond sufficiently, or if key economic drivers become entrenched.

Important variables to monitor are price and wage expectations shown in Chart 16. Rising expectations are an early warning sign as they tend to lift before actual prices and wages start moving.

Important variables to monitor are price and wage expectations.

Assessing the precise appetite of policy makers to prevent stagflationary risks is difficult. Monitoring the rhetoric is one approach but such forward guidance is not always reliable, as RBA watchers know.

Chart 16 – Inflation Expectations (weighted mean)
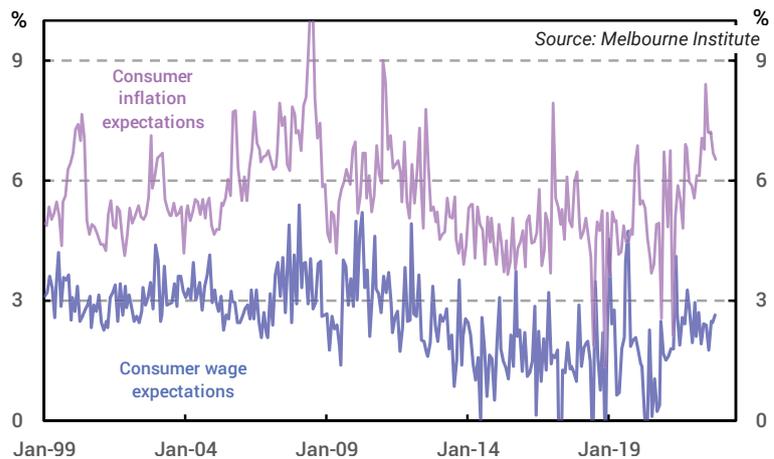
Financial markets do 'price' risks efficiently. So watching the market pricing for RBA interest rate action is appropriate. And keeping an eye on the inflation expectations built into market pricing, like inflation swaps, should also help.

Table 3 provides more details on the key scenario outcomes. A Chart Gallery of selected outcomes is available later in this section.

Table 3: Stagflation: key outcomes

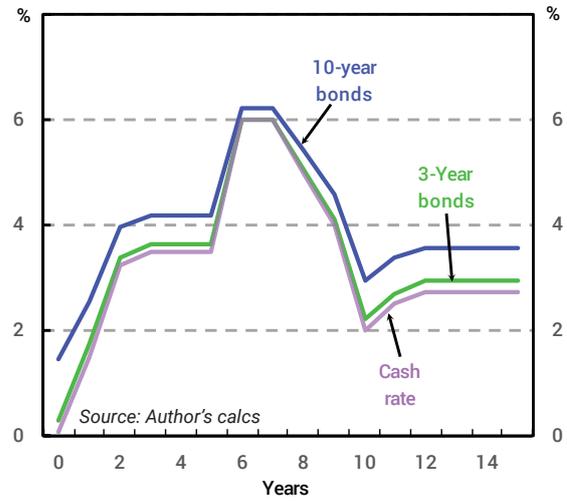|	Real GDP (%pa)	CPI inflation (%pa)	Unemployment rate (%)	Risk free rate (10yr bonds)	Equity risk premium (%)
Yr 0	4.9	2.9	5.1	1.5	5.5
Yr 1	3.9	6.5	3.5	2.6	9.3
Yr 2	2.3	5.4	4.7	4.0	8.6
Yr 3	1.4	5.7	5.0	4.2	8.3
Yr 4	1.6	6.8	5.6	4.2	8.9
Yr 5	1.5	7.9	5.9	4.2	10.3
Yr 6	1.6	8.9	6.5	6.2	9.2
Yr 7	0.8	7.9	7.1	6.2	8.8
Yr 8	-1.2	5.2	10.1	5.4	6.2
Yr 9	1.1	1.8	10.7	4.6	2.1
Yr 10	3.5	2.1	9.0	3.0	4.1
Yr 11	3.5	2.3	7.4	3.4	4.9
Yr 12	3.0	2.5	6.3	3.6	5.7
Yr 13	2.6	2.6	5.7	3.6	5.5
Yr 14	2.5	2.7	5.1	3.6	5.2
Yr 15	2.5	2.7	4.5	3.6	5.2
Source: Author's calculations					

Stagflation scenario: chart gallery

**(Blue bars are deviations in *levels* – green bars are deviations in *growth* rates)**
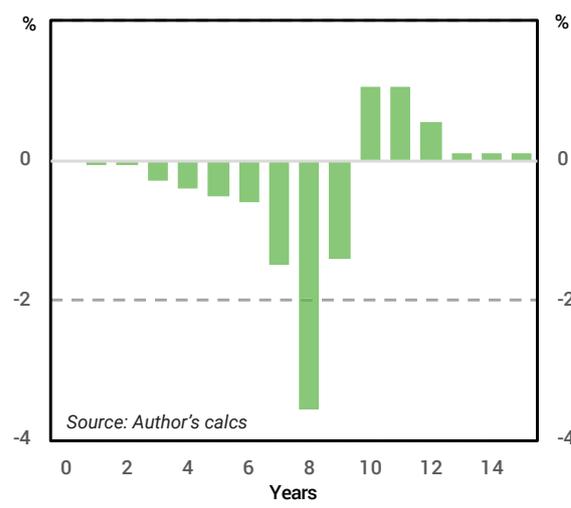
Stagflation: Key Indicators

CPI (%pa)
Unemployment rate (%)
GDP (%pa)
Source: Author's calcs
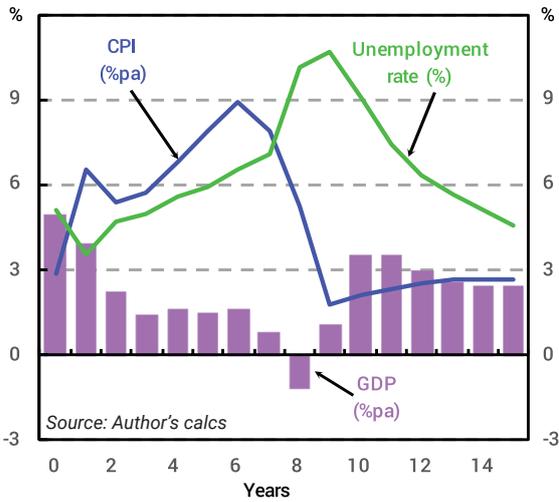
Stagflation: Interest Rates

10-year bonds
3-Year bonds
Cash rate
Source: Author's calcs

Stagflation: GDP (deviation from baseline)

Source: Author's calcs

Stagflation: GDP (deviation from baseline growth rate)

Source: Author's calcs
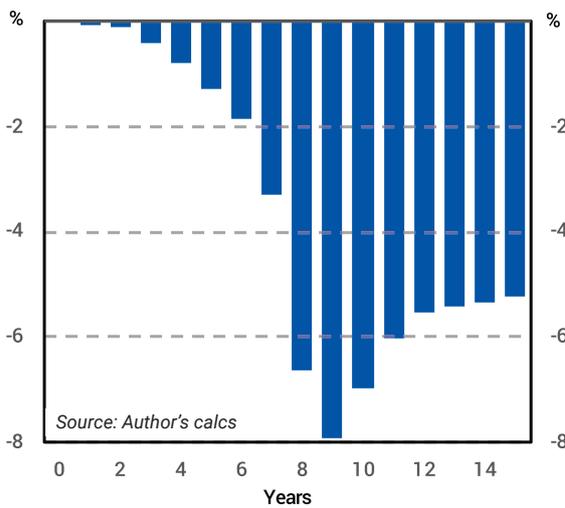
Stagflation: Unemployment (deviation from baseline)

Source: Author's calcs
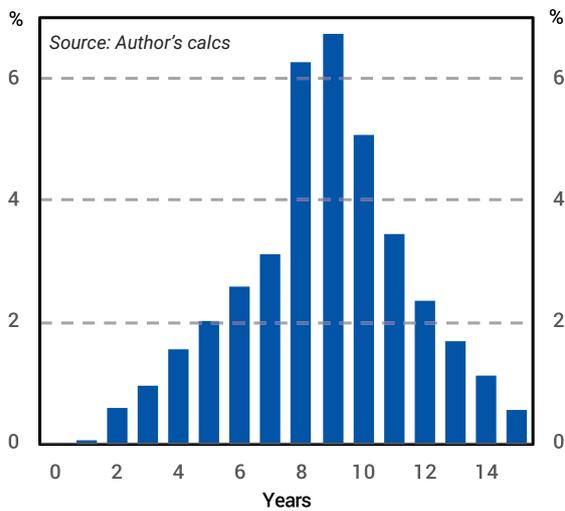
Stagflation: CPI (deviation from baseline growth rate)

Source: Author's calcs
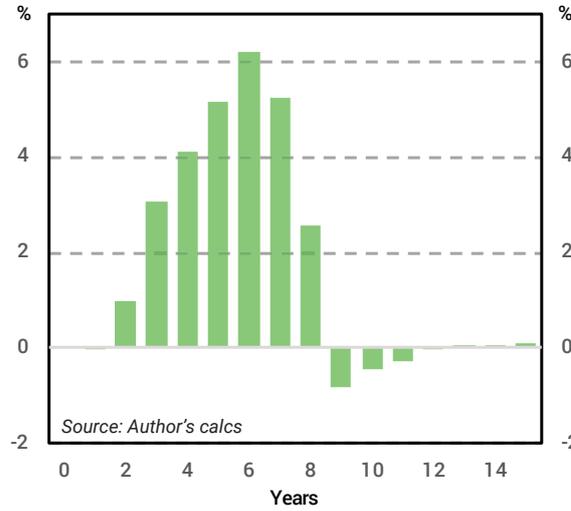
7 Major house price correction scenario

- ▶ This scenario looks at the implications of a 30% drop in dwelling prices, which is well beyond all current mainstream projections.

- ▶ The price collapse is triggered by an overly aggressive RBA tightening cycle that leads to a cascading effect across the economy and financial system.

- ▶ The RBA is forced to reverse course.

- ▶ The shift to expansionary policy settings eventually drives a recovery.

- ▶ While most key economic variables converge back to baseline estimates towards the end of the scenario, the economy is nearly 2% smaller than in the baseline by the end.

- ▶ The unemployment rate and debt servicing ratio are crucial variables to watch for this scenario.

7.1 Know your environment

The idea that we are standing on the edge of a housing precipice where prices could collapse at any moment, is a perennial fear overhanging the economic landscape.

There are many occasions where concerns about a property collapse have surfaced. They are typically correlated with:

- ▶ Major shocks such as the global financial crisis in 2008 and the onset of COVID in 2020;

- ▶ Expert commentary, often from overseas commentators, who consistently see the Australian housing market as overvalued; and

- ▶ Policy changes, ranging from the standard interest rate adjustments by the RBA to the less conventional policy moves such as APRA's tightening of macroprudential rules from 2016.

The shock and awe generated by the RBA's aggressive interest rate campaign during 2022 against a backdrop of rising inflation means forecasts for large falls in dwelling prices reappeared. The usual spectacle of commentators competing to see who can produce the most negative housing scenario followed.

Chart 17 – Residential Dwelling Prices (peak=100 | year indicates start of downturn)

Source: ABS
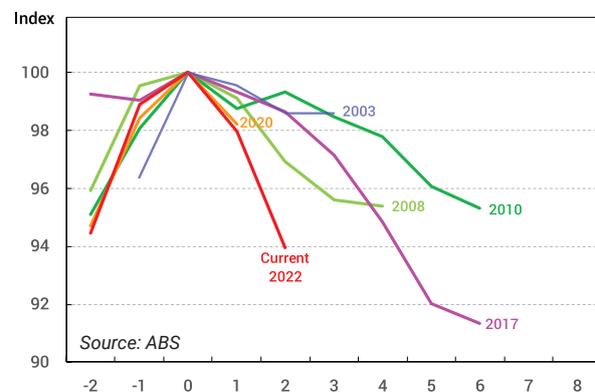
The earlier predictions of extreme price falls proved wide of the mark. But dwelling prices can fall and they fell during 2022. ABS data on residential dwelling prices show six downcycles in prices (including the current cycle) in the period since 2003 as seen in Chart 17.

The typical downturn involves price falls of 4½-8½% (2008, 2010, 2017) and the typical downturn runs for 4-6 quarters.

7.2 Designing the scenario

Housing is important for the economy more broadly:

- ▶ Housing is a key driver of household cash flows and influences the ability to spend;

- ▶ Housing is the largest component of household assets – the 'wealth effect' from changing prices is important for sentiment and spending;

- ▶ Housing is the largest component of household liabilities (and bank assets) so is important for financial stability; and

- ▶ Housing construction and related activities are important drivers of economic growth and employment.

Despite this wide-ranging reach, the Australian economy has weathered previous price downturns remarkably well. Nevertheless, this wide reach is a reason why the housing market is involved in endless stress tests, particularly from a banking and financial system stability perspective.

One risk factor that could deliver bigger price falls relates to the idea that housing is overvalued. The debate centres around valuation measures like price:income ratios illustrated in Chart 18. These ratios have increased sharply. They sit well above long-run averages and they look high relative to many countries.

Chart 18 – Dwelling Price:Income Ratio (2015=100)
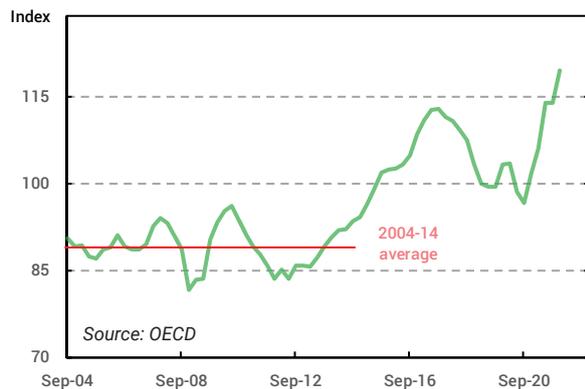
If you accept the overvaluation argument, then the calculations are straightforward. To get the housing price:income ratio back to the normal levels that prevailed during 2004-2014, prices need to fall by about 30%.

This would collapse on any metric.

7.3 Identifying the key drivers

A trigger is needed to see the overvaluation scenario come into play. The most likely trigger is a policy mistake that leads to a cascading series of events that drive dwelling prices lower.

The 'one-rate-rise-too-many' is clearly a potential trigger. The RBA is aggressively lifting policy interest rates in the face of surging inflation. These increases have fully flowed through to indicator mortgage rates. The standard variable mortgage rate now stands at 7%, the highest rate since 2012. Monetary authorities are indicating that there is more to come.

The Housing Industry Association (HIA) constructs a housing affordability measure for Australia. Their measure implies that a 1% rise in mortgage rates reduces affordability by 10%. In turn, some sensitivity analysis suggests that a 10% drop in affordability reduces prices by 2-3%.

The RBA noted in its October 2022 Financial Stability Review that some households are already feeling the strain from

higher interest rates and inflation, and this is likely to continue for some time.

The cascade that could follow sees falling affordability and negative sentiment towards housing reducing demand. A deteriorating economic and market backdrop makes banks more cautious in their lending practices. First-home buyers trying to get a loan and investors chasing capital gains are particularly affected by these changes. Prices start falling and heavily indebted households facing the risk of negative equity start selling, adding to housing supply. Investors may add to that supply as they attempt to realise earlier capital gains.

Around 4-6% of the dwelling stock is transacted in any year. New construction adds about 1-2% to the stock in any year. The rest of the housing stock is owned by those with no plans to sell and so effectively off-the-market.

This small share of stock in play at any one time means that small shifts in the supply-demand balance can have a large impact on price. An orderly house price adjustment could rapidly become a rout.

Housing lenders could intensify the downside risks if they overly tighten lending practices to protect their balance sheets. The resultant credit squeeze would further reduce demand.

7.4 Identifying external forces and critical uncertainities

Other external forces important for the housing market include housing tax arrangements such as negative gearing, the capital gains tax discount and land tax. Changing those arrangements could contribute to lower house prices.

History shows that the brief period from 1985-1987, when negative gearing was suspended, resulted in a period of slowing price growth. More recent surveys show that the now-abandoned proposals by the Queensland government to widen their land tax net would have contributed to selling by investors. The extra supply hitting the market was expected to push dwelling prices lower.

APRA, is another potential external influence on the housing market. APRA has shown a willingness to act when it sees a need. APRA introduced a 10% benchmark on lending to investors in 2014, for example. The share of lending to investors eventually collapsed and the benchmark was removed in early 2018. So, the risk of a prudential mistake or overreach is another uncertainty.

The assumption is that the RBA goes too far in the battle against inflation and residential price declines accelerate. But, unlike the stagflation scenario, the monetary authorities could reverse course reasonably quickly and it would be more of a rates spike rather than a high rates plateau.

Falling interest rates lift housing affordability immediately and typically turn the market around quite quickly. The price collapse scenario requires the cascading process discussed earlier taking over and offsetting the benefit of lower mortgage rates for a while. In essence, the fallout from house price declines spreads to the broader economy and feeds back into the housing market.

The transmission to the broader economy occurs via the impact of rising debt servicing costs on consumer spending (see Chart 19). And the impact of lower construction activity on GDP growth and employment.

Chart 19 – Debt Servicing and the Consumer (annual change)

DEBT SERVICING & THE CONSUMER (annual change)
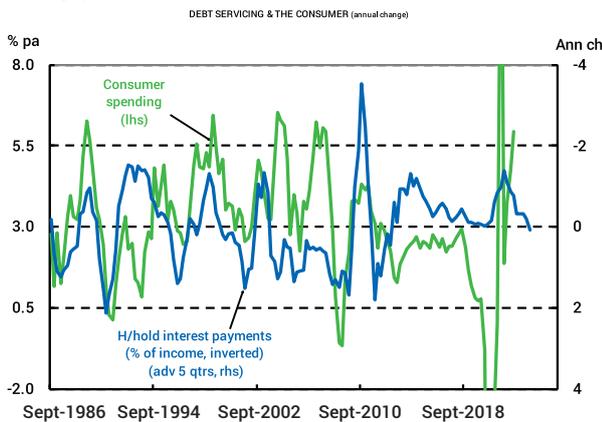
7.5 Constructing the scenario

The scenario highlights the importance of housing activity for the economy more broadly.

The initial fall in dwelling prices triggered by the RBA's overly aggressive rate-rise campaign as they pursue their 2-3% inflation target feeds back into the real economy. Rising debt servicing costs reduce consumer's ability to spend. Falling housing wealth dents sentiment and reduces the appetite to spend. Higher rates and falling demand trigger a downturn in residential construction. Spending and construction account for 55% of GDP so, the economic impact is large and widespread. The RBA moves further than other central banks, allowing interest rate spreads to widen and the Australian dollar strengthens as a result. A stronger currency is a further drag on the GDP growth profile. Unemployment rises towards double digits.

The RBA soon reverses course and interest rates fall. But there is sufficient negative economic momentum by that point that the downturn continues for a while. House prices keep falling, with the cycle intensified by a bank reluctance to lend. The bottom is reached when the housing 'overvaluation' is removed. And large negative output gap, sluggish wages growth in the face of high unemployment and falling import prices as the currency strengthens means inflation rates slow quickly.

At that point, expansionary policy settings start to work and recovery begins. Most key economic variables converge back to baseline estimates towards the end of the scenario.

However, there are some exceptions. The economy is nearly 2% smaller than in the baseline by the end. The government allows the fiscal stabilisers to operate during the downturn and recovery. The budget deficit widens then contracts, in line with the cycle and government debt ratios stabilise. But at a higher level than projected in the baseline.

The equity risk premium falls initially. The recession lowers earnings yields, and the aggressive RBA rate rises lift the whole structure of interest rates. Real bond yields are much higher than envisaged in the baseline initially. The equity risk premium converges back to the baseline as the scenario runs its course.

7.6 Analysing results, responses and what to watch

The main lesson from this scenario is how intertwined the Australian economy is with the housing market. The fallout from a 'normal housing downturn' can be accommodated yet a genuine house price collapse would be very damaging.

There is no shortage of data available for monitoring the housing market. This data ranges from daily readings on house prices, monthly releases on lending, construction and sales activity, and quarterly updates on household income and balance sheets. Two crucial variables to monitor are unemployment and debt serving ratios.

Experience suggests that households can live with a surprising amount of interest rate pain.

The focus is making the mortgage payment each month and cutting spending elsewhere. But even with the best will in the world, borrowers without a job will find it very difficult to meet those mortgage payments.

Jobless borrowers will have to cut non-housing spending even more aggressively and the reduction in other spending magnifies the impact of the housing downturn across the broader economy.

At the very worst, jobless borrowers may decide to cut their losses and exit the housing market. Negative equity and forced liquidations are possible for recent entrants into the market. The downward pressure on dwelling prices intensifies in both cases. In this way what is a housing-market-real-economy problem can jump the fence and become a financial system problem too.

These considerations explain why bank non-performing loan experience has a higher correlation with unemployment than with the mortgage rate in Chart 20.

Chart 20 – Asset Quality and Unemployment

Source: APRA/RBA/ABS
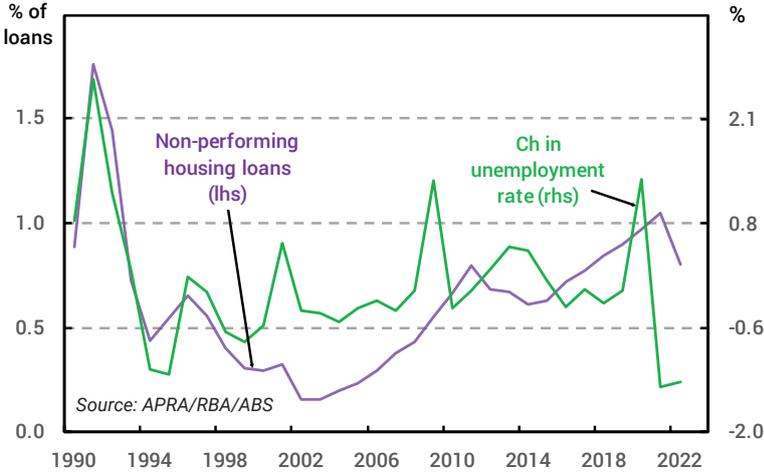
A rising debt
service ratio
is a precursor
of household
financial stress.

A rising debt service ratio, or the share of disposable income required to service a mortgage, is a precursor of household financial stress.

In Q1 2022, just before the current rate rise cycle, the debt service ratio was 3.4% of disposable income. This ratio was at the lowest level since 1973. But that will change very rapidly as the impact of RBA rate rises flows through.

Some sensitivity analysis shows anything above a 3½% cash rate would push debt servicing back close to 2008 highs – a time of significant household stress.

Table 4 provides more details on the key scenario outcomes. A Chart Gallery of selected outcomes is available later in this section.

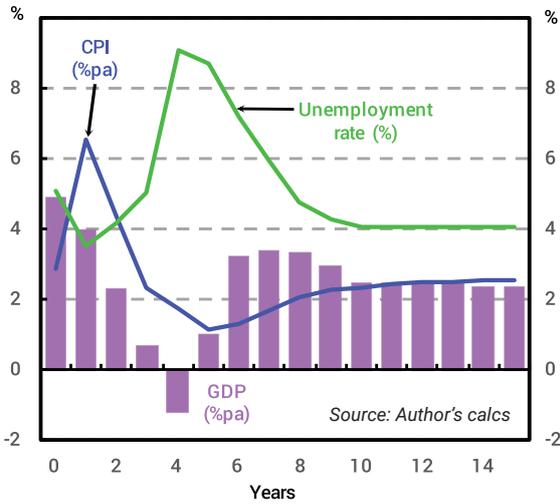**Table 4 – Major house price correction: key outcomes**

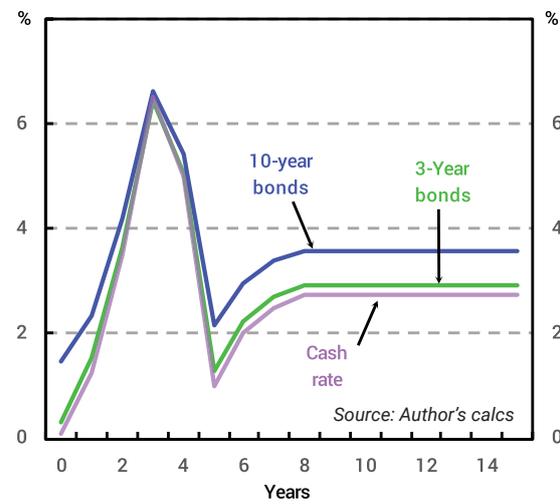|	Real GDP (%pa)	CPI inflation (%pa)	Unemployment rate (%)	Risk free rate (10yr bonds)	Equity risk premium (%)
Yr 0	4.9	2.9	5.1	1.5	5.5
Yr 1	4.0	6.5	3.5	2.4	9.5
Yr 2	2.3	4.4	4.2	4.2	7.4
Yr 3	0.7	2.3	5.0	6.6	1.8
Yr 4	-1.2	1.7	9.1	5.4	1.9
Yr 5	1.0	1.2	8.7	2.2	3.4
Yr 6	3.2	1.3	7.2	3.0	2.8
Yr 7	3.4	1.7	5.9	3.4	4.3
Yr 8	3.4	2.1	4.7	3.6	4.6
Yr 9	3.0	2.3	4.3	3.6	4.8
Yr 10	2.5	2.3	4.1	3.6	4.8
Yr 11	2.5	2.4	4.1	3.6	4.8
Yr 12	2.5	2.5	4.1	3.6	4.9
Yr 13	2.5	2.5	4.1	3.6	4.9
Yr 14	2.4	2.5	4.1	3.6	4.9
Yr 15	2.4	2.5	4.1	3.6	4.9
Source: Author's calculations					

Major house price correction scenario: chart gallery

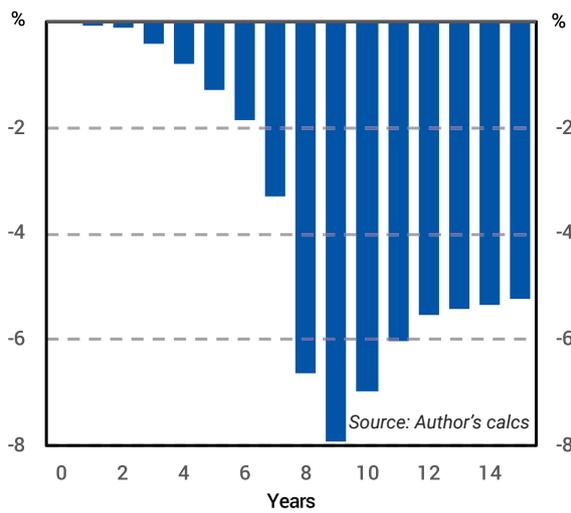**(Blue bars are deviations in *levels* – green bars are deviations in *growth* rates)**
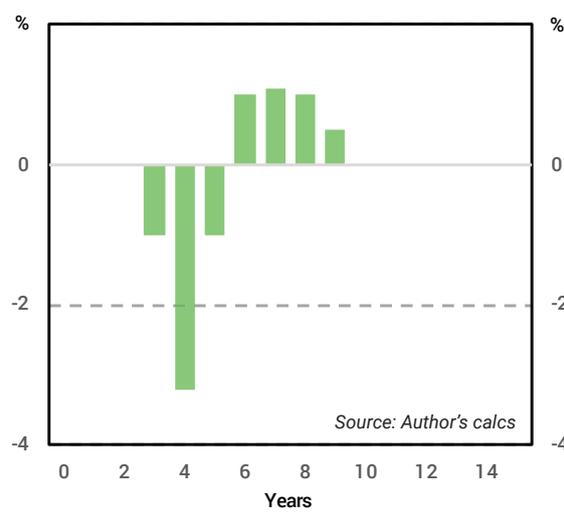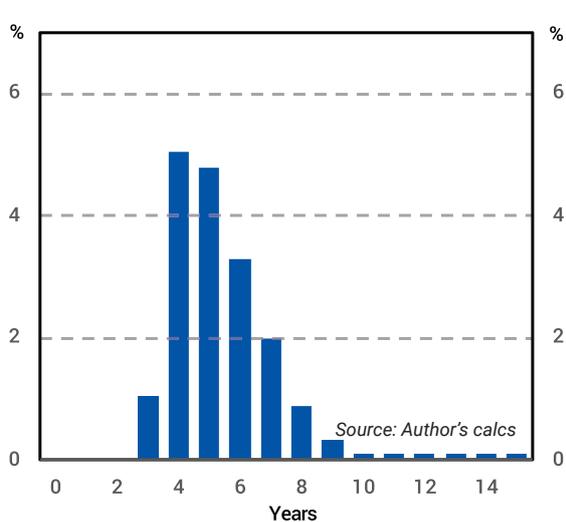
Housing: Key Indicators

CPI (%pa)
Unemployment rate (%)
GDP (%pa)

Source: Author's calcs

Housing: Interest Rates

10-year bonds
3-Year bonds
Cash rate

Source: Author's calcs

Housing: GDP (deviation from baseline)

Source: Author's calcs

Housing: GDP (deviation from baseline growth rate)

Source: Author's calcs

Housing: Unemployment (deviation from baseline)

Source: Author's calcs

Housing: CPI (deviation from baseline growth rate)
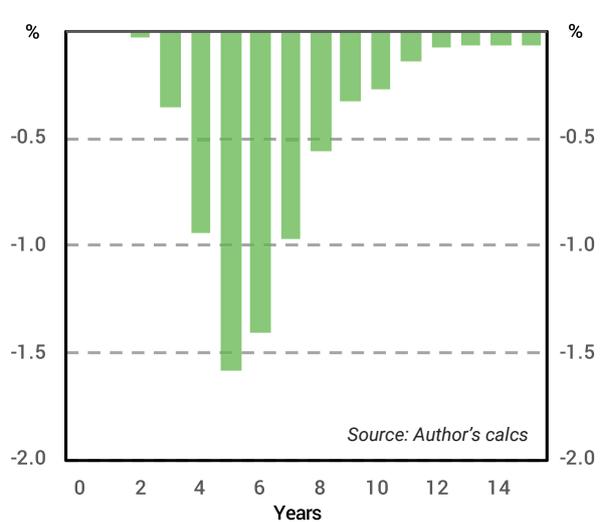
Source: Author's calcs

Major house price correction scenario: chart gallery (continued)

(Blue bars are deviations in *levels* – green bars are deviations in *growth* rates)

Housing: Cash Rate (deviation from baseline)

Source: Author's calcs
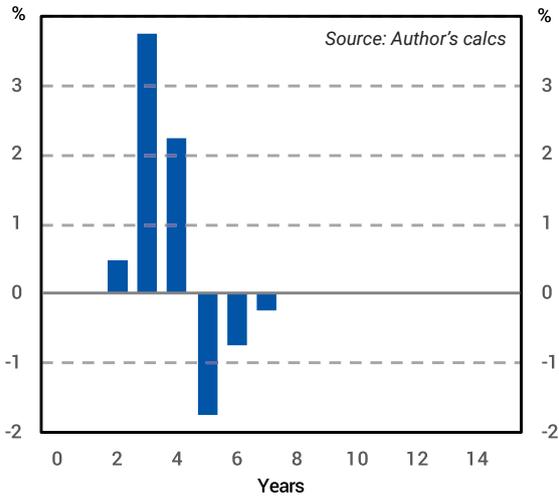
Housing: 10-year bonds (deviation from baseline)

Source: Author's calcs
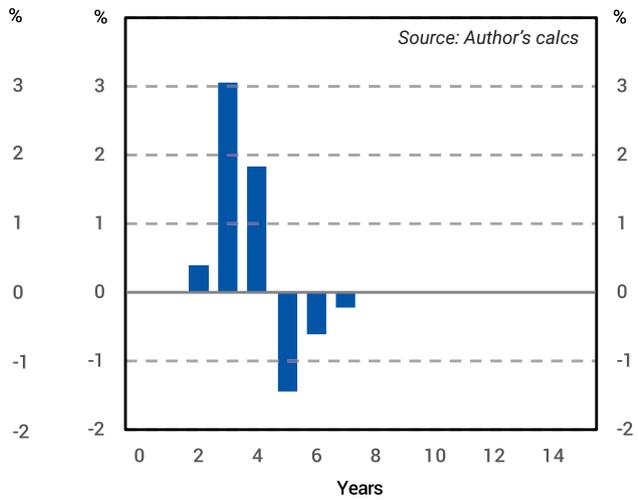
Housing: ERP (deviation from baseline)

Source: Author's calcs
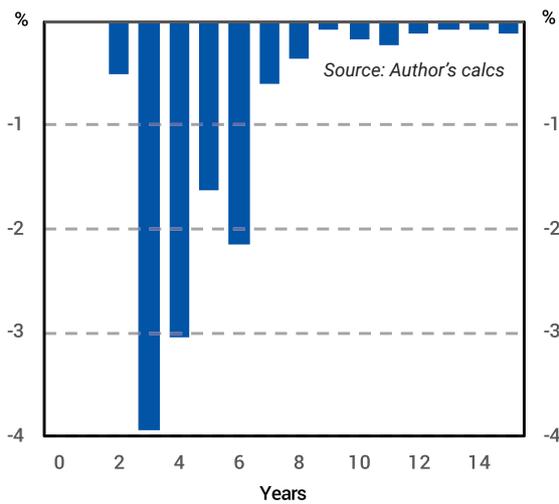
Housing: Government net debt (deviation from baseline)

Source: Author's calcs

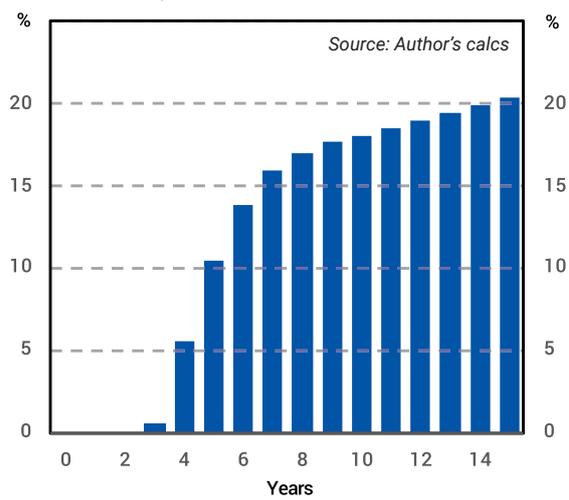# 8 Leap of faith into Modern Monetary Theory (MMT) scenario

- ▶ This scenario looks at the implications of adopting Modern Monetary Theory (MMT).

- ▶ MMT focuses on achieving full employment by creating and issuing new money to fund government expenditure, instead of new debt.

- ▶ MMT is not well suited to dealing with the resultant boost to inflation.

- ▶ The eventual solution involves a return to a more traditional policy mix.

- ▶ By the end of the scenario period, key economic variables necessarily converge back to the baseline projections and the economy is 3% larger because of the strength of the MMT economic boom and notwithstanding the subsequent recession.

- ▶ A key variable to watch in this scenario is M3 growth over and above nominal GDP growth. A positive value is a leading indicator of rising inflation rates and the need to revert to traditional policies.

8.1 Know the environment

Economic theory has a long history and has evolved over time. This evolution reflects the changing economic circumstances. But the main driver of evolution is the failure of the current theory to explain what was going on.

So, the classical economics of the previous two centuries could not explain the Great Depression. Keynesian economics could explain the Depression and how to get out of it. It became the dominant theory until the 1970s when it could not explain the stagflation of the time.

Monetarism took hold and successfully squeezed inflation out of the system in the 1980s. But the approach was not really successful at generating growth and dealing with unemployment. Theory shifted to the supply side and Neo-Classical economics took over. A free market was seen as the route to the best economic outcomes.

The pandemic and the experience of the past few years has again challenged conventional economic thinking and the ideas of MMT are being debated.

MMT was proposed by an American fund manager, Warren Mosler. The idea was fleshed out by Australian economist Bill Mitchell and others. And it entered the mainstream debate with help from some US politicians such as Bernie Sanders and Alexandria Ocasio-Cortez. It's also fair to say that some of the MMT ideas were road tested during the pandemic-induced recession.

MMT is proposed as a way of delivering gold standard economic outcomes like full employment or socially desirable goals such as a national disability insurance scheme. It avoids the roadblocks thrown up by conventional economic wisdom – that is, how to pay for such policies.

MMT proponents argue that the government budget is different from that faced by households and businesses. These groups must earn or borrow to fund spending. But a government with a fiat currency can print as much of that money as they desire. Budget deficits do not matter as spending is funded by creating more of it. There is no funding requirement so nor is there a need to issue government bonds or run up government debt. The government is not competing with the private sector for scarce financial resources.

Inflation is only possible in this scenario if we run out of workers or other resources. In this scenario, the solution is to increase taxes to reduce private sector spending. There is little role for central banks to play in this scenario other than to keep interest rates low or zero and print more money.

The policy response during the pandemic involved central banks cutting interest rates to zero or below. Governments ramped up spending and stopped worrying about public debt. Central banks implemented Quantitative Easing by issuing new money (instead of new debt) to buy government bonds and push interest rates lower. The policy package included elements of what MMT proponents could claim as their own. And it worked. Recessions were nasty but recoveries were strong. Unemployment rose then fell.

8.2 Designing the scenario

If we stop the analysis at that point, then a potential alternative future could involve policy makers formally adopting MMT.

An Australian MMT package would focus on achieving full employment and government spending would be ramped up to achieve this end.

A job guarantee is often added as part of the MMT package and there is a crossover here with the idea of a universal basic income. The MMT guarantee involves creating basic jobs linked to the minimum wage. Proponents of MMT would never characterise it this way but the guarantee could be seen as a 'work-for-the-dole' scheme. The hidden agenda could be to maintain a pool of cheap labour as a way of dealing with potential inflation pressures.

Japan is often cited as an economy that manages to run large budget deficits, a huge level of public debt and little in the way of inflation. What often fails to get a mention is that there is little in the way of economic growth despite regular injections of fiscal stimulus (Chart 21).

Chart 21 – Japan: Selected indicators

Source: Japabnese Statistics Bureau
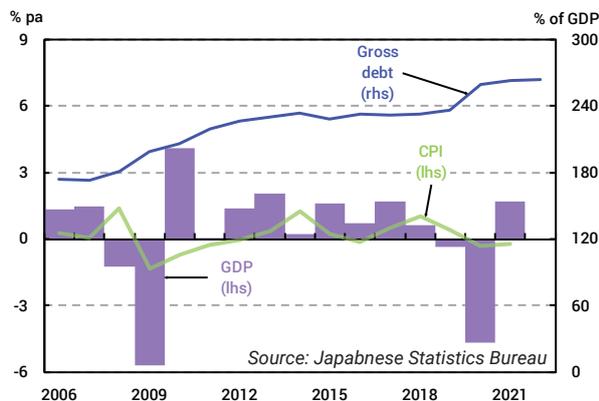
The RBA has only a minor policy role relative to Treasury in this scenario.

The apparent success of MMT-type policies over 2020-2021 catapulted the theory into the economic debate, particularly with the lack of any inflation response to the extraordinary policy stimulus. All came to a crashing halt over the past year as inflation rates accelerated everywhere.

A range of 'special factors' may have triggered the initial inflation response. But MMT-type policies broadened the scope of price rises and probably lifted the peak inflation response.

8.3 Identifying the key drivers

Rising government spending is the key driver in the MMT scenario. An essential requirement in this scenario is that

households, businesses, and financial markets are supportive of the policy experiment.

This support is more likely if the starting point is excess capacity in product and labour markets.

Much will depend on the use of the additional government spending. If the fiscal authorities adhere to the MMT game plan, then that spending should favour employment growth. So spending is directed at job creation schemes and infrastructure. If the starting point is excess capacity, then inflation risks should be low. Spending on infrastructure is one way to lift productivity, helping sustain low inflation rates.

8.4 Identifying external forces and critical uncertainties

There are many challenges and uncertainties that would come into play in a MMT world.

Inflation is the major uncertainty:

▶ MMT would probably become a victim of its own success. An economy running at full employment is one, by definition, with no spare capacity. An inflation surge is a real possibility as demand moves ahead of supply;

▶ Politicians, emboldened by their success in moving towards full employment, look beyond job creation and apply MMT principles to fund other policies. The additional resources needed can further add to inflation pressures; and

▶ Governments are not the only economic agents. Full capacity allows business to lift prices and full employment allows workers to pursue wage rises.

The major test of MMT occurs in an environment where inflation rates are lifting.

Central banks often say their job is to take away the punchbowl just as the party is starting. An independent central bank can push through unpopular changes. The task for policy makers under MMT is to follow the same approach by lifting taxes. But politicians want to be re-elected. Their commitment to removing the punchbowl in a timely fashion is uncertain.

Financial markets may not have to worry about budget deficits or public debt. But they will worry about inflation.

If inflation rates lift, financial markets will build some extra inflation compensation into yield curves. Government bond yields may be irrelevant under MMT. But private sector lending rates will rise (Chart 22). These higher rates are a potential drag-on economic activity.

Chart 22 – Interest rates and inflation

Source: ABS/RBA
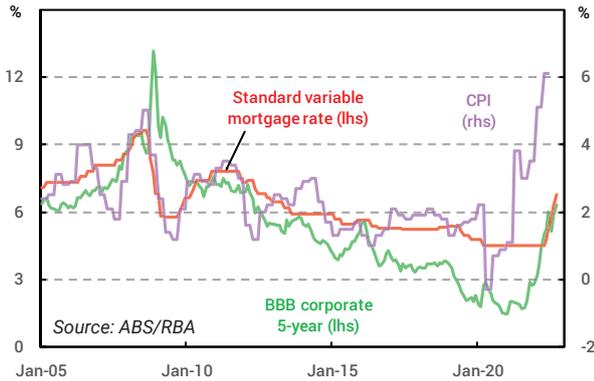
The global reaction to an Australian experiment with MMT would also be a key uncertainty. Australia traditionally runs a current account deficit. That deficit is a measure of Australia's exposure to global funding markets. Markets want an extra risk premium when uncertainty lifts about Australian prospects. That premium is taken via a lower exchange rate or higher interest rates.

Australia is currently running a current account surplus and the risk of external pressures to MMT look low. However, a global recession could see the surplus evaporate as commodity prices fall sharply.

8.5 Constructing the scenario

The scenario highlights the problems of getting policy settings right when policy makers face conflicting objectives. It highlights how small, open economies like Australia cannot diverge too far or too long from global norms. And it does imply there is no 'magic pudding' in a modern economic system.

For simplicity, the scenario assumes that MMT is not introduced until the current cycle runs its course allowing the pure impacts of MMT to be discerned. So MMT starts in Year 4.

The government increases spending with an objective of moving to full employment. The fiscal boost over the first three years is 6% of GDP.

GDP growth rates run substantially above the baseline. A lift in participation rates (courtesy of strong jobs growth) and productivity (courtesy of infrastructure spending) boost potential growth rates temporarily. The RBA provides necessary funding and policy interest rates are set at 'neutral', where there is no impact on the economy.

The initial outcome is falling unemployment. The unemployment rate pushes down towards 2% - a rate last seen in the early 1970s.But inflation pressures start to appear as the economy approaches full employment. Employees become more inclined to seek wage rises.

Businesses find it easier to push through price increases. The inflation rate is running near 7% p.a. within three years.

The fiscal authorities, however, are reluctant to lift taxes to contain inflation. History is a guide here. The same fiscal authorities were happy to run large budget deficits when the economy required some fiscal help. But they failed to push budgets back into surplus during the 'good times' as demanded by Keynesian economic theory.

Inflation rates continue to rise, market interest rates respond and support for MMT begins to waver by Year 7.

The real stress test for MMT in this scenario comes via global recession. Commodity prices fall and our protective current account surplus disappears. The currency weakens and interest rates rise further as our exposure to global funding markets resume. A lower currency boosts import prices and adds to the inflation upside.

The RBA is brought out of hibernation as the risks of a wage-price spiral develop. Politicians are more comfortable with an arms-length institution making some of the difficult policy decisions.

As noted, bond yields are largely irrelevant during the period that MMT holds sway. Any budget deficit is covered by issuing money.

There is a residual pool of outstanding government debt so there would still be a price, or yield, for that debt. In some ways, the background would be like when the government is running a budget surplus as there is no need for new issuance. The difference comes through in what happens when the existing debt matures. In a normal world that debt is typically refinanced. And gross issuance is positive even if net debt is unchanged or declines. Yet, under MMT, maturing debt could be repaid via issuing new money again.

This absence of new issuance creates problems for financial markets. There is no longer a risk-free rate to act as a benchmark. Financial markets presumably would find some proxy as an alternative. But there is a threat to efficient market pricing in a MMT world. Some variables, like equity risk premiums, would be difficult to calculate. Table does include estimates for implied bond yields and equity risk premiums, but they should be regarded with caution.

Sizeable budget deficits are associated with the MMT scenario. If these deficits were financed via the traditional method of selling government bonds, public debt would level out at around 67% of GDP, some 30% above the baseline scenario.

Government bonds play a role in more than just market pricing. They also represent an important element of financial system stability. Financial institutions must hold

high quality liquid assets, like government bonds, as part of their prudential requirements. Government bonds play a role in helping financial institutions match their assets and liabilities. State governments need to fund their obligations and how semi-government debt operates in a MMT environment is unclear.

8.6 Analysing results, responses and what to watch

The main lesson from this scenario is that the underlying economic principles and drivers still operate, regardless of the prevailing fashion in economic theory.

The inability to deal with rising inflation rates revealed by the scenario is the key flaw in the MMT approach. As such, leading indicators of inflation are key variables to monitor.

The monetary part of MMT suggests monetary variables are worth monitoring. One possibility is excess money supply growth. This excess is M3 growth over and above nominal GDP growth. A positive reading means more money is being created than needed to fund the expansion in the economy.

This excess is a leading indicator of rising inflation rates as seen in Chart 23.

Chart 23 – 'Excess' M3 and inflation (annual % change)
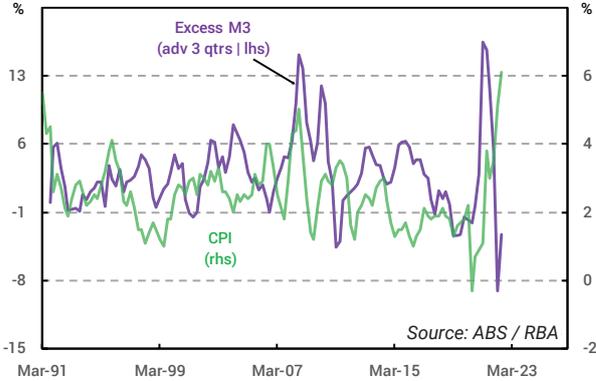

Source: ABS / RBA

Table 5 provides more details on the key scenario outcomes. A Chart Gallery of selected outcomes is available later in this section.

**Table 5 – Leap of faith into MMT: key outcomes**

|	Real GDP (%pa)	CPI inflation (%pa)	Unemployment rate (%)	Risk free rate (10yr bonds)	Equity risk premium (%)
Yr 0	4.9	2.9	5.1	1.5	5.5
Yr 1	4.0	6.5	3.5	2.4	9.5
Yr 2	2.3	4.4	4.2	3.8	7.9
Yr 3	1.7	2.7	4.0	3.6	5.7
Yr 4	3.2	3.1	3.6	3.6	5.3
Yr 5	4.8	4.3	3.2	3.6	7.2
Yr 6	5.6	5.4	2.2	3.6	9.2
Yr 7	2.0	6.9	2.0	3.6	11.3
Yr 8	0.4	4.5	2.5	4.2	6.9
Yr 9	-1.0	3.1	5.7	5.0	3.5
Yr 10	2.5	2.5	5.7	4.2	3.2
Yr 11	3.5	2.5	4.8	3.6	4.8
Yr 12	3.0	2.5	4.3	3.6	5.7
Yr 13	2.5	2.5	4.2	3.6	5.1
Yr 14	2.4	2.5	4.1	3.6	4.9
Yr 15	2.4	2.5	4.1	3.6	5.0
Source: Author's calculations					

Leap of faith into MMT scenario: chart gallery

(Blue bars are deviations in *levels* – green bars are deviations in *growth* rates)

MMT: Key Indicators

Source: Author's calcs

MMT: Interest Rates

Bond yields not relevant under MMT. RBA sidelined.
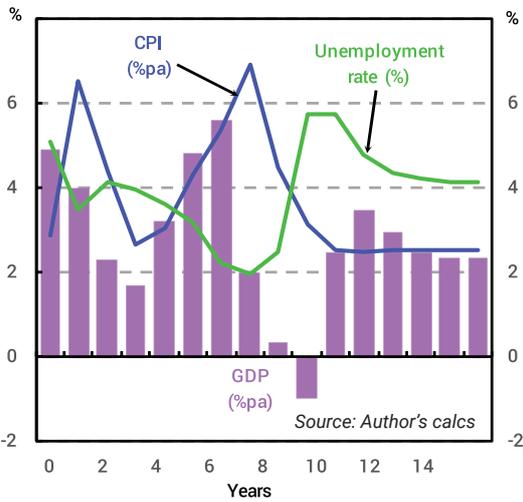
Source: Author's calcs
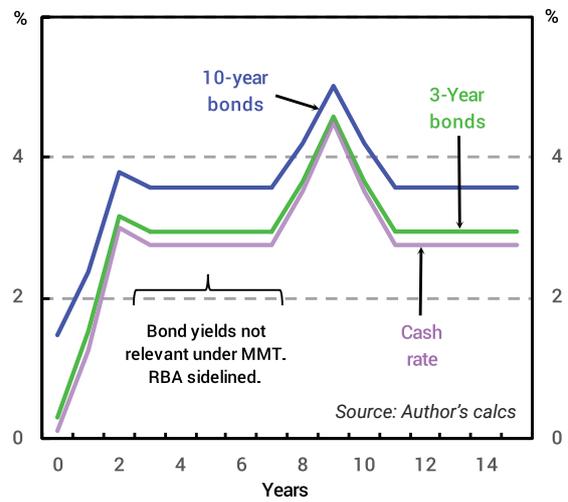
MMT: Potential GDP (deviation from baseline growth rate)

Source: Author's calcs

MMT: GDP (deviation from baseline growth rate)

Source: Author's calcs

MMT: Unemployment (deviation from baseline)

Source: Author's calcs
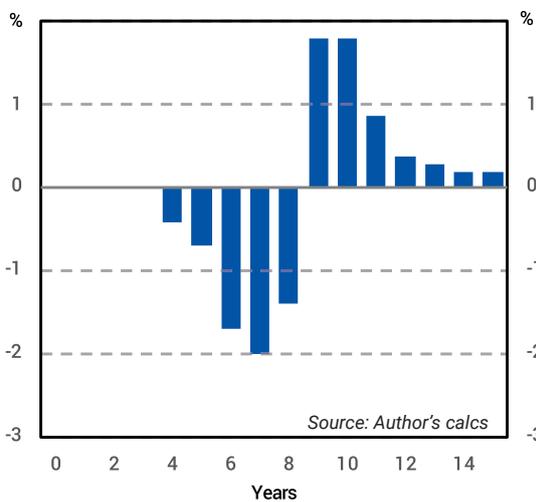
MMT: CPI (deviation from baseline growth rate)
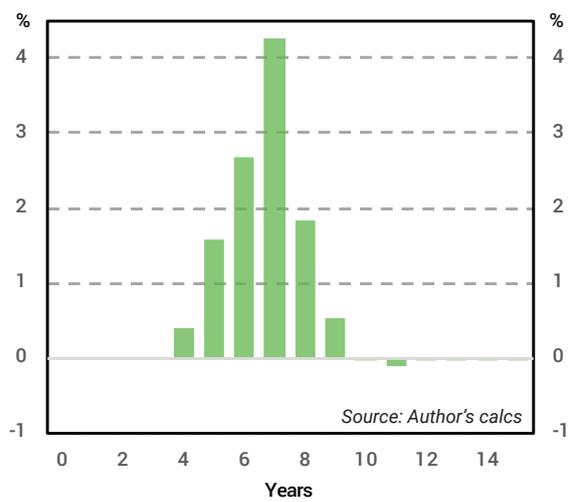
Source: Author's calcs

Leap of faith into MMT scenario: chart gallery (continued)

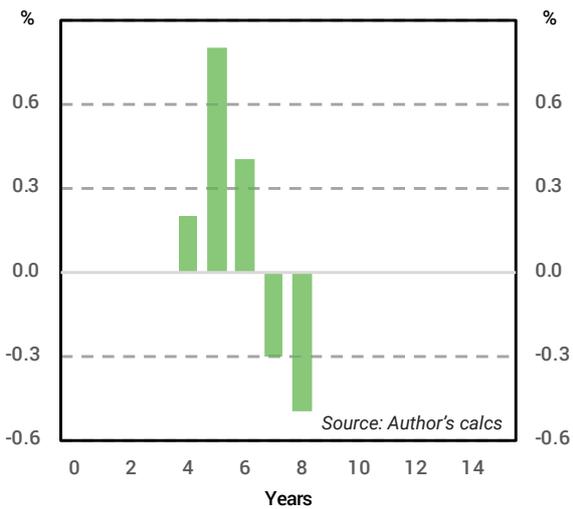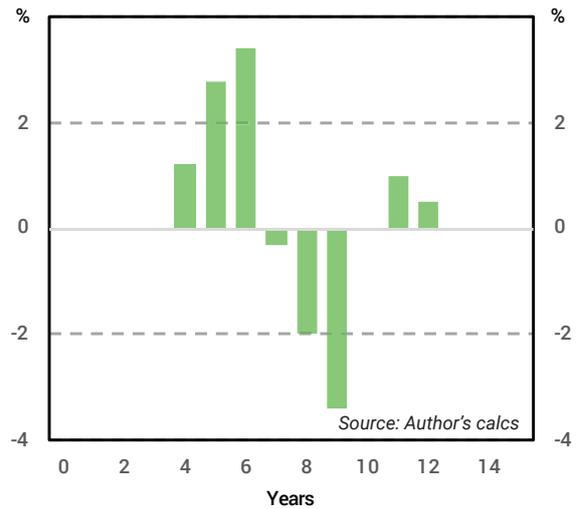**(Blue bars are deviations in *levels* – green bars are deviations in *growth* rates)**
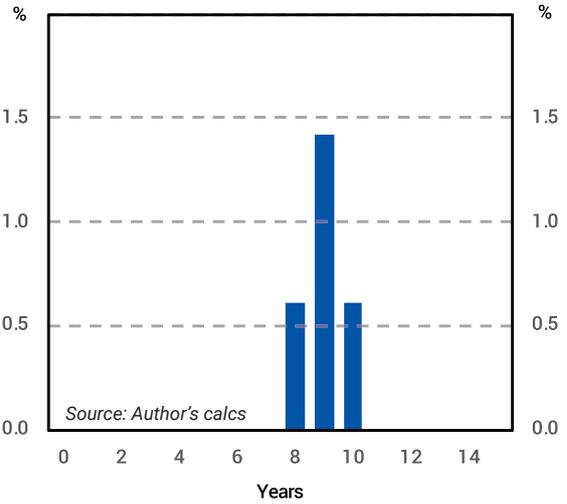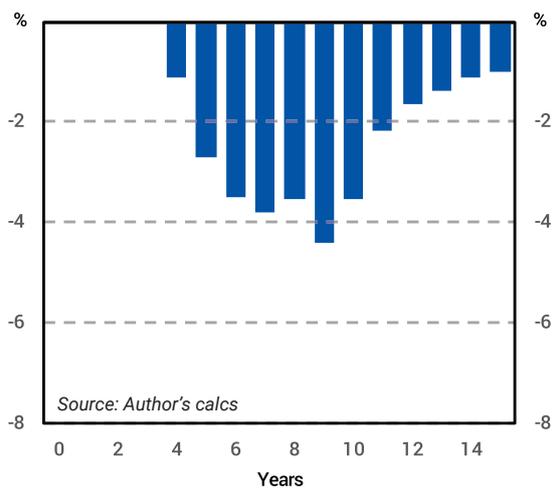
MMT: Cash Rate (deviation from baseline)

Source: Author's calcs
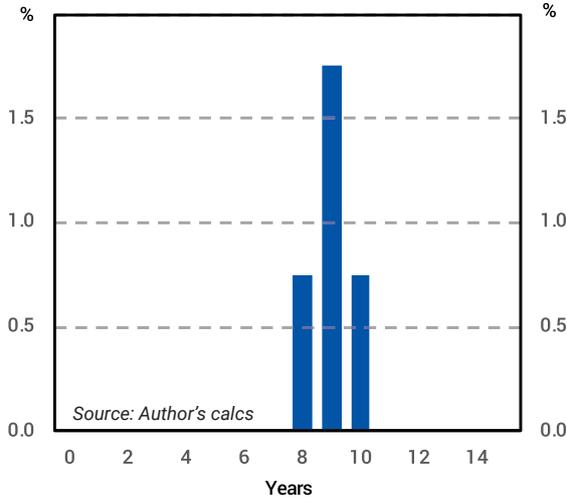
MMT: 10-year bonds (deviation from baseline)

Source: Author's calcs

MMT: Budget balance (deviation from baseline)

Source: Author's calcs

9 Supplementary tables

Table 6 – Stagflation: Other Outcomes

	Nominal GDP (%pa)	Wage Price Index (%pa)	Cash Rate (%)	AUD/USD	Net Government Debt (% of GDP)
Yr 0	10.6	2.0	0.10	0.75	29.0
Yr 1	8.5	2.6	1.50	0.67	30.7
Yr 2	7.5	3.6	3.25	0.71	33.1
Yr 3	6.2	3.5	3.50	0.69	35.4
Yr 4	7.0	3.7	3.50	0.66	38.0
Yr 5	7.8	3.9	3.50	0.63	40.3
Yr 6	9.5	4.0	6.00	0.65	42.3
Yr 7	7.2	3.8	6.00	0.64	44.0
Yr 8	2.9	2.3	5.00	0.63	48.8
Yr 9	1.8	1.4	4.00	0.59	55.3
Yr 10	4.8	1.7	2.00	0.54	61.1
Yr 11	6.9	2.5	2.50	0.60	64.6
Yr 12	6.2	2.9	2.75	0.64	66.4
Yr 13	5.4	3.1	2.75	0.67	67.2
Yr 14	5.0	3.2	2.75	0.69	67.2
Yr 15	5.0	3.3	2.75	0.70	66.5

Table 7 – Major House Price Correction: Other Outcomes

Yr 0	10.6	2.0	0.10	0.75	29.0
Yr 1	8.5	2.6	1.25	0.66	30.7
Yr 2	7.0	3.7	3.50	0.72	32.6
Yr 3	4.9	3.0	6.50	0.83	34.5
Yr 4	0.0	1.2	5.00	0.79	40.6
Yr 5	0.8	0.7	1.00	0.68	46.2
Yr 6	4.9	1.2	2.00	0.71	50.1
Yr 7	5.3	1.7	2.50	0.73	52.7
Yr 8	5.5	2.5	2.75	0.74	54.1
Yr 9	5.2	2.8	2.75	0.74	55.0
Yr 10	4.8	2.9	2.75	0.75	55.7
Yr 11	4.9	3.1	2.75	0.75	56.2
Yr 12	5.0	3.1	2.75	0.76	56.7
Yr 13	5.0	3.1	2.75	0.76	57.1
Yr 14	4.9	3.1	2.75	0.77	57.4
Yr 15	4.9	3.1	2.75	0.77	57.6

Table 8 – Leap of faith into MMT: Other Outcomes

Yr 0	10.6	2.0	0.10	0.75	29.0
Yr 1	8.5	2.6	1.25	0.66	30.7
Yr 2	6.7	3.7	3.00	0.70	32.6
Yr 3	4.6	3.4	2.75	0.71	33.9
Yr 4	6.2	3.8	2.75	0.72	36.2
Yr 5	8.8	4.9	2.75	0.74	39.6
Yr 6	10.3	6.5	2.75	0.73	43.6
Yr 7	7.0	6.4	2.75	0.67	47.9
Yr 8	4.2	5.4	3.50	0.68	51.7
Yr 9	2.5	3.1	4.50	0.71	56.5
Yr 10	4.9	3.2	3.50	0.69	60.2
Yr 11	6.9	3.2	2.75	0.75	62.5
Yr 12	5.5	3.2	2.75	0.75	64.2
Yr 13	5.0	3.2	2.75	0.76	65.5
Yr 14	4.9	3.2	2.75	0.76	66.4
Yr 15	4.9	3.2	2.75	0.77	67.1
Source: Author's calculations					

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