



The Taxpayers Research Foundation Limited

2021

Tax Policy Journal

An Annual Summary
of Tax Policy Issues

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GOLDILOCKS AND THE THREE DRIVERS OF FISCAL SUSTAINABILITY



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SUMMARY

This paper examines whether the independent Parliament Budget Office (PBO) is being too optimistic in its current assessment of the fiscal sustainability of the Australian Government over the next forty years. Our analysis is based mainly on a careful assessment their projection methodologies and scenario design. To highlight the key vulnerability in the PBO's methodology we develop an alternative projection that points towards an unsustainable fiscal path unless remedial steps are taken. We end by thinking about some novel policy reforms to help avert the possible fiscal cliff.

INTRODUCTION

Two 2021 Parliamentary Budget Office (PBO) reports into fiscal sustainability of the Australian Government provide a fairly upbeat assessment of the fiscal challenges being faced by the nation. They are:

- Fiscal Sustainability.
- Beyond the budget 2021-22: Fiscal outlook and scenarios, fiscal sustainability assessment (2032-33 to 2060-61).

The reports explore fiscal paths over a 40 year time horizon for high – low roads outcomes for key variables (the primary deficit, nominal GDP and interest rates) over 27 scenarios. Both reports find public gross debt will likely stabilise or decline beyond 2031. Budget deficits will likely remain at or below 1.5 per cent of GDP. Consequently debt interest payments also remain manageable.

The PBOs cautious optimism, albeit with caveats, is both reassuring and somewhat surprising.

- It is reassuring given the impression that COVID-19 fiscal stimulus may have caused some lasting structural damage to the budget especially given the starting point for the 2020-21 Budget was a cash deficit of 11 per cent of GDP.
- It is surprising given that full extent of the long term fiscal challenges faced by the Australian economy (population ageing, National Disability Insurance Scheme (NDIS) implementation, calls for spending uplift in age care and defense, along with the Net Zero 2050 commitment).

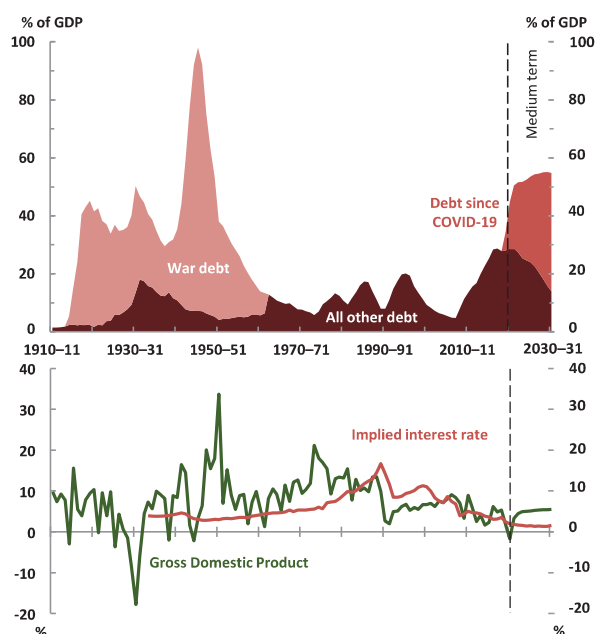
PBO's "Goldilocks" assessment implies good luck and previous exertions are doing just enough but no more than necessary to achieve sustainability through time. The PBO also finds that only a very unlikely mixture of low economic growth, high interest rates and larger than expected budget deficits would produce rising debt to GDP shares, after 2030.

But is the PBO's assessment complete? Could another decade of low productivity growth in the 2020s, coupled with higher term premia in bond markets, combine with existing structural deficits to generate an unsustainable fiscal spiral? This is the scenario that is developed below and the question is answered in the affirmative.

A BRIEF HISTORY OF DEBT

The Commonwealth of Australia has experienced long periods of high and low gross debt over the past 100 years (Figure 1). Periods of increasing debt have tended to follow an economic downturn, including during the two world wars, the Great Depression, recessions in the 1970s, 1980s and 1990s, the Global Financial Crisis and, more recently, the COVID- 19 recession.

Figure 1:
Past periods of high gross debt have not persisted



Source: PBO, Fiscal Sustainability 2021, p10.

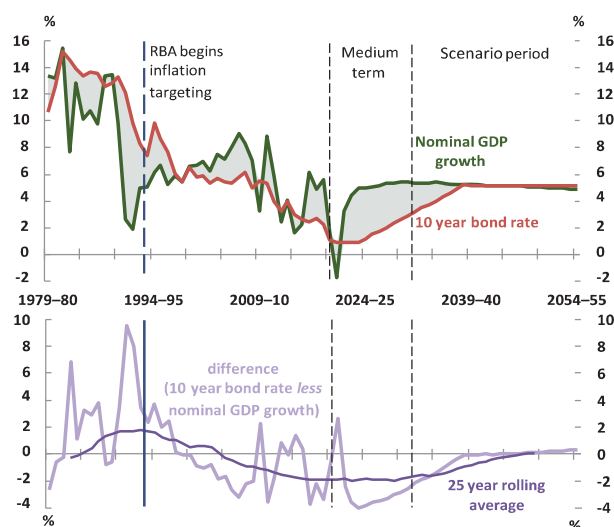
The PBO describe Figure 1 as representing a cyclical debt-to-GDP ratio, but in our view the peaks are driven mainly by emergencies (shocks).

- Debt has tended to peak a few years after an economic downturn, while economic growth recovers in the years following the peak and so has been a key driver of fiscal consolidation.
- Peak debt was reached just after the end of Second World War when the debt-to-GDP ratio reached almost 100 per cent. Over the following decade, the debt-to-GDP ratio fell rapidly. During this period, nominal GDP growth averaged 14 per cent while the interest payments amounted to around 3½ per cent of the debt. With growth(g) far larger than interest rates(r), and the government running a largely balanced budget, the debt-to-GDP ratio fell rapidly.

Persistent differentials between interest rates (r) and nominal GDP growth rates (g)

Do these spiral patterns represented interest rates (r) and growth (g) differentials tend to persist through time? Based on the PBO's data and modelling, large differentials can persist for period for over a decade (Figure 2).

Figure 2:
The difference between GDP growth and interest rates has been cyclical



Source: PBO, Fiscal Sustainability 2021, p12.

Looking back even further to the 1970s, at the differential between the long term interest rate (r) and nominal GDP growth (g) series, or the (r – g) differential, not only do gaps persist, but also long term interest rates (r) exceeds nominal GDP growth rates (g) quite often and for long time periods. So over this longer time period the interest rate and growth (r – g) differential is skewed towards toward positive values.

Table 1:
Fifty Years of Historical Averages and Volatility

Variable	Interest rates (r)	Nom. GDP (g)	r – g
1970-79	6.6	13.9	-7.3
1980-89	12.1	11.7	0.4
1990-99	10.2	4.9	5.3
2000-09	7.8	7.0	0.9
2010-19	3.8	4.3	-0.5

Source: Macroeconomics analysis using PBO Fiscal Sustainability 2021, Table 4-5 & 4-6.

Sustainability defined

The PBO defines fiscal sustainability as a government's ability to maintain its long term fiscal policy arrangements indefinitely, without the need for major remedial policy action. It says that sustainability is important:

- Benefits flow to the public sector as government meets its objectives and granted space to respond to economic downturns by stimulating the economy, if needed.
- Benefits flow to the private sector as sound public finances allow signal to others they can make financial decisions with confidence about the direction of government policy.

The PBO's approach could be termed the *r-g-B* framework. That approach projects the debt-to-GDP ratio over time based on different scenarios for interest rates (*r*), nominal economic growth rates (*g*) and the Australian Government's budget balance (*B*) – and based on the debt sustainability identity summarised in the Appendix Box 1 below. The PBO's modelling relies on presenting high-low range for *r*, *g* and *B* around 'central' scenarios, to project future debt paths. These economic scenarios are based on a 'smoothed' range between which each of the *r*, *g* and *B* series has oscillated through time. The key attraction to the PBO of this approach is that it is relatively intuitive and only requires simple spreadsheet modelling to capture the dynamic interaction through time of the economy and budget through accounting relationships to generate reasonable projections. The analysis focuses on the trajectory of future gross debt under the 'smoothed' range of scenarios as a measure of fiscal sustainability. They consider whether gross debt stabilises and falls, or continues to increase.

PBO PROJECTIONS

The key to the *r-g-B* framework is to choose ranges for interest rates (*r*), nominal GDP growth (*g*), and budget balance (*B*) that are historically valid and to think forward about reasonable projection ranges.

Interest rates (*r*)

Interest rates in the *r-g-B* framework begin with the yield curve assumptions underpinning the 2020-21 Budget. Here, the 10-year bond yield is assumed to remain fixed over the forward estimates (to 2023-24) before converging in a linear fashion to the long-run yield, 15 years after the end of the forward estimates. The yields for bonds with a different term length, such as 3 year, 20-year and 30 year bonds, are assumed to follow similar linear paths. So in the PBO's fiscal analysis, the average interest rate paid on the stock of debt (termed the implied interest rate) tends

to lag current bond rates. The 'implied' interest rate takes longer to reach the long run yield (Figure 3). The risk of the implied rates approach to projecting the long-term funding cost of the Australian Government is that it artificially lowers the price / speed of adjustment of borrowing costs.

The range of the upside/ downside scenarios for interest rates is derived from the 25-year moving average for the GDP profile (plus-or-minus 0.6 per cent). The theoretical connection between the two series is not explained.

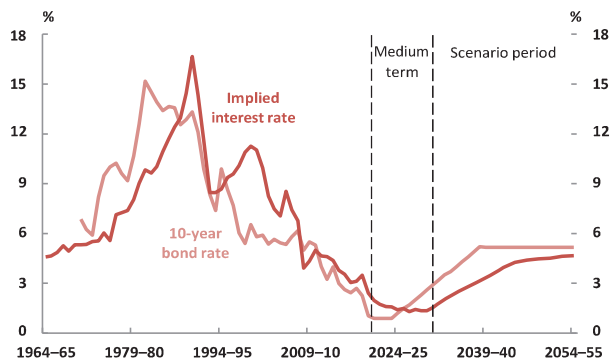
Productivity (*g*)

The productivity assumption in the *r-g-B* framework which drives nominal GDP growth (*g*) is calculated using a 25-year rolling average of the historical series where the upper and lower bounds are the basis for scenario testing (Figure 4). The lowest point of the 25-year rolling average of GDP per hour worked has occurred over the most recent 25 years, primarily because productivity growth has slowed over the last five years, averaging only 0.5 per cent. Even if productivity growth recovers over the next few years, the 25-year rolling average may continue to fall. The PBO's downside scenario assumes productivity growth of 1.2 per cent, based on an estimated 25-year rolling average. The assumption is much weaker than any previous 25 year period but still far higher than measured productivity in the late 2010s. Incorporating this assumption extends the range of the difference between *r* and *g* to plus-or-minus 1.2 per cent under the best and worst case scenarios.

Primary deficits (*B*)

Scenarios for the budget balance (*B*) represent the primary balance, excluding interest payments, which are factored separately into the analysis via the long-term interest rate (*r*). Again a 25 year moving average is used with the most recent value being a cash balance surplus of 0.4 per cent of GDP, corresponding to a deficit of 0.5 per cent of GDP when interest payments are included. In terms of scenarios:

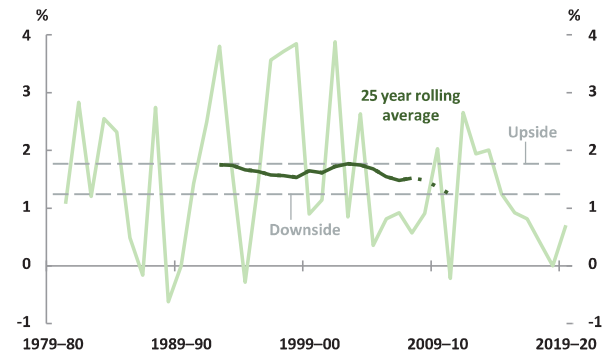
Figure 3:
PBO implied interest rate takes longer to reach its long-run level
Middle scenario



Source: RBA, 2020-21 Budget and PBO analysis.

Note: 'Medium-term' in this and the other charts in the report refers to the periods known as the *forward estimates* and *medium term* in the 2020-21 Budget, from 2020-21 to 2030-31.

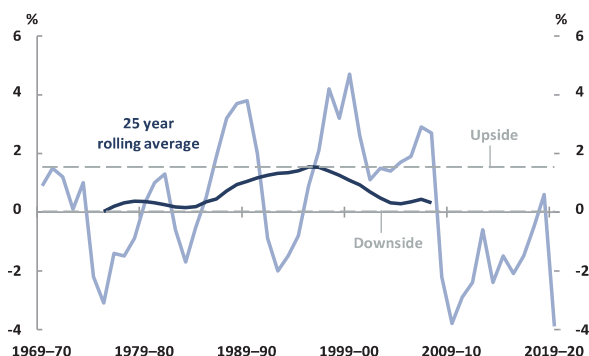
Figure 4:
PBO's growth in GDP per hour worked (productivity)



Source: ABS and PBO analysis. Note: dotted line shows the 25-year rolling average if productivity growth equals 0.5 per cent for the next three years.

- upside is based on the highest point of the 25 year rolling average, 1.5 per cent of GDP share, resulting in a smaller, but steadily growing surplus after interest payments are included.
- downside corresponds to a primary balance but becomes a deficit once interest payments are included.

Figure 5:
PBO headline cash balance (before interest payments)



Source: Budget Papers and PBO analysis.

Figure 5 present the historical and scenario headline cash balance both with and without interest payments. Interest payments have averaged roughly 1 per cent of GDP, which in several years has been the difference between a headline cash surplus and deficit.

Overall debt picture

By combining the Governments baseline estimates and projections at the 2021-22 Budget with smoothed r-g-B series, generates the optimistic PBO projections.

- The PBO finds that there is no immediate fiscal sustainability threat out to the 2050s or beyond.
- The PBO finds that under all of its 27-scenarios, debt to GDP declines for at least 13 years from 2030-31.

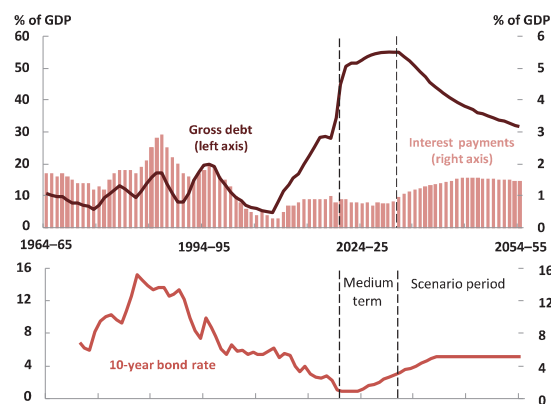
The key reason for the ease of debt reduction are the historically low interest rates on debt issued over the past year, coupled with the expectation that rates will remain

low for the next decade (Figure 6). Even though the interest rate on new debt issued under the middle scenario converges to a value that slightly exceeds GDP growth, the average interest rate on all outstanding debt remains lower than GDP growth for many years, in part due to the term length of the bonds (Figure 2).

27 scenarios

Summary results for all the PBO's 27 scenarios for the gross debt-to-GDP ratio under all the high-middle-low combinations of interest rates (r), nominal GDP growth rates (g) and primary budget balances (B) are presented in Figure 7. The debt-to-GDP trajectories are generated by projecting the identity presented in the Appendix - Box 1 below.

Figure 6:
The PBO' middlescenario results in a steady decline in debt-to-GDP ratio



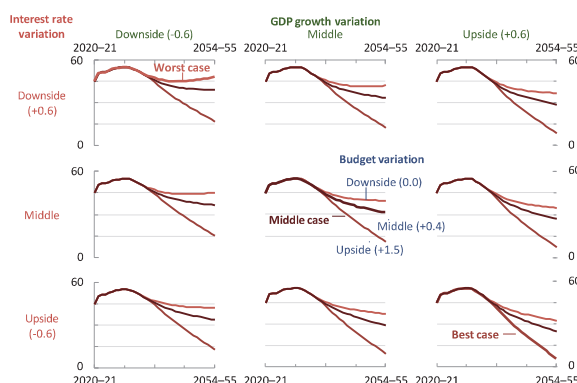
Note: Until the mid-1990s the Australian Government managed State debt on their behalf. This debt is included in the historical tables in the Budget Papers, while the chart above does not include it.

Source: RBA, Budget Papers 1970-2020 and PBO analysis.

The debt-to-GDP ratio falls under most of the 'middle' and 'downside' scenarios, each of which assumes ongoing case' and 'worst case'. They argue that the simultaneous attainment of the 'best' and 'worst' scenarios for each the three inputs, are very unlikely. budget deficits. Based on this the PBO argues that the Australian Government's fiscal sustainability is not dependent on achieving budget balances, even after a rapid build-up of debt has occurred, such as the situation today.

Nor does the PBO claim that any scenario is most likely, but just specifies the feasible range by identifying 'best case' and 'worst case'. They argue that the simultaneous attainment of the 'best' and 'worst' scenarios for each the three inputs, are very unlikely.

Figure 7: Debt to GDP is decreasing under almost every scenario
Gross debt, percentage of GDP



Source: 2020-21 Budget and PBO analysis

Caveats and limitations

The PBO places the following caveat on its key findings in relation to fiscal sustainability:

We have not attempted to model scenarios that go beyond historical experience for a sustained period of time (twenty five years or more). If future economic shocks were consistently larger or more frequent than historical shocks, or if long term structural shifts meant that growth rates were much lower than they have been historically, this would make it more difficult for Australia to maintain a fiscally sustainable position, through both lower average economic growth (g) and larger budget deficits (B). Shocks of this type might occur if, for example, domestic or international concerns about globalisation, together with significantly different global policy responses, affected productivity and population growth, leading to lower economic growth.

Sustained significant shocks are also likely to affect interest rates. A permanent structural change to (r-g) may, for example, result from a significant and sustained reduction in Australia's attractiveness as a location for global investment, relative to other locations. Yet Australia's position as an attractive destination for capital in the long run could also be maintained through an adaptive economy, stable institutions and sound fiscal management.

The PBO's analysis relies on reasonably robust and constant nominal growth rates that outstrip long-term interest rates over the scenario, on average, but particularly in the early years of the scenario.

The first 'trick' to the PBO projections is that they make a good start. They adopt the 2021-22 Budget Outlook and projections out to 2030-31 which are somewhat optimistic for growth, along with the persistent negative interest rate and growth (r – g) differential. This drives the outcomes of the sustainability projections. It builds up both the level of GDP and reduces the absolute stock of debt early in the projection period while bypassing compounding effects.

The second 'trick' to the PBO projections is not allowing for future shocks like wars, disease, recessions, market drawdowns, climate change, even policy mistakes. So there are no shock buffers or allowance for cycles. Over

the period to 2060 it is possible that multiple shocks will occur and provisioning for these in some ways would be sensible. Not doing so may even prove more expensive. For example, assistance associated with the COVID 19 pandemic has totalled around \$300 billion including around \$38 billion in wasted JobKeeper payments.

The PBO has made significant provision for future growth in some of the Australian Government spending programs that are considered most likely to incur significant spending increases (Table 2).

OUR ALTERNATE PROJECTION

There are some inherent weaknesses in the PBO's projections which tend to bias results towards the sustainable conclusion. As explained earlier, the most fundamental issue is assuming a long lasting negative difference between r and g (Figure 8). This assumes away the adjustment task by 'forcing' growth to exceed interest costs. Nor does it accurately capture the historical character of the underlying data series. Again the approach is front-ended and so captures the compounding benefit of an improving fiscal position, as opposed to a fiscal deterioration.

Scenario 28

Instead of proposing a range of smooth pathways for interest rate and growth (r – g) differential, we assume that the future will be something like the past, played out in reverse. So the interest rate and growth (r – g) gap for last year will be repeated this year and similarly, the gap in two years time will match the gap two years hence. In our view this is the most defensible approach in an uncertain world given we have no theoretical priors about what value the 'gap' should take (see above). We are also cognisant that a turning point may soon be reached in bond markets where higher inflation / risk premia are more likely after the forty year bull market in bonds. Whereas the PBO passively assume record low rates remain for at least a decade.

Scenario 28 could also be termed the low-growth projection. It is our attempt to reflect the ongoing costs of the 'micro deform' era in Australia since 2001 (absent policy reform coupled with weak business investment from 2012). It is underpinned by three key assumptions:

Table 2:
PBO comparison of payments by key program area
2018-19 and 2031-32

Payments	Nominal payments		Per cent of GDP		Change in percentage points of GDP	Annual real growth	Share of total payments
	2018-19	2031-32	2018-19	2031-32	2018-19 to 2031-32	2031-32	2031-32
	\$ billion		%		% pt	%	%
Defence	38	79	1.9	2.3	0.4	3.5	8.8
National Disability Insurance Scheme	11	59	0.6	1.7	1.2	11.1	6.6
Aged care	20	50	1.0	1.5	0.4	4.7	5.5
Medicare Benefits Schedule	24	48	1.2	1.4	0.2	3.1	5.4
Public hospitals	22	46	1.1	1.3	0.2	3.6	5.1
Interest payments	19	38	1.0	1.1	0.1	3.1	4.2
Pharmaceutical Benefits Scheme	13	22	0.7	0.6	0.0	1.9	2.5

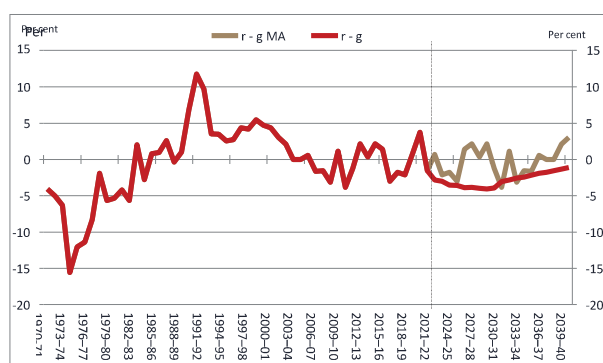
Note: Numbers may not sum due to rounding. In previous medium-term fiscal projections reports, the base year of comparison has been the year prior to the budget year, which for this report would be 2020-21. However, the years 2019-20 and 2020-21 were unusual due to the COVID-19 pandemic and associated policy response. In order to compare against a more typical base year, this table uses 2018-19 as the comparison year. The contingency reserve provision is always equal to zero in actual estimates.

Source:
2021-22 Budget and PBO analysis.

- I. Low productivity growth (relative to the PBO for the first decade of the projection up to 2030). It is assumed to grow at just above the average of the past five years or 0.75 per cent implying nominal GDP growth of 4.75 based on target inflation and labour force growth.
- II. Tax receipts held permanently at or below 23.9 per cent of GDP.
- III. Outlays /program expenditure growth drivers broadly consistent with those in Table 2 above.
- IV. Interest outlays to GDP stay within the historical range of 0 to 3.5 per cent of GDP.

Based on these four assumptions and given historical values for the interest rate and growth ($r - g$) differential from Chart 8, it is possible to back out the nominal interest rates implied by historical matching of time periods. The next step is to input these baseline projections into the Macroeconomics Analysis Federal Budget tracking model and project out to 2060-61.

Figure 8:
Interest rate and growth ($r - g$) actuals and projections



Source: 2021-22 Budget and PBO analysis.

Results of the Scenario 28 projection are presented below. The scenario begins with an Australian Government Budget estimated cash deficit of \$113 billion dollars (around 5.7 per cent of GDP) in the current year 2021-22 (Table 3). Deficits are expected to decline somewhat over the Outlook period but widen again out to the end of the decade. This produces a sizeable deterioration in deficits and debt over the next 10 to 15 years. So Budget deficits do not narrow over the first two decades of the projection in absolute terms and net-debt expands significantly (Table 3).

Table 3:
Comparison of key budget indicators 2021
and to 2040-41

	Actual	Estimate	Projections	
	2020-21	2021-22	2030-31	2040-41
	\$b	\$b	\$b	\$b
Underlying Cash Balance	134.3	-112.6	-117.7	-128.6
Per cent of GDP	-6.8	-5.7	-4.3	-3.3
Net Debt	592	705	1,580	2,924
Per cent of GDP	28.1	33.3	50.7	60.6

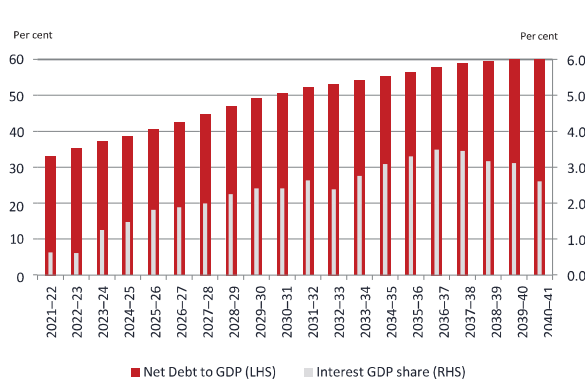
Source: Budget Papers and Macroeconomics' estimates.
Subject to rounding.

The fiscal deterioration under Scenario 28 is mainly driven due to the combination of higher 'average' debt servicing interest costs and lower nominal growth. These produce lower tax receipts and raise interest costs. The combination compounds through time by reducing the size of the economy each period relative to the size of the debt stock.

- Interest costs rise as a share of GDP rise at times as much as five-fold back to levels last seen in the 1980 (Figure 9).
- Public debt as a share of GDP doubles in net terms equivalent to record levels set at the end of WWII.

It has been said before that credit ratings agencies start to track public indebtedness once it rises above 70 per cent of GDP. That ceiling may be breached within the next two decades or sooner if all the liabilities of all Australian governments are counted. It is worth noting that our simulation does not account for rising State and Territory debt, nor unfunded superannuation liabilities. It does not account for the penalty (risk premia) that would be incurred when the Commonwealth loses its AAA credit rating, nor subsequent downgrades across jurisdictions as the stock of debt rises. So in this sense our projection is conservative. Regardless, based on the present scenario, the Federal Government may be required to undertake a material discretionary policy tightening by the middle of the 2020s (1.2 per cent of GDP) unless remedial policy action is taken.

**Figure 9: Australian Government General Government
Net Debt & Interest Cost
2021-22 and 2040-41 % of GDP**



Source:

Budget Papers and Macroeconomics' estimates. Subject to rounding.

REALISM

Who knows what the coming decade or so will hold for the Australian economy? But surely a sober approach is to assume things will be no better than they have been in recent years. This point is underscored by the slowing of China in recent months in the wake of the Evergrande property crisis, the downstream impact for the Australian economy should be more evident in 2022. At the same time sovereign bond yields are finally edging higher globally and meanwhile most Australian state and territory governments are still accumulating more debt.

So Scenario 28 is a plausible. It certainly captures the historical character of the interest rate and growth ($r-g$) gap which is normally considered the key to fiscal projections. The projected deterioration in the Federal Budget outlined in this analysis is a possibility consistent with the current state of the Federal Budget and functioning of the Australian economy. We do feel that official agencies like the Treasury and especially the independent PBO need to be careful in defining projections to avoid the impression that their one role is one of public reassurance rather disclosure.

POLICY RESPONSES

Australia has historically been reliant on net capital inflows to fund future growth and so it is a net debtor globally. It is now in the unenviable position of generating significant levels of public debt whilst already maintaining a massive stock of household debt (in excess of 100 per cent of GDP).

We would argue that it is critical for Australian governments to address their fiscal issues at the source. For the Australian Government that means addressing spending pressures around ageing, defense etc. on the one hand and adopting a macro policy mix more consistent with strong and steady growth on the other hand.

SPENDING CONTROL

A significant problem with the Federal Budget in 2021 is the extent to which the Australian government is running a structural deficit and that is widening through time. Various age, disability and health related programs account for much of the likely growth in spending over coming decades and we attempt to address this spending growth with some positive suggestions below. The other gaping hole in policy terms is defence procurement, where project management and incentives seem to be entirely misaligned.

In terms of spending related to the ageing of the population, we feel the solution here is for government to better assist ageing Australians to achieve their retirement living and income aspirations through less public subsidy. It seems that this can be achieved through changes to the relevant pension and aged care means tests and by restructuring the default superannuation system for retirement phase.

Allowing the tax free sale of the family home to fund retirement housing

The seven volume final report of the Royal Commission into Aged Care Quality and Safety highlighted the fiscal pressures that the Australian Government is facing in managing retirement living policy choices of older Australians. It is estimated that it will cost up to \$12 billion per year to bring the aged care homes up to basic community standards. Further no one really knows just how fast this spending base must grow to accommodate future demand. The growth rate will certainly outstrip most other spending programs for two decades at least. No Australian government currently has the resources to meet this cost uplift.

One potential funding source is to allow the sale of family homes on a no disadvantage basis provided that

the proceeds are set aside to manage retirement living. The problem is that under the current means tests, older Australians are locked into their primary tax residence. They have no incentive to sell their home to fund their own retirement living and aged care arrangements because they are then penalized under the assets test. So many property sales intended to achieve appropriate lifestyle rightsizing are being prevented.

The solution is to reform the means tests to allow retirees to use sale proceeds to fund their own retirement living and aged care costs without any financial penalties. Under this proposal the full value of the proceeds (up to say \$2 million) could be excluded from the means test for the homeowner(s) for life. The proceeds from the sale of the home would then be available to fund any right sized accommodation (private dwelling, at a retirement village or aged care facility). Any remaining proceeds should then be allocated to a special purpose retirement living superannuation account and invested in 30:70 mix of income producing equities and bonds. That fund could be managed by a single entity (see below).

Such a proposal would be both innovative and incredibly popular and allow governments to avoid solutions in residential age care like reverse mortgages which have high transaction costs. It would also be seen by tax economists and public finance experts as a major microeconomic reform in the sense it would improve the efficiency of the residential property market and enhance the taxing of savings.

Allowing a single fund to manage superannuation balances in retirement phase

A single national default scheme for retirement phase could help to improve the efficient transfer of member dollars through default superannuation in accumulation phase to a more valuable income stream for retirees.

Another key plank of self provision for retirement is obtaining the best income stream that your superannuation savings will provide for you. With so many superannuation funds competing for members' accumulation contributions there is not enough focus achieving an efficient transitioning to retirement. Here, Alan Kohler is the expert and he has been a long time proponent of a single, government-run default super fund.

The biggest problem with Australia's superannuation system is that the industry is all about members saving an amount of money, that members get handed when they retire. We even talk about the \$3.1 trillion super pool, as if that has some meaning (except for those feeding off it).

Right now most super funds seem to think their job ends with retirement, when the lump sum is handed over. In most cases it is the largest amount of cash the retirees have ever had. It's then left to retirees to figure out what to do with it. Sadly, some spend it and go on the pension, which is an appalling outcome of the public purse. Most people, take the advice of some slick financial planner, whence it is invested, usually in income stocks, usually banks, and mercilessly skimmed (by the planner, platform, fund manager and company executives).

What superannuation funds should be focused on is converting a member's lump sum into the highest income stream they can afford. The problem with even our recently reformed system is that your outcomes (including transition into retirement) are more equivalent of a lottery game than a predictable and efficient value transfer.

A single national default scheme for retirement phase could achieve the conversion of lump sums to annuities most efficiently, avoiding duplication and investing those lump sums in a way that better matches overall system asset and liability structures and so raising risk adjusted returns. It would make sense to limit the annuity provider to just one (or very few) retirement specialist funds. They could act as an agent of Government effectively selling annuities to prospective retirees that were affectively top ups to the age pension.

This reform would hopefully reduce reliance on the full and partial pension through by raising confidence in all phases of default superannuation system.

Reducing tax subsidies paid on residential property and redirecting the savings to build new affordable homes.

Analysis suggests there is a definite need for the ongoing construction of 15,000 new community owned homes each year across the nation at a cost of \$8 billion annually. But the good news is that Australian governments (mainly the Federal Government) are currently spending around \$70 billion annually subsidizing the demand for existing residential buildings via a plethora of tax concessions and direct outlays. So why not redirect some of this to budget savings leaving enough to fund a single supply side tax credits to boost equity investment in new affordable building developments.

This tax credit program could be operated as a joint Federal and state program could be overseen by a single coordinating agency – perhaps the Productivity Commission – and operated by someone with suitable property industry skills. Each dwelling built could begin life as a rental but reliable tenants could be offered the opportunity to purchase the residence via assisted low cost loans and shared equity programs such as Keystart in Western Australia. In this way a budget savings could be garnered in both the short-term and long-term by reducing housing costs and reducing long-term welfare dependency.

CONCLUSION

We have made the case that the PBO (and the Treasury) are being too optimistic in assessing the fiscal sustainability of the Australian Government over the next fifteen to forty years. We have carefully considered the sustainability of the Australian Government fiscal position over coming decades based on publicly available information regarding economic projections and policy spending trends. Our thought experiment generates a significant structural deficit and unsustainable fiscal outlook. Our analysis suggests that the Federal Government would be required to undertake a material discretionary tightening of policy by the middle of the 2020s (1–2 per cent of GDP).

Our key issue with the PBOs analysis is that it is driven by assumption and does not fit the underlying data they are modelling. More fundamentally we think that it is better to be safe than sorry and so more cautious public pronouncements would be advisable.

Australia now faces the most perilous international economic and security environment in our lifetime. It is now imperative that we make sensible fiscal choices. To begin we should make it easier for individuals to provide for themselves in retirement living and disability care. We should also restructure incentives and program management and feasible options in our major defense procurement programs and raise the value added to Australian production.

APPENDIX: Theoretical Linkages Between Growth Rates and Long Term Interest Rates

The linkage between the nominal GDP growth rate (g) long term interest rates (r) and debt stocks is well established empirically. Governments have relied on policy frameworks consistent with strong growth and lower interest rates to drive down debt levels through time by simultaneously reducing interest repayment costs and the level of debt relative to GDP. Sometimes this sounds too good to be true. It is sort of a magic pudding. Then again if something sounds too good to be true maybe it isn't.

One way to do a quick reality check is to do a little back of the envelope mathematics.

A very simple model won't tell us anything specific. In the real world there are complicating factors at play, including:

- total external indebtedness and balance of payments;
- activist fiscal policy; and
- the structure of monetary and debt management policies.

So deviations from any simple model are likely to be pronounced.

On the other hand if a simple model starts to throw up something the looks wrong we should, take a closer look. It might indicate a more serious issue.

How do we specify formal linkages which capture these indirect channels between growth rates and interest rates?

Here is one way we might go about it. Below we describe an extremely simplified version of a more extensive analysis by Macroeconomics Advisory on the theoretical relation between debt levels, growth and welfare.

Assume that the rate of growth depends only on interest rates and some underlying demand. Leaving out almost everything this would give a differential equation like:

$$\dot{g} = g(a - r)$$

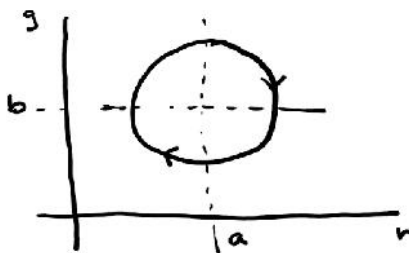
where a is a constant. This says at a rate of interest less than a there is sufficient demand at the price of production for firms to borrow and expand capacity. If r is greater than a , the cost of expansion becomes too great and firms no longer grow.

Assume that the rate of growth in interest depends on the demand for money and this depends on the activities of firms. When growth and demand is low interest rates will fall. When demand gets above some specified level then interest rates will increase. This gives:

$$\dot{r} = r(g - b)$$

In this case we have a system of differential equations with an unstable fixed point at $g = 0$ and $r = 0$ and a centre at (a, b) as in Figure 10.

Figure 10: A Simple Differential Equation System of rates (r), growth (g) and debt



In some ways this is consistent with the stylised fact that nominal growth rates and interest rate seemingly spiral around whilst defying formal mathematical expression.

It is again stressed that this is only illustrative. It is not even intended to come close to a serious mathematical model and is not meant to say anything about the real world. On the other hand it does raise some questions about the long run sustainability of a policy that depends on high growth and low interest. At the least, it says we might want to look at it more closely.

Box 1:

The maths of the r-g-B framework: how interest rates and growth rates determine sustainability

Government debt (D) at the end of any year (t) is equal to remaining debt at the end of the previous year ($t - 1$) plus interest (i), less the budget balance excluding interest (B): a budget surplus ($B > 0$) will reduce debt while a deficit ($B < 0$) will increase debt.

The change in government debt as a share of the economy over time – the *trajectory* of the debt-to-GDP ratio – can therefore be expressed as:

$$\frac{D_t}{GDP_t} - \frac{D_{t-1}}{GDP_{t-1}} = \frac{D_{t-1}}{GDP_{t-1}} \left(\frac{1+i}{GDP_t/GDP_{t-1}} - \frac{B_{t-1}}{GDP_{t-1}} \right)$$

Where D is sufficiently large and B is too small the position of g relative to r through time is crucial to support fiscal sustainability.

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² The two key references which form the basis are this report are:

- Parliamentary Budget Office, Fiscal Sustainability: Long-term budget scenarios, 01/2021, April 2021; and
- Parliamentary Budget Office, Beyond the Budget 2021 22: Fiscal Outlook and Scenarios, 02/2021, September 2021.

The context for these references are the Australian Governments long term fiscal projections, the latest version of which is:

- The Treasury, 2021 Intergenerational Report (2020-21 to 2060-61), June 2021.

The long-run path for the debt-to-GDP ratio depends on three factors: economic growth, interest rates and the government's budget balance.

³ Essentially the debt was paid for via financial repression where central banks in the US, UK and Australia held interest rates artificially low and forced savers to bear the burden of fiscal adjustment. It may be that governments will try to impose some similar formula in the wake of the COVID-19 shock.

⁴ Parliamentary Budget Office, Beyond the Budget 2021, p.22.

⁵ The PBO's analysis assumes debt yields are slow moving assisted by the debt management function which takes the weighted average of tenors that each move slowly through time. So they assume that rates stay low and are not impacted by issuance levels, credit ratings, external shocks etc.

⁶ 2020-21 Budget, Budget Paper 1, Statement 7: Debt Statement, Chart 7: Yield curve assumptions from 2020-21 to 2023-24 and Chart 8: Convergence to long-run yield curve.

⁷ According to Edmond et al. (2020) 'a rise in global interest rates (driven, for example, by increased political tensions in the United States, or by the sheer amount of new government debt issued around the world), would likely lead to rising interest rates in Australia'; see Edmond, C., Holden, R. and Preston, B. (2020), 'Should we worry about government debt? Thoughts on Australia's COVID 19 response.' Australian Economic Review, 53(4).

⁸ Australian Government (2020), Budget 2020-21 Overview. According to the IMF Fiscal Monitor database in October 2020, Australia's 'above the line' measures totalled 11.7 per cent of GDP, one of the largest responses of advanced economies.

⁹ Nicholas Jenssen, JobKeeper forked out \$38bn to thriving firms, AFR, 5 November 2021.

¹⁰ The PBO's payments projections are based on individual analysis of 23 major program areas. Projections of payments generally assume policy settings and arrangements as contained in the budget estimates. Payments outside of the 23 major programs account for around 20 per cent of total payments, with the exception of 2019-20 and 2020-21 where many payments related to COVID 19 were delivered outside of major ongoing programs.

¹¹ In fact we adopt this symmetrical approach from the 2023-24 year, applying the PBO's implied interest rates in the first two years of the projection. Thereafter we smooth interest rate implied by the historical r-g gap via seven year moving average to account for debt management.

¹² Clearly the low productivity environment is Australia has coincided with a technology and demographic slowdown in advanced economies termed by Larry Summers in 2013 as structural stagnation.

¹³ Thereafter our nominal GDP forecast is very similar if somewhat higher than the PBO's.

¹⁴ Maybe it can be argued that these debt stocks are somehow 'good' debt in the welfare sense – the Pitchford thesis – that household superannuation balances are counted as well – although this is along a bow to draw.

¹⁵ S. Anthony, Relinking Mainstream and Supported Housing in Australia, Parity, Council to Homeless Persons, 13 July 2021.

¹⁶ This is a topic formally examined in a forthcoming paper by Anthony and Coram 2022.