

## STATEMENT 7: FORECASTING PERFORMANCE AND SCENARIO ANALYSIS

The economic and fiscal forecasts presented in the 2015-16 Budget incorporate assumptions and judgments based on information available at the time of preparation. The forecasts are subject to considerable uncertainty. This Statement details the forecasting performance for the key macroeconomic aggregates of real and nominal GDP and estimates of government receipts. The Statement also presents a number of scenarios which help to illustrate the sensitivity of budget aggregates to changes in parameters.

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# STATEMENT 7: FORECASTING PERFORMANCE AND SCENARIO ANALYSIS

## OVERVIEW

The macroeconomic and fiscal forecasts presented in the 2015-16 Budget incorporate assumptions and judgments based on information available at the time of preparation.

Budget macroeconomic and fiscal forecasts are important for Government policy and decision-making. The budget estimates provide a fiscal baseline against which policy decisions are taken by the Government. Better forecasting, and a better understanding of the uncertainties around the forecasts, contributes to better policy and decision-making.

This Statement presents an assessment of forecasting performance and estimates of uncertainty around the forecasts. This is consistent with moves of fiscal agencies around the world to improve forecasting performance and raise awareness of the uncertainties inherent in forecasting.

The macroeconomic forecasts are reliant on the assumptions underpinning them. The economic forecasts and the forward estimates of revenue and expenses are closely linked. The fiscal forecasts are therefore sensitive to the assumptions underpinning the economic forecasts. This statement illustrates how alternative assumptions or other developments can affect the economic and fiscal outlook. A discussion of economic and other assumptions and the sensitivity of budget estimates to changes in these assumptions is one of the requirements of the *Charter of Budget Honesty Act 1998*.

## FORECASTING PERFORMANCE

### Macroeconomic forecasting performance

The Government's macroeconomic forecasts are prepared using a range of modelling techniques, including structural macroeconomic models and equations, spreadsheet analyses and accounting frameworks. These are supplemented by survey data, business liaison, expert opinion and judgment.

The differences between forecasts and outcomes (forecast errors) can arise for a range of reasons, for example differences between the assumed path of key variables and the outcome, or the relationship between different parts of the economy.

Confidence intervals are based on observed historical patterns of forecast errors. Confidence intervals show that there is a range of plausible outcomes around any

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given point estimate forecast. They are a guide to the degree of uncertainty around the forecast and, typically, span a wide range of outcomes.

**Real GDP forecasts**

Real GDP forecasts in the Budget are based on assumptions about the exchange rate, interest rates and oil prices. The forecasts incorporate judgments about how developments in one part of the Australian economy affect other parts, and how the domestic economy is affected by events in the international economy. The accuracy of the forecasts depends on the extent to which the assumptions and judgments underpinning them prove to be correct.

For example, a lower exchange rate than assumed would be expected to result in higher growth in Australia's export volumes, including in tourism and manufacturing. At the same time, import prices would be higher, resulting in lower growth in import volumes. Overall, this would lead to a larger contribution of net exports to economic growth, although there would be some mitigating effect on real GDP from the impact of higher import prices on real household income.

Forecast errors for real GDP can also result from unexpected shifts in economic activity between forecast years. For instance, economic growth can suddenly gain pace in an upswing, supported by a mutually reinforcing pick-up in consumer spending, employment and investment.

A faster pick-up in Australia's economic growth in 2015-16 could be driven by stronger than forecast household consumption in response to rising housing and stock market wealth. Rising consumer spending could lead to higher employment growth, capacity utilisation and stronger investment. Stronger than expected growth in Australia's major trading partners could provide a fillip to exports and in turn boost incomes and demand throughout the economy.

More persistent shifts in the economy's supply side through changes in population, productivity or participation can also give rise to forecast errors. An illustrative scenario of the macroeconomic and fiscal effects of a one per cent increase in real GDP driven by an increase in labour productivity and labour force participation is presented later in this statement.

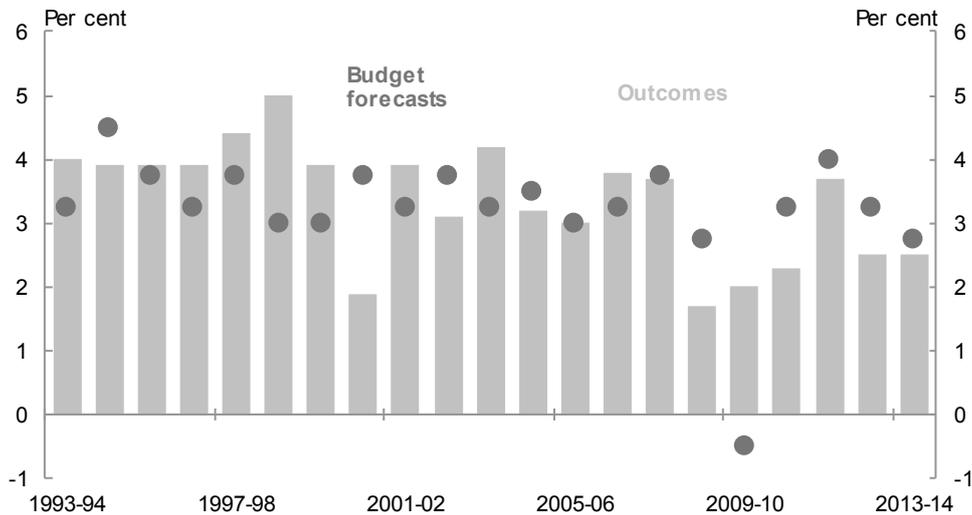
Over the past 20 years, Treasury's forecasts of real GDP growth have exhibited little evidence of bias, and accuracy has generally remained within a range of ½ to 1 percentage point (Chart 1). While forecasts of real GDP growth were less accurate in the years during and immediately after the global financial crisis (GFC), forecast errors have since returned to the usual range.

While National Accounts data are not yet available for the whole of 2014-15, information to date suggests that real GDP growth is evolving broadly in line with last year's Budget forecast. This reflects some offsetting results at the component level, with stronger growth in export volumes, including non-rural commodities, and lower

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growth in import volumes expected to balance slightly lower growth in household consumption. Other components of GDP, including business investment, have so far evolved largely as expected in 2014-15.

**Chart 1: Budget forecasts of real GDP growth**



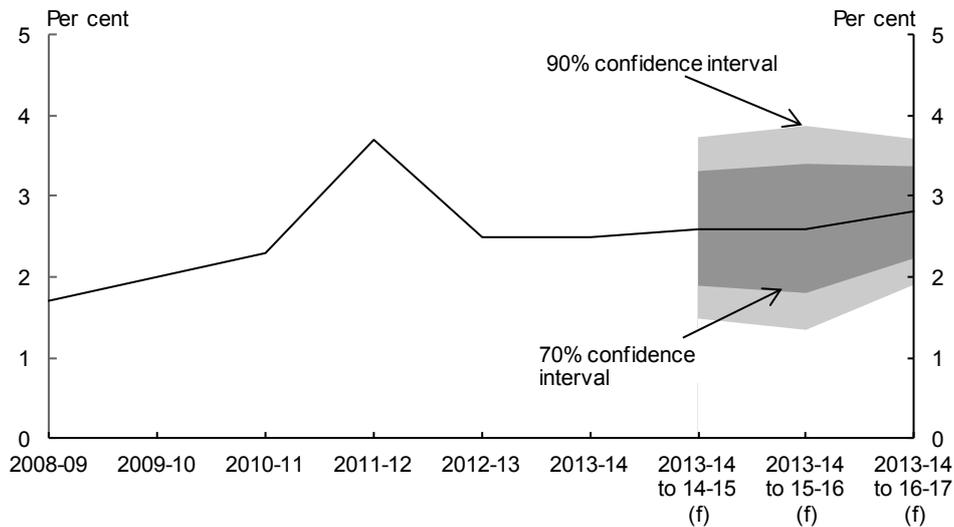
Note: Outcome is as published in the December quarter 2014 National Accounts. Forecast is that published in the Budget for that year.

Source: ABS cat. no. 5206.0 and Treasury.

Chart 2 shows that the average annualised growth rate in real GDP in the two years to 2015-16 is expected to be around 2½ per cent, with the 70 per cent confidence interval ranging from 1¾ to 3½ per cent. In other words, if forecast errors are similar to those made over recent years, there is a 70 per cent probability that the growth rate will lie in this range.

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**Chart 2: Confidence intervals around real GDP growth rate forecasts**



Note: The central line shows the outcomes and the 2015-16 Budget forecasts. Annual growth rates are reported for the outcomes. Average annualised growth rates from 2013-14 are reported for 2014-15 onwards. (f) are forecasts. Confidence intervals are based on the root mean squared errors (RMSEs) of Budget forecasts from 1998-99 onwards, with outcomes based on December quarter 2014 National Accounts data.

Source: ABS cat. no. 5206.0, Budget papers and Treasury.

**Nominal GDP forecasts**

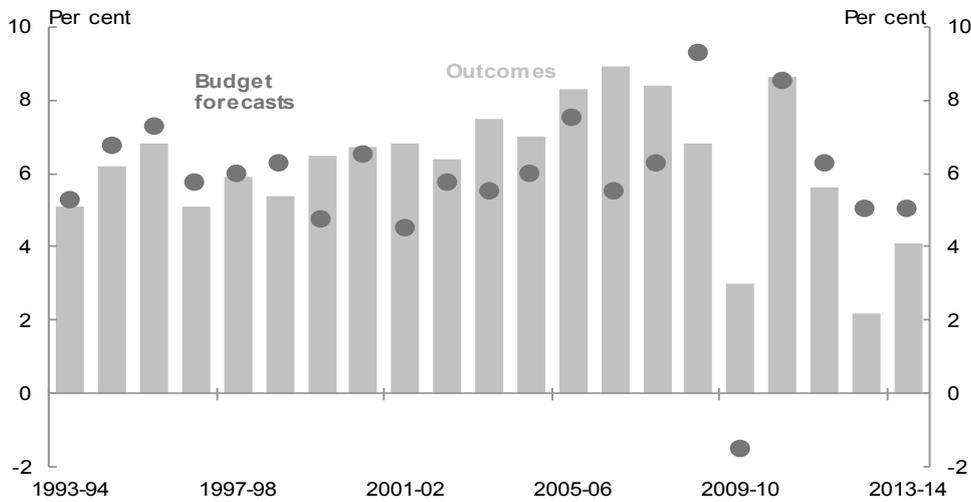
Compared with real GDP forecasts, nominal GDP forecasts are subject to additional sources of uncertainty from the evolution of domestic prices and wages, and world prices for commodities.

Over the past decade, nominal GDP forecast errors have reflected the difficulties in predicting movements in global commodity prices (Chart 3). Faster than anticipated declines in the prices of key commodities in recent years, particularly iron ore, has meant that nominal GDP was overestimated.

In 2014-15, nominal GDP growth is expected to be lower than forecast in last year's Budget. This primarily reflects the steeper than anticipated decline in key commodity prices over the past year, which has contributed to lower than forecast outcomes for the terms of trade and GDP deflator.

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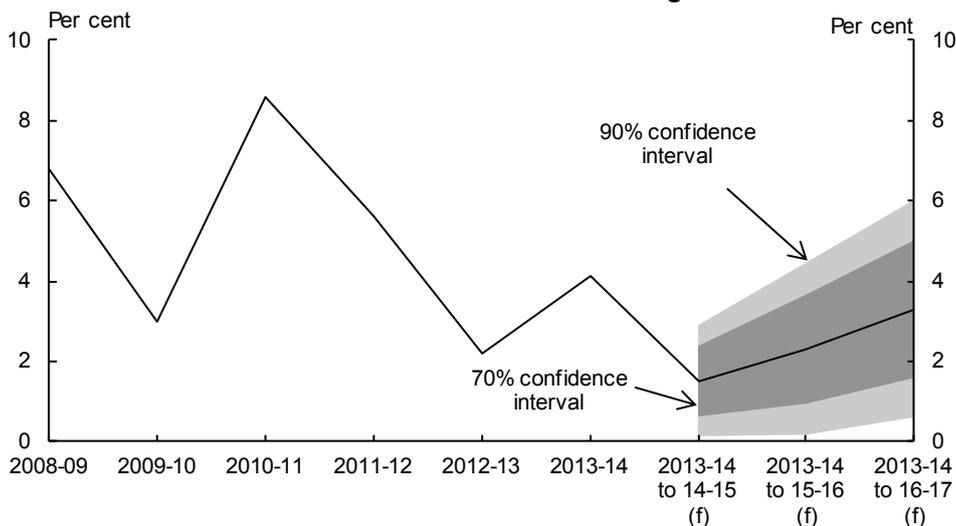
**Chart 3: Budget forecasts of nominal GDP growth**



Note: Outcome is as published in the December quarter 2014 National Accounts. Forecast is that published in the Budget for that year.  
Source: ABS cat. no. 5206.0 and Treasury.

The confidence intervals around nominal GDP forecasts are wider than those around the real GDP forecasts, reflecting both the uncertainty over the outlook for real GDP and the added uncertainty about the outlook for domestic prices and the terms of trade. Chart 4 suggests that the average annualised growth rate in nominal GDP growth in the two years to 2015-16 is expected to be around 2¼ per cent, with the 70 per cent confidence interval ranging from 1 to 3¾ per cent.

**Chart 4: Confidence intervals around nominal GDP growth rate forecasts**



Note: See note to Chart 2.  
Source: ABS cat. no. 5206.0, Budget papers and Treasury.

## **Fiscal forecasting performance**

The fiscal estimates contained in the 2015-16 Budget are based on forecasts of the economic outlook. Changes to the economic forecasts underpinning the estimates, for example, inflation, profits, wages growth, population and unemployment, will affect receipts, payments and therefore the profile of both the underlying cash balance and government debt. Even small movements in economic parameters can result in large changes to the budget estimates, for example, decreasing payments or increasing receipts with flow-on effects to the underlying cash balance.

Major taxes such as company and individuals income taxes fluctuate significantly with economic activity. Capital gains tax (CGT) is particularly volatile and is affected by both the level of gains in asset markets and the timing of when those gains are realised. Similarly, superannuation fund taxes are affected by investment market returns.

Receipts forecasts are also affected by errors in translating the impact that changes in the economy have on tax collections, and other factors. Factors such as the timing of tax payments and enforcement activity can affect outcomes compared with forecasts.

The estimates and projections of receipts are subject to a number of general risks that can affect tax collections. These general risks include failure of the tax system to keep pace with changes in the business environment, tax avoidance, court decisions, Australian Taxation Office rulings and enforcement efforts. These pressures may result in a shift in the composition of taxation collected from the various tax bases and/or a change in the size of the tax base.

There are also a number of risks that may affect the payments estimates and projections. In particular, demand-driven programmes, which form the bulk of the Government's payments, can fluctuate significantly with economic and social conditions. If changes to these conditions are not anticipated this can have major effects on payments levels. For example, an unexpected increase in the number of persons unemployed in the population could lead to additional welfare-related payments.

Fiscal risks also include emergency foreign aid and natural disasters. Such occurrences have in the past resulted in unexpected increases in payments and may do so again. Specific fiscal risks to the budget and forward estimates are detailed in Budget Statement 8: *Statement of Risks*.

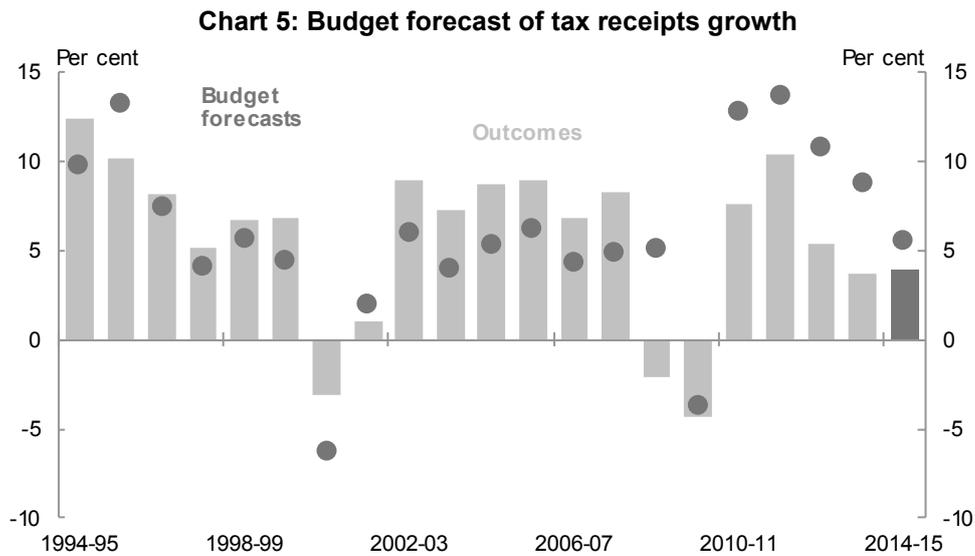
## **Receipts forecasts**

The Government's tax receipts estimates are generally prepared using a 'base plus growth' methodology. The last known outcome (2013-14 for the 2015-16 Budget) is used as the base to which estimated growth rates are applied, resulting in tax receipts estimates for the current and future years.

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Most of the indirect heads of revenue, such as GST and fuel excise, are forecast by mapping the growth rate of an appropriate economic parameter directly to the tax growth rate in the relevant head of revenue. A number of income taxes also involve determining whether this tax will be paid in the year the income is earned, such as for pay-as-you-go withholding tax, or in future years, such as for individuals' refunds.

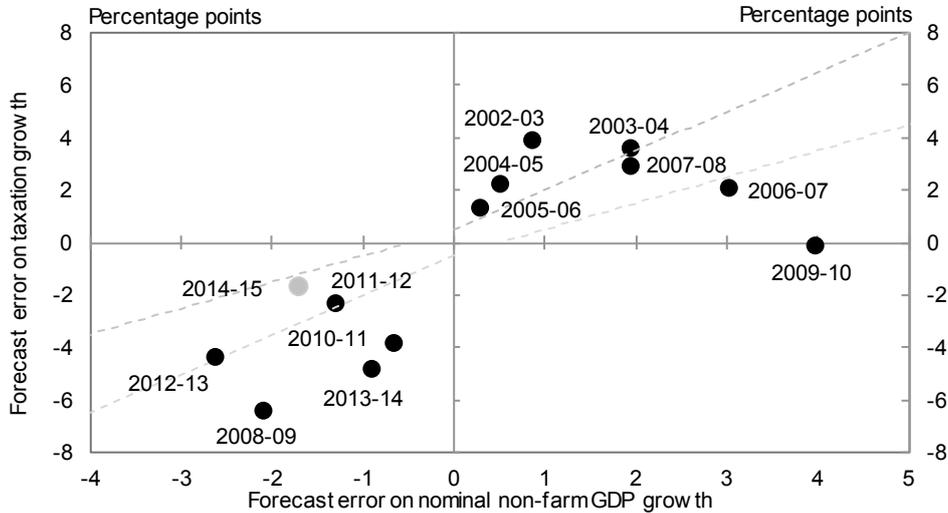
Over the past two decades, receipts forecasts have both under- and over-predicted outcomes (Chart 5).



Note: Forecast error for 2014-15 is an estimate.  
 Source: ABS cat. no. 5206.0, Budget papers and Treasury.

Generally, there is a strong correlation between the accuracy of the forecasts of the nominal economy and the forecasts for tax receipts. On average, economic forecasting errors will be magnified in receipts forecasting errors, owing to the progressive nature of personal income tax. Chart 6 plots the forecast errors for nominal non-farm GDP against the errors for tax receipts. It shows where there has been an underestimate of nominal non-farm GDP growth, tax receipts tend to be underestimated and vice versa.

**Chart 6: Budget forecast errors on nominal non-farm GDP growth and taxation receipts growth (excluding CGT)**



Note: The lower and upper lines are based on aggregate elasticities (of receipts with respect to nominal non-farm GDP) of 1.0 and 1.5 respectively, assuming an error of plus or minus 0.5 per cent if there is zero error on the economic forecasts. Forecasting errors outside this range could be a result of factors such as timing of tax receipts. Forecast error for 2014-15 is an estimate.  
Source: ABS cat. no. 5206.0, Budget papers and Treasury.

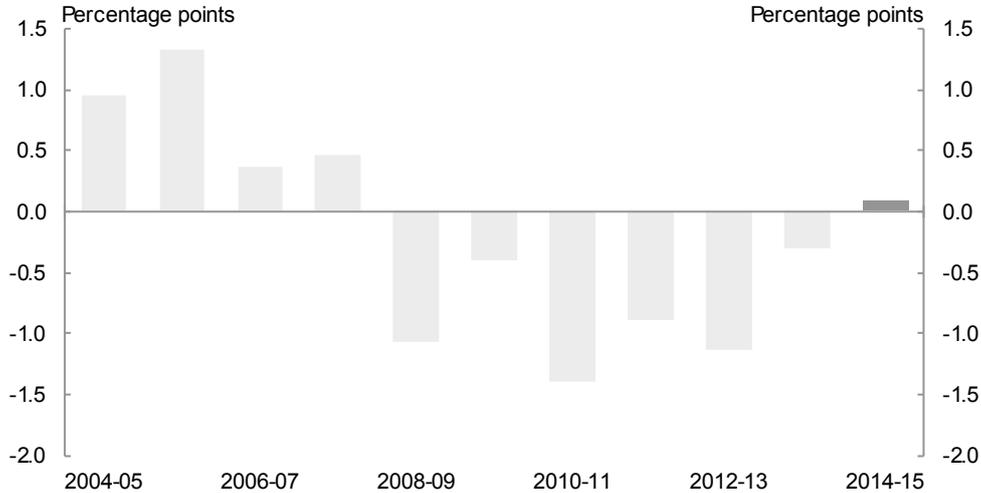
The forecast for 2014-15 tax receipts (excluding CGT) in the 2014-15 Budget is expected to be an over-estimate of around 1.7 percentage points, compared to an over-estimate of around 1¾ percentage points for nominal non-farm GDP growth.

The largest contributor to the expected forecasting error in 2014-15 is from the shortfall in company tax. In 2014-15, company tax is estimated to be \$3.6 billion (5.0 per cent) lower than in the 2014-15 Budget. This overestimate of company tax is largely a result of lower than expected commodity prices, particularly iron ore.

Another significant contributor to the expected forecasting error for 2014-15 is from gross income tax withholding which is estimated to be \$3.1 billion (1.8 per cent) below the forecast of the 2014-15 Budget as a result of lower than expected wage growth. Discussions of earlier years' forecast performance can be found in previous budgets.

From 2008-09, forecasting errors in tax receipts have been affected significantly by the economic downturn following the GFC, particularly with regards to CGT (Chart 7).

**Chart 7: Forecast error on capital gains tax (contribution to tax receipts growth)**



Note: Forecast error for 2014-15 is an estimate.  
Source: ABS cat. no. 5206.0, Budget papers and Treasury.

Forecasting CGT, in particular, is very difficult. First, unexpected price movements may cause CGT to be significantly different from the forecast. Secondly, CGT only applies to realised gains, so even in the absence of unexpected price movements, there may be more or less gains realised than was assumed.

Following the GFC, a large stock of capital losses were carried forward (see Box 2 of Statement 5 of the 2010-11 Budget), and the utilisation of these losses continues to generate large uncertainty in both the timing and magnitude of the forecasts.

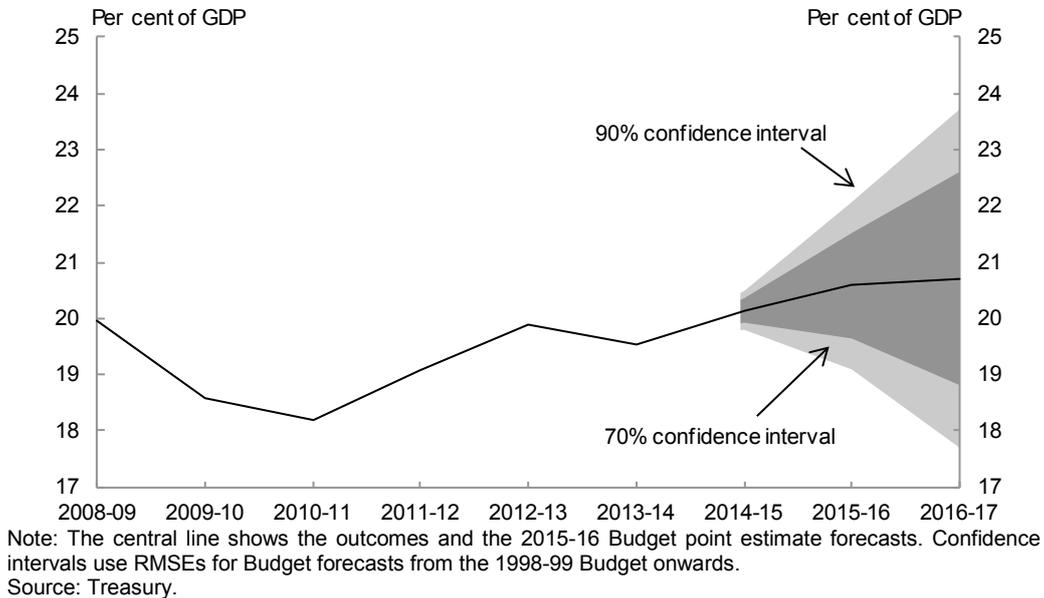
Chart 8 shows confidence intervals around the forecasts for receipts (excluding GST<sup>1</sup> and including Future Fund earnings). Impacts of future policy decisions are beyond the scope of these forecasts. To account for this, confidence intervals constructed around the receipts forecasts exclude historical variations caused by subsequent policy decisions. These intervals take into account errors caused by parameter and other variations in isolation.

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1 GST was not reported as a Commonwealth tax in budget documents prior to the 2008-09 Budget. As a result, GST data have been removed from historical receipts and payments data to abstract from any error associated with this change in accounting treatment.

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**Chart 8: Confidence intervals around receipts forecasts**



The chart shows that there is considerable uncertainty around receipts forecasts and that this uncertainty increases over the estimates period. It suggests that in 2015-16, the width of the 70 per cent confidence interval for the 2015-16 Budget receipts forecast is approximately 1.9 per cent of GDP (\$30 billion) and the 90 per cent confidence interval is approximately 3.0 per cent of GDP (\$50 billion).

### Payments

The Government's payments estimates are prepared by Australian Government agencies which comprise the Australian Government general government sector. An assessment of payments forecast performance is not included in this Statement, however, historical errors have been incorporated in estimated confidence intervals.

Chart 9 shows confidence intervals around payments forecasts (excluding GST). As with the receipts estimates, historical policy decisions are excluded,<sup>2</sup> and future policy

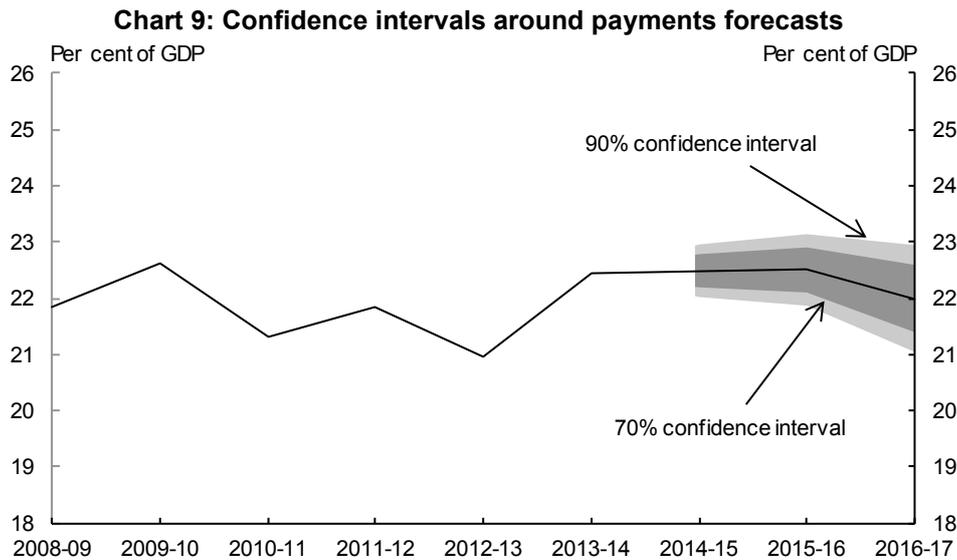
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2 Excluding historical variations stemming from policy decisions does not exclude cases that are classified in budget documentation as parameter and other variations, but have more in common with decisions of government. For example, decisions to re-profile spending due to changes in timing of projects are captured for reporting purposes as parameter and other variations, as are new and often substantial spending decisions to provide assistance for the impacts of natural disasters. Such variations contribute to the size of the confidence intervals around payments.

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decisions are out of scope. The estimates include the public debt interest impact of policy decisions.<sup>3</sup>

The chart shows that there is moderate uncertainty around payments forecasts. In 2015-16 the width of the 70 per cent confidence interval for the 2015-16 Budget payments forecast is approximately 0.8 per cent of GDP (\$15 billion) and the 90 per cent confidence interval is approximately 1.3 per cent of GDP (\$20 billion).



Note: See note to Chart 8.  
Source: Treasury.

Payments outcomes can differ from forecasts for a number of reasons. Demand driven programs such as payments to individuals and some social services, form the bulk of Government expenditure. Forecasts of payments associated with a number of these government programs depend on forecasts of economic conditions. For example, higher than forecast unemployment levels will mean that expenditure on related services, including allowances, will be higher than anticipated.

**Underlying cash balance**

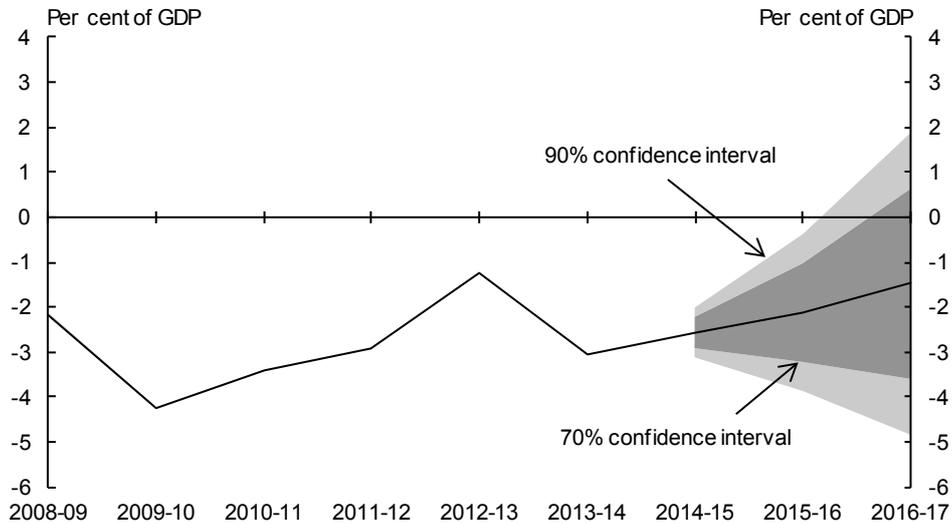
The underlying cash balance estimates are sensitive to the same forecasting errors that affect estimates of receipts and payments. Confidence interval analysis shows that there is considerable uncertainty around the underlying cash balance forecasts (see Chart 10).

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<sup>3</sup> The impacts of past policy decisions on historical public debt interest through time cannot be readily identified or estimated. For this reason, no adjustment has been made to exclude these impacts from the analysis.

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**Chart 10: Confidence intervals around the underlying cash balance forecasts**



Note: See note to Chart 8.  
Source: Treasury.

In 2015-16, the width of the 70 per cent confidence interval for the 2015-16 Budget underlying cash balance forecast is approximately 2.2 per cent of GDP (\$35 billion) and the 90 per cent confidence interval is approximately 3.5 per cent of GDP (\$60 billion). In line with receipts forecasts, uncertainty increases over the estimates period.

## SCENARIO AND SENSITIVITY ANALYSIS

Small movements in economic parameters can result in large changes to the budget estimates, for example, increasing payments or reducing receipts can lead to wider deficits and ultimately changes in gross and net debt.

Consideration of particular scenarios and sensitivity analysis demonstrates the potential impact of these changes. This analysis highlights the trade-offs that governments face should risks eventuate, for example, in choices about budget funding or meeting fiscal targets.

### Fiscal sensitivity to permanent changes in key economic variables

The scenarios examine the effect on receipts and payments of altering some of the key economic assumptions. The economic scenarios provide a rule of thumb indication of the impact on receipts, payments and the underlying cash balance of changes in the economic outlook.

**Scenario 1: One per cent reduction in nominal GDP**

The following sensitivity analysis considers the consequences of a permanent fall in world prices of non-rural commodity exports in 2015-16 to examine the fiscal consequences of a reduction in nominal GDP. The price fall examined is consistent with a fall in the terms of trade of around 4 per cent, which causes a 1 per cent fall in nominal GDP by 2016-17. The sensitivity analysis evaluates the flow-on effects on the economy, the labour market and prices. The impacts in Table 1 are stylised and refer to per cent deviations from the baseline levels of the economic parameters.

**Table 1: Illustrative impact of a permanent one per cent reduction in nominal GDP by 2016-17 due to a fall in the terms of trade (per cent deviation from the baseline level)<sup>4</sup>**

	2015-16 per cent	2016-17 per cent
Real GDP	0	- 1/4
Non-farm GDP deflator	- 3/4	- 3/4
Employment	- 1/4	- 1/2
Wages	0	- 1/4
CPI	0	- 1/4
Company profits	-3	-3
Consumption	- 1/4	- 1/2

Assuming no change in exchange rates or interest rates, the fall in export prices leads directly to a lower non-farm GDP deflator (from the export component of GDP) and lower domestic incomes. Lower domestic incomes cause both consumption and investment to fall, resulting in lower real GDP, employment and wages. The fall in aggregate demand puts downward pressure on domestic prices.

Given these assumptions, the overall impact of the fall in the terms of trade is a decrease in the underlying cash balance of around \$2.9 billion in 2015-16 and around \$5.8 billion in 2016-17 (see Table 2).

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4 These results represent a partial economic analysis only and do not attempt to capture all the economic feedback and other policy responses related to changed economic conditions, and assume no change in the exchange rate, interest rates or policy over the forecast period.

**Table 2: Illustrative sensitivity of the budget balance to a one per cent decrease in nominal GDP due to a fall in the terms of trade**

	2015-16	2016-17
	\$b	\$b
<b>Receipts</b>		
Individuals and other withholding taxes	-0.6	-1.7
Superannuation fund taxes	-0.1	-0.3
Company tax	-1.8	-3.3
Goods and services tax	-0.1	-0.3
Excise and customs duty	-0.1	-0.1
Other taxes	-0.1	-0.1
<b>Total receipts</b>	<b>-2.8</b>	<b>-5.8</b>
<b>Payments</b>		
Income support	-0.2	-0.3
Other payments	0.0	0.1
Goods and services tax	0.1	0.3
<b>Total payments</b>	<b>-0.1</b>	<b>0.1</b>
Public debt interest	0.0	-0.1
<b>Underlying cash balance impact(a)</b>	<b>-2.9</b>	<b>-5.8</b>

(a) Estimated impacts fall within the 70 per cent confidence intervals for years 2015-16 and 2016-17, as shown in Charts 8 to 10.

On the receipts side, a fall in nominal GDP reduces tax collections. The largest impact is on company tax receipts as the fall in export income decreases company profits. Owing to lags in tax collections, the effect on company tax is larger in 2016-17. Lower company profits are assumed to flow through to lower Australian equity prices, therefore reducing capital gains tax from individuals, companies and superannuation funds.

The weaker economy results in lower aggregate demand, which flows through to lower employment and wages, reducing individuals income tax receipts. The decrease in disposable incomes leads to lower consumption, which in turn results in a decrease in GST receipts (decreasing GST payments to the states by the same amount) and other indirect taxes.

On the payments side, a significant proportion of government expenditure is partially indexed to movements in costs (as reflected in various price and wage measures). Some forms of expenditure, in particular income support payments, are also driven by the number of beneficiaries.

The overall estimated expenditure on income support payments (including pensions and allowances) increases in both years because of a higher number of unemployment benefit recipients. The increase in spending on unemployment benefits in 2016-17 is partly offset by reduced expenditure on pensions and allowances reflecting lower growth in benefit rates resulting from lower wages growth and lower inflation. At the same time other payments linked to inflation fall in line with the reduced growth in prices.

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The reduction in the underlying cash balance results in a higher borrowing requirement and a higher public debt interest cost.

While not taken into account in this scenario, under a floating exchange rate, a fall in the terms of trade would be expected to lead to a fall in the exchange rate. This would likely dampen the effects on real GDP, meaning the impact on the fiscal position could be substantially more subdued. Also, to the extent that the fall in the terms of trade is temporary rather than permanent, the impact on the economic and fiscal position would be more subdued.

**Scenario 2: One per cent increase in real GDP driven by an increase in labour productivity and labour force participation with each contributing equally**

As discussed above, the budget forecasts also depend on assumptions about the economy's supply side. If the outcomes for population, productivity and participation differ from what was assumed, then so may the budget outcomes.

This scenario involves a permanent 0.5 per cent increase in both the participation rate and labour productivity, resulting in a 1 per cent increase in real GDP from 2015-16. Once again, the sensitivity analysis evaluates the flow-on effects on the economy, the labour market and prices. The impacts in Table 3 are stylised and refer to per cent deviations from the baseline levels of the parameters.

**Table 3: Illustrative impact of a one per cent increase in real GDP due to an equal and ongoing increase in both productivity and participation (per cent deviation from the baseline level)<sup>5</sup>**

	2015-16 per cent	2016-17 per cent
Nominal GDP	3/4	3/4
Non-farm GDP deflator	- 1/4	- 1/4
Employment	1/2	1/2
Wages	1/4	1/4
CPI	- 1/4	- 1/4
Company profits	1 3/4	1 3/4
Consumption	1	1

The one per cent increase in real GDP increases nominal GDP by slightly less but the magnitude of the effects on receipts, payments and the underlying cash balance differ from the first scenario because different parts of the economy are affected in different ways.

The increases in labour force participation and labour productivity have the same impact on output, but different impacts on the labour market. Higher productivity leads to higher real GDP and higher real wages, while an increase in the participation

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5 See footnote 4.

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rate increases employment and real GDP. Imports are higher in this scenario, reflecting higher domestic incomes.

Since the supply side of the economy expands, inflation temporarily falls relative to the baseline. The lower domestic prices make exports more attractive to foreigners, with the resulting increase in exports offsetting higher imports, leaving the trade balance unchanged. The exchange rate is assumed to be unchanged.

The overall impact of the increase in labour productivity and participation is an increase in the underlying cash balance of around \$3.7 billion in 2015-16 and around \$4.5 billion in 2016-17 (see Table 4).

**Table 4: Illustrative sensitivity of the budget balance to a one per cent increase in real GDP due to an equal increase in both productivity and participation**

	2015-16	2016-17
	\$b	\$b
<b>Receipts</b>		
Individuals and other withholding taxes	1.9	1.7
Superannuation fund taxes	0.1	0.2
Company tax	1.2	1.8
Goods and services tax	0.5	0.6
Excise and customs duty	0.4	0.4
Other taxes	0.0	0.0
<b>Total receipts</b>	<b>4.1</b>	<b>4.7</b>
<b>Payments</b>		
Income support	0.0	0.2
Other payments	0.1	0.1
Goods and services tax	-0.5	-0.6
<b>Total payments</b>	<b>-0.4</b>	<b>-0.3</b>
Public debt interest	0.0	0.1
<b>Underlying cash balance impact(a)</b>	<b>3.7</b>	<b>4.5</b>

(a) Estimated impacts fall within the 70 per cent confidence intervals for years 2015-16 and 2016-17, as shown in Charts 8 to 10.

On the receipts side, individuals income tax collections increase because of the rise in the number of wage earners and, additionally, higher real wages. The stronger labour market also increases tax collections from superannuation funds because contributions (including compulsory contributions) are higher. The increase in personal incomes leads to higher consumption which results in an increase in GST receipts (with the corresponding receipts passed on in higher GST payments to the states). In addition, the stronger economy results in higher levels of corporate profitability, increasing company taxes.

On the payments side, overall estimated expenditure on income support payments (including pensions, unemployment benefits and other allowances) is lower, reflecting lower growth in benefit rates through indexation due to lower inflation (as measured

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by the Consumer Price Index).<sup>6</sup> This effect is partly offset by growth in the number of unemployment benefit recipients (as higher labour force participation increases both employment and the number unemployed).

On balance, the rise in estimated tax collections is only partially offset by increased payments. This improves the underlying cash position, which results in a lower borrowing requirement and lower public debt interest cost.

The impacts shown in the Tables 1 to 4 above are broadly symmetrical. That is, impacts of around the same magnitude, but in the opposite direction, would apply if the terms of trade were to increase or if real GDP were to decrease.

### **Impact on the balance sheet of economic and fiscal developments**

This section outlines in broad terms the impact on the balance sheet of economic and fiscal shocks.

The impact of a terms of trade shock was outlined earlier in this statement (see Tables 1 and 2). In these circumstances, receipts fall and payments increase, leading to a decline in the budget position. To fund a higher deficit, assets would need to be run down or borrowings would need to increase through the issuance of more Commonwealth Government Securities (CGS). This would increase the CGS liability, and interest payments would be higher until the Government repaid this debt.

A weaker economic environment also increases the likelihood of contingent liabilities (for example, guarantees) crystallising or defaults on loans, resulting in higher liabilities and an increase in payments. Details of contingent liabilities are set out in Statement 8.

Alternatively, an improvement in economic conditions would see receipts improve and payments fall, as outlined earlier in this statement, strengthening the budget position. In these circumstances, borrowings could be reduced, and with reduced borrowings, interest payments would be lower.

Some balance sheet items are required to be recorded at market value, for example, the investments of the Future Fund. The market valuation of these items is therefore susceptible to price fluctuations. Market movements may therefore have a temporary impact on the strength of the balance sheet. Movements in interest rates affect the recorded market value of the Government's CGS liability, even though interest rates payable are determined at the time of issuance. For example, lower interest rates that may be used to stimulate the economy will contribute to a higher market value of the liability.

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<sup>6</sup> Under existing indexation arrangements, the growth in wages (average weekly earnings) has historically been the key driver of the growth in benefit rates for pensions and similar payments. However, with recent subdued wages growth, the key driver is currently indexation of benefit rates to growth in the CPI.

### **Medium-term projections scenarios**

The medium-term projections set out in this Budget are not equivalent to forecasts. The medium-term projections use the forward estimates as a base. They are therefore subject to similar risks and uncertainties that affect the fiscal aggregates discussed above, although the longer timeframes mean even greater uncertainty.

Beyond the forward estimates, a range of simplifying assumptions are used to project government payments, with the main drivers being movements in prices, economic growth, the size and structure of the population and the expected per person costs (in each age bracket) of major government programs based on current Government policy. In this context, it is important to note that the projections are very unlikely to unfold exactly as outlined. There will be changes over the projection period that are not anticipated in the underlying assumptions, and government policy will change.

Relatively small changes to assumptions underpinning these projections can have a significant effect on projections of the key fiscal aggregates including the underlying cash balance and CGS on issue (otherwise known as gross debt) by the end of the projection period.

This section outlines the impact on the underlying cash balance and CGS on issue of two alternative assumptions. The first scenario considers the impact on public debt interest costs of higher interest rate assumptions than adopted in the 2015-16 Budget estimates. The second considers the impact of slower than expected payments growth after the end of the forward estimates.

#### **Scenario 1: Higher yield assumptions**

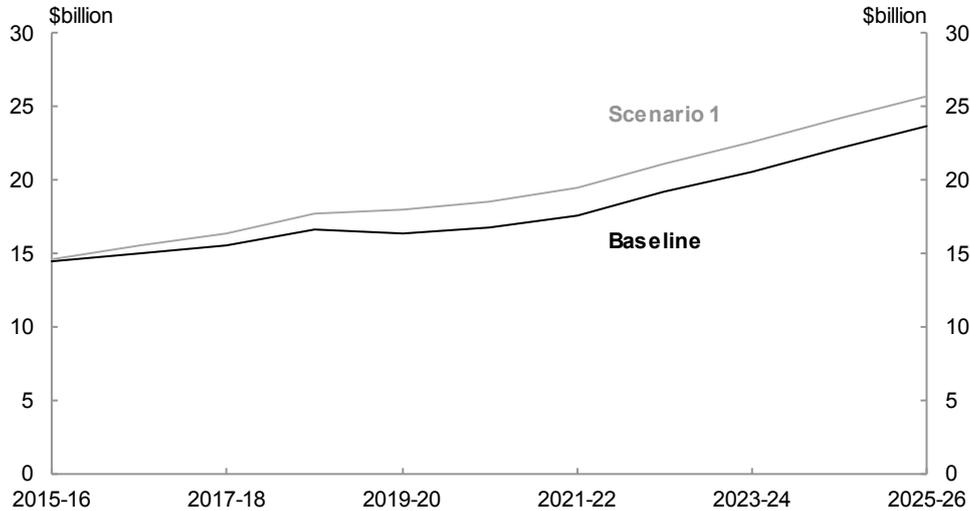
Future borrowing costs are determined by interest rates on Government bonds (that is, bond yields) at the time of issuance. Significant levels of CGS are expected to be issued in current years. This is both to finance projected cash deficits, as well as to refinance maturing debt.

This debt issuance requirement means that an increase in yields from current rates would lead to an increase in public debt interest costs.

Government bond yields have recently been at historically low levels. On 30 April 2015, the yield on 10-year Treasury bonds was 2.6 per cent, compared with 3.1 per cent at the time of the 2014-15 Mid-Year Economic and Fiscal Outlook (MYEFO). At the 2008-09 Budget, the interest rate on 10-year Treasury bonds was over 6 per cent.

Chart 11 shows public debt interest costs to 2025-26 under the yield assumptions for the 2015-16 Budget, compared with the higher yield assumptions at the 2014-15 MYEFO. The chart shows that if the 2014-15 MYEFO yield assumption were applied to borrowings estimated in the 2015-16 Budget, public debt interest costs would be \$1.1 billion higher by 2018-19, and \$2.1 billion higher by 2025-26.

**Chart 11: Impact of higher yields on public debt interest costs over the medium term**



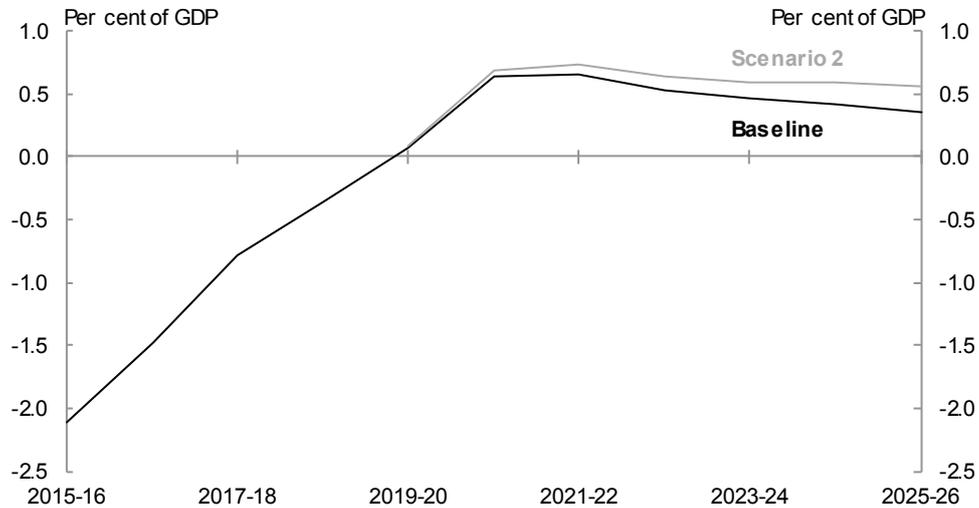
Source: Treasury projections.

The increase in public debt interest costs would increase payments, and therefore lead to a deterioration in the underlying cash balance. This would flow through to further borrowings, increasing CGS on issue and net debt. A return of the yield curve to levels closer to historical averages would be expected to lead to even larger increases in public debt interest costs.

**Scenario 2: Slower than anticipated payments growth**

The rate of payments growth affects the underlying cash balance over time. This may be driven by changes in demand for particular programs, or changes in the cost of those programs, for example, wages growth. This scenario shows the impact of 10 per cent of total government payments growing 1 per cent slower than expected, after the end of the forward estimates. The impact of this scenario on the underlying cash balance is illustrated in Chart 12.

**Chart 12: Impact on underlying cash balance of slower payments growth over the medium-term**

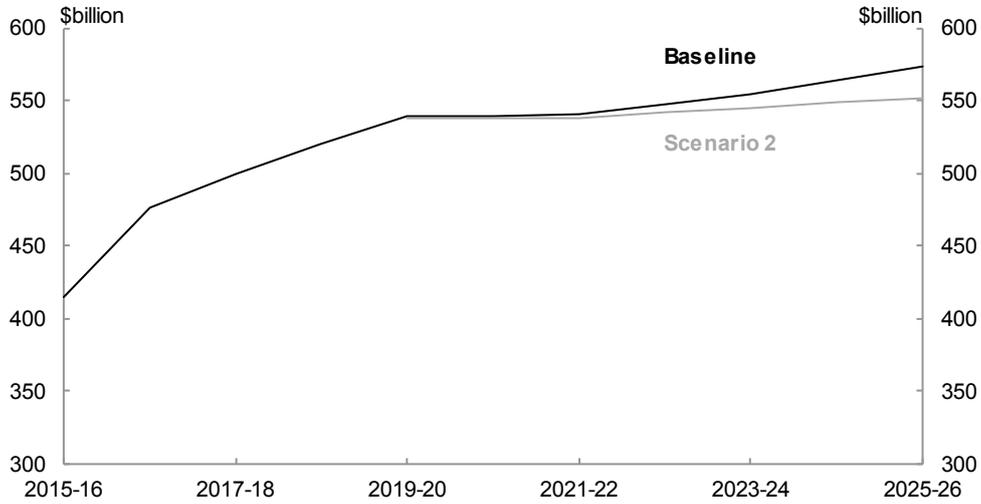


Source: Treasury projections.

Chart 12 shows that the underlying cash balance would improve, and be higher by 0.2 per cent of GDP by 2025-26, compared with the baseline scenario. This incorporates the benefits from lower public debt interest costs, projected to be \$1.1 billion lower in 2025-26 compared with the baseline scenario.

The improvement in the underlying cash balance as a result of slower payments growth would also have an effect on the total face value of CGS on issue (see Chart 13). This scenario would be projected to lead to a decrease in the total face value of CGS on issue of \$21 billion compared with the baseline scenario.

**Chart 13: Impact on face value of total CGS on issue of slower payments growth over the medium term**



Source: Treasury projections.

The impact of a scenario in which a proportion of government payments grows faster than currently projected is broadly symmetrical. That is, the impact is around the same magnitude, but in the opposite direction.

