STATEMENT 7: FORECASTING PERFORMANCE AND SCENARIO ANALYSIS

The economic and fiscal forecasts presented in the 2016-17 Budget incorporate assumptions and judgments based on information available at the time of preparation. These forecasts are subject to considerable uncertainty.

This Statement provides details of the historical performance of Budget forecasts for the key macroeconomic aggregates of real and nominal GDP as well as for estimates of government receipts. The Statement also presents a number of scenarios seeking to illustrate the sensitivity of budget aggregates to changes in economic forecasts and projections, and some underlying assumptions.

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OVERVIEW

The macroeconomic and fiscal forecasts presented in the 2016-17 Budget incorporate assumptions and judgments based on information available at the time of preparation.

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 contribute to better policy and decision making.

This Statement presents an assessment of the historical performance of Budget forecasts and estimates of uncertainty around the forecasts. This assessment is consistent with the practice of many other international fiscal agencies to improve forecasting performance and, more importantly, to raise awareness of the uncertainties inherent in forecasting.

This Statement also presents an analysis of the sensitivity of 2016-17 Budget estimates to changes in key assumptions as required under the *Charter of Budget Honesty Act 1998*. An analysis of how alternative assumptions over the medium term can affect the economic and fiscal projections is also included.

FORECASTING PERFORMANCE

Macroeconomic forecasting performance

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

Forecasts are subject to inherent uncertainties. Generally, these uncertainties tend to increase as the forecast horizon lengthens. Forecast errors (the difference between forecasts and outcomes) can arise for a range of reasons — for example, differences between the assumed path of key variables and outcomes, as well as changes in the relationships between different parts of the economy.

Confidence intervals seek to illustrate that there is a range of plausible outcomes around any forecast. Confidence intervals are based on observed historical patterns of forecast errors. They are a guide to the degree of uncertainty around a forecast and can span a wide range of outcomes.

Real GDP forecasts

Real GDP forecasts in the Budget are based on a number of key assumptions including the exchange rate, interest rates and commodity prices. The forecasts also 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 — and also the reliability of the economic relationships embodied in the macroeconomic models used to produce them.

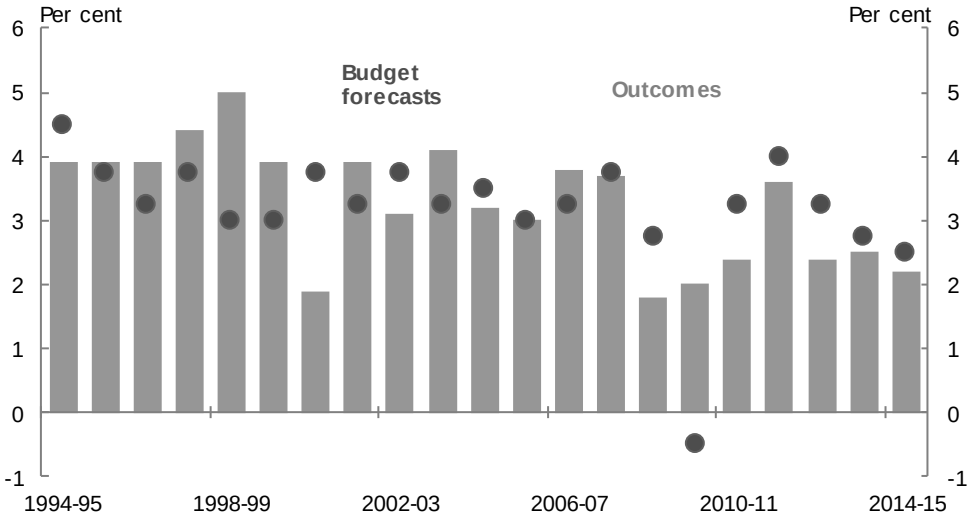
For example, a lower exchange rate than assumed would be expected to result in higher than forecast growth in Australia's export volumes, including in tourism and manufacturing. At the same time, import prices would be higher, resulting in lower growth in import volumes. Overall, this would lead to a larger contribution from 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 the pace or nature of economic activity during the forecast period. A faster than forecast pick-up in Australia's economic growth in 2016-17 could be driven by stronger consumer spending, underpinned by faster than forecast growth in employment, as activity gathers pace in the economy's labour-intensive service sectors. Alternatively, faster economic growth could be driven by stronger than expected major trading partner growth, which could boost exports and, in turn, stimulate incomes and demand throughout the economy.

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 one 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 seem to have since returned to the usual range.

National Accounts data are not yet available for the whole of 2015-16. Information to date suggests that real GDP growth is evolving broadly in line with last year's Budget forecast, however there are offsetting results at the component level. Stronger growth in dwelling investment and exports are expected broadly to balance higher import growth and softer than expected business investment, particularly in the economy's non-mining sectors. Other components of GDP, including consumption and mining investment, have so far evolved broadly as forecast in the 2015-16 Budget.

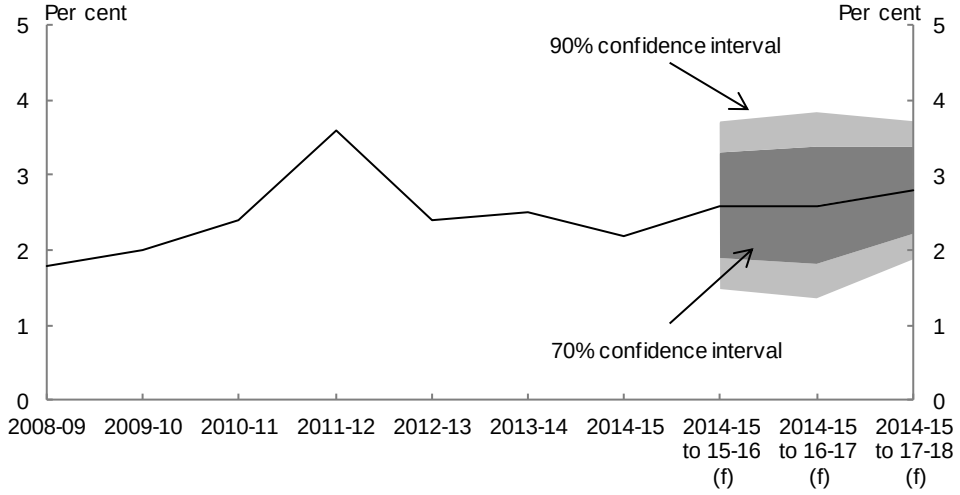
Chart 1: Budget forecasts of real GDP growth



Note: Outcome is as published in the December quarter 2015 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 2016-17 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.

Chart 2: Confidence intervals around real GDP growth rate forecasts



Note: The central line shows the outcomes and the 2016-17 Budget forecasts. Annual growth rates are reported for the outcomes. Average annualised growth rates from 2014-15 are reported for 2015-16 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 2015 National Accounts data.
Source: ABS cat. no. 5206.0, Budget papers and Treasury.

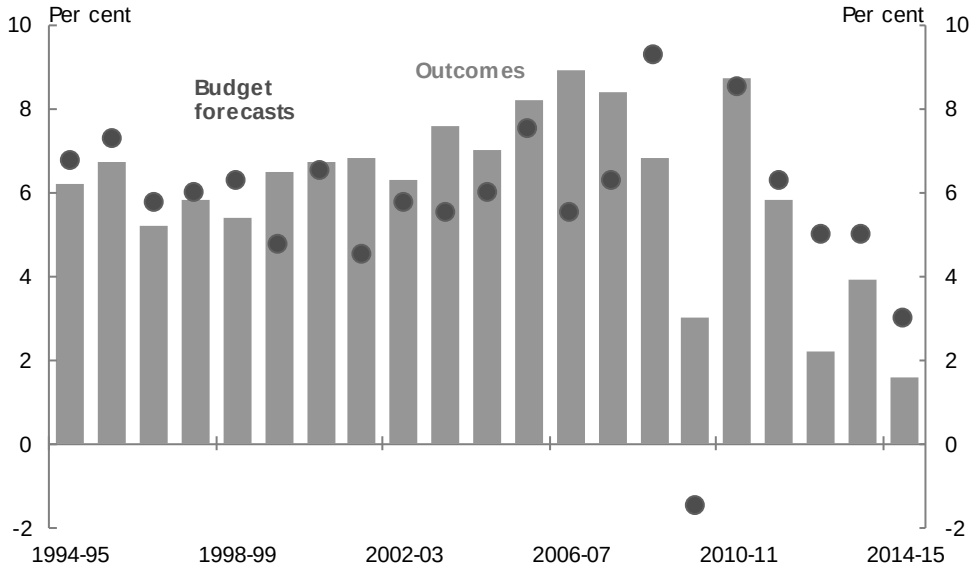
Nominal GDP forecasts

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 expected or assumed declines in the prices of key commodities in recent years — particularly for iron ore — have meant that nominal GDP was overestimated.

In 2015-16, the outcome for nominal GDP growth is expected to be lower than forecast in last year's Budget. This primarily reflects weaker than expected wages and domestic price inflation, which has contributed to lower than forecast outcomes for the GDP deflator.

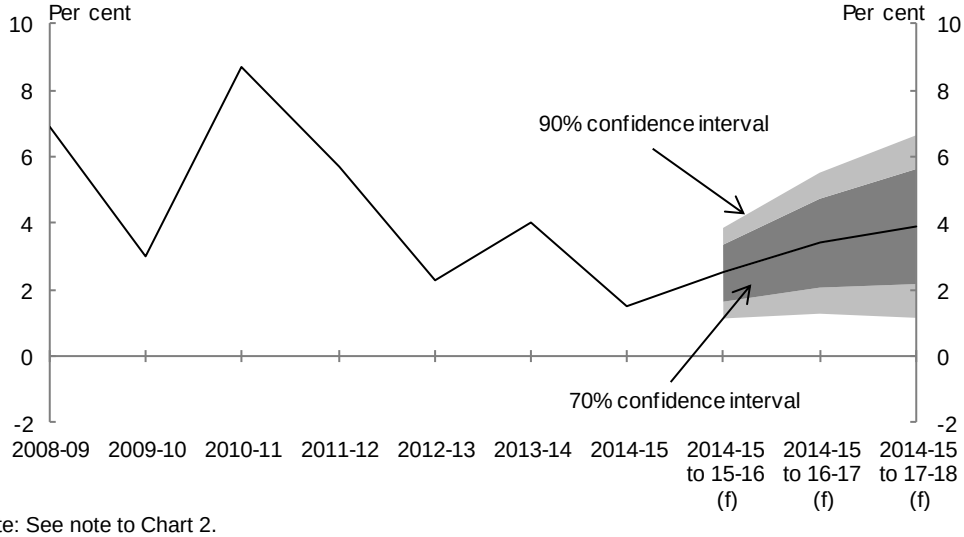
Chart 3: Budget forecasts of nominal GDP growth



Note: Outcome is as published in the December quarter 2015 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 commodity prices. Average annualised growth in nominal GDP in the two years to 2016-17 is expected to be around 3½ per cent, with the 70 per cent confidence interval ranging from 2 to 4¾ per cent (Chart 4).

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 Budget are based on economic forecasts and projections as well as estimates of the impact of Government spending and revenue measures. Changes to the economic forecasts and projections underlying the estimates — for example, inflation, profits, wages growth, population and unemployment — will affect forecasts for receipts and payments. As such, this will have a direct impact on the profile of the underlying cash balance and government debt. Even small movements in economic forecasts and projections or outcomes that defer from the forecasts and projections can result in large changes to the budget aggregates, for example, decreasing payments or increasing receipts with flow-on effects to the underlying cash balance.

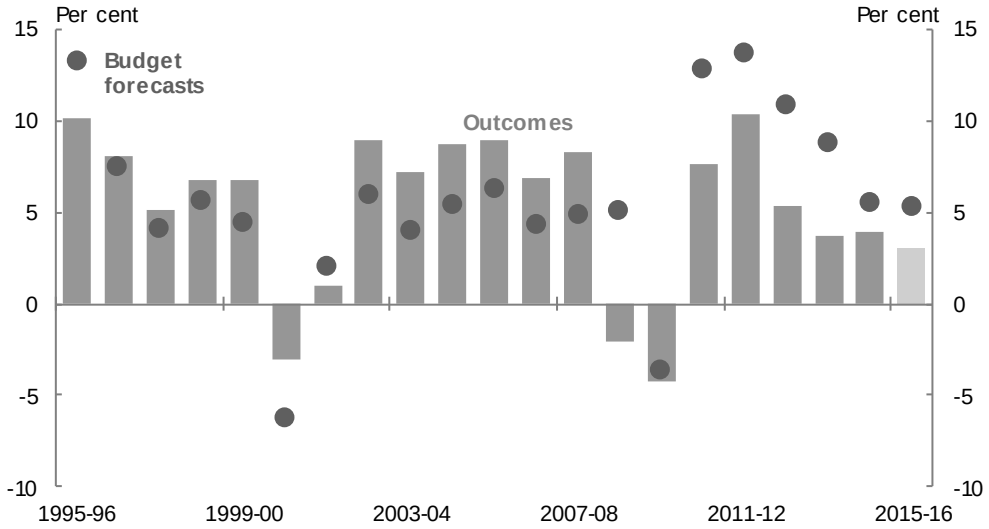
Receipts

The Government's tax receipts estimates are generally prepared using a 'base plus growth' methodology. The last known outcome (2014-15 for the 2016-17 Budget) is used as the base to which estimated growth rates are applied, resulting in tax receipts estimates for the current and future years.

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).

Chart 5: Budget forecasts of tax receipts growth



Note: Forecast error for 2015-16 is an estimate, and abstracts from Visa Application Charges which were reclassified from non-tax receipts to tax receipts at the 2015-16 MYEFO.
Source: ABS cat. no. 5206.0, Budget papers and Treasury.

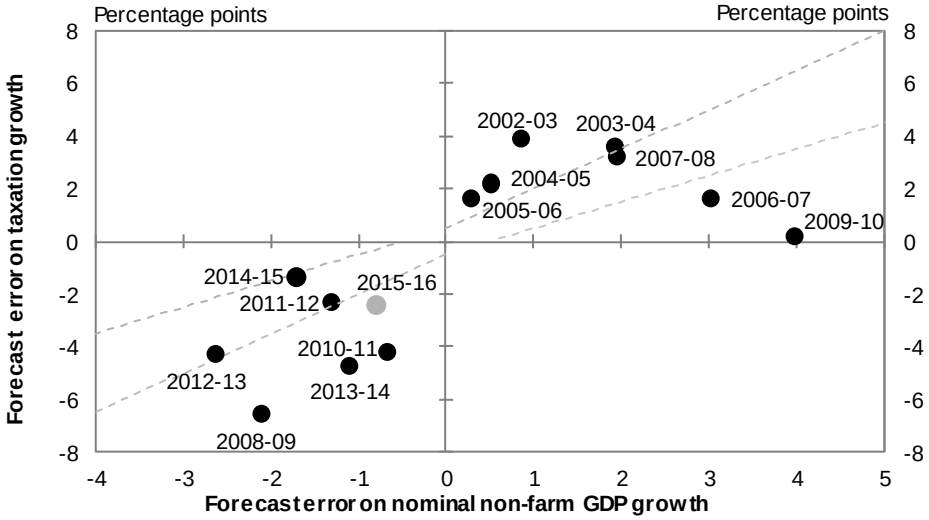
Generally, there is a strong correlation between the accuracy of the forecasts of nominal GDP and its components and the forecasts for tax receipts. On average, economic forecast errors will be magnified in receipts forecast errors, owing to the progressive nature of personal income tax. Chart 6 plots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

The forecast for 2015-16 tax receipts (excluding CGT) in the 2015-16 Budget is expected to be an over-estimate of around 2.4 percentage points, compared with an over-estimate of around 0.8 percentage points for nominal non-farm GDP growth.

The largest contributor to the expected forecast error in 2015-16 is from the shortfall in company tax. In 2015-16, company tax is estimated to be $3.5 billion (5.1 per cent) lower than expected in the 2015-16 Budget. This is primarily driven by the fall in commodity prices in recent years, lowering profitability in the mining sector.

Another significant contributor to the expected forecast error for 2015-16 is from gross income tax withholding which is estimated to be $2.6 billion (1.5 per cent) below the forecast of the 2015-16 Budget as a result of lower-than-expected wages growth. Discussions of earlier years' forecast performance can be found in previous budgets.

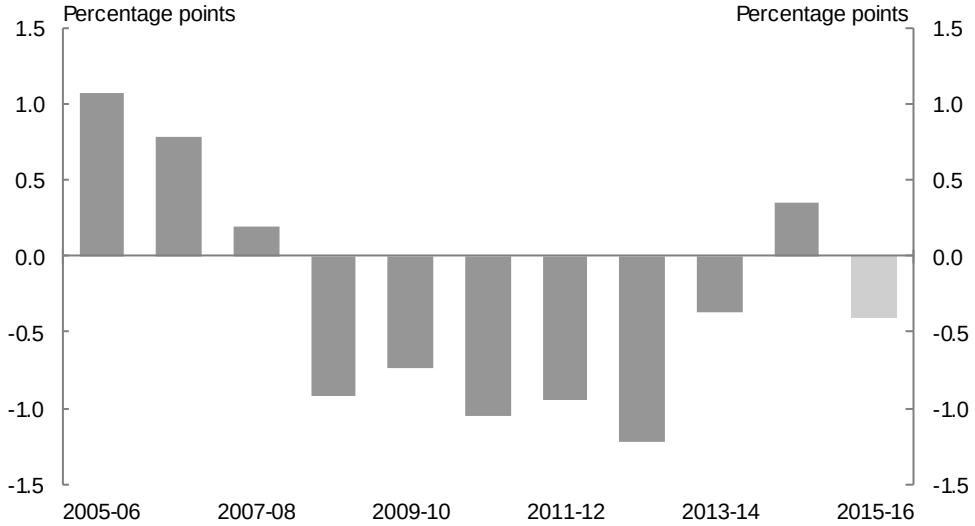
Chart 6: Budget forecast errors on nominal non-farm GDP growth and taxation receipts growth (excluding CGT)



Note: The lower and upper lines indicate the expected forecast error in tax receipts given the associated forecast error in nominal non-farm GDP growth. Forecast errors outside this range could be a result of factors such as timing of tax receipts. The 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. Forecast error for 2015-16 is an estimate, and abstracts from Visa Application Charges which were reclassified from non-tax receipts to tax receipts at the 2015-16 MYEFO.
Source: ABS cat. no. 5206.0, Budget papers and Treasury.

From 2008-09, forecast errors in tax receipts have been affected significantly by the economic downturn following the global financial crisis and, in particular, the impact on CGT (Chart 7).

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



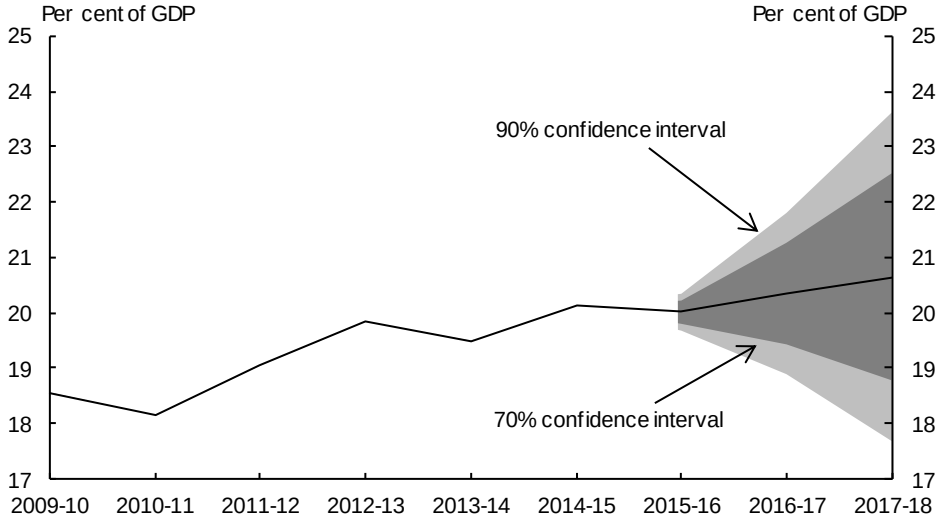
Note: Forecast error for 2015-16 is an estimate.
Source: Treasury.

Forecasting CGT is very difficult. Asset price movements above or below the assumption may cause CGT to differ significantly from the forecast. Further, CGT only applies to realised gains, so even if the asset prices are consistent with the assumptions, 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 2011-12 Budget), and the utilisation of these losses continues to generate large uncertainties in both the timing and magnitude of the forecasts.

Chart 8 shows confidence intervals around the forecasts for receipts (excluding GST[1] and including Future Fund earnings). 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.

Chart 8: Confidence intervals around receipts forecasts



Note: The central line shows the outcomes and the 2016-17 Budget point estimate forecasts. Confidence intervals use RMSEs for Budget forecasts from the 1998-99 Budget onwards.
Source: Treasury.

The chart shows that there is always considerable uncertainty around receipts forecasts and that this uncertainty increases as the forecast horizon lengthens. It suggests that in 2016-17, the width of the 70 per cent confidence interval for the 2016-17 Budget receipts forecast is approximately 1.8 per cent of GDP ($30 billion) and the 90 per cent confidence interval is approximately 2.9 per cent of GDP ($50 billion).

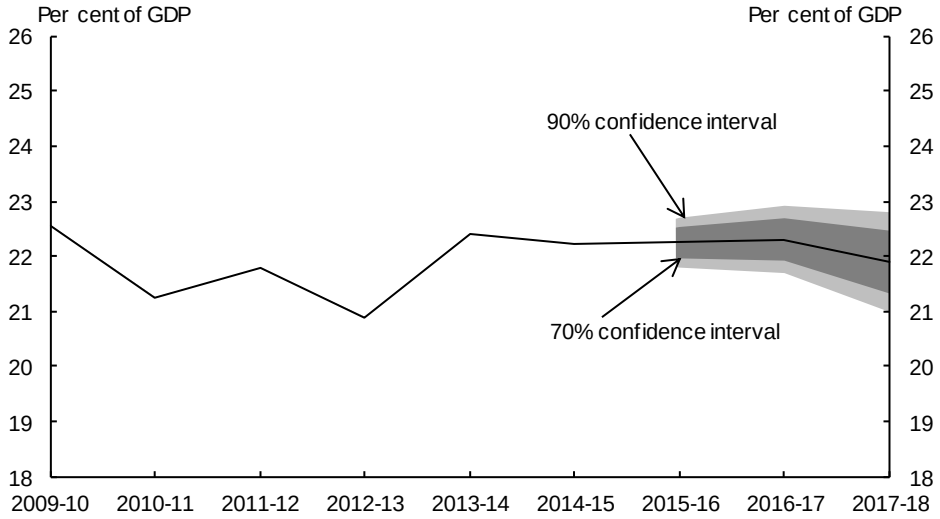
1 GST was not reported as a Commonwealth tax in budget documents prior to the 2008-09 Budget. As a result, GST data have been removed from historical receipts and payments data to abstract from any error associated with this change in accounting treatment.

Payments

The Government's payments estimates are prepared by agencies that comprise the Australian Government general government sector. An assessment of payments forecasting 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 receipts estimates, historical policy decisions are excluded[2], and future policy decisions are out of scope. Payments estimates include the public debt interest impact of policy decisions.[3]

Chart 9: Confidence intervals around payments forecasts



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

The chart shows that there is moderate uncertainty around payments forecasts. In 2016-17, the width of the 70 per cent confidence interval for the 2016-17 Budget payments forecast is approximately 0.8 per cent of GDP ($15 billion) and the 90 per cent confidence interval is approximately 1.2 per cent of GDP ($20 billion).

2 The allowance for historical policy includes only new policy decisions made at each update. No allowance is made for other decisions, such as assistance for the impact of natural disasters or changes to the timing of projects announced in previous updates. These decisions will contribute to historical forecast errors and therefore increase the size of the confidence intervals around payments.

3 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.

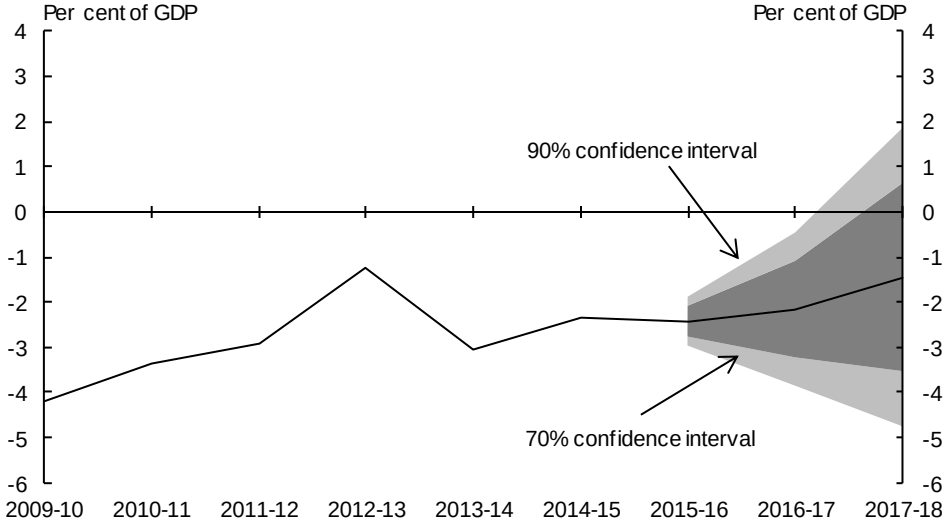
Payments outcomes can differ from forecasts for a number of reasons. Demand-driven programs, such as payments to individuals and some social services, form the bulk of Government expenditure. Forecasts of payments associated with a number of these government programs depend on forecasts of economic conditions.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

Underlying cash balance

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

In 2016-17, the width of the 70 per cent confidence interval for the 2016-17 Budget underlying cash balance forecast is approximately 2.1 per cent of GDP ($35 billion) and the 90 per cent confidence interval is approximately 3.4 per cent of GDP ($60 billion). In line with receipts forecasts, uncertainty increases over the estimates period.

Chart 10: Confidence intervals around the underlying cash balance forecasts



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

SENSITIVITY AND SCENARIO ANALYSIS

Small movements in economic forecasts or projections can improve or worsen the underlying cash balance, depending on their impacts on payments and receipts. This in turn can drive changes in gross and net debt. Consideration of particular scenarios and sensitivity analysis demonstrates the potential impact of these changes. This

analysis highlights the uncertainties that governments face should risks eventuate — for example, in meeting budget forecasts or fiscal targets.

At the 2015-16 Budget, the analysis included two economic scenarios covering the two forecast years showing the illustrative impact on the fiscal aggregates.

The analysis presented in the 2016-17 Budget has been expanded to include four economic scenarios that have impacts over the medium term.

Scenarios 1 and 2 explore the sensitivity of fiscal aggregates to a fall in the terms of trade and a delayed recovery in non-mining business investment. These risks are outlined in Statement 2.

Scenarios 3 to 6 illustrate the sensitivity of fiscal aggregates to changes in key assumptions underpinning the medium-term economic projections.

Sensitivity analysis over the forecast period

The following two scenarios provide a rule of thumb indication of the sensitivity of receipts, payments and the underlying cash balance to changes in the economic outlook over the forecast period.

Scenario 1: Fall in the terms of trade

This scenario considers the consequences of a permanent 10 per cent fall in world prices of non-rural commodity exports through 2016-17. The price fall is consistent with a fall in the terms of trade of 4¾ per cent and a reduction in nominal GDP of 1 per cent by 2017-18. The sensitivity analysis shows the flow-on effects to GDP, the labour market and prices. The impacts in Table 1 are stylised and refer to percentage deviations from the Budget forecast levels.

Table 1: Illustrative impact of a permanent 10 per cent fall in non-rural commodity prices (per cent deviation from the Budget level)[4]

	Impact after 1 year (2016-17) per cent	Impact after 2 years (2017-18) per cent
Real GDP	0	- 1/4
GDP deflator	- 1/2	- 3/4
Nominal GDP	- 1/2	-1
Employment	0	- 1/4
Wages	- 1/4	- 1/2
CPI	0	- 1/4
Company profits	-1 3/4	-3 1/4
Nominal household consumption	0	- 1/2

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.

Assuming no change in exchange rates or interest rates, the fall in export prices leads directly to lower overall output prices (as measured by the GDP deflator) and lower domestic incomes compared with Budget levels. Lower domestic incomes cause both consumption and investment to fall, resulting in lower real GDP and employment and further falls in wages. The fall in aggregate demand puts downward pressure on domestic prices.

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. The impact on company tax is larger in 2017-18, partly owing to lags in tax collections and a larger impact on company profits in the second year of the scenario period. Lower company profits are assumed to flow through to lower Australian equity prices, therefore reducing capital gains tax from individuals, companies and superannuation funds.

On the payments side, a significant proportion of government expenditure is partially indexed to movements in costs (as reflected in various price and wage indicators). 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, unemployment benefits and other allowances) increases in both years, reflecting a higher number of unemployment benefit recipients. The increase in spending on unemployment benefits in 2017-18 is partially offset by reduced expenditure on pensions and allowances reflecting slower growth in benefit rates resulting from lower inflation and wages growth. At the same time other payments linked to inflation fall in line with the reduced growth in 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 $2.2 billion in 2016-17 and around $5.4 billion in 2017-18 (see Table 2).

Table 2: Illustrative sensitivity of the budget balance to a permanent 10 per cent fall in non-rural commodity prices

	2016-17 $b	2017-18 $b
Receipts		
Individuals and other withholding taxes	-0.4	-1.4
Superannuation fund taxes	0.0	-0.1
Company tax	-1.6	-3.2
Goods and services tax	0.0	-0.3
Excise and customs duty	0.0	-0.2
Other taxes	-0.1	-0.2
Total receipts	**-2.1**	**-5.4**
Payments		
Income support	-0.1	-0.2
Other payments	0.0	0.0
Goods and services tax	0.0	0.3
Total payments	**-0.1**	**0.1**
Public debt interest	0.0	-0.1
Underlying cash balance impact(a)	**-2.2**	**-5.4**

(a) Estimated impacts fall within the 70 per cent confidence intervals for years 2016-17 and 2017-18, as shown in Charts 8 to 10.

This scenario assumes no change in exchange rates. Under a floating exchange rate, however, a fall in the terms of trade would be expected to lead to a depreciation. This would likely dampen the effects on real GDP, meaning the impact on the fiscal position could be smaller.

Scenario 2: Delayed recovery in non-mining business investment

This scenario considers the consequences of a weaker outlook for business investment than forecast in the Budget. The scenario involves a 3 and 6 per cent reduction in new business investment in 2016-17 and 2017-18 respectively, compared with Budget levels, as a result of a delayed recovery in non-mining business investment. Under this scenario, the level of non-mining business investment would be broadly flat over this two-year period.

Once again, the sensitivity analysis evaluates the flow-on effects to GDP, the labour market and prices. The impacts in Table 3 are stylised and refer to percentage deviations from the Budget forecast levels.

Table 3: Illustrative impact of a delayed recovery in non-mining business investment (per cent deviation from the Budget level)[5]

	Impact after 1 year (2016-17) per cent	Impact after 2 years (2017-18) per cent
Real GDP	- 1/4	- 1/2
GDP deflator	0	- 1/4
Nominal GDP	- 1/4	- 3/4
Employment	- 1/4	- 1/2
Wages	0	- 1/4
CPI	0	- 1/4
Company profits	-1	-1 3/4
Nominal household consumption	0	- 1/2

Assuming no change in exchange rates or interest rates, the delayed recovery in non-mining business investment leads directly to lower real GDP compared with Budget levels and also lower imports. This fall in output depresses employment and, in turn, wages. This results in lower levels of consumption. The fall in aggregate demand puts downward pressure on domestic prices.

On the receipts side, lower nominal GDP results in lower tax collections. The initial impact is largest on corporate profits and company tax. In the second year, the larger impact on wages and consumption is expected to result in a larger reduction to tax receipts from individuals and the goods and services tax.

On the payments side, similar to Scenario 1, overall estimated expenditure on income support payments increases in both years due to a higher number of unemployment benefit recipients. The increase in spending on unemployment benefits in 2017-18 is partially offset by reduced expenditure on pensions and allowances reflecting lower inflation and wages growth. In addition, other payments linked to inflation fall in line with the reduced growth in prices.

The overall impact of the delayed recovery in non-mining business investment is a decrease in the underlying cash balance of around $1.5 billion in 2016-17 and around $3.9 billion in 2017-18 (see Table 4).

5 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 4: Illustrative sensitivity of the budget balance to a delayed recovery in non-mining business investment

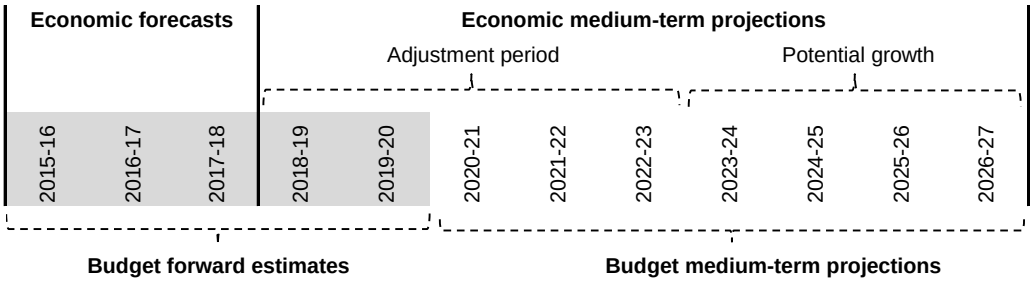
	2016-17 $b	2017-18 $b
Receipts		
Individuals and other withholding taxes	-0.4	-1.4
Superannuation fund taxes	0.0	-0.1
Company tax	-0.9	-1.7
Goods and services tax	0.0	-0.3
Excise and customs duty	-0.1	-0.2
Other taxes	0.0	0.0
Total receipts	**-1.4**	**-3.7**
Payments		
Income support	-0.1	-0.4
Other payments	0.0	0.0
Goods and services tax	0.0	0.3
Total payments	**-0.1**	**-0.1**
Public debt interest	0.0	-0.1
Underlying cash balance impact(a)	**-1.5**	**-3.9**

(a) Estimated impacts fall within the 70 per cent confidence intervals for years 2016-17 and 2017-18, as shown in Charts 8 to 10.

Sensitivity analysis over the medium term

The economic estimates underlying the fiscal projections divide the forecast horizon into a near-term forecast period and a medium-term projection period. The forecast period covers the two years following the current financial year. The medium-term projection period covers the remaining nine years (Chart 11). For the fiscal projections, the medium-term projection period is the seven years after the Budget forward estimates.

Chart 11: Medium-term projection period



Source: Treasury.

The economic and fiscal projections are not equivalent to the economic and fiscal forecasts. The forecasts are based on a range of short-run forecasting methodologies informed by professional opinion and information from business liaison. By contrast, the projections are based on a medium-term methodology. It is crucial to note that they are not estimates or judgments about how conditions will unfold over the medium term. An important assumption is that Government policy does not change.

Economic projections framework

Treasury's medium-term economic projection methodology assumes that any spare capacity remaining in the economy at the end of the forecast period will be absorbed over the following five years (the adjustment period). Over this period, labour force variables including employment and the participation rate converge to their long-run trend levels as real GDP returns to potential — the maximum output the economy can produce when there is full employment. This assumption is crucial to the methodology. Importantly, the assumed five-year timeframe may not be validated and this would affect the projections.

Potential GDP is estimated based on analysis of underlying trends for population, productivity and participation. The Budget forecasts imply that real GDP will be lower than potential GDP at the end of the forecast period — that is, there will be a negative output gap. To close the estimated output gap and absorb forecast spare capacity in the economy, real GDP is projected to grow faster than potential over the adjustment period (over the five years from 2018-19). By the end of the adjustment period, the output gap is assumed to have closed completely and real GDP grows at its potential rate thereafter.

Fiscal projections framework

Treasury's medium-term fiscal projections use the Budget forward estimates as a base. They are therefore subject to similar risks and uncertainties that affect the fiscal aggregates discussed earlier in this Statement, but the longer timeframes mean these risks and uncertainties can be amplified.

Beyond the forward estimates, a range of simplifying assumptions are used to project government receipts and payments. The main drivers are movements in economic growth, the size and structure of the population and prices. The medium-term economic projections are a critical driver of the fiscal projections. For payments, a key parameter is expected per person costs (in each age bracket) of major government programs based on current Government policy. The projections assume current Government policy does not change.

Changes to the assumptions underpinning Treasury's estimate of Australia's potential GDP — as well as the pace of adjustment back to potential — can have large impacts on the fiscal projections. The following section illustrates the sensitivity of fiscal aggregates to these assumptions over the medium-term projection period.

Output gap scenarios

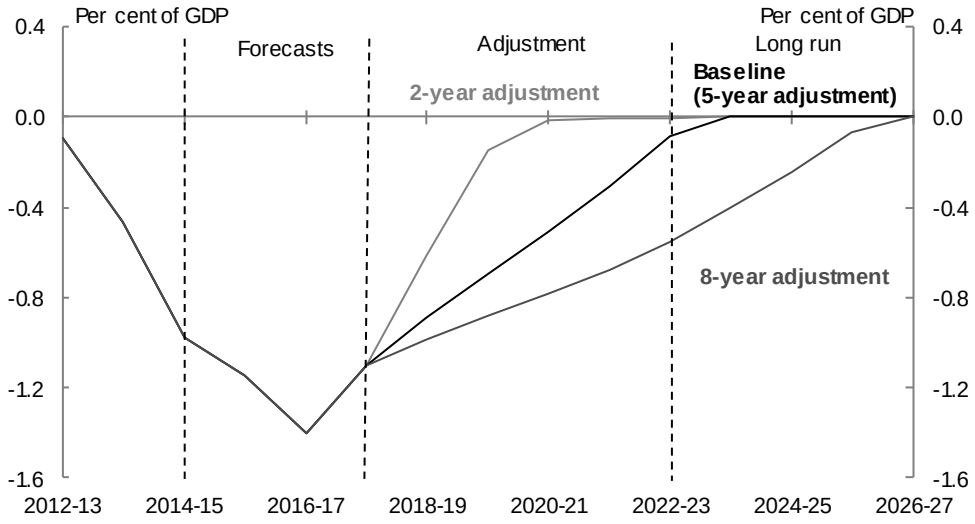
Scenarios 3 and 4: Alternative output gap adjustment period assumptions

As noted above, the assumption that the adjustment takes five years is crucial and is subject to considerable conjecture as to whether it is appropriate. Scenarios 3 and 4 examine the consequences of shorter (2 years) and longer (8 years) adjustment periods, respectively.

Over the five year adjustment period, real GDP is projected to grow at 3 per cent a year — faster than the estimated potential growth rate of the economy of 2¾ per cent — to close an estimated output gap of around 1 per cent of GDP.

In Scenario 3, a shorter adjustment period requires faster real GDP growth over the adjustment period (Chart 12). In the two-year adjustment period, annual real GDP growth is 0.3 percentage points higher than in the baseline projections to return the economy to its potential level over two years rather than five years.

Chart 12: Output gap — Illustrative impact of closing the output gap over two or eight years



Source: Treasury.

Under this scenario employment grows more quickly than in the Budget projections, leading to lower unemployment over the first five projection years. This in turn generates faster growth in wages and domestic prices. While the long-run level of real GDP is unchanged from Budget, the price level is permanently higher. As a result, closing the output gap over two years increases the level of nominal GDP in 2026-27 by around 1 per cent compared with Budget.

The higher level of nominal GDP also means higher projected tax receipts over the 10-year period to 2026-27. Payments are projected to be lower, driven largely by lower projected unemployment which reduces unemployment benefit recipient numbers.

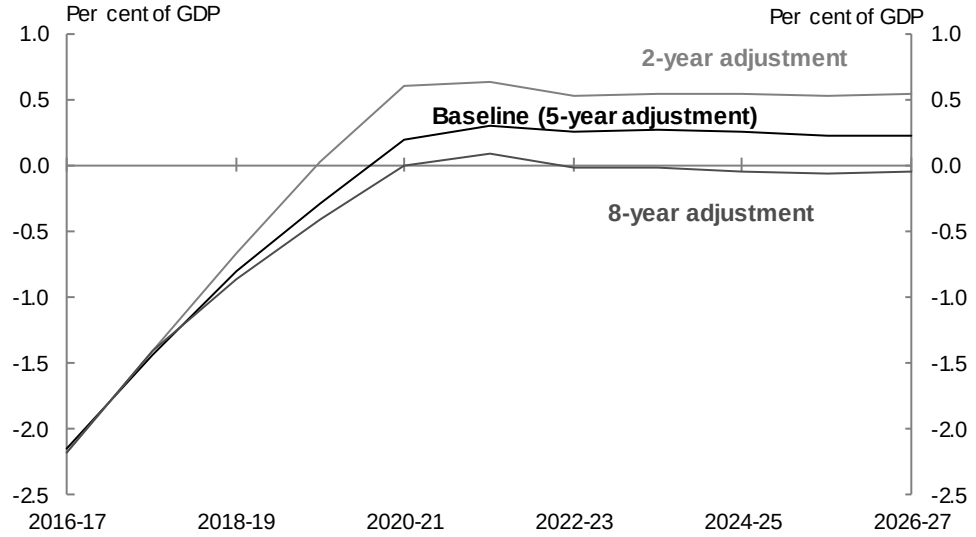
Overall, the faster adjustment in Scenario 3 has a positive impact on the underlying cash balance (Chart 13). In this scenario, the underlying cash balance peaks at 0.6 per cent of GDP in 2020-21, to be 0.5 per cent of GDP in 2026-27. This is compared with a peak of 0.3 per cent of GDP in 2021-22 to be 0.2 per cent of GDP by the end of the medium term in the baseline.

The variation in the underlying cash balance would have implications for the level of government debt. Under Scenario 3, gross debt would be lower, reflecting lower Government borrowing associated with the stronger Budget position. Public debt interest payments would also be lower. This reinforces the improvement in the underlying cash balance.

In Scenario 4, a longer adjustment period requires slower real GDP growth over the adjustment period to return the economy to its potential level over eight years rather than five. This leads to higher unemployment over the eight years of the adjustment period and slower growth in wages and domestic prices compared with the Budget projections.

A slower adjustment in Scenario 4 has a negative impact on the underlying cash balance. Receipts are lower across the period and payments higher overall. In this scenario, the underlying cash balance peaks at 0.1 per cent of GDP in 2021-22, reaching a small deficit in 2026-27. Gross debt and public debt interest payments would be higher than in the baseline scenario.

Chart 13: Underlying cash balance — Illustrative impact of closing the output gap over two or eight years



Source: Treasury projections.

Productivity scenarios

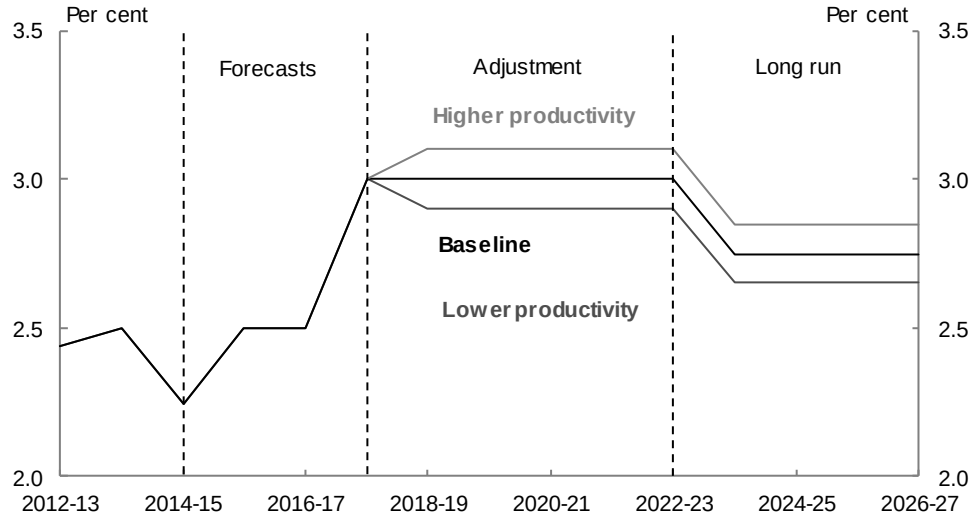
Scenarios 5 and 6: Alternative trend labour productivity growth assumptions

Labour productivity growth is an important determinant of Australia's potential GDP growth. The Budget projections assume that labour productivity grows at a trend rate of 1.6 per cent a year, in line with its 30-year average annual growth rate.

Scenario 5 examines the consequences of a trend rate of labour productivity growth of 1.5 per cent a year, which is 0.1 percentage points lower than the Budget projections. This reduces the economy's potential growth rate over the projection period (Chart 14). As a result, real GDP grows more slowly over the adjustment period compared with the baseline projections to close the output gap and absorb spare capacity in the economy.

By the end of the projection period in 2026-27, real GDP is around 1 per cent lower compared with the Budget projections. Lower labour productivity growth also flows through to lower wages. Nominal GDP falls in line with real GDP as there is only a small effect on wages per unit of output (nominal unit labour costs) and, in turn, prices.

Chart 14: Real GDP growth rate — Illustrative impact of higher and lower trend productivity growth



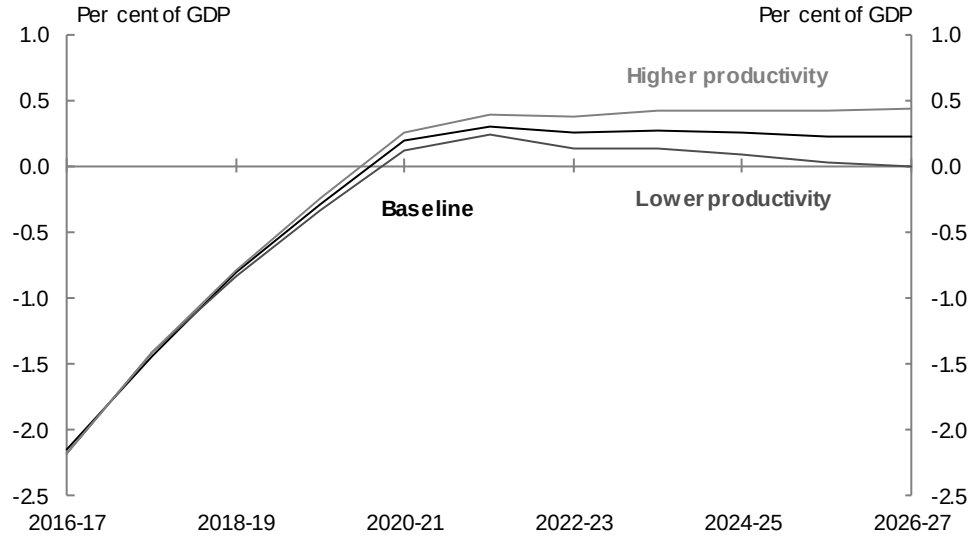
Source: ABS cat. no. 5206.0 and Treasury.

In Scenario 5, the underlying cash balance peaks at 0.2 per cent of GDP in 2021-22 before deteriorating to balance by the end of the medium term. This is because of lower projected receipts, owing to lower nominal GDP and a broadly neutral impact on government payments. Gross debt would be higher, reflecting higher borrowing associated with larger Budget deficits. Public debt interest would also be higher.

Scenario 6 assumes a trend labour productivity growth rate of 1.7 per cent a year, which is 0.1 percentage points higher than the assumption factored into the Budget projections. This has broadly opposite effects on the economy compared with Scenario 5, resulting in higher real GDP and higher wages.

In Scenario 6, the underlying cash balance reaches a surplus, peaking at 0.4 per cent of GDP (Chart 15). Gross debt would be lower, reflecting lower Government borrowing. Public debt interest would also be lower.

Chart 15: Underlying cash balance — Illustrative impact of higher and lower trend productivity growth



Source: Treasury projections.