
Risks and Scenarios

Overview

- This chapter outlines the general economic and fiscal risks associated with the major assumptions underpinning the main forecast. Risks associated with the main forecast of the *Half Year Update* are evenly balanced, with upside risks to the domestic outlook having increased relative to recent *Economic and Fiscal Updates*, while risks associated with a negative global shock remain.
- Domestically, risks with potentially the largest impact on the New Zealand economy relate to the speed of the Canterbury rebuild and its interaction with the wider economy, the extent to which demand is boosted by population growth via higher net migration inflows and the degree of caution displayed by consumers.
- Major advanced economies continue to undergo significant adjustments to reduce government debt, while the effects of monetary easing remain uncertain. Emerging economies are at risk from a rise in global interest rates once the US begins tapering its quantitative easing programme, which could have negative implications for New Zealand's economy through both financial channels and the terms of trade.
- Two scenarios are presented that represent just two possible ways the New Zealand economy could deviate from the main forecast. Scenario one is based on a stronger domestically driven, cyclical pick-up in GDP growth, in part driven by higher external net migration. This scenario results in nominal GDP being \$20.7 billion higher over the forecast period. In scenario two, a slowing of growth in emerging Asia negatively impacts New Zealand's terms of trade and lowers nominal GDP by \$12.5 billion over the forecast period. If these economic risks or any significant deviations from the main forecast were to eventuate they would impact on the Government's fiscal performance and position.
- In addition to risks associated with the economy, the Crown is also subject to expenditure and balance sheet risks. In particular, volatility in market prices such as interest rates can have a significant impact on the Crown's fiscal position.

Introduction

The first part of this chapter outlines the key risks to the economic outlook. These risks mainly relate to the key judgements associated with the main forecast. In the second part of the chapter, two scenarios are presented that represent just two possible ways the New Zealand economy could deviate from the main forecast. The chapter then focuses on the established channels between the risks facing the economy and the Crown's fiscal position.

Economic Risks

Risks to the forecasts are relatively balanced

As in the *Budget Update*, risks around the main forecasts are fairly evenly balanced, with upside risks to the domestic outlook having increased relative to recent *Economic and Fiscal Updates*, while risks associated with a negative global shock remain.

There are a large number of ways in which events could turn out different from forecast. The risks with potentially the largest impact on the New Zealand economy relate to the speed of the Canterbury rebuild and its interaction with the wider economy, the extent to which demand is boosted by population growth via higher net migration inflows and consumer behaviour. Global economic developments, including shocks as the world economy undergoes an extended period of transition, could lead to more rapid adjustments for the prices of some of our main commodity exports and therefore affect the path of the terms of trade.

All of these factors are likely to have a significant role in influencing the size and dynamics of the current economic cycle. Other key judgements made in the forecasts include the level and flow-through of the exchange rate, the current amount of spare capacity in the economy and monetary policy developments.

The earthquake rebuild remains a significant area of uncertainty...

There is considerable uncertainty associated with the timing and magnitude of the Canterbury earthquake rebuild. Key determinants of the speed of the rebuild include insurance settlements and the capacity and capability of the construction sector. If the rebuild were to progress more slowly than expected, residential and non-residential construction and employment could all be weaker than in the main forecast. The overall size of the rebuild will also be influenced by the extent to which private firms ultimately decide to reinvest insurance proceeds within the Canterbury region.

Another risk to the forecasts is how much the Canterbury rebuild crowds out activity in other parts of the economy. Even with inward migration and the importation of capital goods, New Zealand has limited construction capacity and consequently it is likely that some rebuild activity will crowd out other activity elsewhere. Implicitly this means that activity outside Canterbury at the peak of the building cycle is likely to be a lower share of GDP relative to previous construction upturns. If the pace and level of the Canterbury rebuild is more sluggish, there will be less displacement of activity in the rest of the country and less competition for construction resources, resulting in less upward pressure on prices.

...as does the strength of the current net migration cycle...

Despite large upward revisions to the net migration assumption since the *Budget Update*, there is the possibility that weaker activity in Australia and other developed economies sees even stronger net inflows into New Zealand. The impact on the economy will be influenced by the skills of migrants and the areas where they settle (or remain in the case of New Zealanders who choose not to leave for abroad). For example, appropriately skilled migrant inflows into Canterbury could mitigate some of the risks related to the Canterbury rebuild, albeit adding to accommodation pressures in the near term. However, a large proportion of the population gains from higher net migration will likely place additional pressure on the housing market in other parts of the country, such as Auckland, contributing to stronger domestic demand, which then flows through to the wider economy through multiplier effects.

...while households could be less cautious, resulting in greater cyclical volatility

If households exercise less spending restraint than is anticipated in the main forecasts, consumption may rise faster than disposable income, with the shortfall being funded by rising debt, resulting in a negative saving rate over the forecast period. While this would be positive for GDP growth in the near term, owing to a boost to private consumption, it may require a sharper adjustment in the medium term as households become more indebted and need to repair their balance sheets. Elevated debt levels also expose household balance sheets to sharp corrections in house prices.

The Alternative Scenarios section explores the risk of a more protracted and larger net migration cycle and more willingness on the part of households to spend, all resulting in a more cyclical pick-up across the economy.

Global downside risks persist...

Global risks continue in the background and remain skewed to the downside as major advanced economies continue to undergo significant adjustments to reduce government debt, and in addition the effects of monetary easing and its subsequent withdrawal remain uncertain. Some emerging Asian economies, which are significant for New Zealand's trading partner growth, could also experience weaker growth once global monetary stimulus is withdrawn, particularly in the US.

...with elevated debt levels requiring ongoing adjustment

European countries remain highly indebted, but the probability that the crisis will worsen significantly has subsided over the past year owing to actions taken by the European Central Bank and some pick-up in euro area growth. Nevertheless, there remains considerable ongoing risk of further flare-ups, which would further dampen growth in the region and trigger financial market turmoil if an event was significant enough. Peripheral countries in the euro area continue to struggle with austerity measures which, compounded by poor competitiveness, create the potential for political instability.

The US must also undergo significant adjustment to reduce high government debt. Following on from events in October when the debt ceiling was raised temporarily to prevent a default on interest payments for US Treasury debt, there is a risk that brinkmanship continues to create heightened uncertainty concerning a permanent increase in the debt ceiling. This could lead to significant volatility in global financial markets which rely heavily on US Treasury bills and bonds as collateral.

More sustained growth and therefore reduced need for monetary stimulus...

Well anchored inflation expectations and existing spare capacity mean Japan, the US and the UK are still undertaking significant quantitative easing programmes to stimulate their economies through the purchase of financial assets. However, the US economy has recently shown signs of more sustainable growth and markets are expecting a tapering of quantitative easing in early 2014, although the US remains vulnerable if the removal of stimulus proves to be premature. Japan has implemented additional fiscal stimulus and structural reforms to kick-start growth. However, whether this will translate into sustainable growth over the medium term remains uncertain, particularly following a prolonged period of economic malaise.

...could expose fragilities elsewhere...

A rise in global bond rates once the US tapers its quantitative easing programme could leave some emerging economies significantly exposed given their currently high levels of debt. This could be exacerbated by losses in the banking sector in those emerging economies if the rapid growth in credit in recent years was facilitated by easy lending standards. An increase in US bond rates, combined with a weaker economic outlook in emerging market economies, could also lead to an outflow of foreign capital, putting downward pressure on exchange rates and raising inflation.

Of New Zealand's emerging Asia trading partners, Indonesia and India are the most vulnerable, as neither is currently running a current account surplus. The risk of a severe event similar to the Asian financial crisis in 1997 appears less likely now given that most Asian economies have floating exchange rates, hold larger foreign exchange reserves and have less foreign currency-denominated external debt.

...while risks for New Zealand's key trading partners remain...

Of more significance to New Zealand are the risks to the growth outlook for China, which is our second largest trading partner after Australia. The property investment and construction boom in China following the global financial crisis led to a build-up of poor-quality debt, especially in the local government sector. The risk of a sharp correction in house prices remains, and could expose a high level of bad debts in the banking sector and may cause credit conditions to tighten even further.

China is aiming to rebalance its economy away from export- and investment-led growth towards consumption. Rebalancing could lead to lower growth in the short term, particularly if the transition is disorderly, while faster progress to this goal would benefit New Zealand as it is a major supplier of food products to Chinese households. Weaker growth in China would also negatively impact on activity in emerging Asia, particularly amongst commodity producers, given their reliance on Chinese demand and tightly-linked supply chains.

One of the main risks associated with New Zealand's largest trading partner, Australia, is the transition of growth from investment to domestic demand and exports. It will take some time for the exports associated with this investment to come online, requiring increased residential and non-mining business investment to replace high levels of mining investment and maintain Australia's recent strength in economic growth. Australia is also exposed to a slowdown in China and emerging market economies which would reduce the demand for hard commodities.

...which, if they eventuate, would adversely impact on the New Zealand economy

Weaker growth in our trading partners could result in weaker demand for New Zealand's exports and commodity prices may fall. This would affect domestic incomes, confidence and asset prices as households behave more cautiously owing to higher risk aversion. The result of these developments would be lower private consumption, while more caution on the part of firms would decrease business investment growth and new hiring. The higher level of uncertainty faced by financial market participants could flow through to reduced availability, and a higher cost, of credit for New Zealand. However, in contrast to other developed countries, there is still scope for the Reserve Bank to provide liquidity as needed and lower the base interest rate (or slow increases) to mitigate the impact of higher funding costs on the interest rates faced by households and businesses.

Other risks surround key judgements...

Economic relationships are complex and developments are subject to inherent uncertainty, particularly the evolution of the exchange rate. There is a risk that the exchange rate remains supported for longer owing to the stronger domestic outlook, prolonged monetary stimulus in advanced economies and ongoing gains in global commodity prices for key New Zealand exports. A higher exchange rate would decrease tradables inflation, as imported goods would become less expensive, and encourage consumption of imported products. On the other hand, exporters and import-competing businesses would become less competitive, hindering manufacturing and services exports and production of import substitutes for the domestic market.

Another area of uncertainty is the current amount of spare capacity in the economy (the output gap) and its relationship with inflation. If the output gap is currently more negative, because potential GDP is higher than we have assumed in the main forecast, then there is greater scope for an increase in real GDP with less domestically generated inflation. Alternatively, if the strength of inflationary pressures were to surprise, perhaps owing to a stronger spill-over of rebuild costs from Canterbury into the wider economy, the response of monetary policy may be greater than anticipated. While implemented for macro-prudential reasons, the effectiveness of the recent loan-to-value restrictions in moderating house price growth is another area of uncertainty.

...including the perennial risks associated with the weather

Pasture conditions have improved since last summer and the impact of the drought on real GDP was broadly in line with estimates outlined in the *Budget Update*. In the near term, the agricultural sector is expected to bounce back strongly from the drought, although this is dependent on the assumption that pasture conditions remain favourable in coming quarters. Feed prices and availability amongst New Zealand's international competitors will also influence global supply and have a strong bearing on commodity prices and therefore the path of New Zealand's merchandise terms of trade.

Alternative Scenarios

The following scenarios show how the economy might evolve if some of the key judgements in the main forecast are altered (Table 3.1). The scenarios are only illustrative in that they are two of a large number of possible examples, and do not represent upper or lower bounds for the forecasts, with more extreme paths possible. They represent what are assessed to be key risks to the *Half Year Update* forecast and illustrate the impact of relatively small changes in the assumptions on key economic and fiscal variables. Although not the most likely outcome, there is a realistic prospect that these scenarios could occur.

Table 3.1 – Summary of key economic and fiscal variables for main forecast and scenarios

	2013	2014	2015	2016	2017	2018
March years	Actual	Forecast	Forecast	Forecast	Forecast	Forecast
Real GDP (annual average % change)						
Main forecast	2.7	2.7	3.6	2.7	2.0	2.2
Stronger cyclical growth	2.7	3.2	4.4	2.8	1.6	1.8
Slower emerging Asia growth	2.7	2.7	3.4	2.5	1.8	2.0
Unemployment rate¹						
Main forecast	6.2	5.8	5.6	5.4	5.2	4.7
Stronger cyclical growth	6.2	5.7	5.3	5.1	4.9	4.6
Slower emerging Asia growth	6.2	5.8	5.8	5.7	5.4	5.0
Nominal GDP (annual average % change)						
Main forecast	2.4	6.5	4.9	5.2	4.0	3.7
Stronger cyclical growth	2.4	6.9	6.1	5.7	3.9	3.6
Slower emerging Asia growth	2.4	6.5	4.1	5.0	3.8	3.4
Current account balance (% of GDP)						
Main forecast	-4.5	-4.2	-5.5	-6.3	-6.5	-6.4
Stronger cyclical growth	-4.5	-4.2	-5.8	-7.2	-7.5	-7.2
Slower emerging Asia growth	-4.5	-4.2	-6.4	-7.2	-7.1	-7.1
90-day bank bill rate²						
Main forecast	2.7	2.7	3.6	4.4	4.9	5.2
Stronger cyclical growth	2.7	2.9	4.7	5.8	6.0	6.1
Slower emerging Asia growth	2.7	2.7	3.3	3.7	4.5	5.0
Total Crown OBEGAL (% of GDP)³						
Main forecast	-2.1	-1.0	0.0	0.7	1.2	2.1
Stronger cyclical growth	-2.1	-0.8	0.6	1.6	2.2	3.0
Slower emerging Asia growth	-2.1	-1.0	-0.2	0.3	0.7	1.5
Core Crown net debt (% of GDP)³						
Main forecast	26.2	26.3	26.5	25.8	24.4	22.3
Stronger cyclical growth	26.2	25.9	25.2	23.5	21.2	18.4
Slower emerging Asia growth	26.2	26.4	26.9	26.6	25.7	24.3

Notes: 1 March quarter, seasonally adjusted.

2 March quarter average.

3 June years.

Sources: Statistics New Zealand, the Treasury, Reserve Bank

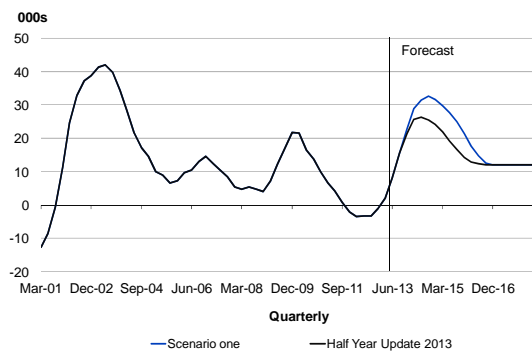
Scenario One – Stronger Cyclical Growth

A more cyclical pick-up in domestic growth...

Scenario one is based on a stronger domestically driven, cyclical pick-up in GDP growth, in part driven by higher external net migration which raises domestic demand and spills over to wider confidence amongst firms. In this scenario it is assumed that the peak and duration of the net migration cycle is greater than in the main forecast and reaches 33,000 in the year to September 2014, only 10,000 below the peak in the early 2000s. This results in an addition of 16,000 people to the population over the forecast period (Figure 3.1) and follows from a relatively more attractive New Zealand economy and outlook compared to other developed countries, particularly Australia. Within this, the arrival of international migrants to assist in the Canterbury rebuild is greater, particularly from the UK and Ireland, as well as Asia.

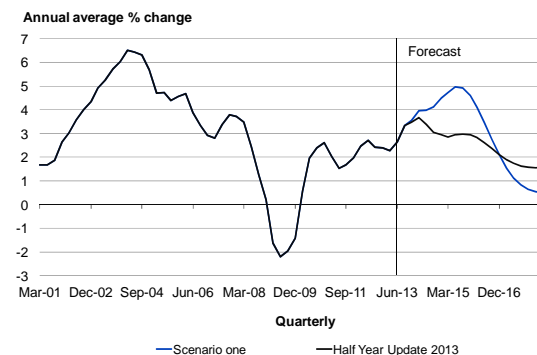
An increase in the number of international arrivals adds to demand for housing, particularly in the Auckland and Canterbury regions where job opportunities are more abundant and the pressure on the existing housing stock is already high. Stronger competition for existing homes leads to higher house price inflation relative to the main forecast. As a result, annual house price inflation peaks at about 15% in 2014, compared with around 10% in 2013 in the main forecast.

Figure 3.1 – Annual net external migration



Sources: Statistics New Zealand, the Treasury

Figure 3.2 – Private consumption growth



Sources: Statistics New Zealand, the Treasury

...with private consumption and investment growing more strongly...

Faster house price growth leads households to resume mortgage equity withdrawal to finance consumption, and the relationship seen between house prices and consumption over the 2000s reasserts itself. Annual real private consumption growth averages 4.5% in this scenario over 2014 and 2015 compared to 3.0% in the main forecast, although growth is slower beyond 2016 (Figure 3.2). Additional demand for the existing housing stock also provides further support for residential investment which is already forecast to reach a similar peak (as a percent of GDP) as in the previous housing boom. The lift in domestic demand spills over to business confidence, resulting in increased market investment and hiring. Employment growth is therefore higher, which contributes to a lower unemployment rate over the forecast period.

In the near term, the demand-driven pick-up in actual GDP sees the output gap close earlier, resulting in faster growth in domestically generated inflation. Although the influx of overseas migrants contributes to an increase in potential GDP over the forecast by lifting the working-age population, the output gap is more positive owing to the stronger pick-up in actual GDP. The output gap peaks at 1.9% of potential GDP over the medium term as opposed to 0.9% in the main forecast, but is still much narrower than the cycle in the mid-2000s.

Higher inflation and inflation expectations in the near term see the Reserve Bank react by tightening monetary policy sooner and more aggressively over the cycle to maintain price stability. The 90-day bank bill rate reaches 6.0% by March 2017, around 100 basis points higher than the main forecast, which could see floating mortgage rates rise to around 8%. Higher interest rates act to temper private consumption and investment growth and, as a result, real GDP growth beyond 2016 is weaker relative to the main forecast.

...but domestic and external imbalances become greater

As the higher consumption is partly financed by borrowing against the increased value of housing, rather than higher incomes, the household saving rate is significantly lower than in the main forecast. The household saving rate reaches a low of -3.6% of household disposable income in the March 2017 year compared to the main forecast where it is 0.1% in 2017. This negative saving rate, along with higher interest rates at the end of the forecast period, drives lower consumption growth relative to the main forecast in 2017 and 2018. It is likely that further adjustment to household balance sheets will be required sometime beyond the forecast period, which would continue to constrain future consumption growth.

The annual current account deficit is wider and reaches 7.2% of GDP in March 2018, versus 6.4% in the main forecast. This is because some of the increased consumption and investment is met from imported goods and services. The higher interest rate track also means the exchange rate remains elevated for longer, which encourages more imports and constrains services exports, further contributing to a wider current account deficit.

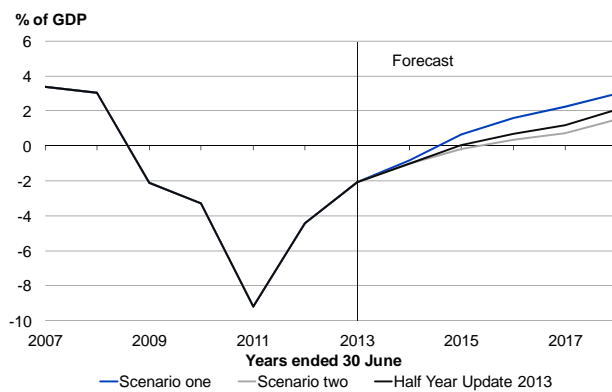
GDP and tax revenue increases...

Stronger private consumption and residential investment, along with greater price pressure, result in nominal GDP being a cumulative \$20.7 billion higher over the forecast period. The increased activity drives a stronger labour market in the early years of the forecast period, with the unemployment rate falling to 5.1% in March 2016, 0.3 percentage points lower than in the main forecasts.

Core Crown tax revenue is a cumulative \$8.6 billion higher over the forecast period as a result of the higher nominal GDP. Higher nominal consumption and residential investment boost GST revenue by \$2.1 billion over the forecast period. The stronger labour market and increased competition for workers push up wages and salaries, boosting source deductions revenue by a cumulative \$1.8 billion. The stronger economic activity allows firms to increase their margins, boosting profitability and increasing corporate tax by \$1.9 billion out to June 2018. Higher short-term interest rates, needed to control rising inflation, boost tax on interest by \$1.8 billion.

Core Crown expenses are slightly lower than in the main forecast owing to a fall in debt servicing costs and, to a lesser extent, a reduction in welfare payments. The decrease in welfare payments is driven by a lower number of recipients receiving unemployment-related benefits, reflecting the stronger labour market. In this scenario, OBEGAL records a larger surplus of 0.6% of GDP in the June 2015 year, the same year surplus is achieved in the main forecast (Figure 3.3). Net core Crown debt as a percentage of GDP peaks at 25.9% in the June 2014 year, compared to 26.5% in the June 2015 year in the main forecast and falls away more quickly, dropping below 20% by June 2018 (Figure 3.6).

Figure 3.3 – Operating balance (before gains and losses)



Source: The Treasury

...but fiscal policy assumed to be restrained

While OBEGAL records a larger surplus in 2015 in this scenario, discretionary fiscal policy is unchanged relative to the main forecast and is restrained compared to the mid-2000s cycle. The subdued growth in government spending in the main forecast maximises the prospect of a subsequent “soft-landing” for the economy as well as minimising external vulnerabilities. If the extra income received by the Government was used to increase spending it would add to the cycle by increasing domestic demand, contributing to price pressures, which could then necessitate tighter monetary policy. This may support the exchange rate remaining higher for longer, which could result in greater imbalances such as an even larger current account deficit.

Scenario Two – Slower Growth in Emerging Asia

Increases in global interest rates trigger slower growth in emerging Asia...

Scenario two is based on a slowing of growth in emerging Asia, which would negatively impact New Zealand's terms of trade as demand for soft commodities falls. It is assumed that earlier and faster-than-expected tapering of asset purchases in the US leads to a tightening of credit conditions in emerging Asia, excluding China. Tighter credit conditions in the region constrain business investment, while household disposable income falls as servicing costs on outstanding household debt rise, limiting household spending growth.

...while domestic imbalances partially unravel in China...

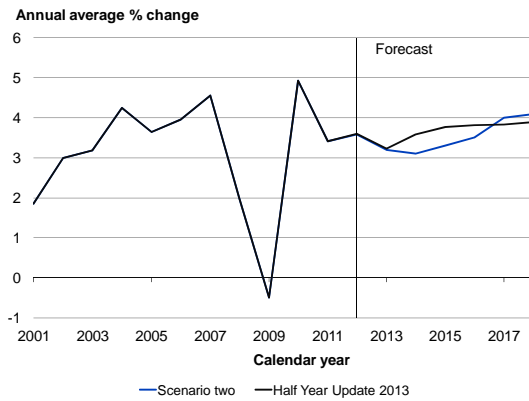
Slower growth in China is triggered by relatively disorderly corrections in domestic financial and real estate markets. Specifically, these events could arise from a reduction in infrastructure investment as local government debt mounts to unsustainable levels, a sharp correction in the overheated housing market which results in a tightening of credit conditions and/or large-scale defaults in the informal banking sector. It should be noted that this scenario characterises a disorderly rebalancing event as opposed to a significant financial market failure that would have more severe implications, but is considered to be unlikely. Weaker Chinese demand for commodities produced in the rest of emerging Asia compounds the impact of the initial slowdown in the region. In addition, growth in our largest trading partner, Australia, slows as demand for hard commodities from emerging Asia falls in the face of weaker growth.

...resulting in weaker growth in our trading partners...

Overall, the shock lowers trading partner growth between 2014 and 2016 relative to the main forecasts (Figure 3.4). The weaker-than-assumed activity in emerging Asia (including China) flows through to New Zealand in the form of lower prices for key commodity exports, particularly dairy, meat and forestry products, resulting in a larger drop in the merchandise terms of trade in the near term (Figure 3.5). As in the main forecast, the assumed global supply response to previously strong demand still occurs in this scenario, adding to the downward pressure on prices for key commodity exports. The terms of trade in this scenario remain at a lower level over the medium term, albeit one that is still high by historical standards, which reduces incomes and results in more cautious household spending over the forecast period. In this scenario, private consumption growth averages around 2.4% annually, compared with 2.6% in the main forecast. Risk aversion is heightened for firms, leading to lower business investment as they are less willing to commit to expenditure in a more uncertain environment.

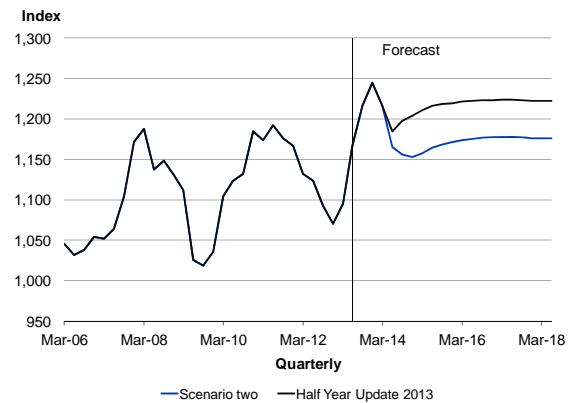
In the main forecast we assume that the labour market continues to improve as increasing employment contributes to a gradual decline in unemployment. In scenario two, a weaker pick-up in domestic activity and more caution on the part of businesses result in subdued employment and the unemployment rate recovers to a lesser extent. The assumption of a weaker labour market sees the unemployment rate fall to 5.0% by March 2018, compared to 4.7% in the main forecast. This results in more spare capacity in the economy and less domestically generated inflation.

Figure 3.4 – Trading partner growth



Sources: Haver Analytics, the Treasury

Figure 3.5 – Merchandise terms of trade (SNA)



Sources: Statistics New Zealand, the Treasury

...causing weaker nominal GDP...

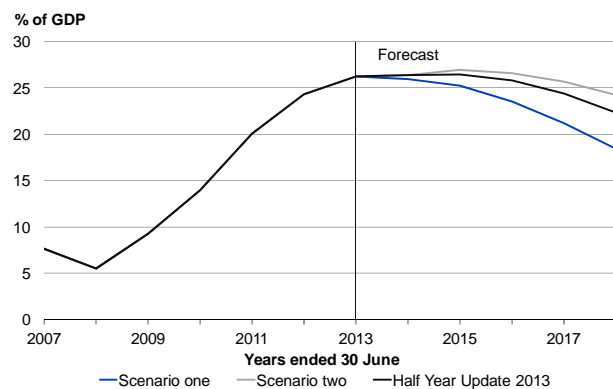
Weaker domestic activity, combined with lower terms of trade and CPI inflation, reduces nominal GDP by \$12.5 billion over the forecast period compared to the main forecast. The lower terms of trade in this scenario weaken the goods trade balance over the forecast period which, along with the lower nominal GDP, increases the current account deficit as a percentage of GDP relative to the main forecast. The current account balance reaches a deficit of 7.1% of GDP by March 2018, compared to 6.4% in the main forecast.

...as well as lower tax revenue and operating balance

Core Crown tax revenue is a cumulative \$3.9 billion lower over the forecast period in this scenario, largely owing to nominal GDP being \$12.5 billion lower over the forecast period. The weaker labour market and less inflationary pressure lower worker incomes, which reduces source deductions revenue by \$1.3 billion over the forecast period. The economy's weaker nominal activity means that business profitability is reduced, resulting in corporate taxes being a cumulative \$1.0 billion lower. Resident withholding tax is \$0.7 billion lower over the forecast period with interest rates increasing less than in the central forecast as inflation is closer to the mid-point of the target band. Weaker nominal consumption and residential investment reduces GST revenue by a cumulative \$0.4 billion over the forecast period.

Core Crown expenses are slightly higher than in the main forecast, driven by an increase in debt servicing costs. Welfare payments are broadly similar to the main forecast as the higher number of recipients receiving unemployment-related benefits is largely offset by lower indexation adjustments to payment rates of many benefits and superannuation. This reflects both lower inflation and wage growth. In this scenario, the return to surplus of OBEGAL is delayed by one year until the June 2016 year (Figure 3.3). As a consequence, net core Crown debt as a proportion of GDP is higher at the end of the forecast period (June 2018), falling to 24.3% compared to 22.3% in the main forecast (Figure 3.6).

Figure 3.6 – Net core Crown debt



Source: The Treasury

General Fiscal Risks

The remainder of this chapter focuses on the links between the risks to the performance of the economy and the Crown's fiscal position. For more on fiscal risks, see the Specific Fiscal Risks chapter on page 61.

Fiscal Sensitivities

Table 3.2 provides some rules of thumb on the sensitivities of the fiscal position to small changes in specific variables. For example, if, for some reason, nominal GDP growth is one percentage point faster than we have forecast each year up to June 2018, tax revenue would be expected to be around \$4.0 billion (1.5% of GDP) higher than forecast in the June 2018 year as a result. The sensitivities are broadly symmetric and if nominal GDP growth is one percentage point slower each year than we expect, tax revenue would be around \$3.9 billion lower than forecast in the June 2018 year. However, these figures can be influenced by the composition of growth as different types of activity have different effective tax rates.

A different interest rate path than that forecast would also impact on the fiscal position. A one percentage point lower interest rate would result in interest income on funds managed by the Treasury's New Zealand Debt Management Office (NZDMO) being \$178 million lower in the June 2018 year. This would be more than offset by interest expenses being \$384 million lower in the June 2018 year.

Table 3.2 – Fiscal sensitivity analysis

Year ending 30 June (\$millions unless stated)	2014 Forecast	2015 Forecast	2016 Forecast	2017 Forecast	2018 Forecast
1% higher nominal GDP growth per annum on					
Tax revenue	620	1,335	2,150	3,035	4,015
(% of GDP)	0.3	0.6	0.9	1.2	1.5
Tax revenue impact of a 1% increase in growth of					
Wages and salaries	270	570	910	1,285	1,725
(% of GDP)	0.1	0.2	0.4	0.5	0.6
Taxable business profits	125	290	475	670	875
(% of GDP)	0.1	0.1	0.2	0.3	0.3
Impact of 1% point lower interest rates on					
Interest income ¹	(70)	(89)	(85)	(161)	(178)
(% of GDP)	(0.0)	(0.0)	(0.0)	(0.1)	(0.1)
Interest expenses ¹	(4)	(134)	(244)	(341)	(384)
(% of GDP)	(0.0)	(0.1)	(0.1)	(0.1)	(0.1)
Overall operating balance	(66)	45	159	180	206
(% of GDP)	(0.0)	0.0	0.1	0.1	0.1

Note: 1 Funds managed by the Treasury's NZDMO only.

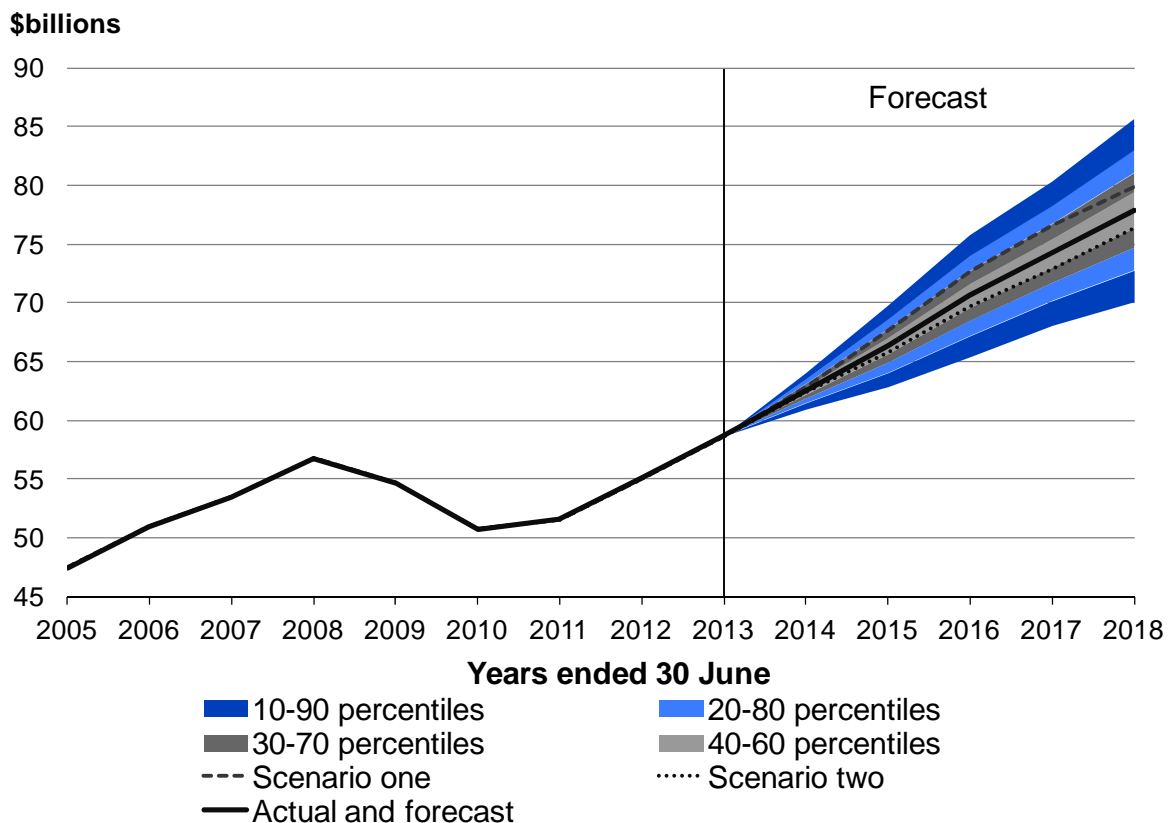
Source: The Treasury

Revenue Risks

One of the major sources of risk to the fiscal position arises from the inherent uncertainty about future tax revenue. The amount of tax revenue that the Government receives in a given year is closely linked to the performance of the economy. Figure 3.7 plots the main tax revenue forecast, along with confidence intervals around those forecasts based on the Treasury’s historical tax forecast errors and the assumption of an even balance of risks around the central forecast.⁷ The outermost shaded area captures the range +/- \$7.8 billion in the June 2018 year within which actual tax outturns fall 80% of the time.⁸

The tax revenue forecasts from the two scenarios are also shown in Figure 3.7. The 2008/09 global financial crisis showed that exogenous shocks can have severe impacts on government revenue. Further adverse weather conditions or a global downturn would have a negative impact on the Government’s fiscal position. Should any of the uncertainties outlined in the Economic Risks section eventuate differently from the main forecast, government revenue would likely be different from forecast, with scenarios one and two being examples of possible outcomes.

Figure 3.7 – Core Crown tax revenue uncertainty



Source: The Treasury

⁷ A full summary of the methodology and critical assumptions is included in New Zealand Treasury Working Paper 10/08. Standard deviation assumptions used for 0-, 1-, 2- and 3-year ahead forecasts are 0.9%, 3.2%, 5.3% and 6.6% of the actual result, respectively.

⁸ Previous Treasury analysis showed that a shock that has a significant and persistent impact on economic growth can result in tax revenues significantly beyond the outermost shaded area. See Fookes, C (2011), “Modelling shocks to New Zealand’s fiscal position”, New Zealand Treasury Working Paper 11/02.

Based on average historical forecast errors and an even balance of risks, Figure 3.7 suggests that tax revenue over the forecast period would be stronger than scenario one approximately 30% of the time and weaker than scenario two approximately 40% of the time.

There is also uncertainty around government revenue arising from the performance of SOEs and the path of interest rates as outlined in the Fiscal Sensitivities section.

Expenditure Risks

One-off and unexpected expenditure shocks can have a large impact on the Crown's operating balance in the year that they occur. Persistent errors in forecasting the cost of various programmes (ie, policies that cost more than the Government allows for) can also have substantial ongoing effects on the fiscal position.

There is also considerable uncertainty regarding the effect of the performance of the economy on Crown expenditures. This uncertainty largely relates to the operation of the so-called automatic stabilisers. For example, if the economy performs better (worse) than expected in a given year, official expenditures on social programmes may be lower (higher) than planned.

Meanwhile, the destructive seismic events of recent years have underlined the inherent exposure of the Crown's fiscal position to exogenous shocks. The Government's fiscal position would be impacted if another catastrophic earthquake were to occur or if the costs associated with the recent events exceed the updated estimates.

The ageing population also presents risks to the medium-term fiscal position, particularly to the extent that demographic forecasts may prove to be too low or high. An ageing population requires increased government expenditure, particularly for health and superannuation spending.

Balance Sheet Risks

In addition to risks around revenue and expenditure, the Crown's financial position is exposed to risks to its balance sheet. While some are unavoidable, the Crown's general approach is to identify, avoid or mitigate these risks where practicable. For more information on balance sheet risks, see the Fiscal Outlook chapter on pages 34 to 35.

The largest source of balance sheet risk is volatility in asset and liability values owing to movements in market variables such as interest rates, exchange rates and equity prices. This may result in an operating balance impact. Of the Crown's aggregate financial risk, roughly a third is estimated to be attributed to this "market risk".⁹ Three areas of the balance sheet are particularly susceptible:

- Financial assets held by the CFIs are sensitive to financial-market volatility. CFIs diversify their portfolios across a range of financial assets to manage exposures to specific market risks. The Crown Ownership Monitoring Unit (COMU) estimates a 10% fall (rise) in world share markets would lead to a 4% to 5% fall (rise) in the value of the Crown's financial portfolio.

⁹ Irwin, T and Parkyn, O (2009), "Improving the management of the Crown's exposure to risk", New Zealand Treasury Working Paper 09/06.

- Insurance and retirement liabilities and provisions are prone to market volatility through their actuarial valuations, which are sensitive to assumptions about variables such as interest and inflation rates, and risk margins.
- Physical assets such as land, buildings, state highways and military equipment are susceptible to valuation movements through changes in property market conditions, interest rates and changes in the costs of construction. This will affect the recorded value of physical Crown assets.

Business risks, relating to the broader commercial environment, may also affect the Crown's balance sheet. A number of entities owned by the Crown, including commercial and social entities, have their financial performance and valuations impacted by these external factors.

Funding Risks

The New Zealand Crown remains in the top-20 rated sovereigns globally, with the top Aaa foreign-currency rating from Moody's and AA foreign-currency ratings from Standard & Poor's and Fitch. The outlook is stable across all three agencies.

The downside risks identified by the rating agencies are broadly in line with the risks identified earlier in the chapter. In the case of an increase in global risk-aversion and in the absence of a marked improvement in the external position, New Zealand may be more likely to face a degree of funding pressure in the future. All things being equal, any further deterioration in the ratings outlook could serve to raise debt-servicing costs for the Crown. On the other hand, additional downward pressure on borrowing rates is possible if diversification flows, particularly away from Europe, continue in the future.

The Crown is also susceptible to "liquidity risk" with respect to its ability to raise cash to meet its obligations. This risk, however, is relatively small given ongoing management of the core Crown's liquidity position by the Treasury's DMO, as well as the Government's commitment to maintaining prudent debt levels.

