3

Risks and Scenarios

Overview

- The first part of this chapter outlines the key risks to the economic outlook. In the second part of the chapter we present upside and downside scenarios for the New Zealand economy. The chapter then focuses on the established channels between the risks facing the economy and the Crown's fiscal position.

Economic risks

- The global economic outlook remains uncertain and poses risks to the New Zealand economy. While the initial short-term challenges in Europe have been partly addressed, ongoing medium-term challenges for the global economy remain.
- The uncertainties around the pace of growth in the domestic economy lie mainly with the timing and scale of the Canterbury earthquake rebuild, but also around the degree of household consolidation and changes in the exchange rate.
- Two scenarios illustrate the risks to the Treasury's main forecasts. A generalised upside scenario shows the effect of a number of factors leading to a faster-than-expected recovery on the New Zealand economy. A downside scenario looks at the effect on the New Zealand economy of lower world and domestic potential growth, as well as greater cyclical weakness in the near term.
- We note that the two scenarios discussed in this chapter are only examples of other possible outcomes and are not indicative of relative likelihood of occurrence. There are a large number of risks – both to the upside and downside – to the outlook, and each would have its own unique effect on the economy if it were to occur. However, the ways they impact on the New Zealand economy are similar, thus the scenarios remain a useful tool in analysing different possible outcomes.

Fiscal risks

- The balance of these risks also means that the achievement of the Government's fiscal strategy will remain challenging, as illustrated by the scenarios presented in this chapter. In the downside scenario, nominal GDP is $26 billion lower than in the main forecasts, compared to $16 billion higher in the upside scenario. Also, the operating balance remains in deficit over the forecast period in the downside scenario. While the operating surplus in the upside scenario is larger than in the main forecasts, a surplus is achieved in the same year. However, it should be noted that to the extent economic conditions and tax revenue differ from forecast, the Government could make policy changes in future budgets.

Economic Risks

Global risks skewed to the downside...

The global economy still faces several significant challenges. The euro area economy remains weak, as the sovereign debt crisis affects market confidence, impacting on business and household decisions alike. The US does not escape unscathed, with policy uncertainty around the "fiscal cliff" contributing to subdued business investment. While Asian growth has started to stabilise in the final quarter of 2012, significant weak patches remain. Risks to the Treasury's main forecasts have become slightly more balanced since Budget 2012, but remain skewed to the downside.

...with the euro area sovereign debt crisis yet to be resolved...

The euro area economy remains weak, having re-entered a technical recession in the September 2012 quarter. The weakness has mostly been caused by the sovereign debt crisis, which has negatively affected the region since late 2009. So far, policy makers have been able to "manage through" the crisis, with the area remaining intact. The Treasury's main forecasts assume that policy makers will continue to "manage through" the crisis, but with euro area output recovering only slowly. The likelihood of large-impact, low-probability events, such as a full or partial breakup of the euro area, has been reduced substantially during 2012, primarily owing to the Outright Monetary Transactions (OMT) programme announced by the European Central Bank (ECB) in August 2012. Nevertheless, risks remain to the outlook. The main one now is that the euro area crisis will remain unresolved, causing ongoing uncertainty. This would mean growth rates would remain lower for much longer than we expect, further impacting on global growth.

...and US and Asia still of some concern...

Another significant risk to the global economy is the so-called "fiscal cliff" in the US. This refers to a number of automatic tax increases and spending cuts (amounting to over 4% of GDP) due to take place in the first quarter of 2013 unless an agreement can be reached on alternative settings for tax rates and government spending to stabilise future government debt at an appropriate level. If legislators cannot reach agreement, the US economy is expected to re-enter recession. Most commentators expect this will be avoided, given the stakes, with only part of the fiscal tightening expected to occur. Nevertheless, it is possible that the issue is not addressed in time, negatively affecting world growth.

After a soft patch through the middle of 2012, growth in the Asian region has begun to stabilise. Nevertheless, significant risks remain in the second and third largest economies in the world: China and Japan. China faces downside risks from over-inflated house prices and debt-burdened local governments. However, risks are not all to the downside, with a faster-than-expected pickup in activity possible over 2013 if policy makers successfully navigate through the challenges ahead and implement additional reforms. Japan's situation is becoming more serious; public debt (although mostly held by domestic citizens) is at a record high and continues to grow, while an ageing population adds to the challenges. The Treasury expects only modest growth going forward (excluding the tsunami rebuild), with risks to the downside if these challenges are not met. As New Zealand's largest trading partner, the prospects for the Australian economy are important for New Zealand. The main risk for Australia is that a larger-than-expected fall in commodity prices leads to a further scaling back in mining investment and broader

demand. This would lower growth in the mining and mining-related industries in Australia, reducing demand for manufactured goods exports from New Zealand.

A further downside risk, which is explored in more detail in the downside scenario, is that the recovery in global growth is slower than expected owing to weaker-than-expected global potential growth. Advanced nations' debt sustainability would become more of an issue, likely leading to further fiscal consolidation, adding to the slowing in growth. The effect on New Zealand would primarily be in the form of lower demand for exports, but also possibly through a higher cost of capital in the event that such developments see significant increases in global risk premiums and given central banks have little room to ease policy rates.

Global risks are not all to the downside, as hinted at above with China, but overall upside risks are smaller in magnitude than the downside risks. The OECD notes that possible upside risks include a comprehensive resolution of the euro crisis, a medium-term fiscal framework for the US and the benefits of structural reform being undertaken in Europe flowing through faster than currently anticipated. These would all drive higher global growth, and flow through to greater demand for New Zealand exports.

Other notable international risks include the ongoing conflict in the Middle East, which has the potential to push up oil prices and disrupt trade. Weather events, such as tropical cyclones, could also impact on growth rates.

...potentially impacting on New Zealand's economy through lower export demand...

If international activity turns out to be weaker than we have built into our main forecasts, demand for New Zealand's exports would fall. Reduced demand would lead to lower volumes of manufactured goods exports and lower tourist arrivals and spending. For commodity exports, production tends to respond less than non-commodity exports to reduced demand; instead, the reduced demand is reflected in falling prices of commodity exports. Lower export prices would result in lower terms of trade.

...lower terms of trade...

Our main forecasts assume that the terms of trade decline modestly in the near term, but remain high relative to historical standards over the five-year forecast period. Should the terms of trade, in contrast, fall much further and reach their 30-year average, a sharp drop in incomes for agricultural producers would flow through into weaker domestic demand, less income for investment and debt repayment and a significantly wider current account deficit. This would negatively impact on nominal GDP, leading to lower tax revenues for the Government. Lower prices for commodities such as iron ore, minerals and coal could also affect New Zealand indirectly through Australia. Australia would experience a fall in its national income from international commodity sales, lowering demand for New Zealand's goods and services, although a depreciation in the NZD may provide an offset.

...and lower availability of credit and confidence

On the financial side, a drop in confidence and pick-up in global risk-aversion would be expected to reduce the availability, and raise the cost, of credit for New Zealand. With a high current account deficit, there is a risk that markets would demand a higher risk premium for New Zealand's debt in the future. That said, there is room for the Reserve Bank to provide liquidity as needed and, if the outlook for inflation permits, to facilitate easier monetary conditions to help domestic borrowers adjust.

Finally, if any of the downside risks identified above were to materialise, this would lead to falls in consumer and business confidence. With lower confidence, households would lower their spending and increase their saving by more than assumed in the main forecasts. Similarly, businesses would invest less and hire fewer workers than assumed in the main forecasts.

Meanwhile, domestic challenges still lie ahead...

There are risks to our forecasts arising from domestic sources as well. However, unlike the global risks, domestically-sourced risks are more balanced. In our main forecasts, the Treasury expects private consumption growth to remain modest over the five-year forecast horizon, as households reduce their debt-to-income ratios to more comfortable levels. The risks to this outlook are to both the upside and downside. Given the greater potential for tighter conditions in global funding markets, there is a risk that the degree of household consolidation could be more intense than expected, with households seeking to move to an even lower level of debt than we have forecast. While this might bring forward some rebalancing in the economy from later years, such a scenario would involve weaker domestic activity in the near term. On the other hand, households may return to higher rates of consumption growth as confidence improves and house prices rise. If this were to occur, it would drive a stronger economy in the near term and defer household rebalancing until later years.

...including the exchange rate...

Another notable risk to the outlook is the exchange rate. The Treasury's main forecast expects the NZD to remain around current levels (on the trade-weighted index) until 2014 before depreciating thereafter. The exchange rate can be volatile, thus there are risks to either side of the main forecast. The NZD could potentially move higher than we have assumed, or hold up for longer. This could come about for a number of reasons, including New Zealand remaining a relatively attractive place to invest compared to other countries, the terms of trade rebounding higher than expected or a faster-than-expected domestic recovery leading to higher domestic interest rates. The result would be lower export incomes, flowing through to lower consumption. The current account deficit would also widen.

On the other hand, if, as a number of measures suggest, the NZD is overvalued at current levels, it could depreciate sooner and faster than the Treasury anticipates. A larger-than-expected decline in the terms of trade or an improvement in global growth leading to a closing of interest rate differentials are both possible reasons for a depreciating currency, but would have different implications for the New Zealand economy. Higher global growth (and thus demand) at the same time as a depreciating currency would boost exporter incomes. However, New Zealanders' purchasing power on a global comparison would be lower, as imports become more expensive. Inflationary pressures would also be higher, which may result in higher interest rates, dampening the benefits from a lower exchange rate. If falling terms of trade were the reason for the depreciating exchange rate, the lower NZD may partly offset lower prices on exported goods, cushioning the economy to some degree.

...and the Canterbury rebuild...

The timing and extent of the Canterbury earthquake rebuild is difficult to forecast. If large aftershocks cause further damage, the current $25 billion damage estimate factored into our main forecasts could rise, as would the risk that the rebuild could be slower and overall economic activity lower in the short term. Conversely, the rebuild could gather

pace more quickly. Accordingly, residential and non-residential construction, imported goods volumes and employment would all be stronger than in the main forecasts. As a result, we would expect wages in and around the rebuild area to come under greater upward pressure, as well as prices for some goods – particularly housing construction-related goods and services.

On the other hand, higher worker migration into Canterbury, as well as increased productivity in the construction sector owing to the localised nature of the rebuild, may help to relieve pressure on prices in the construction sector. On top of this, a more rapid rebuild could boost wider confidence in the economy, providing a lift to consumer spending and business investment.

...as well as risks from non-economic events

There are also non-economic risks that may impact on the economy, particularly climatic conditions here and abroad. Poor weather and droughts have adversely affected domestic agricultural production in the past; equally, climatic conditions can lift production as we have seen in New Zealand over the past season. Any impact on agricultural incomes from production may be offset by prices moving in the opposite direction, although this will depend on many factors, particularly production abroad. Other risks may impact on the economy, including the potential for biosecurity issues to affect the agricultural sector.

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

March years	2012 Actual	2013 Forecast	2014 Forecast	2015 Forecast	2016 Forecast	2017 Forecast
Real GDP (annual average % change)						
Main forecast	**1.6**	**2.3**	**2.9**	**2.5**	**2.4**	**2.4**
Upside scenario	1.6	2.5	3.2	3.1	2.7	2.3
Downside scenario	1.6	2.1	2.3	1.7	1.7	2.2
Unemployment rate[1]						
Main forecast	**6.7**	**6.9**	**6.2**	**5.9**	**5.6**	**5.1**
Upside scenario	6.7	6.6	5.7	5.3	5.0	4.6
Downside scenario	6.7	7.5	6.9	6.6	6.3	5.7
Nominal GDP (annual average % change)						
Main forecast	**3.4**	**3.6**	**5.9**	**4.7**	**4.1**	**4.1**
Upside scenario	3.4	3.9	6.2	5.6	4.7	4.1
Downside scenario	3.4	3.1	4.8	4.1	3.4	3.7
Current account balance (% of GDP)						
Main forecast	**-4.5**	**-5.1**	**-4.6**	**-5.5**	**-6.2**	**-6.5**
Upside scenario	-4.5	-4.7	-4.1	-5.5	-6.7	-7.2
Downside scenario	-4.5	-5.5	-5.6	-6.2	-6.7	-6.7

Note: 1 March quarter, seasonally adjusted

Sources: Statistics New Zealand, the Treasury

Downside Scenario

Global growth is weaker than expected over the forecast horizon…

While there are a large number of global downside risks, we have developed a downside scenario based on the International Monetary Fund's (IMF) lower global potential growth scenario from its October World Economic Outlook. This entails potential growth being approximately 0.5% per year lower than the IMF's central forecasts for advanced nations and 1% lower for Asian countries, with actual growth rates even lower as countries must make further fiscal cuts and trade is lower. Applied to New Zealand's top 16 trading partners, trading partner output is about 4% lower by 2017 compared to the IMF's central forecasts. Figure 3.1 illustrates the effect on New Zealand's trading partner growth rates.

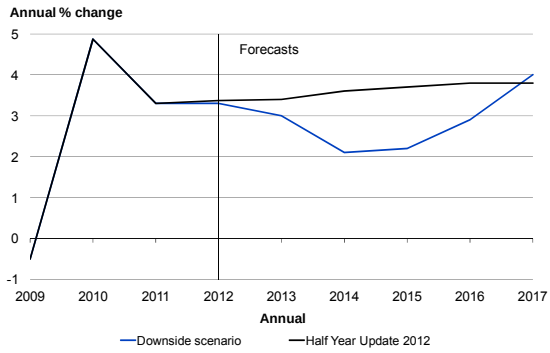
We also assume for this scenario that New Zealand's potential growth rate is lower than in the main forecasts. While the Treasury has already lowered its potential output assumption for New Zealand in its main forecasts (see the 'GDP Growth in the *Half Year Update'* box in the *Economic Outlook* chapter), we assume that New Zealand's potential output is even weaker than we anticipate, in part owing to the weaker world growth. In addition, we assume that the cyclical weakness evident in the September quarter in the New Zealand economy continues into the December quarter and beyond.

Slower-than-expected world growth and less liquidity in the world would mean Australian and New Zealand banks face a higher premium on their international wholesale borrowing. While part of these increased funding costs may be absorbed in falling bank margins and partly offset by a reduction in the policy rate, the remainder would be passed on to household and business borrowers. This scenario assumes that households and businesses are charged around an additional 40 basis point premium on their borrowing compared to the main forecasts.

...with lower terms of trade and reduced incomes...

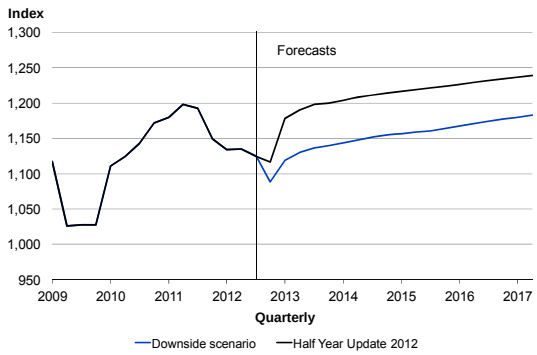
Weaker-than-assumed global activity flows through to New Zealand in the form of lower prices for key commodity exports, particularly dairy, meat and forestry products. The good news for New Zealand is that the country is still exposed to the relatively faster growing parts of the global economy, such as emerging Asia and Australia, although they too experience lower growth. This means that New Zealand's terms of trade and demand for exports would not fall by as much as might otherwise be expected.

Figure 3.1 – Trading partner growth



Sources: IMF, the Treasury

Figure 3.2 – Merchandise terms of trade (SNA)



Sources: Statistics New Zealand, the Treasury

In this scenario, the merchandise terms of trade fall further, and do not rebound as sharply as in the main forecast (Figure 3.2), reflecting the lower international demand for commodities and other exports. The terms of trade are still expected to rise over the forecast period, in part reflecting increasing demand for dairy products in Asia as incomes continue to grow. The lower terms of trade result in a more rapid deterioration in the current account balance, with the deficit increasing to 5.6% of GDP in the March 2014 year compared to 4.6% in the main forecasts. However, the gap between the main economic forecasts and scenario closes by the March 2017 year, with the current account deficit only 0.2% points wider at 6.7% in the downside scenario, in part owing to a slightly lower exchange rate.

The lower terms of trade lead to lower incomes, resulting in a more subdued outlook for household spending. The increased cyclical weakness in the near term results in a higher unemployment rate than in the main forecast, dampening pressures on wage growth, further lowering incomes. Despite a cut in the OCR, retail rates remain similar to the main scenario until 2016 and 2017, owing to the higher overseas funding costs. Private consumption growth averages 1.3% per year over the five years to March 2017, compared to 2.1% in the main forecasts. Lower demand and profits reduce business investment, although not to the same extent as consumption. This is in part owing to the Canterbury rebuild, which will help to drive strong growth in business investment.

All in all, the lower world growth, lower New Zealand potential output and increased near-term cyclical weakness result in real GDP growth averaging only 2.0% per year in the five years to March 2017 in comparison to 2.5% in the main forecasts. Of importance to tax revenues, the level of nominal GDP is about $26 billion lower in total over the period to June 2017.

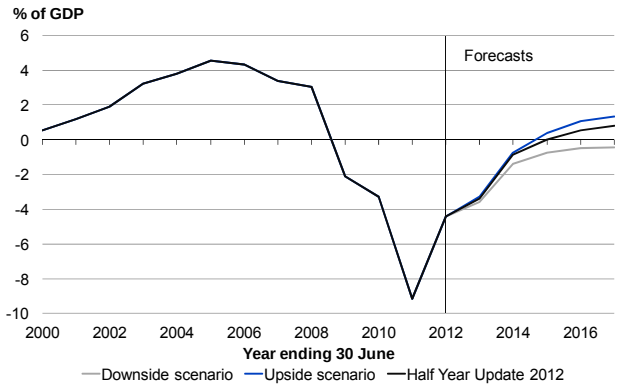
…leading to lower tax revenue while raising operating deficits and net debt

Core Crown revenue is a cumulative $7.9 billion lower in the downside scenario by June 2017. The weaker domestic economy reduces source deductions and corporate tax by about $3 billion and $2 billion respectively, compared to the main forecasts, while other persons tax falls by $0.4 billion. Also, lower private consumption and residential investment lead to $1.4 billion lower GST revenue, compared to the main forecasts, while resident withholding tax is only slightly lower as interest rates are similar.

Core Crown expenses (excluding financing costs) are $0.6 billion higher, as the weaker labour market flows through to increased Unemployment Benefit recipient numbers. In addition, finance costs are higher, owing to higher government borrowing.

In this scenario, the operating balance (before gains and losses) does not move into surplus within the forecast period and, consequently, net core Crown debt as a proportion of GDP is still rising at the end of the forecast period (June 2017), reaching 33.9% at that time.

Figure 3.3 – Operating balance (before gains and losses)



Source: The Treasury

Upside Scenario

As discussed in the earlier section of this chapter, there are a number of potential upside risks to the Treasury's main forecasts, but most are only modest in size. This scenario presents a generalised upside scenario, where a number of factors together lead to faster-than-expected growth over the forecast period, resulting in higher tax revenues and a larger surplus in 2014/15.

World growth is stronger, leading to higher terms of trade...

It is possible that New Zealand's trading partner growth will be stronger than forecast in the main economic forecasts. In this upside scenario we assume that trading partner growth is about 0.2% to 0.3% points higher than the main forecast in each year, with a number of factors that could lead to this, as mentioned earlier in the chapter. These include a faster-than-expected resolution in the euro crisis, a strong medium-term fiscal plan in the US or faster flow through of the benefits of structural reforms. Any one of these could be expected to improve global demand, leading to higher commodity prices and increased demand for New Zealand exports. New Zealand's terms of trade would be slightly higher across the forecast period, leading to higher incomes.

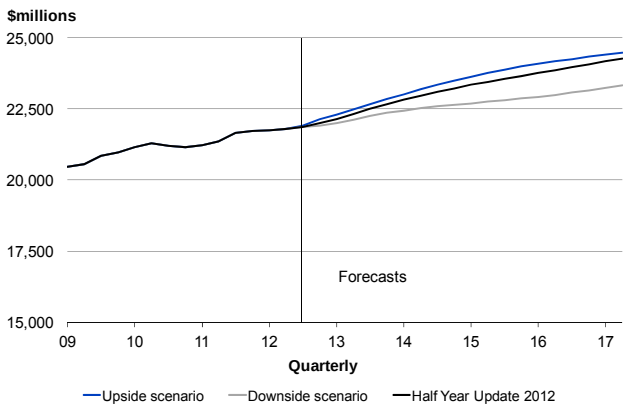
...with a faster Canterbury rebuild and stronger household spending...

There is a large degree of uncertainty around the timing and scale of the Canterbury rebuild. In this upside scenario, we allow for a faster rebuild compared to the main forecasts and bring more of the rebuild inside the forecast period ending March 2017. Net migration is higher, peaking at an annual 16,000 (and earlier) compared with 13,000 in the main forecasts. Most of the increase is assumed to be workers moving into Canterbury from abroad.

The faster rebuild leads to an increase in residential investment, with growth 3.8% points higher in the March 2014 year than in the main forecasts. As a result, inflationary pressures are higher, as capacity constraints are reached sooner. Wage rates in the region are higher (particularly in the construction sector), with modest spill-over to the rest of the country.

In addition, we assume stronger private consumption in the upside scenario, in part owing to the higher incomes from the higher terms of trade. Private consumption growth is 0.4% and 0.3% points higher in the March 2014 and 2015 years respectively than the main forecasts (Figure 3.4). This flows on to the labour market, with the unemployment rate coming down faster than the main forecasts, finishing at 4.6% in March 2017 compared to 5.1%. However, there is also lower household saving and higher imports than in the main forecasts.

Figure 3.4 – Real private consumption



Sources: Statistics New Zealand, the Treasury

A combination of higher incomes, a faster rebuild and stronger consumption leads to higher inflation than in the main forecasts. The Reserve Bank responds by increasing interest rates sooner than otherwise, leading to tighter monetary conditions. The level of nominal GDP is about $16 billion higher in total over the period to June 2017.

…leading to a modest increase in the operating surplus in 2015

Core Crown revenue is a cumulative $3.7 billion higher in the upside scenario than the main scenario by June 2017, led by a $1.6 billion increase in source deductions, attributable to the higher incomes of New Zealand households. More household spending leads to $800 million in additional GST revenue, while higher business profits contribute to a $500 million boost in corporate tax revenue. Higher interest rates in later periods lead to $300 million in additional resident withholding tax.

Core Crown expenses (excluding financing costs) are $0.2 billion lower, as the stronger labour market flows through to fewer Unemployment Benefit recipients. In addition, finance costs are lower, owing to less government borrowing.

In this scenario, the operating balance (before gains and losses) moves into surplus in the June 2015 year, the same year as the main forecasts, with the surplus 0.4% of GDP. Net core Crown debt as a proportion of GDP peaks at 28.7% of GDP in the June 2014 year.

General Fiscal Risks

The discussion up to this point has focused on the main near-term economic risks. The rest of this chapter focuses on the links between the risks to the performance of the economy and the Crown's fiscal position.

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 1% point slower than we have forecast each year up to the year ending June 2017, we would expect tax revenue to be around $3.6 billion (1.4% of GDP) lower than forecast in the June 2017 year as a result. The sensitivities are broadly symmetric; that is, if nominal GDP growth is 1% point faster each year than we expect, tax revenue would be around $3.6 billion *higher* than forecast instead. For more on fiscal risks, see the *Specific Fiscal Risks* chapter.

Fiscal Sensitivities

Table 3.2 – Fiscal sensitivity analysis

Year ending 30 June ($millions unless stated)	2013 Forecast	2014 Forecast	2015 Forecast	2016 Forecast	2017 Forecast
1% lower nominal GDP growth per annum on					
Tax revenue	(590)	(1,245)	(1,975)	(2,750)	(3,575)
(% of GDP)	(0.3)	(0.5)	(0.8)	(1.1)	(1.4)
Revenue impact of a 1% decrease in growth of					
Wages and salaries	(255)	(525)	(825)	(1,150)	(1,500)
(% of GDP)	(0.1)	(0.2)	(0.3)	(0.5)	(0.6)
Taxable business profits	(115)	(265)	(430)	(605)	(790)
(% of GDP)	(0.1)	(0.1)	(0.2)	(0.2)	(0.3)
Impact of 1% point lower interest rates on					
Interest income[1]	(89)	(81)	(110)	(70)	(81)
(% of GDP)	(0.0)	(0.0)	(0.1)	(0.0)	(0.0)
Expenses[1]	(97)	(184)	(361)	(454)	(518)
(% of GDP)	(0.0)	(0.1)	(0.2)	(0.2)	(0.2)
Overall operating balance	8	103	250	384	438
(% of GDP)	0.0	0.1	0.1	0.2	0.2

Note: 1 Debt managed by the NZDMO only

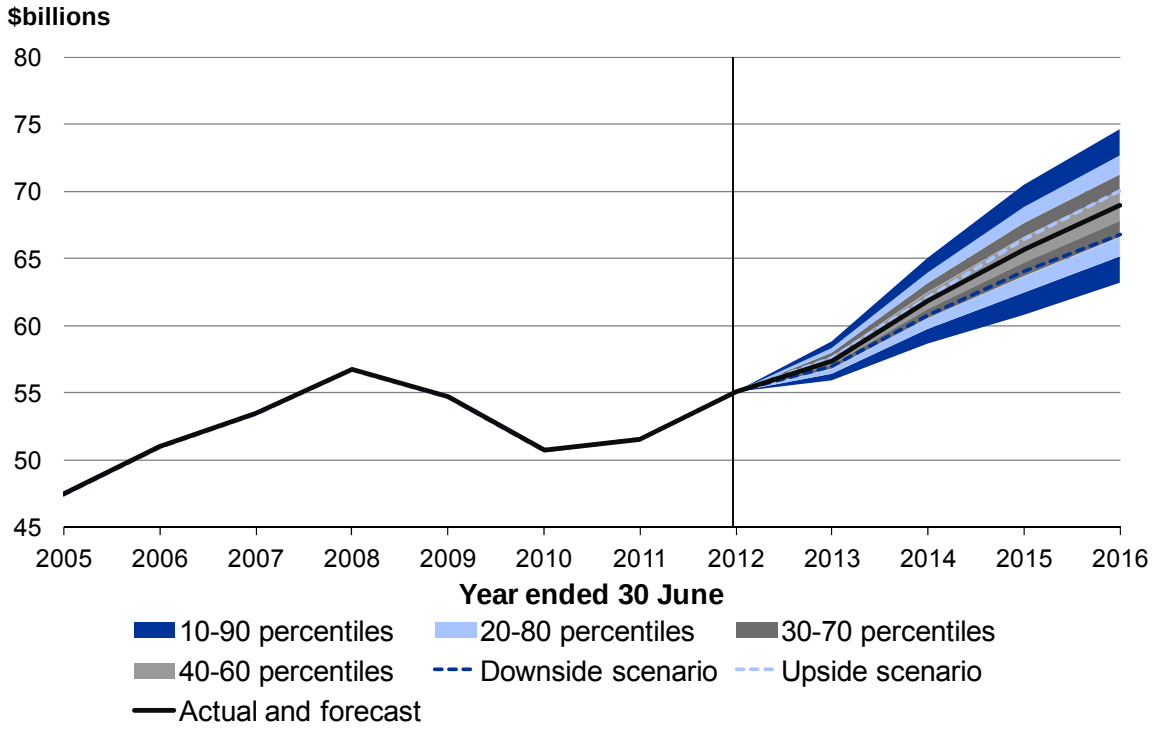
Source: The Treasury

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 accrues in a given year is closely linked to the performance of the economy.

Figure 3.5 plots the main tax revenue forecast, along with confidence intervals around those forecasts based on the Treasury's historical tax forecast errors.[7] The outermost shaded area captures the range (+/- $5.7 billion in the June 2016 year) within which actual tax forecasts would typically fall for 80% of the time.[8] The tax revenue forecasts from the upside and downside scenarios are also plotted.

Figure 3.5 – Core Crown tax revenue uncertainty



Source: The Treasury

Based on average historical forecast errors and an even balance of risks, Figure 3.5 shows that tax revenue over the forecast period would come in weaker than shown in the downside scenario one-third of the time, and conversely come in stronger two-thirds of the time. For the upside scenario, tax revenue over the forecast period would come in stronger than shown slightly over one-third of the time, and weaker just under two-thirds of the time.

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, respectively.

8 Recent Treasury analysis shows that a shock that has a significant and persistent impact on economic growth can result in tax revenues coming in significantly below the outermost shaded area. See Fookes, C (2011), "Modelling shocks to New Zealand's fiscal position", New Zealand Treasury Working Paper 11/02.

However, as discussed previously, the forecast risks are not evenly balanced – they are skewed to the downside. Accordingly, the probability of tax revenue undershooting the downside scenario is likely to be higher than one-third, and the probability of tax revenue overshooting the upside scenario is likely to be lower than one-third.

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, and tax revenues higher (lower).

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.

Balance Sheet Risks

In addition to risks around revenue and expenditure, the Crown's financial position is exposed to risks from its balance sheet. While some are unavoidable, the Crown's general approach is to identify, avoid or mitigate these risks where practicable.

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 Crown financial institutions (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. For example, a 1% fall in the risk-free discount rate used is estimated to result in a $7.3 billion increase in the combined value of the Crown's liabilities from ACC, EQC, Southern Response (formerly AMI) and the GSF.[10]

- Physical assets such as land, buildings, state highways and military equipment are susceptible to movements through changes in property market conditions, interest rates and changes in the costs of construction. This will affect the recorded value of many Crown physical 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.

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

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.

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10 For more information, see the Notes to the *Financial Statements of the Government of New Zealand 2012*.