
Risks and Scenarios

Introduction

The forecasts presented in the *Economic and Tax Outlook* chapter incorporate a number of judgements about how both the New Zealand and the world economies evolve. Some judgements relate to the cyclical drivers of activity, others to the structural characteristics of the New Zealand and the world economies. These judgements have a number of risks surrounding them. In balancing these risks we have arrived at our view of how the economy is going to evolve, as presented in the *Economic and Tax Outlook* chapter.

The risks to our forecasts can be characterised as two types. The first are the risks we traditionally identify that could lead to more or less nominal GDP – examples of such risks include different profiles for the terms of trade, domestic demand and the exchange rate (see the *2007 Half Year Update*, for example). Associated with this forecast, there is a second set of more extreme risks, albeit with a smaller probability, that would arise if recent financial market developments were more prolonged and severe than we have assumed in the main forecast.

The first part of this chapter, Economic Risks, focuses on describing both sets of risks around our forecasts and describing the possible impact on the economy if these risks were to occur. Given the significance of more prolonged and severe weakness in financial markets on the New Zealand economy and the Government's fiscal position, we consider such a scenario in the second part of the chapter. In such an environment, with high levels of risk aversion prevalent and confidence low, a significant gap would exist between the interest rates faced by borrowers and official policy rates both in New Zealand and abroad, slowing domestic demand and trading partner growth relative to our main forecast.

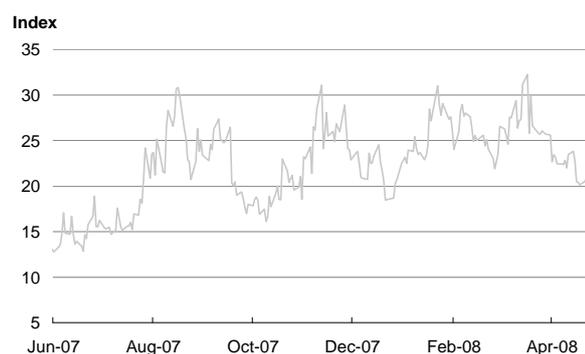
The third part of this chapter, Fiscal Scenarios, considers the implications of the alternative scenario for the fiscal position, while the fourth part, Fiscal Sensitivities, examines how sensitive the fiscal position is to changes in specific variables.

Economic Risks

A longer and deeper financial crisis poses downside risk to our forecasts ...

As stated in the *Economic and Tax Outlook* chapter, the turmoil in international financial markets has worsened since the *Half Year Update*, with financial markets characterised by increased risk aversion and investor uncertainty. In our main forecasts, we have assumed a reasonably orderly resolution of the financial crisis in the year ahead. Figure 3.1 shows the Chicago Board Options Exchange Volatility Index. It represents one measure of the market's expectation of volatility over the next 30-day period (a higher number means more volatility is expected). Since mid-March the index has been falling – consistent with the assumption in our main forecasts – but, as Figure 3.1 indicates, in the past year uncertainty has come in cycles with stresses intensifying and easing in waves. With risk appetite being so volatile in the current environment, further write-downs of debt and bank

Figure 3.1 – Chicago Board Options Exchange Volatility Index



Source: Chicago Board Options Exchange

funding problems internationally could see the markets become even more risk averse. If the period of financial market uncertainty and risk aversion is more protracted and severe than expected, New Zealand could be affected in two main ways – a higher cost of credit to firms and households and a lower exchange rate.

Banks operating in New Zealand have passed on some of the increased costs of funding their loans to New Zealand households and firms in the form of higher interest rates. Banks have also become more reluctant to lend to some firms in some sectors. In our main forecasts this contributes to the slowing in domestic demand which began late 2007, continuing throughout 2008. A further rise in interest rates (or in the more extreme case if credit availability becomes severely restricted) would mean the easing in domestic demand is sharper and longer than we have forecast.

Rising global risk aversion could exacerbate any depreciation of the currency. If, as assumed in our forecasts, the official cash rate moves towards a more neutral position, heightened risk aversion could cause large exits in carry trade positions.⁴ A lower exchange rate would boost exports but would also likely slow consumption and business investment relative to our main forecasts as imports become more expensive.

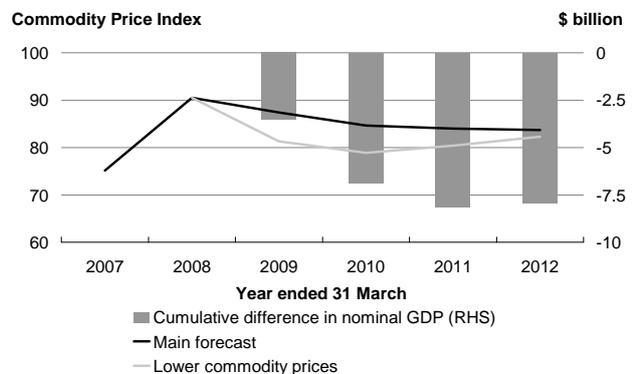
⁴ The carry trade is an investment strategy in which an investor sells a certain currency with a relatively low interest rate, eg, the Yen, and uses the funds to purchase a different currency yielding a higher interest rate, eg, the NZD. These transactions are leveraged, so a small movement in exchange rates can result in large losses.

... as does weaker global growth ...

In the *Economic and Tax Outlook* chapter we noted that a key risk to our forecast would be weaker than assumed growth in Asia. Rapid growth in emerging Asia (notably China and India) has accounted for much of the incremental demand for commodities over the past five years and has therefore been a key driver of the large run-up in commodity prices in that time period. Lower income growth in Asia – driven by lower export receipts as the result of a more severe than expected downturn in the United States and Europe – could see international prices for New Zealand’s exports (particularly commodity exports) fall more rapidly than expected. Lower export prices would lower incomes for agricultural producers and therefore slow domestic demand. Lower export prices would also likely result in a lower exchange rate which would provide some offset to lower agricultural incomes but also lower private consumption and business investment through making imports more expensive. Slower growth in Asia could also slow growth in so-called “hard” commodity prices (eg, metals and coal). Lower hard commodity prices could indirectly affect New Zealand through slowing income growth in Australia thus lowering manufacturing revenue (Australia is the largest export market for New Zealand’s manufactured items) and services revenue (fewer Australians visiting).

As outlined in the *Economic and Tax Outlook* chapter, our trading partner growth forecasts are based on March Consensus Forecasts – albeit adjusted downwards to take into account of the way Consensus Forecasts tend to lag recent developments. Given the heightened level of uncertainty at the moment, there is a range of views on what growth tracks our trading partners (particularly the United States and Europe) could take. The International Monetary Fund (IMF), for example, has a more pessimistic view of the world growth outlook and expects a more severe downturn than Consensus Forecasts and ourselves, particularly in the United States.

Figure 3.2 – Impact of a lower commodity price track on nominal GDP



Source: The Treasury

The exact impact of lower export prices depends on the type of export affected and the nature of the deviation from the forecast track. Figure 3.2 shows the impact on nominal GDP if international commodity prices for New Zealand’s exports were 10% lower than forecast for the first two and a half years of the forecast period. This would lead to about \$8 billion less GDP over the forecast period, which translates into about \$2.6 billion less tax revenue.

... and higher import prices

At the time of writing, West Texas Intermediate (WTI) oil prices were sitting above US\$125 a barrel on reports of low stock levels and supply disruptions. Such a starting point poses upside risks to our oil price track. If the level of oil prices were to be higher over the forecast period this could result in higher petrol prices dampening consumption relative to our main forecast and placing further pressure on firms (particularly in the transport industry). The impact of higher oil prices would be partially offset by increased incomes to New Zealand oil

producers and to oil-exporting countries. Higher incomes for oil-exporting countries would support prices for some of our exports, particularly commodities.

The prices of other commodities we import, particularly metals, have also experienced strong growth of late. Further large increases in these prices would put further upward pressure on firms' input costs, lowering profits therefore presenting a downside risk to our business investment and labour market forecasts. Any increases in costs that are passed on to the domestic consumer would place downside risk to our private consumption profile but upside risk to our inflation track.

But domestically sourced risks are important too ...

The *Economic and Tax Outlook* chapter outlined a number of forces that have been operating to slow the domestic economy. These forces include higher financing costs for firms and households (owing to both restrictive monetary policy and financial market issues), a slowing housing market, rising food and fuel prices and slowing net inward migration. If any of these factors were to prove more severe than assumed in our forecasts then this would lead to weaker domestic demand and a weaker housing market than we currently have in our forecasts.

Our main forecast is for house prices to contract 7% in the March 2009 year. A more marked fall in house prices could be caused by lower than forecast net inward migration and/or higher debt servicing costs (owing to further turmoil in financial markets). The risk of a more marked fall in house prices is also implied by housing affordability measures. Measures of housing affordability show that housing affordability is very low relative to historical standards.⁵ Home ownership affordability is highly cyclical, moving in line with changes in house prices, interest rates and income and while in our forecasts interest rates, house prices and incomes do move in a direction that would help increase affordability, they would not move enough to return affordability to its average – a more marked fall in house prices would be required to achieve this.

A more rapid drop in house prices than forecast could lower the consumption profile by making people less wealthy and also by lowering the value of collateral to borrow against. A weaker housing market would also decrease demand for consumer durables to furnish new houses. A larger fall in house prices would also be indicative of a greater slowing in the housing market (eg, house sales), resulting in a sharper fall in residential investment than forecast.

... including the labour market

In our main forecasts, the labour market is fairly robust throughout the forecast period and provides support to domestic demand. However, there is a risk that the labour market may be weaker than presented in the main forecast. While such data are volatile, March quarter labour market data – released after the finalisation of the forecasts – showed the largest fall in employment since the March 1989 quarter. In particular, weaker labour market places downside risk to our consumption profile. As well as less consumption due

⁵ See: Final Report of the House Prices Unit: House Price Increases and Housing in New Zealand – March 2008 – available at <http://www.dpmc.govt.nz/dpmc/publications/hpr-report>; and Regional Economic Outlook: Asia and Pacific, International Monetary Fund, 2007 – available at: <http://www.imf.org/external/pubs/ft/reo/2007/apd/eng/areo0407.pdf>

to lower income in aggregate, households facing a sluggish employment market are also more likely to engage in precautionary saving – including saving more of the tax reductions than assumed in our main forecast.

A further risk surrounds climatic conditions. Variability in climatic conditions, and the effect of these fluctuations on agricultural production, has been a significant influence on New Zealand's economic growth in past years – most notably in 1998 when the drought precipitated a recession. The *Economic and Tax Outlook* chapter noted that during the summer months of 2007/08, the dry weather reduced agricultural production relative to a “normal” season. Should the next summer be dry there is the potential for a further significant impact on agricultural production in the 2008/09 season as stock condition has already been affected by this season's drought. This would reduce rural incomes and confidence and potentially flow on to other parts of the economy. Other climatic events that may have significant effects in the economy are flooding and severe snow.

If any of the above risks were to occur, the result would be lower nominal GDP and therefore less tax revenue. Table 3.1, in the Fiscal Sensitivities section of this chapter, provides some rules of thumb for calculating the impact of lower GDP growth on tax revenue.

There are also upside risks to our forecasts ...

Some or all of the factors below could interact to produce stronger nominal GDP than in our forecasts.

One key driver of a stronger economy would be a higher terms of trade. Relative to forecast, higher export commodity prices would result in increased exports and stronger domestic demand through boosting agricultural incomes and keeping the exchange rate higher and consequently making imports cheaper. We expect commodity export prices to remain high in the near term before easing back. However, higher than forecast commodity prices could arise for several reasons:

- even stronger protein demand from emerging Asia than assumed in our forecasts
- the world supply response is more muted (particularly in the case of dairy) than we have assumed, owing to higher feed costs as the cost of grain increases (relating to the alternative use of grain as an input into biofuel production) and/or adverse climatic conditions
- higher oil prices increase oil-exporters' demand for soft commodities as well as increasing input costs for producers (especially of crops), and
- increased speculative activity in commodity markets.

... particularly if financial markets recover faster ...

It is possible there may be a quicker than expected resolution to the problems in financial markets than we have assumed – with recent market volatility and weakness proving to be (at least in part) an overreaction to the market correcting for a “mis-pricing” of risk that has been associated with certain asset types over recent years. A quicker than expected resolution to the financial market problems would lower the risk premium being charged on lending to firms and consumers, resulting in stronger than forecast domestic demand growth than in our main forecast.

Such a return of confidence to financial markets could mean the exchange rate is higher than assumed in the main track as investors are attracted by the interest rate differential that exists between New Zealand and other countries (notably the United States and Japan). This interest rate differential has been reinforced by the significant loosening in United States monetary policy (325 basis points since mid-2007), although this differential may decrease if normality were to return to markets faster than expected. A higher exchange rate would provide further upside risk to our domestic demand forecasts but downside risk for our export forecasts.

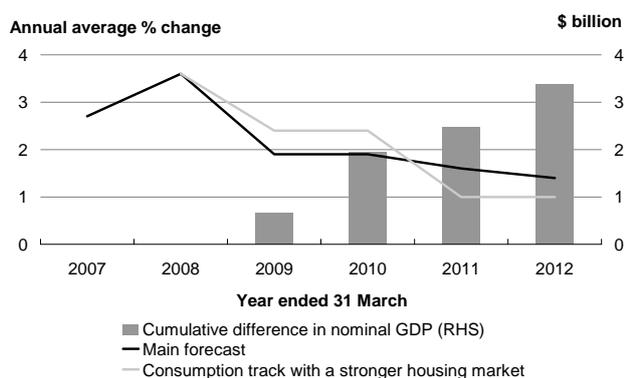
... and if the housing cycle is shallower than assumed ...

There is a risk that the housing cycle is less deep and protracted than we have assumed. Contributing factors would include a faster resolution of the financial market problems (meaning the cost of borrowing faced by households declines), or (relative to our main forecast) the labour market is stronger (making debt servicing easier) and/or net inward migration is higher (increasing the demand for houses).

Higher house prices than forecast could result in higher private consumption and residential

investment. Figure 3.3 shows that nominal GDP could be around \$3.4 billion higher across the forecast period if real private consumption and real residential investment growth in the March 2009 year were to be half a percentage point and two percentage points higher respectively than in our main forecasts as the result of a shallower house price cycle.

Figure 3.3 – Impact on nominal GDP of a shallower housing cycle



Sources: Statistics New Zealand, The Treasury

There is also the risk of higher inflation ...

Relative to our main forecast, a stronger domestic economy (placing more pressure on the economy's productive capacity) or more rapid food and fuel price growth represent upside risks to our inflation forecasts. Prices of staples (particularly food and fuel) have increased rapidly lately. While implicitly in our forecasts we have some further increases built in, further increases over and above this would also result in higher inflation and therefore higher inflation expectations, meaning inflation takes longer to unwind than in our main forecast. Higher food and fuel prices would also provide downside risk to our real private consumption forecasts.

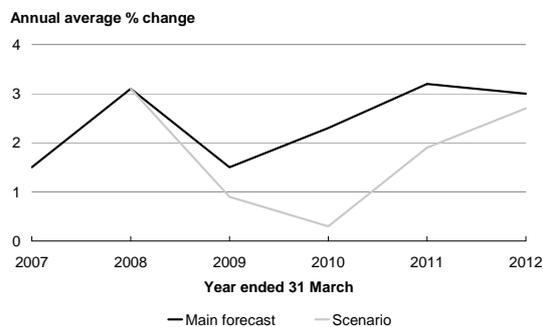
The Emissions Trading Scheme (ETS) offers a further risk to our inflation forecasts. Currently we have assumed an emissions unit price of \$25 a tonne with 50% of the price impacts on directly affected prices (electricity and petrol) passed on to other prices. This results in approximately 0.4 percentage points additional CPI inflation in the June 2010 and 2011 years. If the emissions price were to be higher than this, or alternatively if the pass-through to other prices is greater than assumed, this would result in higher CPI inflation.

Higher inflation, coupled with a higher terms of trade and a stronger real economy, would result in higher nominal GDP and therefore higher tax revenue.

Economic Scenario

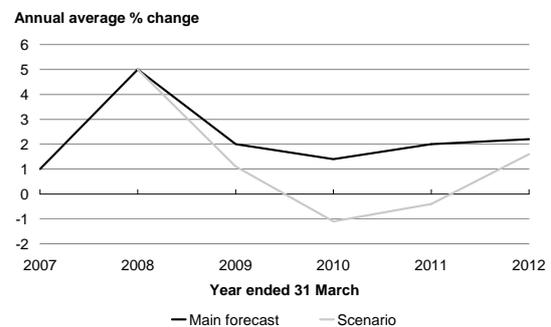
In this section, a scenario is presented to represent a situation where the downturn in financial market developments is more severe and protracted than in our main forecast and this impacts on the growth path of economies worldwide. In the scenario, the severity of the financial downturn leads to a lack of confidence and a high level of risk aversion in financial markets, meaning a significant gap exists between the interest rates faced by borrowers and official policy rates in both New Zealand and abroad. Monetary measures in key global economies, especially the United States, are therefore not successful in their attempts at boosting real economies. While this is a relatively extreme scenario, with a low but not negligible probability, such a development would have significant impacts on the global economy and New Zealand and would have major implications for the New Zealand Government's fiscal position.

Figure 3.4 – Real GDP



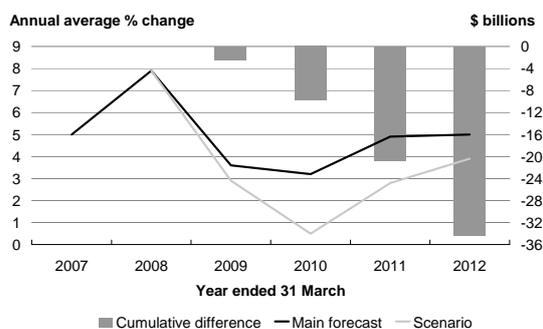
Sources: Statistics New Zealand, The Treasury

Figure 3.5 – Real GNE



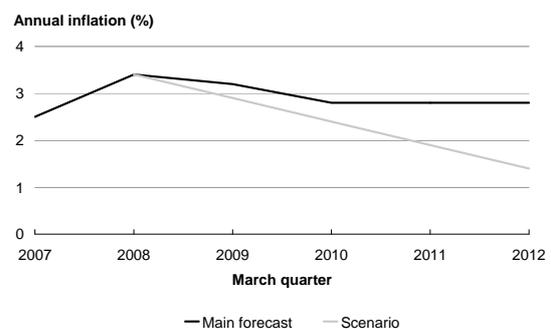
Sources: Statistics New Zealand, The Treasury

Figure 3.6 – Nominal GDP



Sources: Statistics New Zealand, The Treasury

Figure 3.7– Inflation



Sources: Statistics New Zealand, The Treasury

Such a scenario could have the following consequences (expressed relative to the main forecast):

- As a result of investor uncertainty and risk aversion remaining higher in financial markets until the March 2011 year, banks operating in New Zealand face significantly higher funding costs. These increased funding costs are passed on to firms and households as higher borrowing costs. Financial markets begin to normalise again in the March 2012 year.
- Key trading partners experience slower growth for longer, including slower growth in emerging Asia, which has so far been largely unaffected by developed country

weakness. Trading partner growth is about 1 to 2 percentage points lower in each year until the March 2011 year than currently assumed in our forecasts, before recovering to similar levels as in our main forecasts in the March 2012 year. Lower trading partner growth reduces demand for exports, particularly commodities and tourist services.

- The heightened uncertainty means New Zealand households become more cautious in their spending behaviour and firms are reluctant to invest.

Domestic demand is weak in this scenario ...

Relative to the main forecast, higher interest rates – owing to a longer period of more pronounced risk aversion in financial markets – make mortgage debt servicing difficult for a larger number of households and property investors. For the majority of households, higher debt servicing costs reduce disposable incomes, lowering consumption. However for some households (and more than in the main forecast) the strain of servicing this debt would mean they are forced to sell their home or investment property. More houses on the market would lower house prices and lower the demand for the construction of new housing. Residential investment is therefore weaker for longer in this scenario, falling cumulatively by 23% in the forecast period until the March 2011 year.

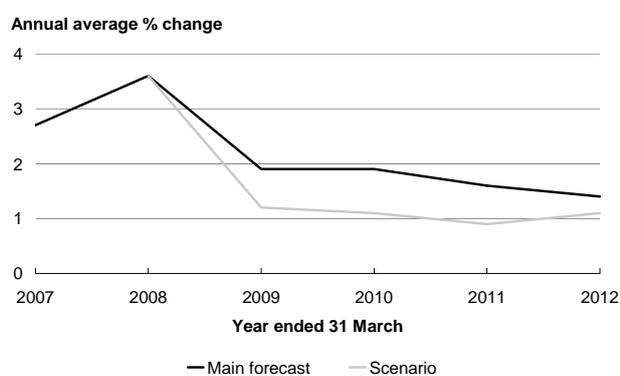
Real private consumption undergoes a period of weak growth (around 1%) throughout the forecast period owing to higher mortgage servicing costs reducing discretionary incomes, falling house values lowering perceptions of wealth and collateral, households engaging in more precautionary saving (particularly of the tax cut) as the result of global uncertainty and a lower exchange rate making imports more expensive.

In this scenario, firms face less demand for their products as a result of weak domestic and international markets. Lower demand, coupled with higher borrowing costs, a lower exchange rate (increasing the cost of importing plant and machinery) and heightened uncertainty mean business investment is cumulatively 14 percentage points lower across the forecast period than in our main forecast.

Slower domestic demand means that firms lower their demand for labour, resulting in a contraction in employment, slower wage growth and a higher unemployment rate than the main forecast. The weaker labour market reinforces the slowdown in the domestic economy.

Domestic demand recovers in the March 2012 year as financial markets recover lowering the risk premium on interest rates. A lower risk premium, combined with looser monetary policy, results in lower market interest rates, which boost private consumption and investment.

Figure 3.8 – Real private consumption growth



Sources: Statistics New Zealand, The Treasury

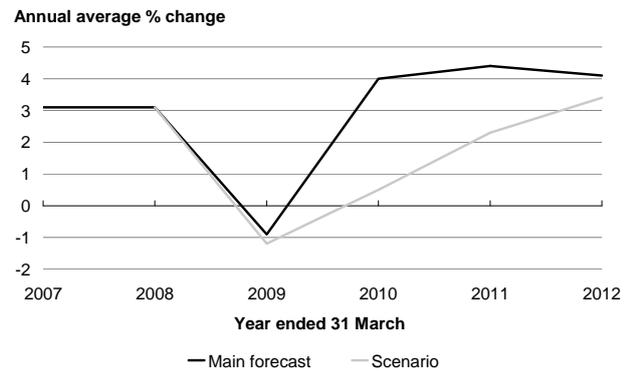
... as is the export response, leading to slower real activity ...

Weaker domestic demand and a lower exchange rate slow import growth until the March 2010 year resulting in a narrowing of the current account deficit to 4.5%. The narrowing of the current account deficit is somewhat muted by increased debt servicing costs as higher world interest rates result in a larger investment income deficit.

From 2010 the lower exchange rate helps to drive the rebound in exports of goods and services but a softer world economy than in our main forecasts means the response of exports to the lower exchange rate is somewhat muted (see Figure 3.9). The response of exports of services (including tourism receipts) to the lower exchange rate is particularly weak as the slower global economy reduces discretionary incomes available for travel.

The weak domestic economy means real GDP growth is sub 1% in the March 2009 and 2010 years. Real GDP growth does rebound to 2.8% in the 2012 March year – although still below trend – owing to lower market interest rates boosting domestic demand and stronger exports as the world economy recovers and the exchange rate is lower.

Figure 3.9 – Real exports



Sources: Statistics New Zealand, The Treasury

... lowering inflation ...

CPI inflation averages 2% across the forecast period in this scenario as opposed to around 2.9% in the main forecast. Lower inflation is mainly driven by a weaker domestic economy lowering non-tradables inflation. While the sharp depreciation of the exchange rate does lead to an increase in tradables inflation, it is limited somewhat by a weaker economy, meaning firms facing increased import prices are not able to fully pass through cost increases. The lower inflation pressures see official interest rates cut significantly more than in the main forecast but this does not fully translate into lower market interest rates owing to the heightened risk aversion in the financial markets. The exchange rate depreciates more sharply than in the main forecasts as slower economic growth and relatively lower domestic interest rates make the New Zealand dollar less attractive.

... leading to less nominal GDP

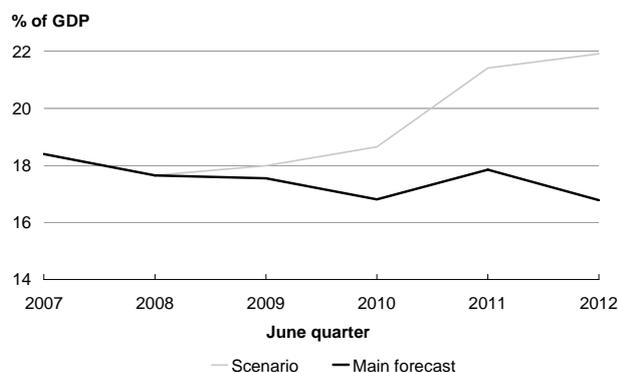
Lower consumer price inflation, coupled with a weaker real economy, results in slower nominal GDP growth throughout the period and therefore the level of nominal GDP is a cumulative \$34.4 billion lower, resulting in lower tax revenues across the whole period. See the Fiscal Scenarios section for more details.

Fiscal Scenarios

The fiscal position is strongly influenced by the economy. The major economic determinants, and how they impact on the fiscal position, are listed below. While each effect is expressed in terms of an increase in the determinant, the opposite impact applies for a decrease.

- Nominal GDP – higher GDP levels are reflected in higher tax revenue, which increases the operating balance and lowers the Government's net debt.
- Interest rates – higher interest rates lead to increased debt-financing costs, although this would be partially offset by higher interest-based revenue on assets.
- The level of unemployment – higher levels of unemployment translate to an increase in spending because the number of unemployment beneficiaries rises. This decreases the operating balance and raises net debt levels.
- CPI inflation – as most benefits are indexed to CPI movements, higher inflation results in increased benefit costs. This reduces the operating balance and increases debt.

Figure 3.10 – Gross sovereign-issued debt



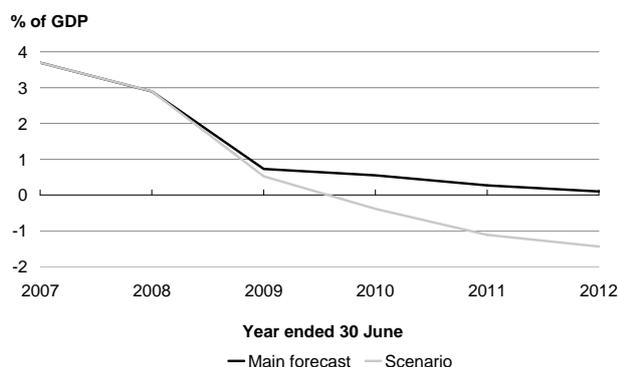
Source: The Treasury

The scenario results in lower tax revenue and more Government debt ...

The scenario is characterised by weaker domestic demand and lower inflation throughout the forecast period compared with the main forecast. The weaker domestic demand and lower inflation – plus a muted export response to the lower exchange rate – lead to lower nominal GDP reducing tax revenue. Relative to the main forecast, there is cumulatively \$10.4 billion less tax by June 2012.

Expenses are lower overall relative to the main forecast, as the increase in debt financing costs owing to the larger stock of debt (see below) and the increase in the number of unemployed are offset by the lower cost of inflation-indexed benefits owing to lower inflation.

Figure 3.11 – OBEGAL (excluding NZS Fund retained revenue)



Source: The Treasury

Despite the lower expenses, lower tax revenue means the OBEGAL (excluding NZS Fund retained revenue) is lower over the forecast period and is, when expressed as a percentage of GDP, 1.5 percentage points lower in the final year of the forecast than in our main forecast (see Figure 3.11). As a result, gross sovereign-issued debt is 21.9% of GDP at the end of the forecast period compared to 16.8% of GDP in the main forecast.

Fiscal Sensitivities

Table 3.1 provides some “rules of thumb” on the sensitivities of the fiscal position to changes in specific variables.

Table 3.1 – Fiscal sensitivity analysis

Year ending 30 June (\$ million)	2008 Forecast	2009 Forecast	2010 Forecast	2011 Forecast	2012 Forecast
1% lower nominal GDP growth per annum					
Revenue	(550)	(1,100)	(1,725)	(2,365)	(3,055)
Addition to financing costs	17	68	152	271	425
Impact on the operating balance	(567)	(1167)	(1878)	(2636)	(3480)
Revenue impact of a 1% decrease in the growth rates of:					
Wages and salaries	(245)	(490)	(765)	(1,045)	(1,355)
Taxable business profits	(125)	(265)	(420)	(590)	(770)
One percentage point lower interest rates					
Interest income	(41)	(89)	(57)	(70)	(49)
Expenses	(21)	(88)	(130)	(167)	(201)
Impact on the operating balance	(20)	(0)	72	97	152

The forecasts of capital contributions to the New Zealand Superannuation (NZS) Fund are sensitive to the rate of return assumed on the Fund’s assets.

Table 3.2 – NZS Fund contributions sensitivity analysis

Variable	Marginal change	Effect on net return after tax	Effect on Capital Contribution (\$ million)			
	(%age points)	(%age points)	2008/09	2009/10	2010/11	2011/12
Expected gross rate of return	-1	-0.76	220	230	243	256