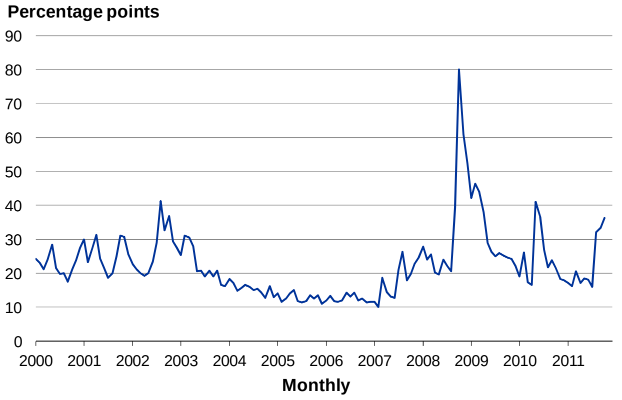
3

Risks and Scenarios

Introduction

The forecasts presented in the Economic and Fiscal Outlook chapters were produced in some of the most volatile economic and market conditions since the height of the Global Financial Crisis. The Chicago Board Options Exchange Volatility Index – a measure of volatility in the S&P500 index and generally considered to be a proxy for international financial market conditions – rose significantly during the September 2011 quarter and remains elevated.

Figure 3.1 – Chicago Board Options Exchange Volatility Index (VIX)



Source: Chicago Board Options Exchange (A higher number means more market volatility is expected over the next 30-day period.)

Against this backdrop, the first part of this chapter outlines key risks to the economic outlook, before presenting a plausible downside alternative scenario for the New Zealand economy. It then focuses on the established channels between the risks facing the real economy and the Crown's fiscal position.

Economic Risks

Global outlook is highly uncertain ...

Internationally, the biggest uncertainty is over how fast, or even if, policymakers and governments can stabilise financial markets. Our main forecasts assume that the global economy "manages through" in the near term, based on a reasonably orderly resolution of the ongoing sovereign debt problems in the euro area combined with the adoption of additional fiscal stimulus measures in the United States. However, the risks to this view are skewed to the downside. A failure on the part of governments to contain the crisis in the euro area could, in particular, cause a severe disruption to global funding markets.

In contrast to late 2008, there is limited room for policymakers in developed economies to cut official interest rates if such a situation were to occur again. Furthermore, differences of opinion over appropriate policy responses have come to the fore, particularly over fiscal settings in the United States. With private deleveraging set to continue in much of the world, we expect a prolonged period of sub-potential growth in the global economy.

... posing risks to New Zealand's economy

The risks to New Zealand from the global economy are threefold. If international activity turns out to be weaker than we have built into our main forecasts, this would reduce demand for our exports. Given the need for sizeable medium-term fiscal consolidation in much of the developed world – not least the United States – there is a great deal of uncertainty over the pace of global growth ahead. And while Asian economies appear to be relatively better placed, policymakers there – particularly in China – face their own challenges from persistently strong inflation and high-valued housing markets.

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. Lower commodity prices could also impact on New Zealand goods and services providers that export to Australia, which would also experience a cut in its national income from international commodity sales.

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. In light of the recent downgrades to New Zealand's sovereign credit rating by international ratings agencies Fitch and Standard & Poor's, 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.

The economy faces existing challenges as well ...

The domestic economy faces other risks as well. Private consumption growth is expected to be held back by weak house price growth and households' aggregate desire to reduce their debt-to-income ratios to more comfortable levels. Given the wider potential for much tighter conditions in global funding markets, the risk is 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 the rebalancing that the economy needs in the long run, such a scenario would involve weaker domestic activity in the near term. At present, the risk of a large-scale increase in borrowing by households, reflecting an increased willingness by banks to lend, seems small. However, if this were to occur, it would drive a stronger economy in the near term, but would not prevent the inevitable household rebalancing further out.

... including ongoing uncertainty over the timing of the Canterbury rebuild ...

As outlined earlier this year, the timing and extent of the Canterbury earthquake rebuild is difficult to forecast. If significant extra seismic activity causes further damage, the risk that the cost of rebuilding exceeds the current $20 billion estimate factored into our main forecasts would clearly rise, as would the risk that the rebuild would be slower and overall economic activity lower in the short term. Conversely, if seismic activity and insurance-related issues that are currently delaying the process were to be rectified sooner than assumed, the rebuild could gather pace more quickly. Accordingly, residential and non-residential construction, imported goods 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 upward pressure, as well as prices for some goods – particularly housing goods and services. On top of this, a more rapid rebuild could boost wider confidence in the economy, providing a lift to consumer spending and business investment.

... and 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 and remain a residual risk. Equally, weather-driven supply shocks in New Zealand's competitor countries also pose risks to the price of New Zealand's exports. There are other inherent risks from a range of environmental events as well, including the potential for biosecurity issues to hit the agricultural sector and the impact of one-off events such as the recent *Rena* shipping incident in the Bay of Plenty.

There are upside risks, but these are small at present

The discussion up to now has centred on the negative risks facing the economy, but there are also some positive risks – albeit small at present. Possible factors this time around include the terms of trade holding up higher than forecast and/or a quicker and more decisive resolution to the problems in the euro area (as opposed to the "manage through" assumed in the main forecasts). In addition, a weaker exchange rate profile than we forecast would be expected to provide a competitive boost to New Zealand-based exporters.

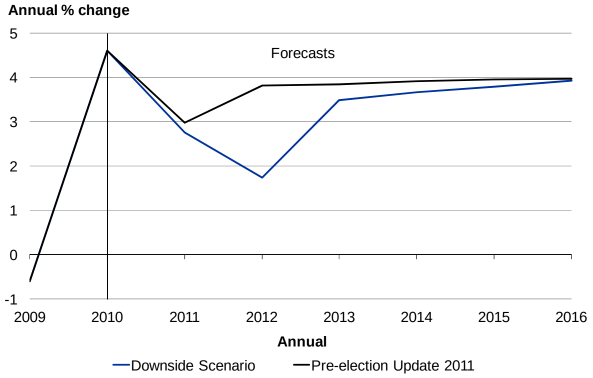
Downside Scenario

With the balance of probabilities around our main forecasts skewed heavily to the downside, this section presents a downside scenario based on the risks discussed earlier in this chapter. To be clear, the following is just one possible outturn based on a set of risks. It should be considered an illustrative outcome rather than a 'worst case' scenario. The main drivers of this downside scenario are:

- European leaders do not manage to contain the ongoing sovereign debt challenges in the euro area, leading to a significant spike in global risk-aversion and an associated increase in market funding costs.
- With little scope for fiscal and monetary policy in the developed world to step in as it did in 2008, a protracted global recession ensues. The United States and euro area economies contract by 1.5% and 2.0% respectively in the 2012 calendar year, and stage relatively weak recoveries thereafter. Monetary policy around the globe stays supportive for longer.
- An increase in funding costs triggers housing market corrections in a number of Asian economies, exacerbating their economic downturns. Annual Chinese GDP growth slows to 6% in 2012 (versus an average of over 10% per year in the past decade).

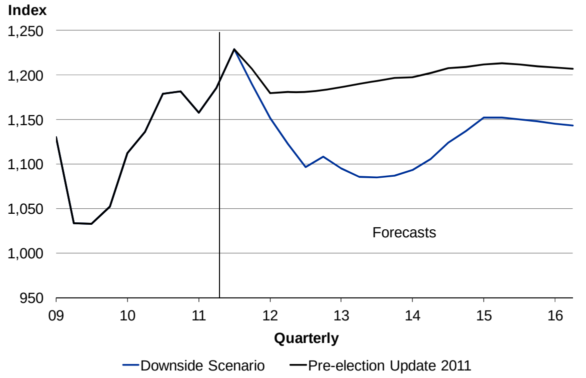
In this scenario, aggregate output in New Zealand's trading partners is approximately 3% lower than the main forecasts in the year ending March 2016. The cumulative loss of trading partner growth over five years is 13.5% of one year's annual GDP. In a deliberate effort to capture the downside risks to the global economy at present, this magnitude is around twice as severe as the IMF's downside scenario from its September 2011 *World Economic Outlook*.

Figure 3.2 – Trading partner growth



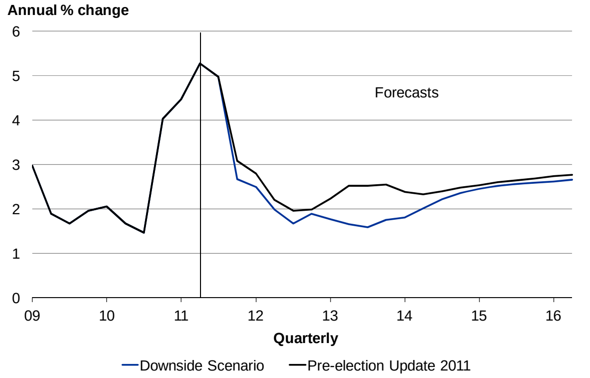
Source: The Treasury

Figure 3.3 – Merchandise terms of trade (SNA)



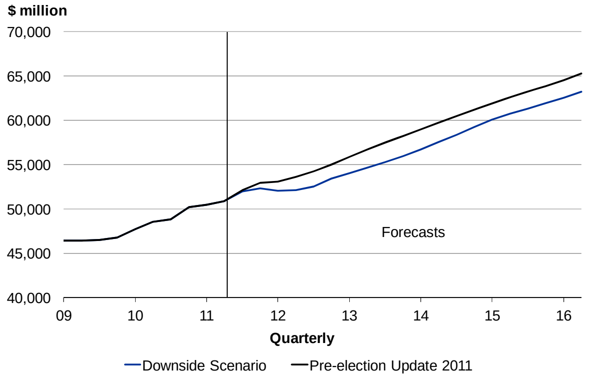
Source: The Treasury

Figure 3.4 – Inflation



Source: The Treasury

Figure 3.5 – Nominal GDP



Source: The Treasury

The impact on New Zealand of this downside scenario primarily comes through lower demand for our goods and services exports (including inbound tourism), and also lower prices for our key commodity exports – particularly dairy, meat and forestry products. The terms of trade fall sharply, down 7.0% in the year ending March 2013, largely reflecting lower prices for export commodities, and remain below levels incorporated into the main forecasts throughout the forecast period. That said, given their high starting point, the terms of trade remain around 9% higher than their long-run average during the five-year forecast period.

Lower export receipts flow through to a more rapid deterioration in the current account balance in this downside scenario. The current account deficit widens to 4.6% of GDP in the year ending March 2013 (compared with 3.6% in the main forecasts) and to 7.9% by the year ending March 2016 (compared with 6.9%). The exchange rate drops sharply and undershoots in the near term, although in a world of weak monetary settings it does not fall as far as in previous recessions. In this scenario, the trade-weighted exchange rate falls to 63.4 by the middle of the 2012 calendar year – more than 9% lower than in the main forecasts but still higher than the average since 2000 – before regaining some lost ground in 2013. In the near term at least, slower global growth outweighs any competitive boost from a weaker currency.

Lower terms of trade would also hit consumer and business confidence. The levels of both consumer spending and market investment remain below their main tracks throughout the forecast period. The latter is held back by a lack of availability, and the higher cost of credit, reflecting the disruption to global funding markets – another key headwind in this downside scenario.

As in the main forecasts, the Canterbury rebuild is a sizeable mitigating factor in this downside scenario. Residential investment is hit in the near term but recovers as reconstruction funded largely by insurance flows gathers pace over the coming years. While unemployment rises to 6.8% in the mid-2012 calendar year in the scenario – 1.2 percentage points higher than the main forecasts – rebuilding activity helps to bring the rate back down towards the end of the forecast period.

However, the overall impact of weaker economic activity in the short run results in the inflation rate being lower throughout the forecast period, coming in at 1.8% in the March 2013 and 2014 years. Accordingly, short-term interest rates are lower than in the main forecasts. The combination of weaker domestic demand and lower terms of trade means that nominal GDP is a cumulative $35 billion lower through to the year ending June 2016 in the downside scenario. A comparison of the downside scenario with the main forecasts for the key economic variables is given in Table 3.1.

Government's fiscal position deteriorates as a result

Tax revenue in this scenario is lower than in the main forecasts because of weaker growth in the economy. However, the relationship between the performance of the economy and tax revenue is very imprecise. In addition to the negative impact forecast by our model, we have lowered tax revenue by a further cumulative $4 billion over the forecast period in the downside scenario. This adjustment is intended to emphasise the downside risks facing the economy at present and the extra uncertainty that this means for tax revenues (note that GDP is lower in the scenario but so is the ratio of tax to GDP).

Overall, core Crown tax revenue in the scenario is a cumulative $14.5 billion lower through to the year ending June 2016. In contrast to the main forecasts, the total Crown operating balance before gains and losses remains in deficit throughout the forecast period, registering a deficit of 0.5% of GDP in the year ending June 2016 compared with a 1.2% of GDP surplus in the main forecasts. Accordingly, core Crown net debt in the downside scenario rises to 35% of GDP in the year ending June 2016 (from 20% of GDP in 2011) – some 7% of GDP higher than in the main forecasts.

Other downside risks not captured in the scenario

As noted earlier, the downside scenario sets out one plausible scenario of a downside event and should be considered more of an illustrative outcome than a 'worst case'. Overall, historic forecasting performance suggests that there is at least a one-in-five chance of an outcome worse than that captured in the downside scenario. Indeed, there are a number of risks for the economy over and above those captured in the scenario. Specifically, if a variety of factors conspired to result in the exchange rate not depreciating as we expect in the downside scenario, New Zealand would have less of a cushion from the weaker global economy. Meanwhile, to the extent that a stronger exchange rate leads to wider current account deficits than in the downside scenario, New Zealand's external liabilities and potential vulnerabilities would be still higher. Conversely, should the exchange rate depreciate more than we expect in the downside scenario, this would help to cushion the export sector further.

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

March years	2011 Actual	2012 Forecast	2013 Forecast	2014 Forecast	2015 Forecast	2016 Forecast
Real GDP (annual average % change)						
Main forecast	**1.6**	**2.3**	**3.4**	**3.3**	**2.9**	**2.4**
Downside scenario		1.7	2.5	3.6	3.2	2.6
CPI inflation (annual % change)						
Main forecast	**4.5**	**2.8**	**2.2**	**2.4**	**2.5**	**2.7**
Downside scenario		2.5	1.8	1.8	2.4	2.6
Unemployment rate[1]						
Main forecast	**6.5**	**5.8**	**5.2**	**4.9**	**4.7**	**4.7**
Downside scenario		6.5	6.3	5.8	5.1	4.7
Nominal GDP (expenditure measure, $billion)						
Main forecast	**198**	**209**	**219**	**231**	**243**	**254**
Downside scenario		207	212	223	235	246
Current Account Balance (% of GDP)						
Main forecast	**-3.6**	**-2.4**	**-3.6**	**-5.4**	**-6.4**	**-6.9**
Downside scenario		-2.9	-4.6	-6.2	-7.4	-7.9

1 March quarter, seasonally adjusted

Source: The Treasury

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 inherent 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 changes in specific variables. For example, if for some reason nominal GDP growth is 1 percentage point slower than we have forecast each year up to the year ending June 2016, we would expect tax revenue to be around $3.5 billion (1.4% of GDP) lower than forecast as a result. The sensitivities are broadly symmetric, ie, if nominal GDP growth is 1 percentage point faster each year than we expect, we would expect tax revenue to be around $3.5 billion *higher* than forecast instead.

Fiscal sensitivities

Table 3.2 – Fiscal sensitivity analysis

Year ending 30 June (\$ million unless stated)	**2012 Forecast**	**2013 Forecast**	**2014 Forecast**	**2015 Forecast**	**2016 Forecast**
1% lower nominal GDP growth per annum on					
Tax revenue	(549)	(1,171)	(1,876)	(2,650)	(3,492)
(% of GDP)	(0.3)	(0.5)	(0.8)	(1.1)	(1.4)
Revenue impact of a 1% decrease in growth of					
Wages and salaries	(240)	(510)	(812)	(1,153)	(1,532)
(% of GDP)	(0.1)	(0.2)	(0.3)	(0.5)	(0.6)
Taxable business profits	(96)	(225)	(370)	(526)	(687)
(% of GDP)	(0.0)	(0.1)	(0.2)	(0.2)	(0.3)
Impact of 1% pt lower interest rates on					
Interest income[a]	(116)	(117)	(54)	(87)	(34)
(% of GDP)	(0.1)	(0.1)	(0.0)	(0.0)	(0.0)
Expenses[a]	(84)	(291)	(378)	(516)	(573)
(% of GDP)	(0.0)	(0.1)	(0.2)	(0.2)	(0.2)
Overall operating balance	(32)	173	325	429	540
(% of GDP)	(0.0)	0.1	0.1	0.2	0.2

a New Zealand Debt Management Office holdings only.

Source: The Treasury

Revenue risks

One of the major sources of uncertainty about 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 3.6 plots our main tax revenue forecast, along with confidence intervals around those forecasts based on Treasury's historical tax forecast errors.[11] The outermost shaded area captures the range (+/- \$5 billion in the final year) within which actual tax forecasts would typically fall for 80% of the time.[12] The tax revenue forecast from the downside scenario is also plotted. Tax revenue in the downside scenario is clearly much lower than in the main forecast, but based on average historical forecast errors, there is still a one-in-five chance that tax revenue over the forecast period comes in even weaker than shown here in the downside scenario. Furthermore, with uncertainty currently greater than usual and risks skewed to the downside, the probability of tax revenue undershooting the downside scenario is currently considered to be higher than one in five.

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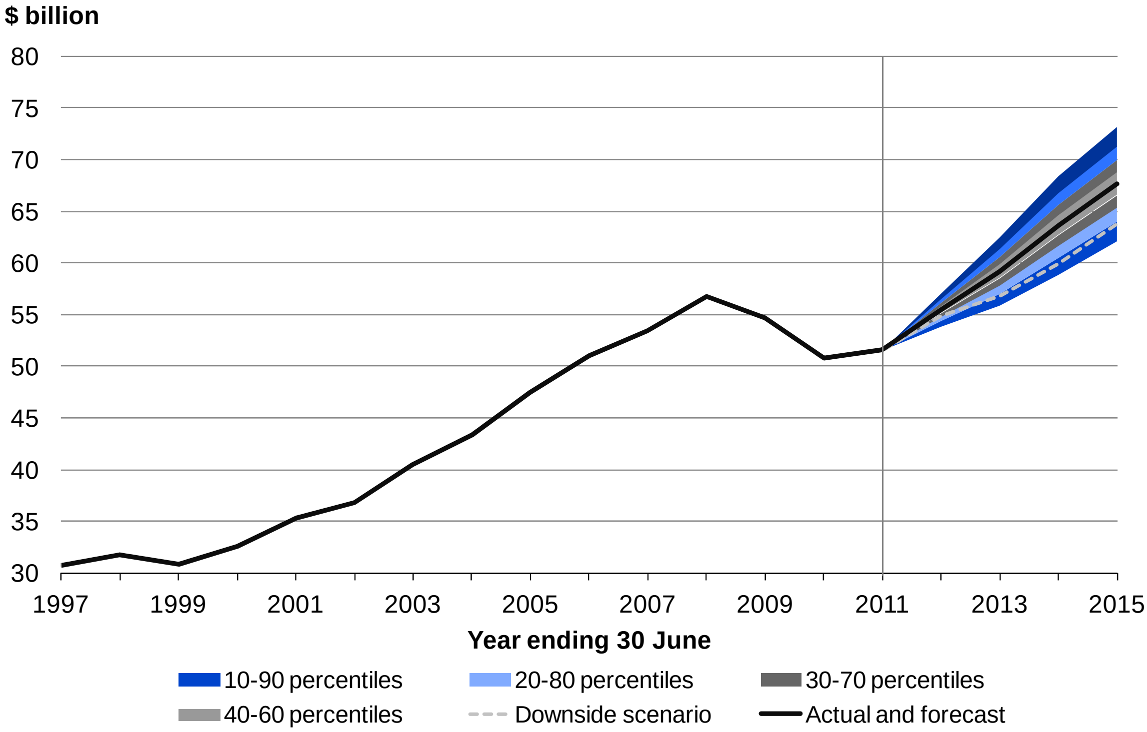
11 A full summary of the methodology and critical assumptions is included in *Treasury Working Paper 10/08*. Standard deviation assumptions used for 0-, 1-, 2- and 3-year ahead forecasts are 2.4%, 4.7%, 6.3% and 6.8% of the actual respectively. These are interpolations of the *Budget Update* forecast estimates, adjusting for the timing of the *Pre-election Update* forecast.

12 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," *Treasury Working Paper 11/02.*

Figure 3.6 – Core Crown tax revenue uncertainty



Source: The Treasury

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 end up costing more than the Government allows for) can also have substantial ongoing effects on the fiscal position.

There is also considerable uncertainty with regard to the performance of the economy on Crown expenditures too. 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 on the capital side. 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 the primary risks facing the public finances, the Crown's balance sheet faces risks on a number of fronts too.[13] One of the main risks in this regard is to the net worth of the Crown's financial assets from movements in financial markets – particularly relating to interest and exchange rates and equity prices. Examples of these funds include the NZS Fund and the Accident Compensation Scheme (ACC). The Crown Ownership Monitoring Unit estimates that the Crown's overall financial portfolio has an asset beta of 0.45 relative to global equity markets. This means that if the MSCI World Equity Index were to fall (rise) by 10%, the value of the Crown's investments would be expected to fall (rise) by 4.5%.

The Crown also faces liquidity risk, and in extreme instances could potentially encounter difficulty in meeting financial obligations as they fall due. However, the bulk of research suggests that such a scenario is very unlikely and the Government has liquid buffers to help cope with such events.

Funding risks

As noted in the Economic Outlook chapter, while our main forecasts were finalised before the recent downgrades of New Zealand's credit rating by Standard & Poor's and Fitch, the market reaction since then means that our forecasts for interest rates in the near term are still appropriate. For now, New Zealand is on a stable outlook with all three major credit ratings agencies and the Crown holds the top Aaa foreign currency rating from Moody's and stable AA foreign currency ratings from Standard & Poor's and Fitch.

Nonetheless, in the absence of a marked improvement in the external position, New Zealand may be more likely to be singled out in the funding markets in the future. All things being equal, any further deterioration in the ratings outlook could serve to raise debt-servicing costs for the Crown as well as borrowing rates for households and businesses.

[13] For a more detailed discussion see the Crown's *Investment Statement 2010* as well as the *Supplement to the Investment Statement 2010*.