NEW ZEALAND COUNCIL OF TRADE UNIONS
Te Kauae Kaimahi

CTU Monthly Economic Bulletin

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Commentary

How good are the wage forecasts?

Summary

An affiliate asked how reliable Treasury's wage forecasts are, after forecasts in the May Budget showed wages increasing nearly 50 percent faster than the inflation rate for the next four years. This commentary looks at the forecasts of annual increases in the average wage from both Treasury and in the NZIER Consensus Forecasts that we report each month.

The short answer to our affiliate's question is that the wage increase forecasts are useful in a limited way. If they forecast less than 18 months ahead, in general terms forecasts rise with the actual value, but there are some quite large misses. On average, Treasury was out by 0.7 to 0.8 percentage points and NZIER by 0.6 to 0.9 percentage points for these forecasts.

In general forecasts aren't biased up or down: for example the average forecast that Treasury made less than 6 months ahead was 3.5 percent; the actual average was 3.4 percent.

However, forecasters tend to forecast around the average historical value of the annual increase. Forecasts looking out two, three years or further are almost independent of the actual outcome. They are near worthless other than to tell us what the forecasters think the long term wage path might be.

Even for shorter forecasts – up to 18 months – you need to be cautious. The further the actual increase is from the average, the worse the performance of the forecasts. There is a statistically significant pattern of forecasting low increases too high and high increases too low by both forecasters.

There is little to choose between Treasury and NZIER's Consensus Forecasts. For our purposes, NZIER's is more useful simply because it is updated every quarter whereas Treasury's is only published twice a year (or three times in an election year).

As with all economic forecasts, use with caution.

I was asked by an affiliate after the May Budget how reliable Treasury's wage forecasts are, given they were forecasting wages increasing nearly 50 percent faster than price inflation for the next four years.

Treasury forecasts the annual increase in the average wage as part of its economic forecasting. So do several other economic forecasters. In each *Economic Bulletin* we report the NZIER Consensus Forecast, which is not a forecast by NZIER (the New Zealand Institute for Economic Research) itself, but an

average of ten or so forecasters, including Treasury, the Reserve Bank, NZIER, and several commercial and investment banks.

While I was looking at Treasury's wage forecasts, I had a look at NZIER's consensus forecasts too. I've compared forecasts with actual outcomes from 1997 to 2012 for Treasury and from 1999 to 2012 for NZIER (the forecasts that are available on their web sites). I will refer to NZIER's Consensus Forecasts just as "NZIER's" even though many forecasters contribute to them.

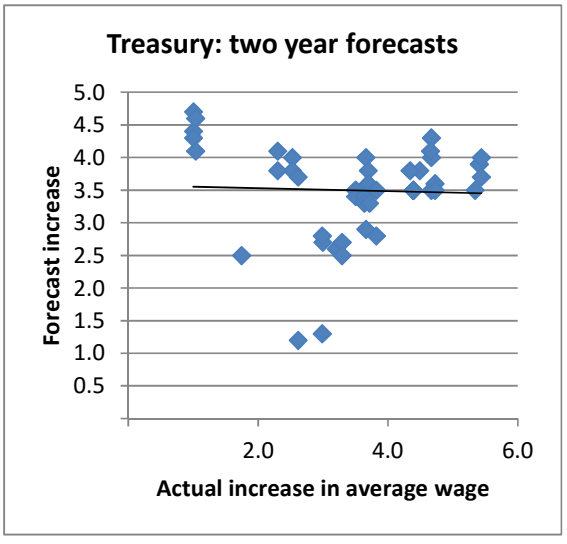
The wage whose increase that they forecast is the average hourly wage – ordinary time in the case of Treasury, private sector (and I assume ordinary time, but it doesn't make much of a difference) for NZIER. See the side box for some warnings.

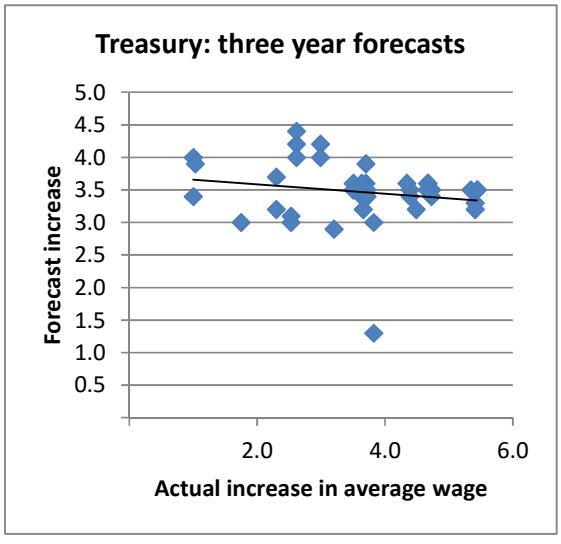
The Average Wage

When thinking about increases in the average wage, bear in mind that it jumps around in ways that don't necessarily reflect what you find in your pocket. If rising unemployment hits low income earners most, then the average wage will rise because many people with lower incomes have fallen out of the workforce. If relatively well paid construction jobs disappear as a result of the slump in the building industry but jobs get created in the lower paid hospitality sector, then the average wage will go down – without anyone in work seeing their wage rates change. If Jo and Chris are both on $25 an hour and Al's on $16, their average wage is $22. If Al loses her job, the average wage of the remaining workforce (Jo and Chris) goes up 14 percent to $25, but no-one is better off. In the whole economy, things aren't that stark, but it is important to remember that average wage levels are affected by the composition of the workforce as well as actual wage movements.

The short answer to our affiliate's question is that the wage increase forecasts are useful in a limited way. If they forecast less than 18 months ahead, in general terms forecasts rise with the actual value, but there are some quite large misses. Forecasts are better around the average actual value (approximately 3.5 percent per year), but tend to be too high for low actual increases and too low for high actual increases. Forecasts for periods beyond 18 months provide little information. The shorter term forecasts aren't biased up or down: for example the average forecast Treasury made less than 6 months ahead was 3.5 percent; the actual average was 3.4 percent. At the other extreme, there is a hint of a downward bias in NZIER's two and three year forecast, but it is not significant in statistical terms.

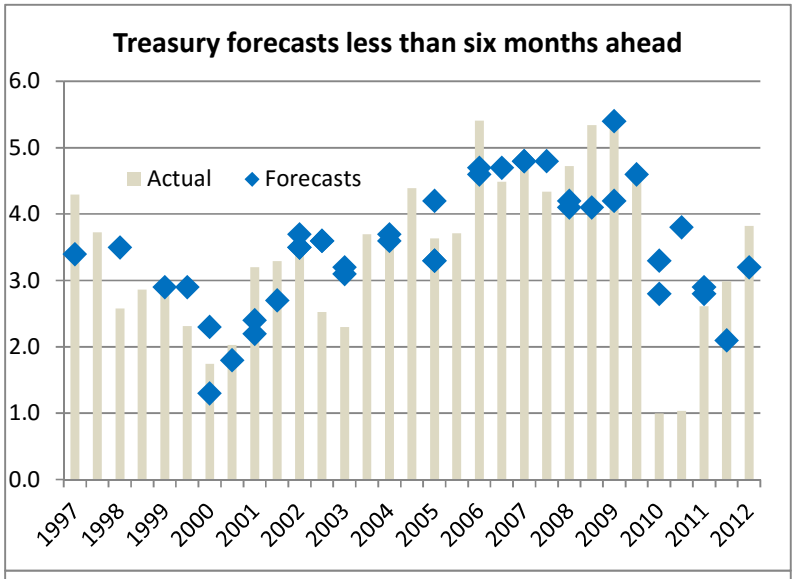
Looking at this in more detail, the problem of course is that you don't know what the increase will actually be until you get there and both forecasters have a tendency to estimate that increases will be near the average (wouldn't you, too?). In fact, looking out two or three years, the forecasts are almost independent of the actual outcome: in the two graphs below, which plot actual vs forecast, the forecast

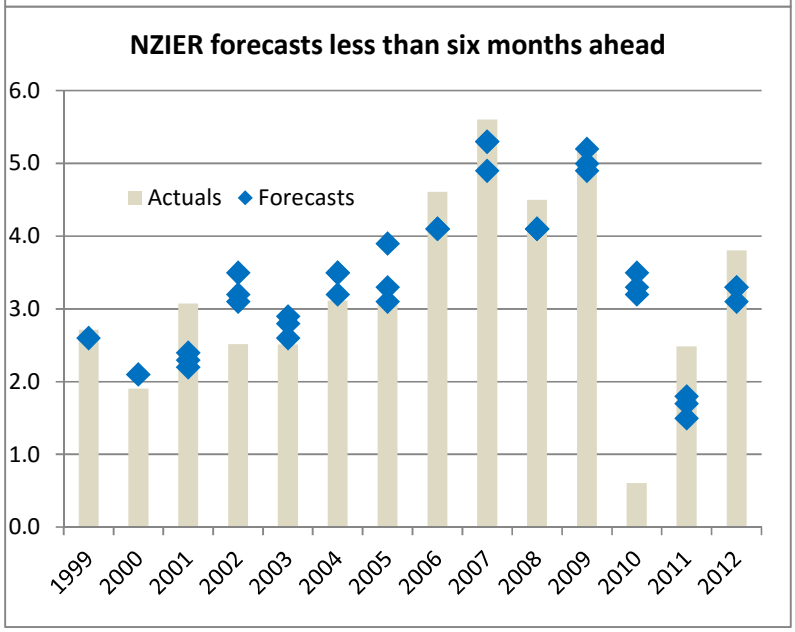




is best fitted by a near horizontal straight line that runs roughly along the average increase. NZIER's two and three year forecasts look similar. (For statisticians out there, the slope of the lines is not significantly different from zero in statistical terms.) See also the graphs at the end of the commentary.

This is rather like the old truism that a stopped clock tells the right time twice a day whereas a slow (or fast) clock hardly ever tells the right time. These two and three year (and older) forecasts are near worthless other than to tell us what the forecasters think the long term wage path might be – "projections" rather than forecasts. In fact for its long term projections beyond four years, Treasury currently assumes that wage growth will equal CPI inflation plus the increase in labour productivity. Based on Statistics New Zealand's measure of labour productivity[1], on past performance this projection significantly overestimates average wage growth.





Even for shorter forecasts – up to 18 months – you need to be cautious. The further the actual increase is from the average, the worse the performance of the forecasts. The graphs to the right show forecasts within 6 months. Further graphs are at the end of the commentary. Some of the forecasts for less than 6 months are in fact for *previous* months. For example, the May 2012 Budget estimated the March 2012 wage increase because when the forecasts were prepared, the official result was not yet available. Forecasters were caught out by the 2008-09 financial crisis and were still forecasting higher wage increases for 2010 than actually occurred. The following year, the NZIER forecast was too low, though Treasury didn't do too badly.

There is a statistically significant pattern of forecasting low increases too high and high increases too low by both forecasters. Looking first at the forecasts of up to 6 months, the 1.0 percent increase that

[1] Treasury calculate their own based on hours worked or FTE workers. SNZ use hours paid, with other differences.

occurred in the years to both March and June 2010 was forecast by Treasury to be between 2.8 and 3.8 percent. The private sector increase of 0.6 percent over the same period was forecast by NZIER to be between 3.2 and 3.5 percent. At the other end of the scale, Treasury has forecast between 4.2 and 5.4 percent for increases that turned out to be 5.4 percent, and NZIER has forecast between 4.9 and 5.3 percent for increases that turned out to be 5.6 percent. On average, Treasury was out by 0.66 percentage points and NZIER by 0.64 percentage points.

The picture is similar for forecasts between 6 and 18 months. Over this time horizon, Treasury forecast between 2.2 and 4.2 percent for increases that turned out at 1.0 percent, and between 4.2 and 5.5 percent for increases that turned out at 5.4 percent. NZIER forecast between 2.6 and 3.6 percent for an actual 0.6 percent increase, and between 3.8 and 4.2 percent for an actual 5.6 percent increase. On average, Treasury was out by 0.79 percentage points, and NZIER was out by 0.87 percentage points.

Treasury regularly reviews its own forecasts of tax revenue, GDP and CPI inflation. Its GDP growth forecasts for example show errors[2] of 0.9 to 1.6 percentage points in the current year, and over 2.0 percent for one to three year forecasts. Calculated on the same basis, its errors in wage forecasts are 0.9 percentage points within 6 months and in the 6-18 month range, and 1.4-1.5 percentage points for the longer forecasts. NZIER's are 0.9 percentage points within 6 months, 1.1 in the 6-18 month range, and 1.3-1.4 for the longer forecasts.

There is not a lot to choose between Treasury and NZIER's Consensus Forecasts, which may mean there are better forecasts averaged into the NZIER Consensus. For our purposes, NZIER's is more useful simply because it is updated every quarter whereas Treasury's is only published twice a year (or three times in an election year or in exceptional times). As with all economic forecasts, use with caution.

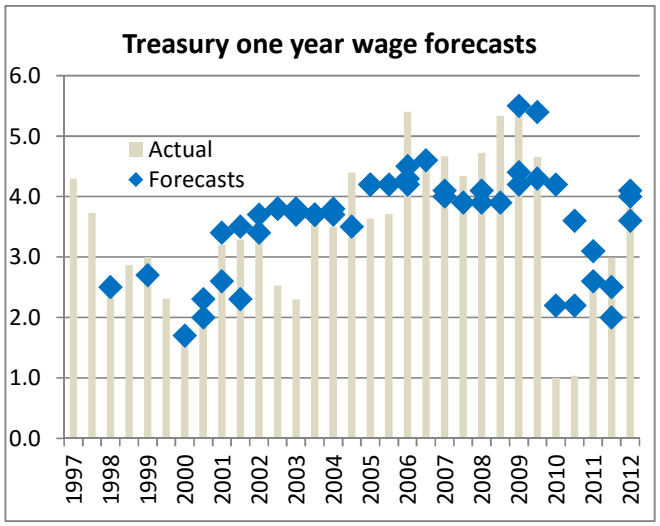
Technical stuff

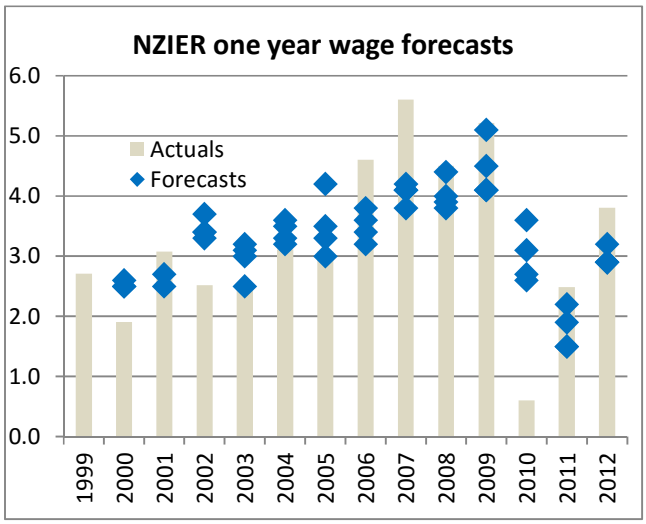
This analysis is based on the forecasts Treasury prepares for its Economic and Fiscal Updates at each Budget and in December, plus pre-election in general election years. We use both their March forecasts and June figures which are variously described as "assumptions" and forecasts, but are in practice forecasts. Documents containing these are on Treasury's web site back to 1997. NZIER's Consensus Forecasts are available on its web site with a few exceptions back to 1999. Tests reported above are at a 5 percent confidence level, and make the usual assumptions regarding normality and heteroskedasticity of errors of forecasts. Bias was tested with paired t-tests, none of which showed significant difference between forecast and actual average increases. The pattern of forecasting low increases too high and high increases too low is illustrated by linear regressions of forecast on actual increases. A perfect forecast would produce a line with slope of 1.0 and zero constant term. In fact for forecasts of up to 18 months, slopes are significantly less 1.0; for longer forecasts, slopes are not significantly different from zero. Constant terms are all significantly different from zero. There may be serial correlation of forecasting errors and other complications. Further details can be obtained from me.

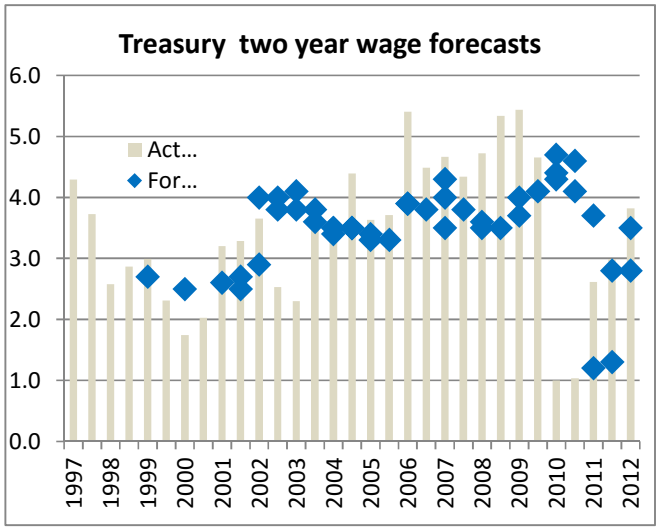
Bill Rosenberg

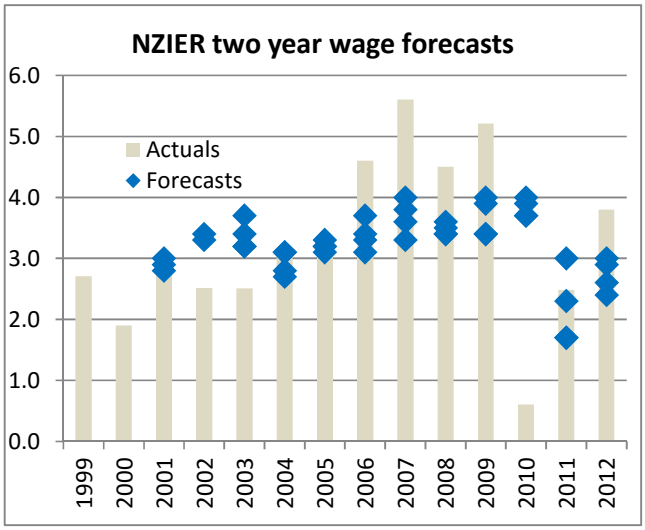
[2] Root mean square errors. For Treasury's reviews, see http://www.treasury.govt.nz/publications/informationreleases/forecastingperformance.

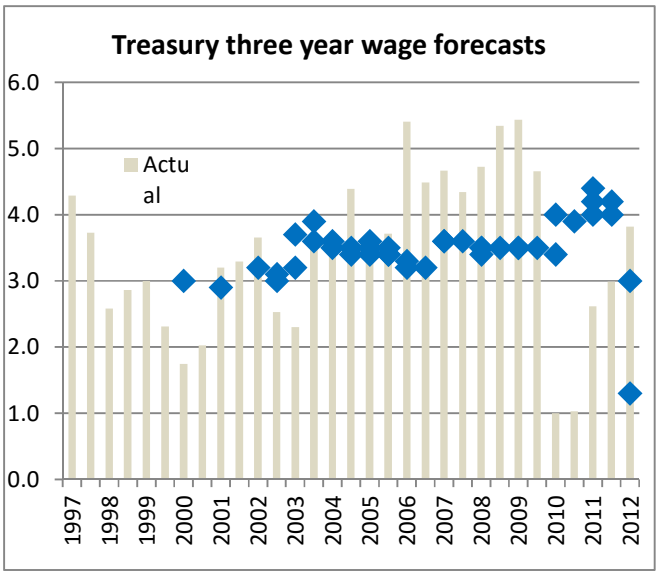
Further graphs: In the graphs below, "one year" includes forecasts of between 6 and 18 months, "two years" includes 18-30 months, and "three years" includes 30-42 months.

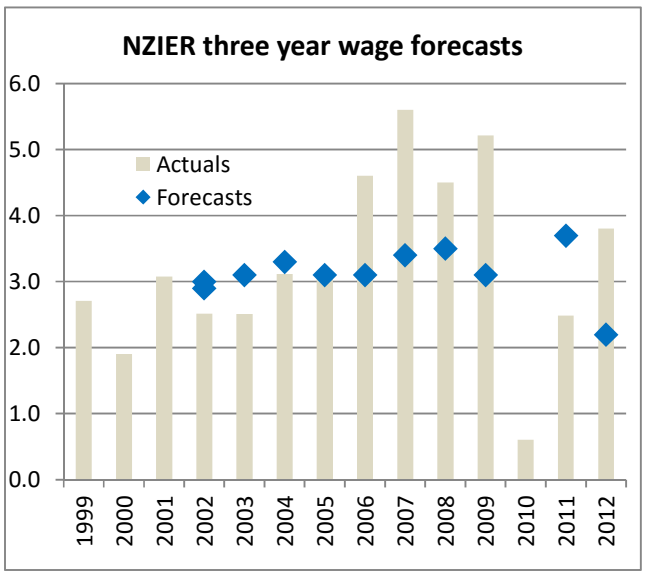












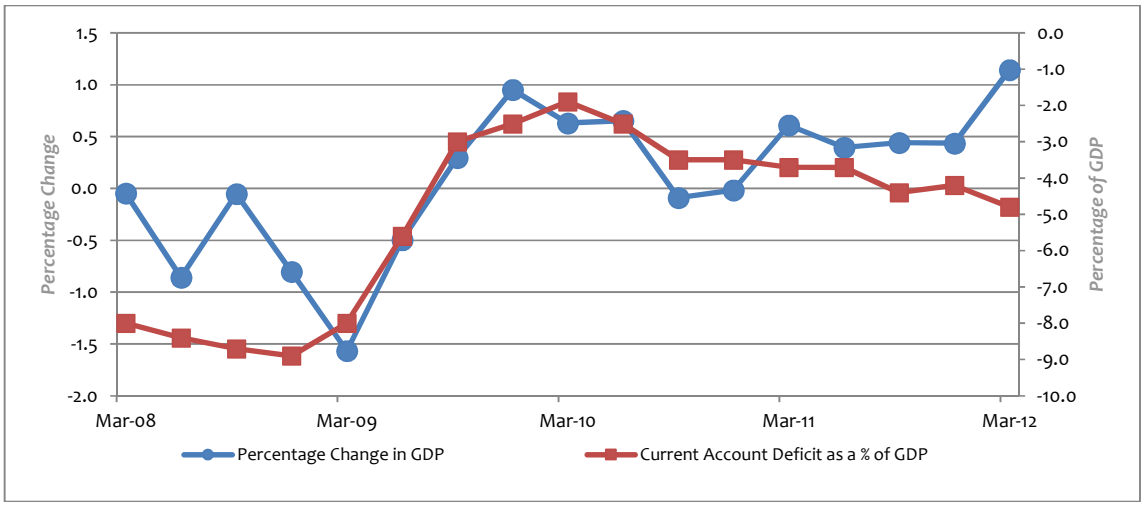
Forecast

★ This NZIER consensus forecast was published on 18 June 2012. Figures in *red italics* are actuals rather than forecasts.

Annual Percentage Change (March Year)	**2011-12**	**2012-13**	**2013-14**
GDP	*1.7*	2.1	3.1
CPI	*1.6*	2.1	2.4
Private Sector Wages	*3.8*	3.2	3.1
Employment	*0.9*	1.3	2.2
Unemployment	*6.7*	6.2	5.5

A ★ indicates information that has been updated since the last bulletin.

Economy



★ Gross Domestic Product was up 1.1 percent in the March 2012 quarter, and GDP growth for the year to March 2012 was 1.7 percent. The quarterly rise was well above expectations, and is not expected to be repeated. Primary industries rose 2.4 in the quarter, with agriculture increasing 2.3 in the quarter and 7.5 percent in the year, driven by higher milk production. However primary industries fell 0.5 percent for the year, largely because of a fall in output from mining, which was down 12.7 percent for the year. Goods-producing industries rose 1.0 percent in the quarter, the first increase since December 2010, leaving the sector 11.6 percent below its December 2007 peak. It fell 0.6 percent for the year. Manufacturing increased 1.8 percent in the quarter but electricity, gas, water and waste services fell 0.7 percent and construction 0.1 percent. Food, beverage and tobacco manufacturing rose 3.2 percent and metal manufacturing rose 6.1 percent but petroleum, chemical, polymer, and rubber product manufacturing fell 1.4 percent, and transport equipment, machinery, and equipment product manufacturing was down 1.5 percent. Manufacturing had its first annual rise (3.1 percent) since March 2008. Construction fell 8.1 percent in the year and is 25.0 percent below the December 2007 peak and at December 2003 levels. Services rose 0.4 percent in the quarter and 2.2 percent for the year. Household

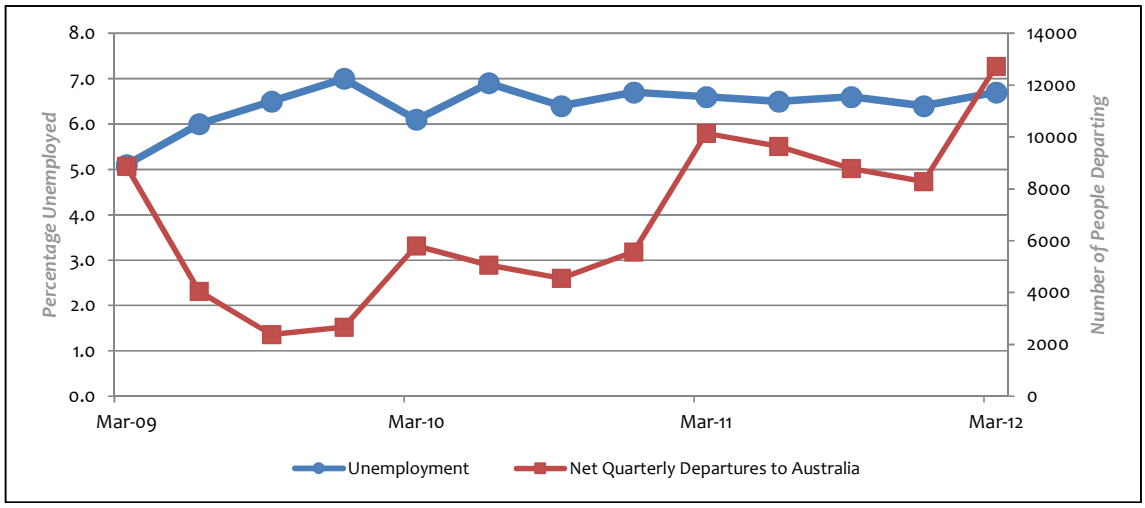
consumption expenditure rose only 0.1 percent in the quarter, including a 0.5 percent fall in purchases of non-durable goods. However it rose 2.2 percent for the year. Investment (gross fixed capital formation) rose 1.7 percent in the quarter, but is still 16.8 percent lower than its December 2007 peak. Investment in residential buildings fell 0.6 percent for the quarter and 11.9 percent for the year. However business investment rose 2.1 percent for the quarter and 2.4 percent for the year.

- New Zealand recorded a Current Account deficit of $2.8bn for the March 2012 quarter in seasonally adjusted terms, $624m worse than the December 2011 quarter. For the year to March the deficit was $9.7bn (4.8 percent of GDP) compared with $7.2bn (3.7 percent of GDP) for the year ended March 2011. The annual deficit is mainly due to profits and interest going to overseas investors (a $10.8bn deficit, not seasonally adjusted, resulting from $16.1bn going overseas less $5.3bn coming in from New Zealand investments abroad) plus a deficit in services trade ($1.3bn). This is partially offset by a positive balance on goods trade of $2.7bn.
- The country's Net International Liabilities were $143.2bn at the end of March 2012 – 70.9 percent of GDP compared with $146.3bn or 72.9 percent of GDP in December 2012, and $133.3bn or 68.0 percent of GDP in March 2011. Reinsurance claims owed but not yet paid for the Canterbury earthquakes totalled $11.9bn at the end of March, compared to a revised $13.1bn at the end of December 2011. These have been falling since June 2011 when they stood at $15.0bn. Without them, international liabilities would be $155.1bn. Total claims from all Canterbury earthquakes was estimated to be $15.7 billion, of which a total of $3.8 billion had been settled with overseas reinsurers. In March, the Government had net international liabilities of $3.8bn, $272 million more than the previous quarter, the first time it had had net international liabilities since December 2005.
- For the month of May 2012, Overseas Merchandise Trade recorded a seasonally adjusted $318m deficit – 8.8 percent of the value of exports. Exports fell by 1.3 percent or $45 million in the month. In seasonally adjusted terms, exports of logs, wood, and wood articles were down 4.3 percent ($10 million). In actual terms, meat and edible offal recorded the largest decrease, down $82 million (13 percent), and exports to Australia fell $106 million (11 percent), the largest fall by export destination. Imports rose by $33 million (0.8 percent) in seasonally adjusted terms, with capital and consumption good imports increasing in actual terms. For the year to March 2012, New Zealand recorded a trade deficit of $805 million (1.7 percent of exports).
- The Performance of Manufacturing Index for May 2012 rose to 55.7[1], a sharp rise from 48.2 in March, which had itself been a sharp fall from 54.0 in March. The employment sub-index rose more modestly to 52.2 from 51.1 in April.
- The Performance of Services Index for May 2012 was 56.8[1], stable compared to 56.7 in April. The employment sub-index fell sharply: 50.7 compared to 55.2 in April.
- The Retail Trade Survey for March 2012 has been revised significantly by Statistics New Zealand from what we reported last month. Retail sales were down 0.6 percent by volume (the largest fall since March 2009) and 0.1 percent by value between the December 2011 and March 2012 quarters. Supermarket sales volumes fell a record 3.9 percent, the largest since the series began in 1995. Volumes for core retailing, which excludes vehicle-related industries, fell 1.4 percent, the largest decrease since June 2008. This can be seen as a return to levels prior to the Rugby

World Cup. Retail sales were up 4.2 percent by volume and 5.2 percent by value compared to the March quarter in 2011.

- ★ On 14 June 2012 the Reserve Bank left the Official Cash Rate unchanged at 2.50 percent. The next review will be announced on 26 July 2012.
- ★ The REINZ Housing Price Index recorded a 1.7 percent rise in May 2012 after a 0.3 percent fall for the month of April, and the median house price rose to $369,000 from $365,000. The House Price Index was up 6.4 percent for the year to May.

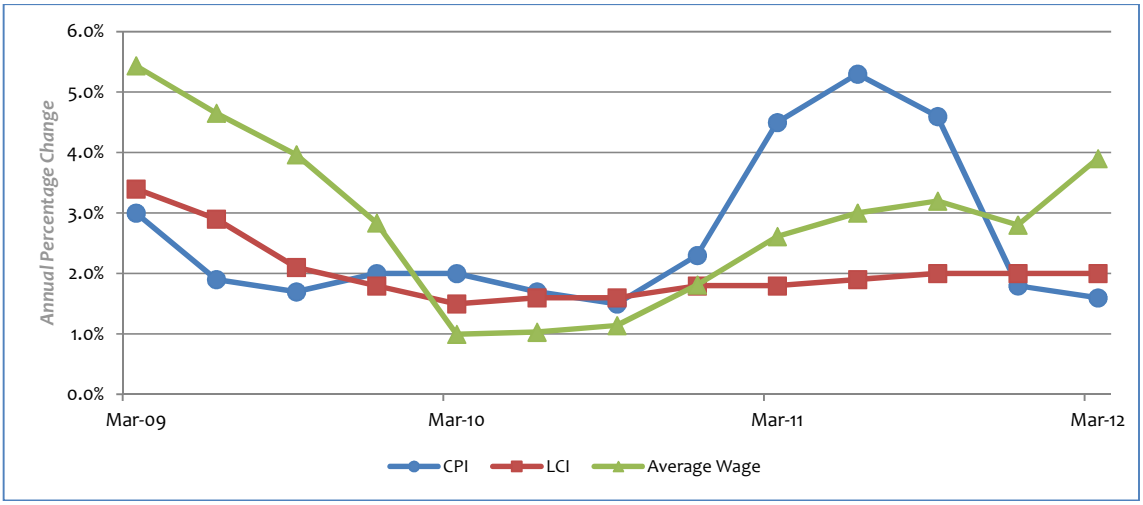
Employment



- o According to the Household Labour Force Survey the unemployment rate in the March 2012 quarter was 6.7 percent, up from 6.4 percent in the December 2011 quarter. The participation rate was 68.8 percent – up 0.6 percentage points on December, and the second-highest value ever recorded. There are 160,000 people unemployed. Māori unemployment was 13.9 percent (up from 13.4 percent), Pacific unemployment was 16.0 percent (up from 13.8 percent), Asian unemployment was 9.4 percent and European/Pakeha unemployment was 5.6 percent. Youth unemployment (15-19 year olds) was 23.4 percent (up from 24.2 percent). Note that the ethnicity and age statistics are not seasonally adjusted so comparisons between quarters should take seasonal factors into account. There are 87,000 people aged 15-24 years who are not in employment, education or training (NEET), which is 13.6 percent of that age group.
- ★ At the end of May 2012 there were 49,219 working age people on an Unemployment Benefit, a fall of 2,203, or 4.3 percent, from 51,422 in April. This is the fourth consecutive month in which there has been a reduction. (Quarterly figures on Unemployment Benefit numbers are available from the MSD website.)
- ★ In May 2012, Job Vacancies Online rose by 9.9 percent for all vacancies and 9.5 percent for skilled jobs in seasonally adjusted terms.
- ★ International Travel and Migration figures show 7,050 permanent and long-term arrivals to New Zealand in May 2012 and 6,890 departures in seasonally adjusted terms, a net gain of 160. There was a net loss of 3,653 migrants in the year to May 2012. Net migration to Australia in the year to May was 39,622 departures. There was an increase of 8,286 permanent and long-term

departures from New Zealand nationally for the year to May 2012 compared to the year to May 2011, the increase more than accounted for by Australia. The loss of people from Christchurch overseas following the February 2011 earthquake appears to be coming to an end: 800 Christchurch residents moved overseas in May 2011, but 500 moved overseas in May 2012, the same number as in May 2010. Meanwhile, in May 2012 400 migrants arrived to live in Christchurch from overseas, again the same number as in May 2010, and more than the 300 who arrived in May 2011.

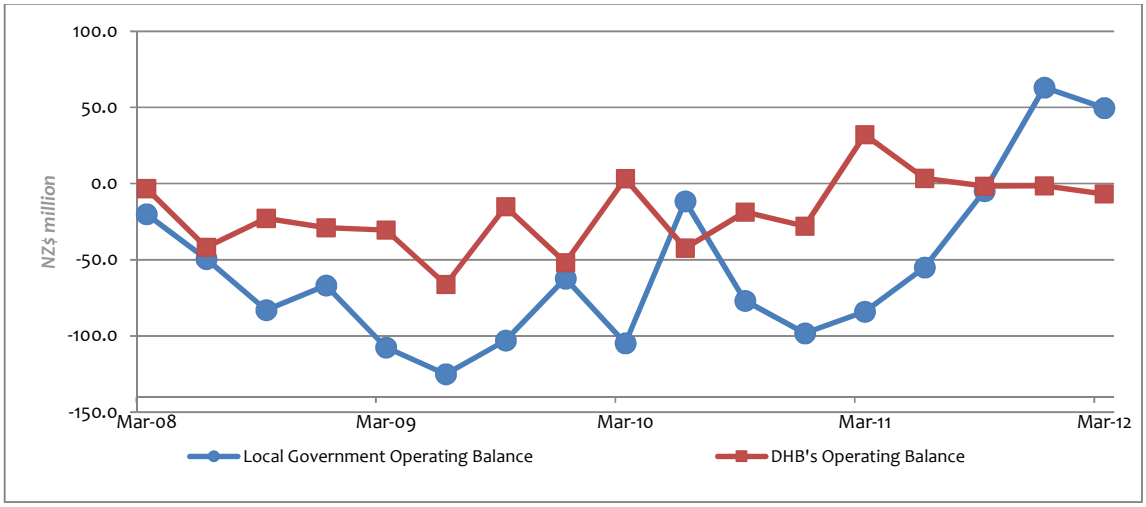
Wages

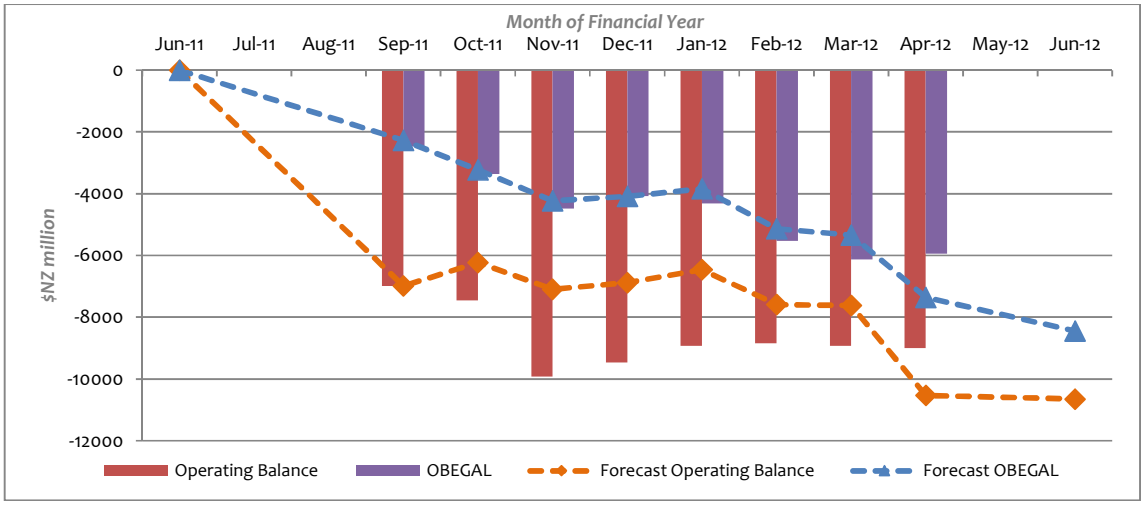


- The Labour Cost Index (Wage and Salary Rates) (LCI) rose 2.0 percent for the year to March 2012 and 0.4 percent for the March quarter for salary and ordinary time rates. It rose 1.6 percent in the public sector and 2.1 percent in the private sector for the year. For the 57 percent of those surveyed who received an increase in their salary or wage rate during the year, the median increase was 3.0 percent.
- The March 2012 Quarterly Employment Survey found the average hourly earnings for ordinary-time work was $26.92, up 1.4 percent on the December 2011 quarter and 3.8 percent over the year. The average ordinary-time wage was $24.84 in the private sector (up 1.3 percent in the quarter and 3.8 percent in the year) and $34.76 in the public sector (up 2.8 percent in the quarter and 3.9 percent in the year). Female workers (at $24.91) earned 87.1 percent of what male workers earned (at $28.61) for average ordinary time hourly earnings.
- The Consumer Price Index for the March 2012 quarter rose 0.5 percent, and 1.6 percent for the year to March. For the quarter, the largest contributor to the increase was a 13.5 percent rise in cigarette and tobacco prices as a result of tobacco tax increases, though rents also rose 0.9 percent. Insurance rose 3.0 percent. Food costs rose 0.2 percent and education 3.1 percent, while communication prices fell 0.2 percent, clothing and footwear fell 0.6 percent, and recreation and culture fell 2.4 percent.

★ The Food Price Index rose by 0.3 percent in the month of May 2012 compared to April 2012, and food prices decreased 0.2 percent in the year between May 2011 and May 2012. Between March and April, Fruit and Vegetable prices rose 3.2 percent, Grocery food fell 0.5 percent, Meat, Poultry and Fish fell 1.5 percent, Non-alcoholic Beverages prices rose 2.2 percent, and Restaurant Meals and Ready-to-eat food prices rose 0.7 percent.

Public Sector





★ According to Treasury's Financial Statements of the Government of New Zealand for the ten months ended April 2012, Government revenue was up $754m (1.6 percent) on the forecast in the 2012 Budget Economic and Fiscal Update (BEFU). Note that these results appear considerably better than previous monthly statements which compared results to the older Pre-Election update. They difference to forecast was mainly due to tax revenue being $772m (1.7 percent) above forecast, including corporate tax up $452m and GST up $313m on forecast. Expenditure was up $323m (0.6 percent) on forecast. As a result, the operating balance before gains and losses (OBEGAL) was $1.4b better than forecast, showing a deficit of $5.9bn. It was also helped by about $300m in better than expected results from State-owned enterprises and

Crown entities. The operating deficit was $9.0bn, $1.5bn better than forecast. The Government's net debt is 25.9 percent of GDP, 0.3 percentage points better than forecast in the BEFU.

- District Health Boards recorded an operating deficit of $6.9m for the March 2012 quarter compared to a deficit of $1.4m for the December 2011 quarter. Employment costs were $1.3bn, up 0.7 percent for the March 2012 quarter, compared to total expenses of $3.4bn, down 0.6 percent. Further information is on the Ministry of Health web site.
- Local Government recorded a 0.3 percent increase in operating income and a 1.0 percent rise in operating expenditure for the March 2012 quarter compared to December, resulting in an operating surplus for the quarter of $49.6m, compared to a surplus of $63.0m in the December quarter, all in seasonally adjusted terms. Without seasonal adjustment, their surplus for the March quarter was $90.6m, compared to a $37.7m deficit in the March 2011 quarter.

Notes

1 For the Performance of Manufacturing Index (PMI) and Performance of Services Index (PSI) a figure under 50 shows the sector is contracting; above 50 shows that it is growing. Previous month's figures are often revised and may differ from those published in a previous Bulletin.

This bulletin is available online at http://www.union.org.nz/economicbulletin136.
For further information contact Bill Rosenberg.