THE TREASURY
Kaitohutohu Kaupapa Rawa

Monthly Economic Indicators

New Zealand Government

November 2018

Executive Summary

- **The unemployment rate fell to 3.9% in the September quarter, but wage pressures remain subdued**
- **Retail sales volumes were flat in the September quarter**
- **Brexit-related uncertainty continued in November, adding to worries of a global growth slowdown**
- **Special topics summarise views from our HYEFU 2018 business talks and assess our forecast accuracy**

Labour market data was stronger than expected for the September quarter, with the Household Labour Force Survey estimate of the unemployment rate coming in well below expectations at 3.9%. A strong increase in the number of people employed (up 29,000 or 1.1%) saw the employment rate rise to 68.3%, the highest employment rate since the series began over 30 years ago. Quarterly Employment Survey measures of employment growth were more modest, with filled jobs growth of 0.5% in the quarter. Despite tight labour market conditions, wage inflation remains subdued, with Labour Cost Index ordinary time wages up 0.4% in the quarter, and 1.8% on an annual basis.

Retail spending was weaker than expected in the September quarter, with spending in real terms flat. This soft result has carried forward into October, with monthly Electronic Cards Transaction data for both total and core retail card spending more or less flat in October. The weak outturn for retail spending presents a downside risk to our consumption outlook.

Much of the international headlines were dominated by ongoing Brexit uncertainty in November, with the UK Cabinet and the EU settling on a Withdrawal Agreement. The deal still needs to pass through the UK parliament. Oil prices continued to fall from October highs and are settling to their lowest levels in over a year. Against this backdrop, weak economic activity in Europe and ongoing trade tensions rattled markets and touched on fears of a global slowdown. Towards the end of November however, US and China agreed to stall further tariff increases, and markets made modest recoveries.

This month's MEI contains two special topic reports. The first special topic discusses the 2018 Half Year Economic and Fiscal Update (HYEFU) business talks. Officials from the Treasury met with a range of businesses and organisations around the country to discuss the outlook for the economy. The information gathered is used to inform the Treasury's HYEFU 2018. The experiences and views on the outlook differed across the businesses we visited, but appear consistent with growth at around current rates over the next year

The second special topic assesses the accuracy of the Treasury's forecasts of three core macroeconomic variables (real GDP growth, CPI inflation, and growth in gross tax revenues). We find that the Treasury's forecasts compare favourably to other forecasts available at the time the Treasury's forecasts were finalised in most years between 2000 and 2017. Moreover, since 2013, there has been a steady and marginal improvement in forecast accuracy in GDP growth and inflation.

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Analysis

A stronger than expected labour market outturn for the September quarter was tempered by flat consumer spending and further declines in commodity prices. Building consents and house sales lifted in October following a weak September quarter, while house prices were relatively flat.

Labour market stronger than expected…

The seasonally adjusted unemployment rate fell to 3.9% in the September 2018 quarter, down from 4.4% in the June quarter. This was significantly stronger than market expectations and the NZD appreciated by about 1 cent against the USD immediately after the release. Strong growth in Household Labour Force Survey (HLFS) employment of 1.1% (more than double our Budget estimate of 0.4%) saw the employment rate rise to the highest on record (68.3%).

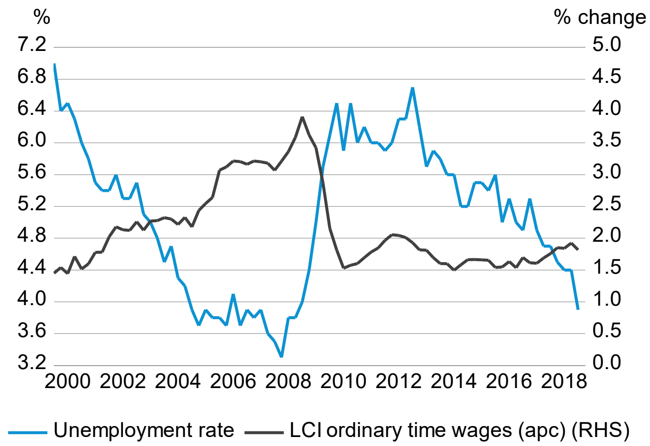
Quarterly Economic Survey (QES) measures of employment showed more moderate growth, with filled jobs increasing 0.5% in the quarter and full-time equivalent employees up 0.7%.

This outturn shows momentum in the labour market remains strong; however, large movements in the unemployment rate are not uncommon and it is too soon to tell whether the latest drop in the unemployment rate will persist.

…although price pressures remain subdued…

Despite tight labour market conditions, wage inflation remained subdued (Figure 1). QES average hourly earnings grew 1.1% in the quarter and were up 2.9% on an annual basis, but Labour Cost Index (LCI) ordinary time wages (which control for quality changes) were up 0.4% in the quarter, and 1.8% on an annual basis.

Figure 1: Wage growth remains subdued



Source: Stats NZ

Seasonally adjusted food prices lifted 0.3% in October, driven by the meat, poultry and fish subgroup (up 2.4%). On an annual basis, food price inflation remains subdued at just 0.6%.

…and the OCR remains on hold

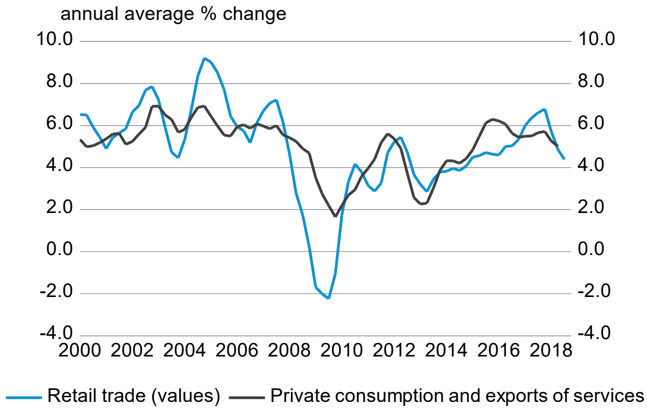
As expected by markets, the RBNZ left the OCR on hold at 1.75% in the November Monetary Policy Statement. The Bank still expects to keep the OCR on hold until 2020, but removed the phrase that the next move could be 'up or down' from the Statement. The Bank kept the OCR track identical to the August Statement, and now expects annual inflation to reach 2.0% in the December quarter of this year. There was minimal market reaction to the Statement.

Household spending flat

Retail spending was weaker than expected in the September quarter. In nominal terms, retail spending was up 0.6% (sa) in the quarter, partly driven by a large (7.0%) increase in fuel prices. In real terms, the total volume of retail spending was flat (0.0%). Total spending excluding fuel and motor vehicles (core retail spending) rose 0.4% in the quarter, a weak outturn relative to recent history. It is likely that spending on discretionary items in the September quarter was crowded out by higher fuel prices, and we expect the recent decline in oil to unwind these pressures in the December quarter.

The weak outturn for retail spending presents a downside risk to our consumption outlook. The Retail Trade Survey is a key input for estimating private consumption expenditure and exports of services (Figure 2).

Figure 2: Retail trade and private consumption



Source: Stats NZ

The flat Retail Trade Survey outturn for the September 2018 quarter carried forward into October, with monthly Electronic Cards Transaction data for both total and core retail card spending more or less flat in October – up 0.1% and 0.0% respectively. Core retail spending (which strips out fuel and vehicle spending) was dragged down by apparel (down 1.2% in the month) however this tends to be the most volatile component. Higher fuel prices contributed to increased spending in fuel (up 1.4%) but this was offset by vehicle spending (down 2.0%).

Dairy prices halt recent declines…

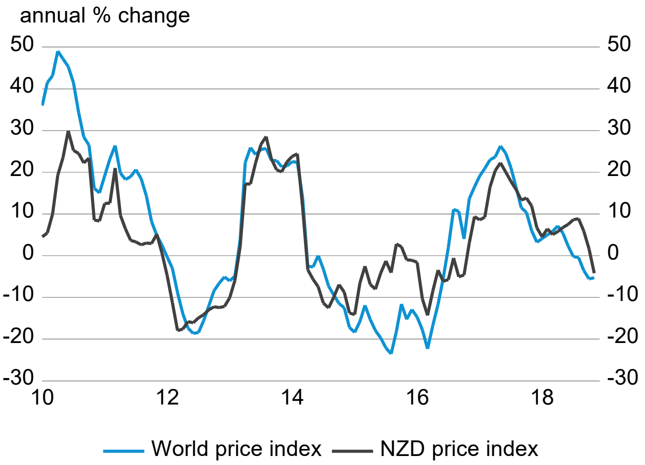
The merchandise terms of trade fell 0.3 percent in the September quarter, with import prices rising more than export prices. Export volume growth (1.8% for the quarter) coincided with a fall in import volumes of 0.9% over the quarter, which will have a net positive impact on September quarter GDP growth. On the nominal side import values remain stronger than forecast, and the trade deficit remains wider than forecast.

Global dairy commodity prices rose 2.2% in the latest Global Dairy Trade (GDT) price auction on 4 December – the first increase following 11 consecutive falls since May 2018. Fonterra had reduced volumes on offer for this event, with 2,000 tonnes of butter and 2,000 tonnes of anhydrous milk fat removed from the platform.

Fonterra lowered its forecast pay-out range to $6.00-$6.30 per kilogram of milk solids, saying the revision was due to global milk supply remaining stronger relative to demand, which has driven a downward trend in the GDT index since May.

The ANZ world commodity price index fell for the sixth consecutive month, down 0.6% in November. On an annual basis, the index is down 5.3%. This month's fall was broad based, with price falls for dairy (down 1.7%), horticulture (down 0.2%), forestry (down 0.3%) only partially offset by a 1.1% increase in meat prices.

Figure 3: ANZ Commodity price indexes



Source: ANZ National Bank / Haver

…while the NZD strengthened in November

The NZD Trade Weighted Index (TWI) rose 3.4% over November, combining with the fall in world commodity prices to leave the NZD commodity price index down 4.4% for the month and down 4.2% on an annual basis (Figure 3).

The NZD is now trading at around $US 0.69 – its highest level since July (Figure 4). The strength comes despite global market volatility and is supported by strong recent domestic data, in particular the strong labour market. The stronger exchange rate combined with earlier falls in global commodity prices will put pressure on exporter revenues.

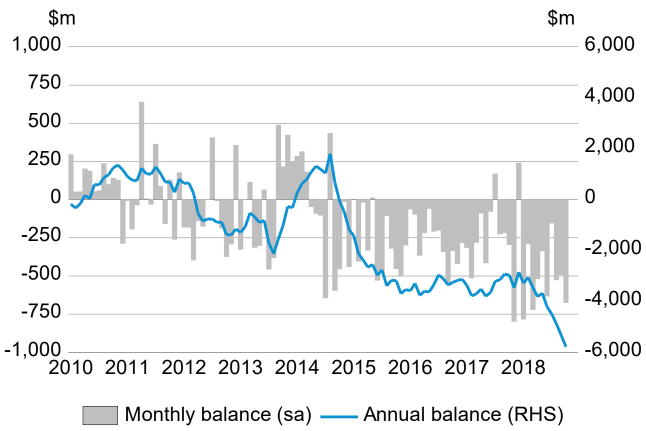
Figure 4: NZD/USD daily exchange rate

Source: Federal Reserve Board/Haver

Merchandise trade deficit continues to widen

The annual overseas merchandise trade deficit widened from $5.3 billion in September to $5.8 billion in October. Seasonally adjusted export volumes were down 6.4% in the month and imports were down 4.6%. However, imports of capital and consumption goods showed strong growth possibly signalling future strength in consumption and business investment.

Figure 5: Overseas merchandise trade



Source: Stats NZ

Building consents gain ground…

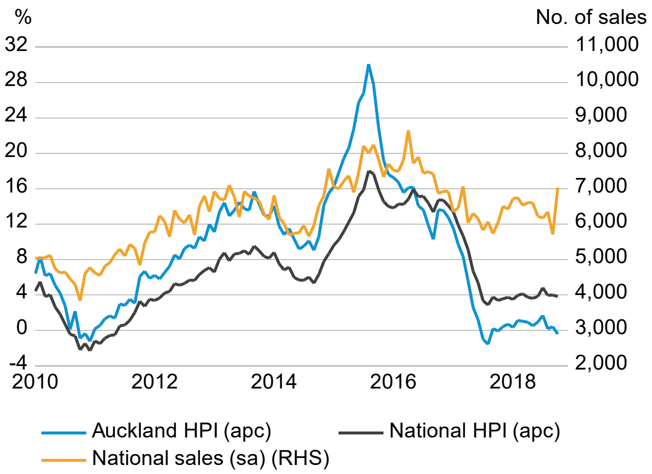
Total dwelling consents rose 1.5% (sa) in October. This month's strength was driven by standalone housing consents which rose 6.1%, as opposed to multi-unit developments, which have been driving much of the volatility recently. New dwelling consents were down significantly over the September quarter (down 9.0% on a seasonally adjusted basis) and this outturn may represent some recovery.

While consents were weak in the September quarter, the volume of building activity that took place increased 0.7% in seasonally adjusted terms over the quarter, with residential construction activity up 1.2%. Auckland led the increase, with the value of work put in place on residential buildings increasing 7.0% over the quarter, more than offsetting a 2.2% decrease in the value of non-residential building activity. Note that the "value" series include the impact of price increases while the "volume" estimates strip out the value increases that are due to price change.

..while house sales rebounded…

Seasonally adjusted REINZ house sales jumped 23.2% in October to their highest level in over a year (Figure 6). Part of the sharp rise in sales represents an (expected) recovery from a 10.1% fall last month, and may reflect monthly volatility. National prices increased 0.4% but were flat in Auckland for the month. On an annual basis, national house price growth was steady at 3.8%, but down 0.4% in Auckland. For the rest of the country excluding Auckland, price growth remains strong (7.9%).

Figure 6: REINZ house prices and sales



Source: REINZ

…and the RBNZ eases LVR restrictions

In its November Financial Stability Report, the RBNZ announced it would be easing the loan-to-value (LVR) restrictions on new mortgage loans from 1 January 2019, with up to 20% (up from 15%) of new loans to owner-occupiers able to have deposits of less than 20%. The RBNZ also relaxed the conditions on new mortgage loans to property investors, with 5% of new mortgage loans able to have deposits of less than 30% (down from 35%).

The RBNZ pointed out that while households remain exposed to financial shocks due to their large mortgage debt burden, mortgage credit growth and house price inflation have eased to more sustainable rates, reducing the riskiness of banks' new housing lending. They indicated that if banks' lending standards are maintained, they expect to further ease LVR restrictions over the next few years. This easing of conditions is modest and is not expected to have much impact on prices.

We expect that house prices will remain broadly steady over the next year, as the effect of the foreign buyer restriction (in place since 22 October) and policy uncertainty regarding future tax treatment help to curb demand growth.

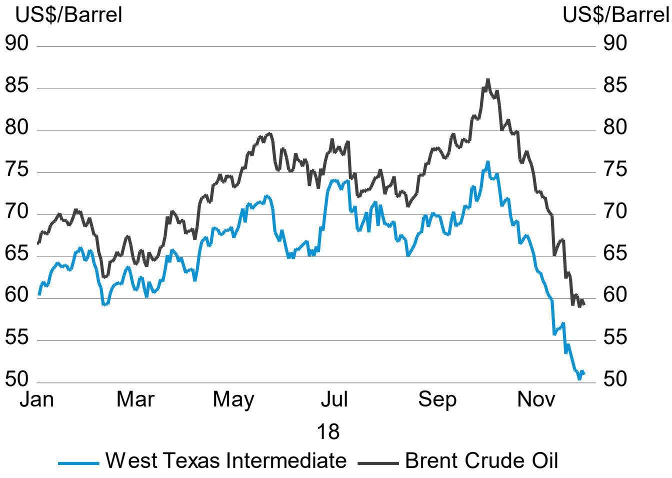
Brexit uncertainty continues in November…

Uncertainty around Brexit dominated international headlines in November. The UK Cabinet agreed to a Withdrawal Agreement; however this was followed immediately by resignations from a handful of Ministers. Since then, the EU have agreed to the Agreement and the final hurdle for Prime Minister Theresa May is getting the UK Parliament to agree to the deal. Rejection of the deal raises the chance of a no-deal Brexit, where Britain would leave the European Union without any trade deal. Under this scenario, the UK Treasury estimates that GDP would be 9.3% lower in around 15 years than if current arrangements were maintained. The Bank of England (BoE) estimates that GDP could be 10.5% lower over 5 years in the worst case scenario (which assumes the UK would not be able to strike new trade deals until 2023). The Parliamentary vote will take place on 11 December.

…while oil prices continue to fall…

Oil prices fell by nearly 25% through November, continuing their rapid declines from recent October highs (Figure 7). West Texas Intermediate (WTI) oil prices reached as high as $76 a barrel in October, while Brent crude oil prices reached $86 a barrel. WTI oil prices are now sitting around $50 a barrel (its lowest level in over a year) and Brent crude sits at around $60 a barrel. The fall in oil prices largely reflects increased production in Saudi Arabia and the US shale industry. The US also announced in November that certain countries may get waivers to import oil from Iran (putting downward pressure on prices). There is speculation that the decline in oil prices may also be reflecting concerns around global growth, as oil is a major input into many industries, and the lower price may reflect weaker demand.

Figure 7: Oil prices

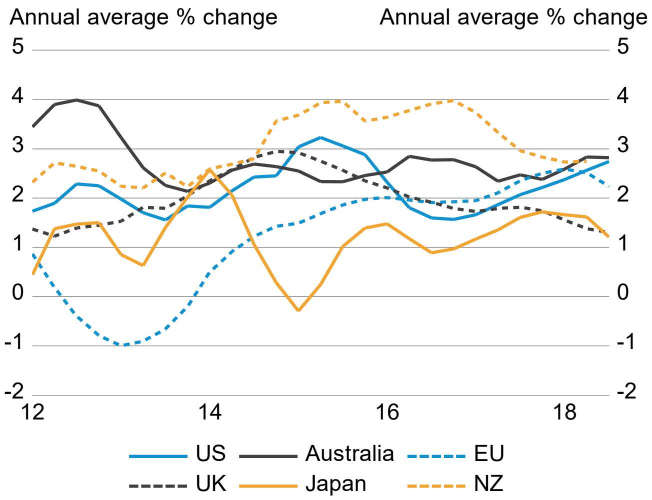


Source: Haver Analytics

…adding to worries of global growth slowdown

GDP fell in both Germany and Japan in the September quarter (-0.2% and -0.3% respectively). These GDP results, together with further trade tensions and weak PMI readings throughout the rest of Europe, increased fears of a global slowdown. Both declines, however, were due to temporary factors (weather in Japan, and compliance to new emission standards hitting the auto industry in Germany) and analysts expect rebounds in Q4.

Figure 8: Global growth



Source: Haver Analytics

Economic data from the rest of the world was mixed in November. The second estimate of US September quarter GDP came in as expected (3.5% quarterly, annualised), however industrial production for October was slightly weaker than expected (0.1% monthly growth). China's manufacturing PMI was weaker than expected in November (and in October) however industrial production in China was slightly stronger than anticipated for October (5.9% annual growth).

UK GDP growth for the September quarter was 0.6%, in line with expectations, while Eurozone GDP growth came in at 0.2% (as expected). Australia's GDP grew 0.3% in the September quarter (below expectations of 0.6% growth), and 2.8% annually.

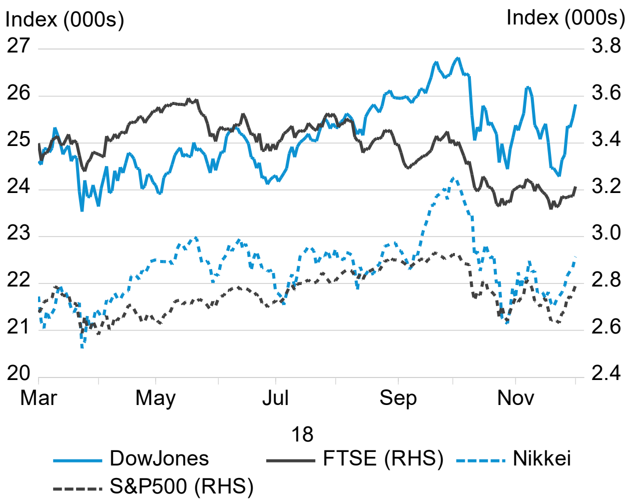
Trade tensions ease…

Trade tensions eased following the G20 summit last weekend, where US President Trump and Chinese President Xi Jinping agreed tariffs on US$200 billion would not be raised on 1 January. The US had previously planned to raise tariffs from 10% to 25% (on $200bn of Chinese goods) in January. China agreed to import more US goods in order to reduce the trade surplus with the US. If negotiations over the next 90 days fail to materialise to anything substantial, the US may continue with the 25% tariff increase. Trade tensions have driven much of the volatility in international equity markets over the last couple of months, and news of conciliation between the US and China has helped lift market sentiment, however uncertainty remains about the outcome in three months time.

…but are affecting equity markets…

After a very volatile October (and early November) for many international equity markets, the latter half of November saw markets make modest recoveries. Aside from the recent news regarding cooperation between the US and China, several other factors may have helped market optimism. In the US, the Democrats gained a majority in the House of Representatives and Republicans maintained control of the Senate in US midterm elections. Markets were optimistic that the outcome would produce greater policy stability.

Figure 9: Global Equity markets



Source: Haver Analytics

...while the Fed remains vigilant…

Equity markets, especially in the US, have also been supported by Fed Chair Powell's comments that interest rates are "just below" the range of neutral rate estimates (in contrast to his comments in October that "we're a long way from neutral at this point"). Markets interpreted this as dovish, and rallied on the expectations of less rate hikes next year. A stronger US dollar and weaker oil prices should also support this sentiment.

...and inflationary indicators are mixed

The statements from Powell also reflect recent data in the US. The core Private Consumption Expenditure (PCE) deflator (the Fed's preferred measure of inflation, which strips out food and energy prices) rose by 1.8% (on an annual basis) in October, below market expectations. Annual CPI inflation in the US rose 2.5% in October, up from 2.3% in September, but down from highs of 2.9% seen in June and July this year. Other areas of the economy remain tight though, and the US labour market surprised on the upside in October, with US non-farm payrolls rising by 250 thousand (versus an expected change of 200 thousand). The unemployment rate came in at 3.7%, the lowest level since 1969. The Federal Reserve is expected to hike interest rates in December, and the market has priced in a further two increases for 2019.

As expected, annual core inflation for the UK came in at 1.9% for October but the unemployment rate for September was slightly above expectations (at 4.1%). The BoE kept the base rate on hold at 0.75% in their November meeting and expect to remain on hold until uncertainty around Brexit is cleared up.

European core annual CPI inflation for October met expectations at 1.9% y/y. While their quantitative easing program is set to finish by the end of the year, the ECB has indicated that they will look through the recent slowdown in the Eurozone and will continue to keep interest rates on hold until late next year. Slowdown concerns in Europe are also reflective of the ongoing budget tensions between Italy and the EU, however the most recent reports (which suggest that PM Conte is trying to convince the coalition leaders to lower the fiscal deficit to meet EU demands) will support market sentiment.

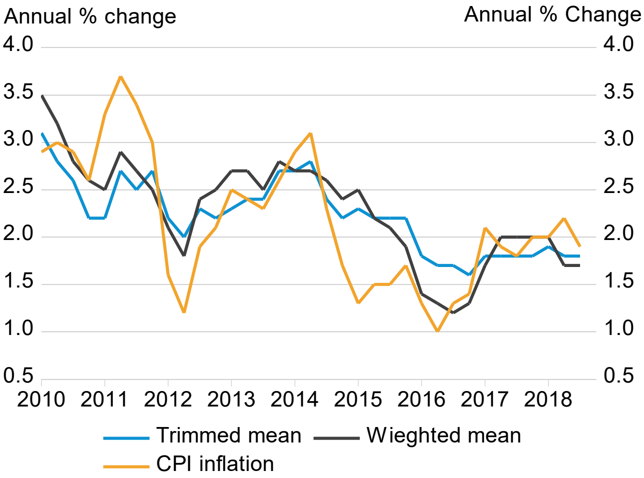
Australia's labour market tightens…

The labour market is tightening in Australia. October employment growth beat expectations to be 2.5% on an annual basis. The unemployment rate held at 5.0% (a 7-year low) and beat expectations of a rise. September quarter wage inflation (the wage price index excluding bonuses) lifted 0.6% and is at 2.3% on an annual basis. Analysts suggest that this is still well below the RBA's 'target' of roughly 3.5% wage inflation (which is consistent with sustaining their roughly 2.5% CPI inflation).

…but inflation slightly weaker than expected

In Australia, annual CPI inflation for the September quarter was in line with market expectations at 1.9% (Figure 10), however both trimmed mean and weighted median measures came in weaker than expectations (1.8% and 1.7% respectively). This is still a fair way from the mid-point of the RBA's inflation target range of 2-3%. As expected, the RBA kept the cash rate unchanged at 1.5% at their most recent meeting. The cash rate is expected to remain on hold for some time, however market pricing suggests an eventual bias towards tightening.

Figure 10: Australian inflation



Source: Haver Analytics

Another factor that will weigh on the RBA's outlook is the decline in Australian house prices. House prices dropped 0.7% for the month of November (following a 0.5% fall in October). This is the biggest monthly drop in house prices since the GFC and national house prices are now down 4.1% annually. The fall has been driven by Sydney, down 8.1% annually and Melbourne, down 5.8%. While house prices are driven by a number of factors, credit tightening appears to be the main driver in this instance, and the market expects house prices to keep falling through the summer and into next year.

Special Topic: 2018 HYEFU Business Talks

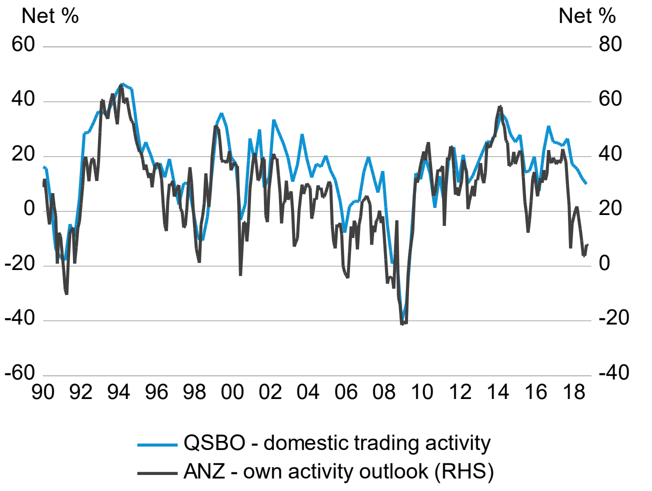
During the final week of October and early November, officials from the Treasury met with a range of businesses and organisations around the country to discuss the outlook for the economy. The information gathered is used to inform the Treasury's HYEFU 2018. While business and consumer confidence are below their historical averages, businesses are generally optimistic and are still seeing good sales growth. This special topic summarises the views of businesses we visited.

The focus of these talks was on four sectors that are important in the current economic environment: construction, retail, manufacturing and agriculture. Officials were interested in the current state of the whole economy, but these sectors particularly, and what the prospects are for both short- and long-term activity.

Sales activity has moderated…

The experiences and views on the outlook differed across the businesses but appear consistent with growth continuing around current rates over the next year. Some businesses said that sales have been fairly flat or declining since March while others said that growth has been strong. While business and consumer confidence measures are below their historical averages, businesses we visited are generally optimistic and are still seeing good sales growth (Figure 1). High petrol prices, high levels of household debt and increasing online sales were cited as possible reasons for lower retail sales activity. Car import volumes, seen to be a leading indicator of household consumption, are down.

Figure 1: Trading activity



Source: NZIER, ANZ

While conditions look favourable for the construction sector, competition and cost pressures, as well as concerns about procurement processes and contractual arrangements, and pricing policies are making conditions very challenging and squeezing margins. Manufacturing companies are seeing steady growth, with strong demand from both the domestic and international markets. Manufacturers supplying into the construction market are benefiting from growth in this sector.

…but tourism is still expanding

Businesses reported that the tourism sector is still expanding, but at a slower rate than previously, mostly owing to competition from other destinations. Visitor arrivals from the USA, China and Europe have increased. While domestic and trans-Tasman passenger growth has been strong in some regions, other regions e.g. Auckland, have seen flat or falling growth in domestic numbers because of high accommodation prices.

Cost pressures are rising…

Input costs are rising, especially for fuel and labour, and the weakening exchange rate is putting further pressure on importers. The exchange rate has however appreciated in recent weeks which, combined with lower international oil prices, has seen petrol prices ease back. Electricity supply shortages are also pushing up wholesale electricity prices, adding to cost pressures. Most firms planned to absorb these costs and had strategies in place to increase sales and/or productivity. Firms were reluctant to pass on costs through higher prices, citing strong competitive pressures. However, some conceded that they would be forced to increase prices in coming months.

The dairy sector is facing challenging conditions with lower prices and higher costs, but sheep and beef farmers were doing well.

Mounting cost pressures in the insurance industry go beyond rising costs associated with natural disasters. For example, there is pressure on motor vehicle insurance. While volumes are growing, new technology in vehicles is pushing up the cost of repairs. The construction sector is also facing cost pressures, brought about by higher asking prices by sub-contractors and higher materials prices.

…and the labour market remains tight

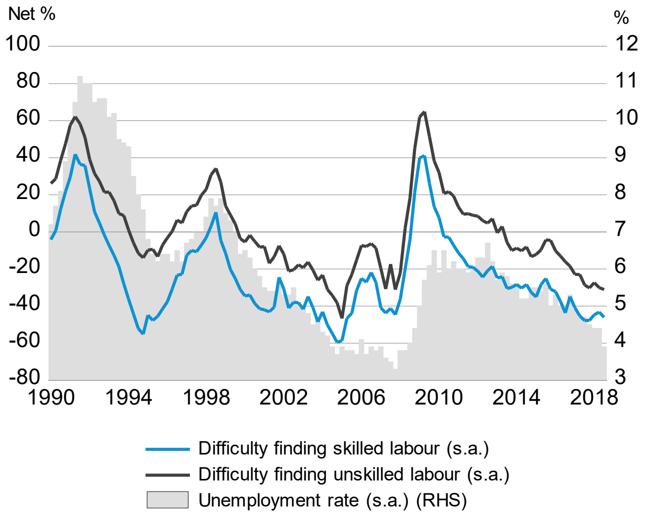
Labour markets are generally seen to be tight, but wage inflation remains low. Some wage pressure is expected for lower-income roles as the effect of wage settlements, union negotiations and minimum wage increases come into effect. These wage pressures are forcing some companies to think about ways of increasing labour productivity.

Union membership is increasing with general sentiment that profits are rising but wages have not been. Industrial action is becoming more prevalent, particularly in lower wage industries.

Many employers are aiming to attract and keep staff by standing out as a "good employer" by offering benefits such as flexible working arrangements and promotion opportunities. Many companies said that it is hard to attract employees to Auckland because of the high cost of living and many are facing significant training costs and high turnover, particularly in the lower skilled workforce. More remote regions and farms also have difficulty finding labour. Some companies are concerned that immigration settings are making it harder to find labour.

There is still strong demand for skilled labour and many firms cited difficulty finding skilled labour (Figure 2).

Figure 2: Difficulty finding labour and unemployment



Source: NZIER, Stats NZ

Businesses continue to invest…

The state of current infrastructure and low levels of investment, particularly in roading, are seen as a constraint for business growth. This is particularly problematic in Auckland where businesses are facing increasing logistical costs and delays.

Firms reported that they have had to increase investment in cyber security as online threats become more prevalent and sophisticated. For some firms providing these services, this has resulted in increased growth and opportunities to drive innovation in product offerings. Investment in automation is also increasing as the cost of labour increases.

Businesses are investing in their own infrastructure but some are finding it difficult to find trusted companies and contractors to complete building projects and refurbishments. The private construction market is reasonably buoyant with good subdivision work but the housing market is seen as slowing and as a result access to finance for developers may be becoming more constrained.

Dairy farm conversions have slowed. Banks are reluctant to lend to dairy farmers and the possibility of interest rate increases are a concern. However, substantial on-farm investment opportunities remain to improve efficiency and meet regulatory requirements.

Universities are not seen as being capacity constrained, so fees free tertiary education is not expected to crowd out international students. International competition from countries like Canada and Australia could significantly affect international student numbers.

…and credit availability is good

Credit availability is generally good and not expected to be a concern for most companies in the near future. Several firms noted that they were oversubscribed when raising capital in overseas markets.

Government policy has a part to play

Generally the companies we visited still seemed positive about their current activity but many are increasingly concerned about maintaining profit margins. Some expressed concern that this challenging outlook is being compounded by uncertainty surrounding upcoming policy changes.

Many companies told us that they feel that Government has a part to play in general infrastructure improvement, smoothing business cycles and providing continuity through changes in government, reforming pricing policies in the construction sector and providing more certainty around proposed policy changes. They would also like to see Government involved in renewable energy investment incentives and improving access to fast internet and recycling initiatives. Global risks remain a concern for most companies we visited.

Talks largely confirmed our judgements

While business and consumer confidence measures are below their historical averages, businesses we met with are generally optimistic and are still seeing good sales growth. The talks confirmed other information over the past months suggesting that electricity generation constraints may have a small negative impact on growth in late 2018. The information gathered has helped inform the HYEFU 2018 forecasts which will be released on 13 December.

Special Topic: Treasury forecast accuracy

The Treasury regularly carries out an assessment of the accuracy of our biannual forecasts: the Budget Economic and Fiscal Update (BEFU) and the Half Year Economic and Fiscal Update (HYEFU). These forecasts underpin the Treasury's fiscal advice and the Government's fiscal outlook, as well as outlining the economic context in which Ministers make decisions. Therefore, it is desirable that these forecasts are as accurate as possible.

Broadly speaking, a "good" forecast consists of two features. First, the forecast should be unbiased: the forecasts do not tend to systematically over or under-predict economic outturns. A set of forecasts is said to be unbiased when the average of forecast errors, defined as the differences between the actual outturns and the forecast values, is zero.

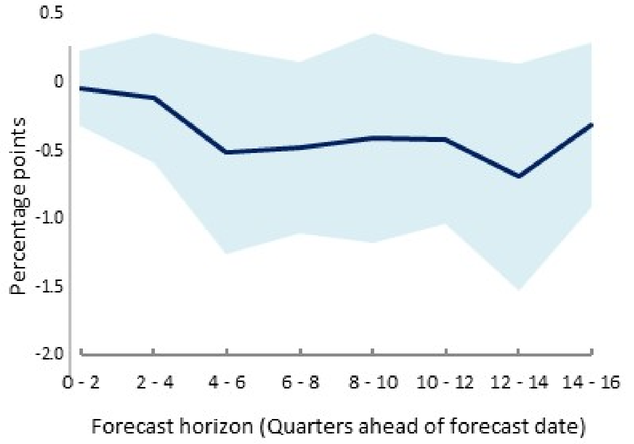
The second criterion is that the deviation of the forecast errors from their mean is small. This way, one can be confident that even if a forecast error arises, it would be within a plausible range. To measure this deviation of forecast errors, we use the root mean square errors (RMSE).[1]

We apply these two criteria to three variables of interest, namely, the average annual percentage change in real GDP growth, CPI inflation, and the average percentage change in gross tax revenues. The sample period is 1990 – 2017.

We assess the accuracy from multiple aspects: over time, relative to other forecasters, and across different forecast horizons.[2]

In terms of unbiasedness, there is not enough evidence to conclude that the Treasury has consistently over- or under-predicted the variables evaluated in this Special Topic. This result holds across forecast horizons ranging from 1 quarter before the actual outturn, to up to 20 quarters. For example, Figure 1 shows the 95% confidence interval around forecast errors for real GDP growth, i.e. we are 95% certain that the true forecast error at each forecast horizon lies within the blue band. Since the confidence interval includes zero at each forecast horizon, we cannot be certain that the true error is non-zero, so we cannot conclude that the forecast errors are biased.

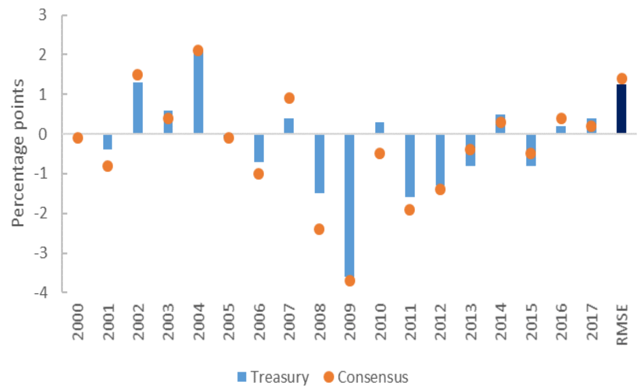
Figure 1: Mean error of real GDP growth forecasts and 95% confidence bands



Source: Treasury calculations

In terms of forecast performance over time, we find that the Treasury's forecasts compare favourably to other forecasts available at the time the Treasury's forecasts were finalised in most years between 2000 and 2017 (Figure 2). Moreover, since 2013, there has been a steady and marginal improvement in forecast accuracy in GDP growth and inflation. These results might be due to several factors: the absence of large surprises in recent years, the informational advantage Treasury holds over other forecasters, as well as improved forecasting experience over time.

Figure 2: One-year ahead forecast errors in GDP growth



Comparisons of forecasts from different organisations are complicated as organisations do not all finalise their forecasts at the same time. As a result different information sets will have been used in compiling the predictions in any collection of forecasts at a point in time. In the comparison that follows, forecasts from other organisations are those that were available at the point in time the Treasury's forecasts were finalised.

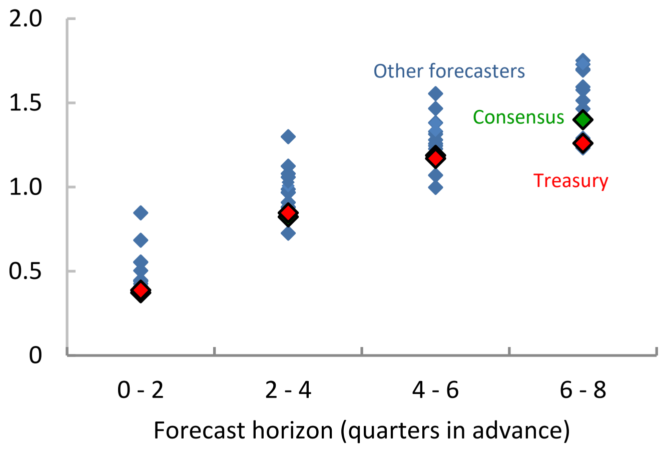
1 $RMSE=\sqrt{\frac{\sum_{i=1}^{N}(Predicted_i - Actual_i)^2}{N}}$ where N is the number of assessed forecasts.

2 The other forecasters are: ANZ, ASB, BNZ, Deutsche Bank, Economist Intelligence Unit, First NZ Capital, HIS Global Insight, IMF, Infometrics, JP Morgan Chase, NZIER, OECD, Reserve Bank, UBS, and Westpac

This means that the Treasury forecasts have the most timely data (as new data will have become available after the other forecasts were finalised). Given this advantage, the result that the Treasury's forecasts are among the most accurate is reassuring.

In terms of cross-sectional performance relative to other forecasters, there is evidence that the Treasury outperforms the consensus of other forecasters in real GDP growth and inflation, across both short and long forecast horizons. Figure 3 shows the comparison with respect to real GDP growth. As one can see, the relative accuracy of the Treasury is especially significant in the long-term forecast horizon.

Figure 3: Average RMSE of real GDP growth forecasts among forecasters, 2000 – 2017



Source: Treasury calculations

To test whether these results are statistically significant, rather than due to chance, we use Diebold-Mariano (DM) test to assess the relative forecast accuracy in real GDP growth and CPI inflation between the Treasury and fifteen other forecasters for the period 2000 – 2017 (Table 1). In general, the results show that the Treasury's performance in forecasting GDP in the long-term (i.e. 7 quarters ahead) is more accurate than other forecasters. In addition, Treasury's forecasts of inflation over the 1-quarter, 5-quarters, and 7-quarters ahead horizons are also more accurate.

Table 1: Diebold-Mariano test of relative forecast accuracy between the Treasury and consensus forecasts

	Real GDP growth (AAPC)	
Forecast horizons	DM statistic	p-value
1 quarter	-0.31	0.62
3 quarters	-0.42	0.659
5 quarters	0.22	0.413
7 quarters	1.79	0.046**
	CPI change (AAPC)	
Forecast horizons	DM statistic	p-value
1 quarter	1.86	0.04**
3 quarters	1.09	0.145
5 quarters	1.53	0.073*
7 quarters	1.41	0.088*

Note: * indicates results are statistically significant.

Source: Treasury calculations

Monthly Economic Indicators is a regular report prepared by the Forecasting team of the Treasury.

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New Zealand Key Economic Data

Quarterly Indicators

		2017Q1	2017Q2	2017Q3	2017Q4	2018Q1	2018Q2	2018Q3
Gross Domestic Product (GDP)								
Real production GDP	qtr % chg[1]	0.8	0.8	0.6	0.6	0.5	1.0	...
	ann ave % chg	3.7	3.3	3.0	2.8	2.7	2.7	...
Real private consumption	qtr % chg[1]	1.1	1.0	0.9	1.0	0.0	1.0	...
	ann ave % chg	5.1	4.9	4.5	4.4	3.8	3.5	...
Real public consumption	qtr % chg[1]	1.1	1.0	2.6	0.0	0.8	2.2	...
	ann ave % chg	1.9	2.9	4.0	4.5	4.8	5.2	...
Real residential investment	qtr % chg[1]	-1.1	-0.8	2.9	0.4	-0.7	0.5	...
	ann ave % chg	9.5	5.0	2.5	0.7	0.5	1.8	...
Real non-residential investment	qtr % chg[1]	0.9	1.4	0.9	4.0	0.3	-0.2	...
	ann ave % chg	3.9	3.8	4.1	4.7	5.4	5.7	...
Export volumes	qtr % chg[1]	0.8	3.0	0.9	0.0	0.0	2.4	...
	ann ave % chg	1.3	0.2	0.3	1.8	3.0	3.6	...
Import volumes	qtr % chg[1]	1.6	0.9	2.3	3.7	1.1	1.5	...
	ann ave % chg	5.1	6.1	6.3	7.0	7.2	7.9	...
Nominal GDP - expenditure basis	ann ave % chg	6.1	6.2	6.6	6.2	5.7	5.5	...
Real GDP per capita	ann ave % chg	1.6	1.2	0.8	0.7	0.6	0.7	...
Real Gross National Disposable Income	ann ave % chg	4.5	4.3	4.2	3.4	3.4	3.1	...
External Trade								
Current account balance (annual)	NZ$ millions	-6,947	-7,117	-7,370	-8,180	-8,540	-9,536	...
	% of GDP	-2.6	-2.6	-2.6	-2.9	-3.0	-3.3	...
Investment income balance (annual)	NZ$ millions	-8,409	-8,582	-9,218	-10,221	-10,343	-10,708	...
Merchandise terms of trade	qtr % chg	3.9	1.1	1.3	1.4	-2.0	0.4	-0.3
	ann % chg	6.5	9.7	12.6	7.9	1.8	1.2	-0.5
Prices								
CPI inflation	qtr % chg	1.0	0.0	0.5	0.1	0.5	0.4	0.9
	ann % chg	2.2	1.7	1.9	1.6	1.1	1.5	1.9
Tradable inflation	ann % chg	1.6	0.9	1.0	0.5	-0.4	0.1	0.8
Non-tradable inflation	ann % chg	2.5	2.4	2.6	2.5	2.3	2.5	2.6
GDP deflator	ann % chg	3.8	3.0	3.6	3.2	1.3	1.9	...
Consumption deflator	ann % chg	1.6	1.3	1.6	1.5	0.7	1.2	...
Labour Market								
Employment (HLFS)	qtr % chg[1]	1.1	0.0	2.0	0.5	0.6	0.6	1.1
	ann % chg[1]	5.7	3.1	4.1	3.7	3.1	3.7	2.8
Unemployment rate	%[1]	4.9	4.7	4.7	4.5	4.4	4.4	3.9
Participation rate	%[1]	70.6	70.1	71.1	70.9	70.8	70.9	71.1
LCI salary & wage rates - total (adjusted)[5]	qtr % chg	0.4	0.4	0.6	0.4	0.3	0.5	0.5
	ann % chg	1.6	1.7	1.8	1.8	1.8	1.9	1.8
QES average hourly earnings - total[5]	qtr % chg	0.5	0.6	1.2	0.8	0.9	0.1	1.1
	ann % chg	1.5	1.6	2.2	3.1	3.5	3.0	2.9
Labour productivity[6]	ann ave % chg	-2.7	-1.7	-1.5	-0.7	-0.3	-1.5	...
Retail Sales								
Core retail sales volume	qtr % chg[1]	1.4	1.6	0.9	1.6	0.5	1.3	0.4
	ann % chg	4.9	5.2	5.2	5.6	4.6	4.5	3.7
Total retail sales volume	qtr % chg[1]	1.6	1.5	0.6	1.2	0.1	1.1	0.0
	ann % chg	5.4	5.8	4.6	5.4	2.8	3.1	2.7
Confidence Indicators/Surveys								
WMM - consumer confidence[3]	Index	112	113	112	107	111	109	104
QSBO - general business situation[4]	net %	17.1	17.8	5.2	-11.8	-10.7	-20.0	-30.4
QSBO - own activity outlook[4]	net %	20.6	18.4	35.2	18.7	10.9	6.9	18.9

Monthly Indicators

		2018M05	2018M06	2018M07	2018M08	2018M09	2018M10	2018M11
External Sector								
Merchandise trade - exports	mth % chg[1]	-1.0	2.2	6.3	-5.9	7.7	-6.4	...
	ann % chg	9.0	4.0	15.5	7.6	12.0	6.6	...
Merchandise trade - imports	mth % chg[1]	-4.3	9.7	0.4	-3.2	9.6	-4.6	...
	ann % chg	6.3	16.1	22.3	14.0	17.8	14.1	...
Merchandise trade balance (12 month total)	NZ$ million	-3678	-4206	-4501	-4900	-5330	-5786	...
Visitor arrivals	number[1]	322,400	311,180	313,620	322,880	317,430	330,030	...
Visitor departures	number[1]	314,840	316,610	307,220	318,730	321,080	331,210	...
Housing								
Dwelling consents - residential	mth % chg[1]	6.8	-8.0	-9.6	7.0	-1.3	1.5	...
	ann % chg	21.9	9.1	-0.4	-2.9	-7.6	14.8	...
House sales - dwellings	mth % chg[1]	-0.2	-5.7	-0.9	2.9	-10.1	23.2	...
	ann % chg	5.3	1.3	4.9	5.3	-0.6	15.5	...
REINZ - house price index	mth % chg	-0.2	0.1	0.3	0.4	0.6	0.4	...
	ann % chg	3.6	3.8	4.8	4.0	4.0	3.8	...
Private Consumption								
Electronic card transactions - total retail	mth % chg[1]	0.6	0.8	0.3	1.1	1.1	0.1	...
	ann % chg	4.2	4.9	3.8	6.3	5.7	6.2	...
New car registrations	mth % chg[1]	13.2	-6.3	1.8	-1.4	-6.1	7.7	...
	ann % chg	-0.6	-4.9	-0.7	-4.7	-10.8	-5.4	...
Migration								
Permanent & long-term arrivals	number[1]	10,790	10,610	10,600	10,750	10,440	10,160	...
Permanent & long-term departures	number[1]	5,700	5,750	5,850	5,760	5,820	5,500	...
Net PLT migration (12 month total)	number	66,243	64,995	63,779	63,288	62,733	61,751	...
Commodity Prices								
Brent oil price	US$/Barrel	76.98	74.40	74.25	72.44	78.89	81.03	*64.75*
WTI oil price	US$/Barrel	69.99	67.33	70.97	67.99	70.20	70.76	*57.00*
ANZ NZ commodity price index	mth % chg	5.0	-1.0	-1.1	0.4	-1.1	-1.6	-4.4
	ann % chg	6.8	7.5	8.6	8.9	5.9	1.6	-4.2
ANZ world commodity price index	mth % chg	1.5	-0.9	-3.3	-1.1	-2.4	-2.4	-0.6
	ann % chg	5.4	2.3	-0.2	-0.5	-3.6	-5.6	-5.3
Financial Markets								
NZD/USD	$[2]	0.6953	0.6941	0.6788	0.6671	0.6595	0.6530	*0.6766*
NZD/AUD	$[2]	0.9239	0.9265	0.9168	0.9100	0.9160	0.9186	*0.9342*
Trade weighted index (TWI)	June 1979 = 100[2]	73.01	73.50	72.96	72.32	71.79	71.67	*74.10*
Official cash rate (OCR)	%	1.75	1.75	1.75	1.75	1.75	1.75	1.75
90 day bank bill rate	%[2]	2.02	2.01	1.94	1.91	1.90	1.90	*1.98*
10 year govt bond rate	%[2]	2.78	2.90	2.81	2.64	2.60	2.62	*2.69*
Confidence Indicators/Surveys								
ANZ - business confidence	net %	-27.2	-39.0	-44.9	-50.3	-38.3	-37.1	-37.1
ANZ - activity outlook	net %	13.6	9.4	3.8	3.8	7.8	7.4	7.6
ANZ-Roy Morgan - consumer confidence	net %	121.0	120.0	118.4	117.6	117.6	115.4	118.6
Performance of Manufacturing Index	Index	54.3	52.7	51.2	52.1	51.9	53.5	...
Performance of Services Index	Index	56.8	52.8	55.0	53.5	54.2	55.4	...

1 Seasonally adjusted

2 Average (11am)

3 Westpac McDermott Miller

4 NZIER Quarterly Survey of Business Opinion

5 Ordinary Time

6 Production GDP divided by HLFS hours worked

Sources: Stats NZ; Reserve Bank of NZ; NZIER; ANZ; Haver; Westpac McDermott Miller; ANZ-Roy Morgan; REINZ; BNZ-Buisness NZ