THE TREASURY
Kaitohutohu Kaupapa Rawa

Monthly Economic Indicators

New Zealand Government

March 2018

Executive Summary

- **GDP grew 0.6% in the December quarter, with solid growth in private consumption and business investment, met by growth in imports.**
- **Early indicators for the March quarter suggest consumption growth is likely to continue to support GDP growth.**
- **Changes to the PTA introduce a requirement for the RBNZ to consider employment in setting monetary policy.**
- **Global growth remains strong although rising trade tensions present a risk to growth.**
- **This month's MEI includes two special topics; the first is a summary of our recent business talks; the second introduces our new macroeconomic forecasting model.**

Real GDP grew 0.6% in the December quarter, below our expectations and our *Half Year Economic and Fiscal Update* (HYEFU) forecast. Strong growth in consumption and investment was met through higher imports. Nominal GDP grew by, a stronger than expected, 1.4%, supported by another record terms of trade and a build-up in stocks.

Early indicators for the March quarter suggest consumption growth is likely to continue to support GDP growth. Consumer confidence has picked up this year which, along with rising house price growth is likely to support consumption in the near term. This has been reflected in strong in strong electronic card spending in January, which held up in February. Growth in net migration appears to be easing, though it remains at a high level and is likely to continue supporting growth for some time.

The annual current account deficit widened from a revised $7.0 billion (2.5% of GDP) in the September 2017 quarter to $7.7 billion (2.7% of GDP) in the December quarter. This is a slightly larger deficit than we and the market had expected.

The RBNZ left the Official Cash Rate (OCR) unchanged in March, and is widely expected to maintain the OCR at 1.75% throughout 2018 and into 2019. The outlook for inflation remains relatively weak in the near term with weak food price growth and policy changes expected in the March outturn. Changes to the PTA require the RBNZ to "seek to avoid unnecessary instability in employment". There was limited market reaction to the changes.

Growth in New Zealand's major trading partners rose to around 4.0% over the second half of the year, the strongest in five years, and momentum appears to have been maintained into 2018. However, there are signs that growth may have peaked amid rising trade tensions that are adding to uncertainty, which may dampen business confidence and investment. A further escalation in tensions and a generalised rise in trade barriers could derail the current broad-based global economic expansion.

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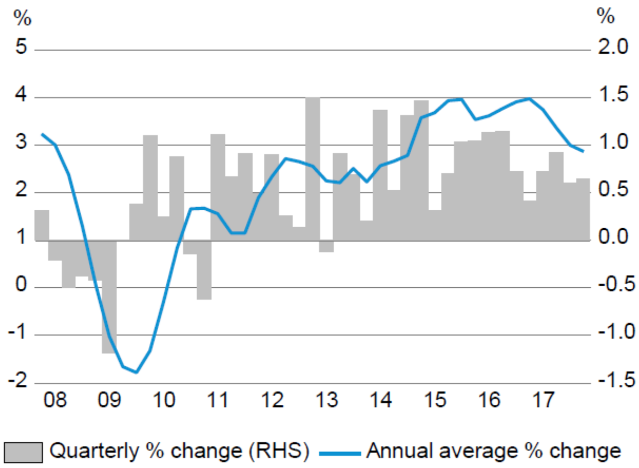
Analysis

Economic data released in March showed that real GDP expanded 0.6% in the December 2017 quarter, driven by growth in consumption and investment, though this was met by strong growth in imports. On the production side, strong growth in services was offset by lower than expected growth in the agricultural sector. Nominal GDP grew by, a stronger than expected, 1.4%, supported by another record terms of trade and a build-up in stocks. Consumption is expected to continue to support growth with consumer confidence on the rise. The current account widened in the December quarter, largely due to a widening by a widening primary income deficit. Overseas Merchandise Trade showed that exports and imports both declined in February, largely in line with forecasts. The RBNZ left the OCR unchanged in March, and is expected to maintain the OCR at 1.75% throughout 2018 and into 2019. Changes to the PTA, increase the focus on employment but do not impact our outlook for the OCR.

GDP growth below market expectations in the December quarter

Real GDP grew 0.6% in the December 2017 quarter, slightly below our estimate and the market median pick of 0.8%. This difference was not large enough to cause a deviation from our annual average growth estimate of 2.9%.

Figure 1: Quarterly real GDP grew 0.6% in December



Source: Statistics NZ

Growth in private consumption (up 1.2%) and business investment (up 3.7%) helped support expenditure GDP, though this growth was partly met through higher imports (up 3.9%) leaving growth in expenditure GDP at just 0.4%.

The main area where growth was weaker than expected was in agriculture sector. We had expected some contraction in output with recent volatile weather conditions. In particular, we had expect dairy exports to weaken on the quarter due to weak milk production. Conversely, we had expected meat export volumes and primary food manufacturing to increase as slaughter was brought forwards.

However, the declines in dairy exports were even larger than anticipated. Additionally, while slaughter numbers rose, they rose by less than expected and primary food manufacturing (the processing of meat for example) actually fell. This suggests that the timing of the weather impact may have been different than we had anticipated. This could imply that we may see a stronger March quarter, with less potential for the large declines in meat and dairy that we had expected.

Strong migration-led population growth continues to be a major driver of demand. GDP per capita growth of 0.1% in the quarter was soft and saw annual average GDP per capita growth fall to 0.7%. This is the weakest rate of growth since 2011 and markedly down from the 1.4% to 2.1% range generally recorded over the 2012 to start of 2017 period.

Despite the weaker than expected real GDP growth, nominal GDP expanded by a stronger than expected 1.4% in the quarter. Nominal GDP was revised up $0.9 billion for the September year as a whole, contributing to the stronger than expected annual average growth of 6.6%. The strength was largely driven by a build-up in stocks along with another record high in the terms of trade with growth in export prices outpacing the growth in import prices.

Outlook for the March quarter is uncertain …

The implications from this release are mixed. On the nominal GDP side, the higher outturn aligns with recent strong outturns in tax revenue. However, most of the gain in nominal GDP was in the volatile and unpredictable stocks component. This would typically lead us to assume the gain was less likely to be persistent. On balance we assume that the higher nominal GDP is likely to persist, although it has limited implications for future quarterly growth rates.

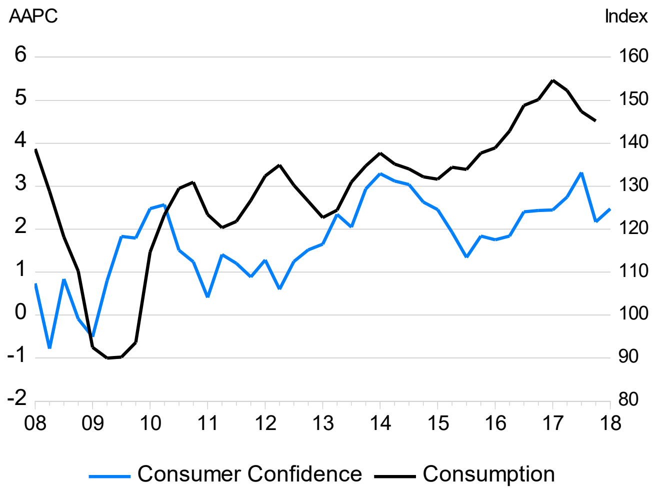
On the real side, we believe the December outturn represents a change in timing but not in the overall outlook. In particular, the impact of volatile weather conditions was assumed to cause a drop-off in dairy exports and meat in the March quarter. It now appears the drop-off in dairy has already occurred and therefore we do not expect as large a contraction in the March quarter (trade data for the March quarter are discussed later in this report).

Finally, on both an aggregate and per capita basis, there has been a considerable slowing in growth over the past year. The extent to which this slowing of momentum continues will be a key judgement for the outlook over 2018.

…though consumption is likely to continue to support growth

Consumer confidence has rebounded from the dip in 2017. The McDermott Miller consumer confidence index rose 3.8 points to 111.2 in the March quarter 2018. The increase was broad based with both the current and expected conditions measures improving. This result is consistent with the ANZ-Roy Morgan Consumer Confidence Index, which lifted from 126.9 to 127.7 in February (Figure 2). The ANZ business outlook showed that business confidence was largely unchanged in March, following a rebound in February.

Figure 2: Consumer confidence and SNA consumption



Source: ANZ, Statistics New Zealand

Rising house prices are one potential cause of stronger confidence among consumers. The REINZ house price index rose modestly in February, up 0.6% (seasonally adjusted), consistent with reasonable growth over the past six months. The index was 3.9% higher than the same month a year ago. The Auckland index also increased modestly, following a flat January, to be 1.1% higher than a year ago.

After strong growth in January, electronic card transactions were flat in February. This would suggest continued solid growth in private consumption in the March 2018 quarter.

Migration also continues to support growth in consumption, although the contribution to consumption appears to be waning. Net permanent and long-term (PLT) migration fell from 6280 in January to 4,970 in February. On an annual basis, there was also a reasonable drop from 70,147 to 68,943 – the lowest since April 2016. This outturn is broadly in line with our forecast at HYEFU.

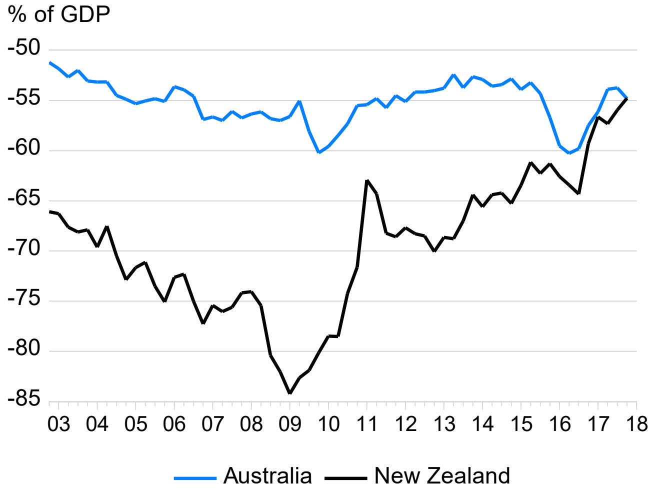
Current account deficit widens in December…

The annual current account deficit widened from a revised $7.0 billion (2.5% of GDP) in the September 2017 quarter to $7.7 billion (2.7% of GDP) in the December quarter. This was a slightly larger deficit than we and the market were expecting. The increase was driven by a widening primary income deficit, meaning income from foreign investment in New Zealand increased by more than income earned from New Zealand investments abroad. Any impact caused by volatility in financial markets in February will be picked up in the March quarter.

The trade balance was largely unchanged. Exports and imports both grew by a similar nominal amount, with weakness in real exports being offset by higher prices.

New Zealand's net international investment position improved $1.0 billion to -$155.2 billion (-54.8% of GDP) with the value of New Zealand's international assets increasing by more than its liabilities in the quarter. This represents the first time, on current data, that New Zealand's net international investment position, as a percentage of GDP has been higher than Australia's (Figure 3).

Figure 3: New Zealand's NIIP passes Australia



Source: Statistics New Zealand, Haver

…With trade data showing a decline in exports in the near term

On a seasonally adjusted basis trade data for February showed a small increase in exports and a decline in imports. However, the increase in exports in February is insignificant compared with the falls in January, with exports still down $738 million from December. The split between volumes and prices is unknown at this stage. A fall in prices would be consistent with our view of some retracement in the terms of trade in the near term. This view is supported by recent easing in dairy prices as New Zealand production has not been as low as some had feared in the wake of a dry start to summer. However, dairy production has also been low with production in the first two months of 2018 6% lower than the same period last year. Slaughter numbers in February also fell, suggesting that meat exports could fall by more than expected.

On the imports side, seasonally adjusted import values declined in February, from $5,069 million in January to $4,787 million. The fall over the two months this year is still not as large as in exports suggesting a further widening of the current account may yet occur. The decline in imports in February was primarily due to lower vehicle imports largely as a result of some cars being turned away due to stick bug contamination.

No change in the OCR in March

As expected, the OCR was kept at 1.75% in March. The statement again reiterated that “monetary policy will remain accommodative for some time”. This is consistent with our view of interest rates, and weak CPI inflation in the near term. Inflation is likely to be low in the March quarter with falls in food prices in the quarter to date, combined with the expected impact of policy changes to tertiary education offsetting the impact of an increase in the price of tobacco.

A new Policy Targets Agreement (PTA) was released in late March. The PTA sets the policy target for the Governor of the Reserve Bank to achieve. The main change to the PTA was an increased focus on employment outcomes including the additional requirement for the Bank to “seek to avoid unnecessary instability in employment”. This addition is in line with the Government’s policy to shift the Reserve Bank to a ‘dual mandate’ focusing on both inflation and employment outcomes. The release also outlined some additional detail about upcoming changes to the Act, including the introduction of a governing committee, which will include some external members (though they will be the minority). The changes and announcement were largely in line with market expectation, and not expected to change monetary policy decisions in the near term. They therefore did not provoke much of a market reaction.

Trading partner growth ended 2017 strongly…

Over the second half of 2017, growth in New Zealand’s major trading partners is estimated to have been close to 4.0%, the strongest since 2012 (Table 1). Growth in the advanced economies continued at an above-trend pace, accompanied by solid job growth. Unemployment has fallen below pre-crisis rates in most of our advanced economy trading partners. In Australia, the unemployment rate has declined more slowly, despite strong jobs growth over the past year or so. In the Asia region, growth in China remained solid, supported by fiscal spending and rapid credit growth. Strong demand from China, and the upturn in advanced economies, has helped sustain a faster pace of growth in other economies in the region, which are closely integrated into international supply chains. In India, higher government spending has helped to shake-off the negative effects of demonetization and the Goods and Service Tax. However, public sector banks have been under pressure from high levels of non-performing loans and fraud scandals.

Table 1: Trading partner growth (annual % change)

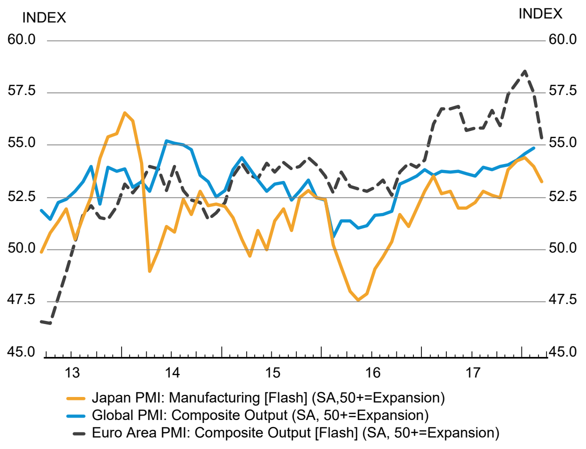
	2017q3	2017q4
Total adv. economies	**2.5**	**2.4**
Australia	2.9	2.4
US	2.3	2.6
Japan	1.9	2.1
Euro area	2.7	2.7
UK	1.8	1.4
Canada	3.0	2.9
Total Asia	**5.6**	**5.7**
China	6.8	6.8
Korea	3.8	2.8
Singapore	5.5	3.6
Taiwan	2.9	3.3
Malaysia	6.2	6.0
Indonesia	5.1	5.2
Thailand	4.3	4.0
Hong Kong	3.7	3.4
Philippines	6.8	6.6
India	6.4	7.3
Total TPG growth	**4.0**	**3.9**

Source: Haver

…and may have reached its peak

More recent data suggest that the pace of growth in the euro area and Japan may have peaked. Euro area industrial production slowed in January, although weather-related effects likely account for a large proportion of the fall, while March’s flash Markit composite PMI extended February’s decline lowering sentiment to its lowest level since January 2017 (Figure 4). Both manufacturing and services components fell, but the decline was larger in manufacturing. February’s equity market volatility, the Chinese holiday calendar and adverse weather may have contributed to the decline in euro area sentiment. Despite the fall, the average PMI over the March quarter was only slightly below the December quarter average, pointing to still-strong growth. Japan’s manufacturing PMI also continued to ease from January’s peak, but remained at a relatively high level (Figure 4).

Figure 4: Global growth may have peaked…



Source: NK/IHSM, JPM/IHSM, IHSM/Haver

While these indicators of slower growth are certainly worth watching, at this time we do not think they portend a broader slowdown in global growth. Indicators of slower growth appear to be concentrated in a few countries and broad measures of global growth momentum, such as the JP Morgan's Global Composite Output PMI, which continued to track up in February (Figure 4). In addition, the fundamental drivers remain supportive. The OECD's Interim Economic Outlook observed that business and consumer confidence were elevated, that higher commodity prices were improving the prospects for investment in commodity-producing economies and that monetary and fiscal policies continued to support growth. However, the OECD do not expect growth to accelerate further from here but to remain solid.

Inflation expected to rise modestly

Globally, inflation has remained low and stable, although in some advanced economies there are signs of emerging labour constraints on production and expectations of future price increases. In the US and Germany, where broad measures of unemployment are now at or below historical norms, there are signs of strengthening wage growth. However, for the euro area as a whole, and for Japan, where labour shortages are particularly acute, wage growth is still soft.

Rising trade tensions present a risk to growth…

Trade tensions escalated in late March as the United States announced action was underway to impose market protection measures in relation to trade with China. These announcements contributed to 4 - 5% falls in US, European and Chinese equity markets, and a weaker US currency against alternative safe haven currencies such as the euro and yen.

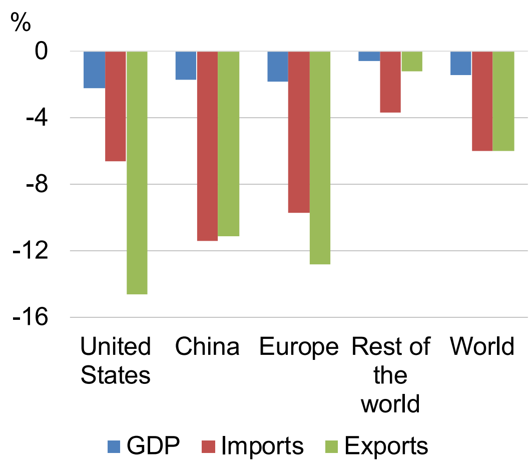
President Trump announced that three actions on Chinese trade were underway: first tariffs on USD 50 billion of goods, with details to be announced within 15 days, second, restrictions on Chinese investment (details within 60 days), and third, an examination of Chinese foreign investment for threats to national security. These actions followed earlier measures, affecting a number of countries, currently including New Zealand, to erect tariffs on imports of steel, aluminium, washing machines and solar panels.

With trade relations often based on the principal of reciprocity there is a high risk that US actions will result in retaliation, which could spiral into a more systematic tightening of trade rules. Indeed, in response to US steel tariffs, China announced planned retaliatory tariffs on USD 3 billion of US imports.

At this point, without knowing how US trade partners will respond, the direct economic impacts of the US tariffs are likely to have limited implications for global growth or inflation. However, a further escalation in tensions and retaliatory actions could derail the current broad-based global expansion.

The effects of a generalised rise in trade barriers is likely to have a major negative effect on trade and GDP. The OECD estimates that a 10% increase in trade costs could reduce global GDP by around 1.5% in the medium-term (Figure 5). The IMF estimates the costs to be of a similar magnitude. They estimate that a 10% rise in import prices globally, half of which is from tariffs and half from non-tariff barriers, would reduce global output by almost 1.75% after five years, with global trade declining by 15%.

Figure 5: The effects of increased trade costs in the United States, China and Europe



Source: OECD

The economies most exposed to trade wars are those most open to trade, including Asian manufacturers, commodity exporters, including Australia and Brazil, and those most exposed to the US (eg Canada and Mexico). The details of the tariffs are important, but assuming they largely avoid soft commodities, most of the impacts on New Zealand would be via the effects of slower growth in our major trading partners, particularly China and Australia.

...but NAFTA and Brexit negotiations provide some relief

However, it has not all been bad news on the trade front. The renegotiation of the North America Free Trade Agreement (NAFTA) appears to be progressing positively, with the US withdrawing its demand on 50% US content in automobiles produced within NAFTA. Elsewhere, the European Union (EU) and United Kingdom (UK) agreed the broad terms of the Brexit transition period. The draft agreement sets out a 21-month transition (ie, to the end of 2020), although it remains contingent on agreement of the overall Withdrawal Agreement. Nonetheless, there remains much to be resolved including the contentious issue of the Irish border and the future end-state of the EU-UK relationship.

US Federal Reserve raises rates and sees stronger growth ahead

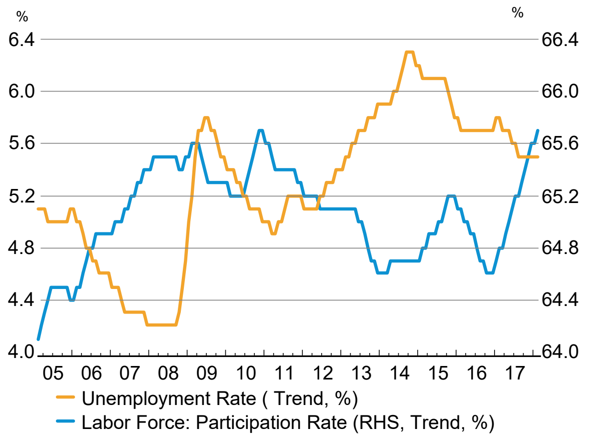
The US Federal Reserve raised its policy interest rate 25 basis points to 1.50 - 1.75% and projected a faster pace of rate rises over 2019 and 2020 than previously forecast, citing an improved economic outlook. Fed officials continued to project a total of three rate increases this year. The upward revision to growth likely reflects the impacts of government spending and tax decisions implemented since December. The median growth projection of US Federal Reserve members was 2.7% in 2018 and 2.4% in 2019, up from 2.5% and 2.1% respectively in December. The median projections for 2020 and beyond were unchanged at 2.0% and 1.8% respectively. The average Federal funds rate was projected to be 20 basis points higher over 2019 at 2.9% and 30 basis points higher than previously at 3.4% in 2020. The inflation projection was little different.

Unemployment in Australia slow to decline

Fourth quarter GDP growth in Australia slowed to 0.4%, following 0.7% in 2017Q3, and calendar year growth eased to 2.3% from 2.6% in 2016. Private consumption rebounded from a weak September quarter and public investment growth remained strong, but net trade and private investment subtracted from growth. However, private consumption growth appears to have faded in the March 2018 quarter, with nominal retail sales in January just 0.1% higher than in December, which in turn was down 0.5% on the month prior.

The Reserve Bank of Australia's March Board minutes, released subsequent to its decision to maintain the policy rate at 1.5%, noted that the low level of interest rates over 2017 had played a role in reducing the unemployment rate and in bringing inflation closer to target. They expect further progress on these goals to be gradual. This expectation was borne out in February's labour market report, which showed the trend measure of unemployment stable at 5.5% (Figure 6). Employment growth continued to expand at a solid, but slowing pace, up 3.3% on the same month a year ago. Labour force participation also increased, rising to 65.7%, equalling its late-2010 record high (Figure 6).

Figure 6: Unemployment stable as participation rises



Source: ABS/Haver

China's 2018 growth target steady at 6.5%

Jan-Feb activity data indicated that first quarter growth in China remained strong. Retail sales, industrial production and real estate investment grew strongly, and exports recorded double digit growth indicating that both internal and external demand drivers are supporting growth. Investment growth in infrastructure and manufacturing slowed as financial conditions facing local governments tightened and polluting industries reduced output.

However, with trade tariffs creating uncertainty and China's National People's Congress (NPC) confirming the 2018 growth target at 6.5% (c.f. 6.5%, or higher if possible, in 2017) it is likely that growth will slow from its current pace. The government's lower fiscal deficit target of 2.6% of GDP, down from 3.0% in 2017, and the People's Bank of China's ongoing focus on financial deleveraging, reinforces the consensus expectation that growth will slow to around 6.5% this year, from 6.9% in 2017.

Special Topic 1: March 2018 Business Talks

In March, 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 will help to inform Treasury's 2018 *Budget Economic and Fiscal Update*. The views of these businesses are summarised below.

Construction and tourism are hitting capacity constraints…

Treasury officials received optimistic reports about growth in the construction sector but many businesses we visited indicated that the sector is severely stretched, leading to price pressures. Many expressed concern about housing and rental affordability. Generally, the housing shortage is expected to continue driving construction demand although growth is expected to flatten over the coming year because of resource and capacity constraints. This is consistent with recent signals from residential investment and building consents data.

The tourism sector is performing very well but is still subject to capacity constraints, mostly because of construction delays. Hotel capacity has increased over the past year but demand continues to outstrip supply. Some businesses noted that the mix of visitors has changed, with more wealthy international visitors from countries like the United States boosting spending. There is some concern, however, that additional fees on tourists could affect this upward trend.

…and growth in sales is still strong

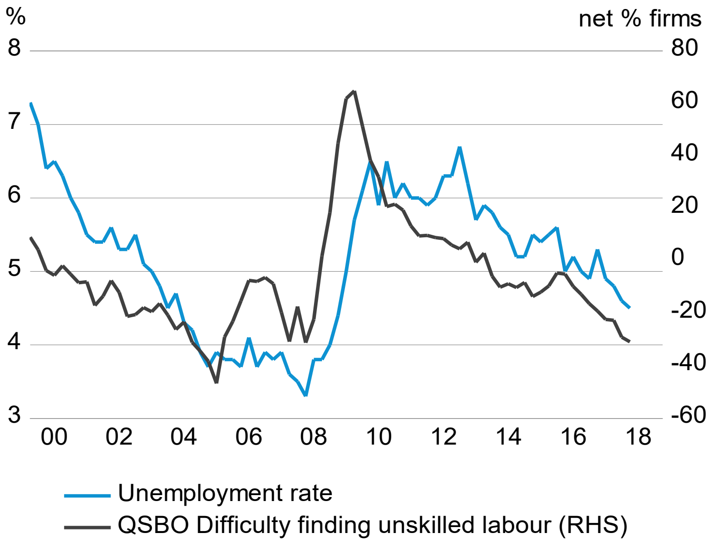
Sales growth has been good, in line with the strong growth we've seen in private consumption, but some businesses indicated that sales targets are hard to meet due to competition. Many businesses are promoting the quality of their products in efforts to boost demand. While profits are generally holding up well, many expressed concern about increased transportation and compliance costs. Rising rent and land prices were cited as a concern for some industries.

Most employers have been increasing wage rates in line with CPI inflation, and expect to continue to do so. Officials received mixed reports on the effect of the planned increases to minimum wages. While some organisations anticipated the increase in the minimum wage would have a marked impact on their profitability, others were less concerned, either because they already pay above the minimum wage or because they saw the increase as being generally good for the economy. There is also a focus on upskilling employees, improving employment conditions, and being an 'employer of choice' to attract or retain good quality staff.

The labour market remains 'tight'…

Highly-skilled roles have generally remained difficult to fill. Filling lower-skilled vacancies has become more difficult (see Figure 7), putting upward pressure on wages. This is particularly evident in the hospitality and transportation sectors. Firms in some of the larger centres also reported losing staff to regions where housing is not so expensive. Some employers indicated that the abolition of 90-day trials has made them more cautious as the trial period allowed them to give employees who they may not otherwise employ (eg, those with criminal records) a chance and that this is likely to add to skill shortages in those industries. Many are dependent on migrant workers and are concerned about changes in immigration policy. Some immigration categories are essential to the workforce and there is some concern that workers are being exploited and don't have a clear path to residency.

Figure 7: Unemployment and difficulty finding unskilled labour



Source: NZIER, Stats NZ

…and investment intensions are positive…

We received many reports of investment, both planned and underway. While much of this investment is physical through planned expansions of offices and distribution centres, both domestically and internationally, there is a significant amount of investment in technology to improve and automate processes to reduce labour dependence and costs.

While infrastructure investment has been good eg, the expansion of road networks, it is still severely stretched and congested in many centres, particularly Auckland. This is a significant cost for businesses. While signalled funding on infrastructure has been welcomed, there is some concern about government reprioritisation and associated economic costs.

…as credit conditions ease

Credit conditions have eased in recent months and is currently not a concern for most of the businesses we visited. While some larger companies are able to raise their own funds, smaller companies are heavily dependent on bank funding and this will remain constrained by credit limits set by the big four Australian banks. Much of the current bank funding is being sustained by churn, as debt gets paid off and banks are able to write new loans, rather than a significant change in available credit. The low level of public debt in New Zealand is seen as an important factor for continued favourable credit conditions.

Overall conclusions are similar to what they were in our last official talks with businesses in October 2017, ie, continued optimism in the New Zealand economy, supported by solid population growth, with positive employment and investment intentions. Availability of good-quality labour was cited as the main constraint on future growth, and some concern was expressed that policies that reduce inward migration could slow economic growth. Businesses saw New Zealand as needing migrant labour in construction to support infrastructure and housing projects, and to ensure the continued success of our agriculture and horticulture industries. Firms would welcome additional support for building affordable housing and infrastructure.

Special Topic 2: An introduction to the Treasury's new macroeconomic model

The Treasury uses a macroeconomic forecasting model of the New Zealand economy to aid in the production of the economic and tax forecasts. During the Budget 2018 forecast round we have introduced a new model called Matai, which is one of a number of tools used to produce the forecasts.

What is a macroeconomic model?

A macroeconomic model consists of a set of mathematical equations which attempt to identify and quantify relationships between variables suggested by economic theory. For example, theory suggests that household spending depends on household incomes. In order to use this theory in a model we need to quantify the relationship by looking at the New Zealand data. We need to be able to say, for example, if incomes were to increase by $100, spending would increase by $90 and $10 would be saved. Matai has around 40-50 of these types of equations. Rather than being a collection of individual isolated equations, Matai attempts to capture the real world dynamic interactions between variables. In the previous example output may need to increase to meet the additional spending (demand) initiating a second round of increases to income and spending. Modelling software is used to solve all these types of interactions.

Why a new model?

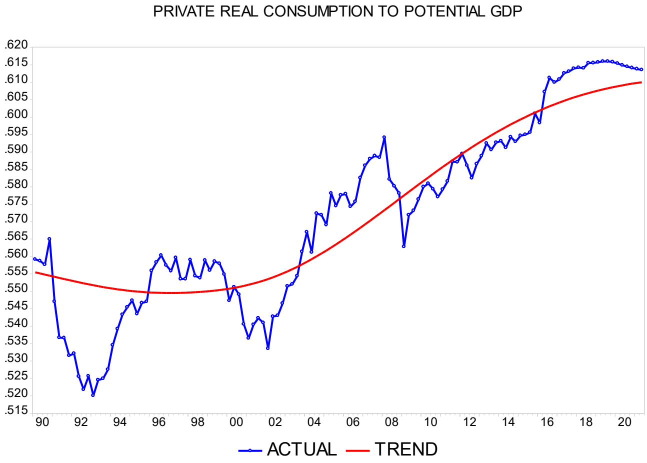
Matai replaces the previous model called NZTM, which has been used in the production of the forecasts for over 10 years. Matai provides a more accessible and up to date tool for the forecasters. It was designed with the following objectives in mind:

- to use standard definitions of the model variables that are widely used and understood by the broader economic community
- to provide a special focus on forecasting nominal GDP (a key determinant of the tax base)
- to create a very simple and intuitive economic structure but calibrated to reflect as closely as possible the key results from in depth off model economic research.
- to use EViews economic software which is widely used in the economic community.

Key model features

In Matai, each variable is split into trend and cycle components. The trends in the forecast period converge towards an assumed long run position (Figure 8).

Figure 8: Actual and trend consumption as a share of potential GDP

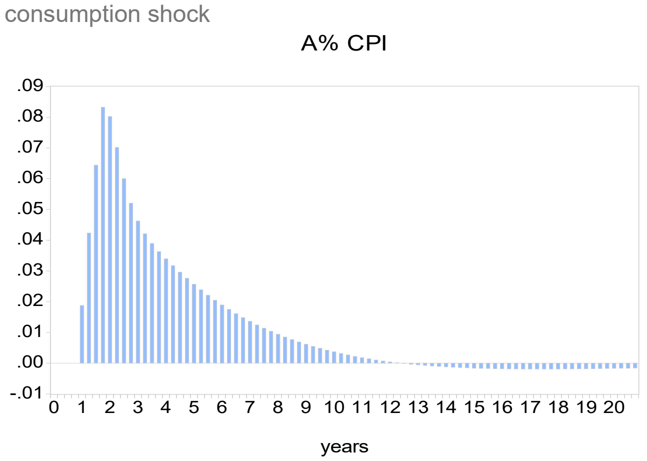


Source: The Treasury

The trend attempts to capture the elements of the data series that are expected to persist longer than the business cycle. All short term and business cycle elements are captured in the gap between actual and trend. For example, real GDP represents actual output in the economy, while sustainable or potential output is captured in the trend. The difference between actual and potential output is the output gap. Potential output is forecast using a single production function that weights together trend estimates of inputs - the capital stock, labour, and multifactor productivity. The output gap is forecast as a sum of the individual expenditure gaps such as the private consumption gap, residential investment gap etc. Each expenditure component gap equation is a weighted sum of other gaps. For example the private consumption gap is a function of the wage income gap, house price gap (deviation from fair value), and interest rate gap (deviation from assumed neutral interest rate).

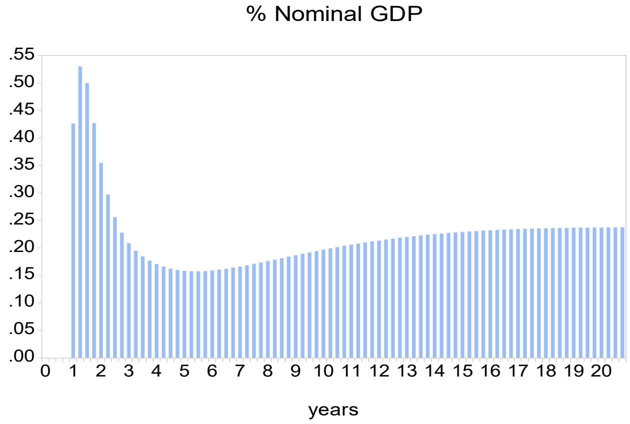
One can gain some insight into the interactions within Matai by considering a scenario where, say, private consumption is unexpectedly higher by around 1 percentage point, and this "shock" is expected to persist for some time (Figure 9, Figure 10).

Figure 9: Impulse response of annual inflation to a consumption shock



Source: The Treasury

Figure 10: Impulse response of nominal GDP to a consumption shock



Source: The Treasury

The higher consumption initially causes the output gap to increase generating inflation and an increase in interest rates. The nominal exchange rate appreciates in response to higher interest rates. As the shock dissipates and the policy tightening takes effect, the output gap moves slightly negative until inflation expectations return to the 2 percent target. The higher inflation results in a permanently higher price level and hence higher GDP deflator. While real GDP returns to the pre-shock level (no change in potential), nominal GDP stays higher because of the higher price level. Note also the nominal TWI exchange rate is permanently lower in order to restore the loss of external competitiveness caused by the higher domestic price level.

How is the model used?

Often adjustments and judgements are made to the initial forecasts that come out of the model. As part of the forecast process we examine a range of other models and information. This information is used to form judgements that influence the model output. Matai is in fact an organising and documentation framework for the forecasters. It encompasses all relevant information gathered from off model sources. Perhaps the most important key inputs/judgements introduced from outside the model are assumptions for government consumption, population growth (including migration) and in the current forecast round assumptions about how export volumes will be affected by adverse agricultural conditions (and the resulting recovery as conditions return to normal).

The model is a useful tool aiding consistency both within and between forecast rounds. Within rounds it retains an element of consistency with both economic theory and New Zealand specific data. Between forecast rounds it provides a systematic record of the previous rounds and a benchmark starting point from which to launch an updated view. It provides a consistent and stable framework to document previous judgements.

Future developments

Since Matai encompasses accumulated knowledge about the economy, it will be under constant review and evolution. One important future development will be a more rigorous and formal estimation. A technical working paper describing Matai in much more detail is also planned.

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

		2016Q2	2016Q3	2016Q4	2017Q1	2017Q2	2017Q3	2017Q4
Gross Domestic Product (GDP)								
Real production GDP	qtr % chg[1]	1.1	0.7	0.4	0.7	0.9	0.6	0.6
	ann ave % chg	3.8	3.9	4.0	3.7	3.4	3.0	2.9
Real private consumption	qtr % chg[1]	2.2	1.5	0.9	1.0	1.0	1.0	1.2
	ann ave % chg	4.3	4.9	5.0	5.4	5.2	4.7	4.5
Real public consumption	qtr % chg[1]	0.0	1.0	1.2	1.0	1.3	2.5	-0.1
	ann ave % chg	1.4	1.3	1.7	2.0	3.2	4.2	4.7
Real residential investment	qtr % chg[1]	4.4	-0.5	0.3	-1.6	-0.5	3.0	0.5
	ann ave % chg	10.5	11.7	11.8	9.5	5.0	2.5	0.6
Real non-residential investment	qtr % chg[1]	1.2	1.2	0.7	0.8	1.1	0.9	3.8
	ann ave % chg	3.4	2.9	4.1	3.9	3.8	4.1	4.5
Export volumes	qtr % chg[1]	1.7	-0.9	-2.2	0.2	5.1	0.8	0.0
	ann ave % chg	4.8	3.0	1.6	0.7	0.0	0.6	2.5
Import volumes	qtr % chg[1]	2.5	1.9	1.3	1.2	0.6	2.5	3.9
	ann ave % chg	1.0	1.8	3.4	5.1	6.0	6.1	6.6
Nominal GDP - expenditure basis	ann ave % chg	5.2	5.2	6.0	6.1	6.4	6.9	6.5
Real GDP per capita	ann ave % chg	1.7	1.8	1.8	1.6	1.2	0.8	0.7
Real Gross National Disposable Income	ann ave % chg	4.0	4.4	5.3	4.8	4.5	4.4	3.5
External Trade								
Current account balance (annual)	NZ$ millions	-6,265	-6,577	-5,985	-7,156	-7,145	-7,013	-7,722
	% of GDP	-2.4	-2.5	-2.2	-2.6	-2.6	-2.5	-3
Investment income balance (annual)	NZ$ millions	-7,816	-7,611	-7,133	-7,700	-7,952	-8,471	-9,399
Merchandise terms of trade	qtr % chg	-2.0	-1.2	5.8	3.9	1.1	1.3	0.8
	ann % chg	-3.8	-1.2	6.7	6.5	9.7	12.6	7.3
Prices								
CPI inflation	qtr % chg	0.4	0.3	0.4	1.0	0.0	0.5	0.1
	ann % chg	0.4	0.4	1.3	2.2	1.7	1.9	1.6
Tradable inflation	ann % chg	-1.5	-2.1	-0.1	1.6	0.9	1.0	0.5
Non-tradable inflation	ann % chg	1.8	2.4	2.4	2.5	2.4	2.6	2.5
GDP deflator	ann % chg	0.2	1.4	4.1	3.8	3.0	3.8	2.9
Consumption deflator	ann % chg	0.8	0.1	0.7	1.6	1.2	1.5	1.4
Labour Market								
Employment (HLFS)	qtr % chg[1]	2.5	1.1	0.9	1.0	0.0	2.2	0.5
	ann % chg[1]	4.5	6.1	5.8	5.7	3.1	4.2	3.7
Unemployment rate	%[1]	5.0	4.9	5.3	4.9	4.8	4.6	4.5
Participation rate	%[1]	69.8	70.0	70.6	70.6	70.1	71.1	71.0
LCI salary & wage rates - total (adjusted)[5]	qtr % chg	0.4	0.5	0.4	0.4	0.4	0.6	0.4
	ann % chg	1.5	1.7	1.6	1.6	1.7	1.8	1.8
QES average hourly earnings - total[5]	qtr % chg	0.5	0.5	-0.1	0.5	0.6	1.2	0.8
	ann % chg	2.1	1.7	1.3	1.5	1.6	2.2	3.1
Labour productivity[6]	ann ave % chg	0.8	-0.3	-1.3	-2.7	-1.6	-1.5	-0.6
Retail Sales								
Core retail sales volume	qtr % chg[1]	2.5	0.5	1.4	1.3	1.9	0.6	1.8
	ann % chg	6.8	5.3	4.9	4.9	5.2	5.2	5.6
Total retail sales volume	qtr % chg[1]	2.1	1.0	1.4	1.4	1.8	0.3	1.7
	ann % chg	6.3	5.3	4.8	5.4	5.8	4.6	5.4
Confidence Indicators/Surveys								
WMM - consumer confidence[3]	Index	106	108	113	112	113	112	107
QSBO - general business situation[4]	net %	18.6	25.7	28.3	17.1	17.8	5.2	-11.8
QSBO - own activity outlook[4]	net %	16.8	39.2	27.0	20.6	18.4	35.2	18.7

Monthly Indicators

		2017M08	2017M09	2017M10	2017M11	2017M12	2018M01	2018M02
External Sector								
Merchandise trade - exports	mth % chg[1]	-10.5	4.4	4.5	-0.7	15.2	-15.9	2.5
	ann % chg[1]	9.0	9.4	16.1	19.1	24.7	8.9	11.1
Merchandise trade - imports	mth % chg[1]	-3.5	5.8	6.4	4.7	-4.8	0.6	-5.6
	ann % chg[1]	5.2	2.1	14.3	27.0	10.8	18.7	4.6
Merchandise trade balance (12 month total)	NZ$ million	-3148	-2925	-2967	-3466	-2851	-3279	-3019
Visitor arrivals	number[1]	307,680	309,940	316,190	323,960	314,590	315,030	321,430
Visitor departures	number[1]	298,890	312,490	319,350	322,220	324,160	314,190	318,670
Housing								
Dwelling consents - residential	mth % chg[1]	5.6	-2.1	-9.9	9.4	-9.5	0.2	...
	ann % chg[1]	11.7	6.0	-1.0	8.6	-1.6	9.4	...
Private Consumption								
Electronic card transactions - total retail	mth % chg[1]	-0.1	0.3	0.5	1.3	0.5	1.4	-0.3
	ann % chg	4.4	2.9	1.3	4.3	3.3	3.4	3.3
New car registrations	mth % chg[1]	6.2	-0.5	3.3	5.2	-8.1	2.6	-9.3
	ann % chg	5.5	5.5	7.3	12.1	4.7	6.2	-4.2
Migration								
Permanent & long-term arrivals	number[1]	10,630	10,540	10,960	10,860	10,990	11,480	10,210
Permanent & long-term departures	number[1]	5,160	5,270	5,300	5,180	5,270	5,200	5,240
Net PLT migration (12 month total)	number	72,072	70,986	70,694	70,354	70,016	70,147	68,943
Commodity Prices								
Brent oil price	US$/Barrel	51.70	56.15	57.51	62.71	64.37	69.08	*65.32*
WTI oil price	US$/Barrel	48.05	49.83	51.60	56.66	57.93	63.66	*62.21*
ANZ NZ commodity price index	mth % chg	0.2	1.7	2.5	1.4	-2.7	-3.0	2.4
	ann % chg	15.8	13.3	13.9	11.9	6.7	4.6	6.4
ANZ world commodity price index	mth % chg	-0.8	0.8	-0.3	-0.9	-1.9	0.7	2.8
	ann % chg	16.3	11.5	10.4	6.0	3.2	4.1	5.0
Financial Markets								
NZD/USD	$[2]	0.7311	0.7246	0.7062	0.6888	0.6953	0.7255	*0.7312*
NZD/AUD	$[2]	0.9233	0.9089	0.9060	0.9034	0.9110	0.9123	*0.9277*
Trade weighted index (TWI)	June 1979 = 100[2]	77.08	75.85	74.73	73.11	73.48	74.90	*75.09*
Official cash rate (OCR)	%	1.75	1.75	1.75	1.75	1.75	1.75	1.75
90 day bank bill rate	%[2]	1.95	1.95	1.94	1.92	1.88	1.88	*1.91*
10 year govt bond rate	%[2]	2.88	2.92	2.97	2.85	2.76	2.88	*2.97*
Confidence Indicators/Surveys								
ANZ - business confidence	net %	18.3	0.0	-10.6	-39.3	-37.8	...	-19.0
ANZ - activity outlook	net %	38.2	29.6	22.0	6.5	15.6	...	20.4
ANZ-Roy Morgan - consumer confidence	net %	126.2	129.9	126.3	123.7	121.8	126.9	127.7
Performance of Manufacturing Index	Index	58.2	57.8	57.4	57.6	51.2	54.4	53.4
Performance of Services Index	Index	57.1	56.0	55.7	56.5	56.0	55.7	55.0