



Bulletin

Vol. 80, No. 3

June 2017



Reserve Bank of New Zealand *Bulletin*

Subscribe online: <http://www.rbnz.govt.nz/email-updates>

For back issues visit: <http://www.rbnz.govt.nz/research-and-publications/reserve-bank-Bulletin>

Copyright © 2017 Reserve Bank of New Zealand

ISSN 1177-8644

Characterising the current economic expansion: 2009 to present day



Rebecca Williams¹

This article follows on from the narrative contained in *Business cycle review: 2008 to present day* (Williams, 2017). The first article described the evolution of the economy since 2008 and how monetary policy responded given the Bank's assessment of economic conditions in real time. This article presents a broader view of the current (as yet incomplete) expansion, by looking at some of its defining features and comparing them to experience in previous expansions. In doing so, this article also presents some broad insights for monetary policy that have been reinforced in the current expansion.

The current expansion has reiterated the sensitivity of the New Zealand economy to global developments, across both cyclical and structural dimensions, even in the wake of domestic shocks such as the Canterbury earthquakes. Experience during the current expansion has also reiterated the difficulties in estimating key unobservables such as potential GDP and the neutral interest rate, as well as the nature of price-setting behaviour via expectations, particularly in real time. The Bank has been reminded not to rely too heavily on simple correlations between economic variables that were evident in the most recent expansion, but to continue to investigate

the drivers behind economic developments and – where data allow – take a longer-term perspective when assessing economic relationships.

Some of the features in this article have simply been revealed with the passage of time, and some reflect the Bank's evolving understanding of how the economy operates. But while these cyclical and structural factors have in some cases been unique to the current expansion, the fact that the Bank has been confronted with such developments or challenges to our understanding is nothing new, and should be expected. In an uncertain world, the best that monetary policy can do is ensure that it is as robust to this uncertainty as possible. Constant learning through regular review of the economic environment – foreign and domestic, cycle and trend – enables policy to adjust as quickly as possible when new information comes to light.

¹ The author would like to thank colleagues at the Reserve Bank for their contributions during discussion of earlier drafts, and in particular Adam Richardson, Christie Smith, Dean Ford, Gael Price, Geordie Reid, and Roger Perry for their detailed feedback on this article.

1 Introduction

The increase in New Zealand's GDP since the global financial crisis (GFC) has been weaker than in previous expansions, particularly on a per capita basis in recent years (figures 1a and 1b). While the current expansion in New Zealand has been weaker than in the past, New Zealand's economic outlook has generally been stronger than those of many other advanced economies since the GFC. This stronger outlook has reflected factors such as the impulse to growth provided by the Canterbury rebuild, the surge in New Zealand's net immigration and our exposure to faster-growing emerging market economies in Asia.

This article follows on from the economic narrative contained in "*Business cycle review: 2008 to present day*" (Williams, 2017). The first article described economic developments since 2008 and how monetary policy responded, given the Bank's real-time assessment of conditions. This article presents a broader view of the current expansion. It begins by looking at some of the key features of the current expansion, concentrating on those that are particularly relevant for inflation and the conduct of monetary policy. These features are:

- Prolonged underlying weakness in major advanced economies, which has had implications for New Zealand via the exchange rate, trade, and price-setting behaviour;
- New Zealand's increased exposure to emerging Asia, and related developments in the terms of trade;
- The Canterbury earthquakes and subsequent rebuild, which was ultimately less inflationary than initially feared;

Figure 1a
Real GDP over
New Zealand
expansions

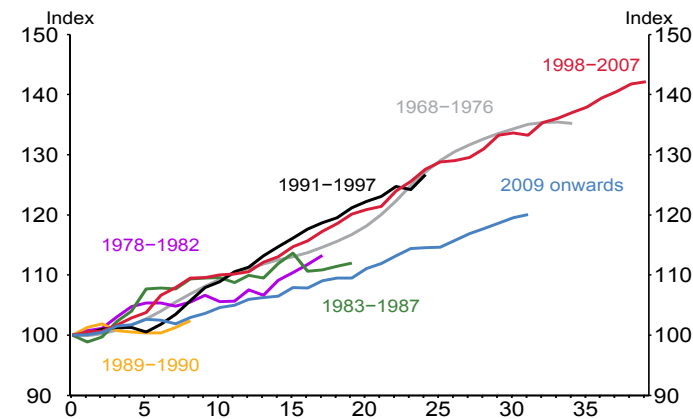
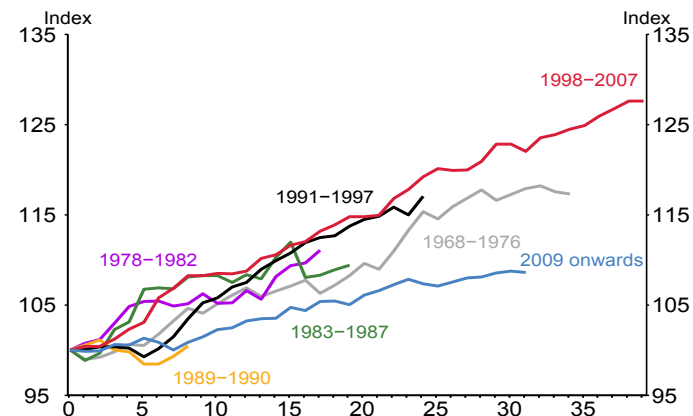


Figure 1b
Real per
capita GDP
over New
Zealand
expansions



Source: Statistics New Zealand, RBNZ estimates. Expansions are defined using the classical business expansion trough to peak estimates from Hall and McDermott (2016), shown as quarters from the GDP trough.

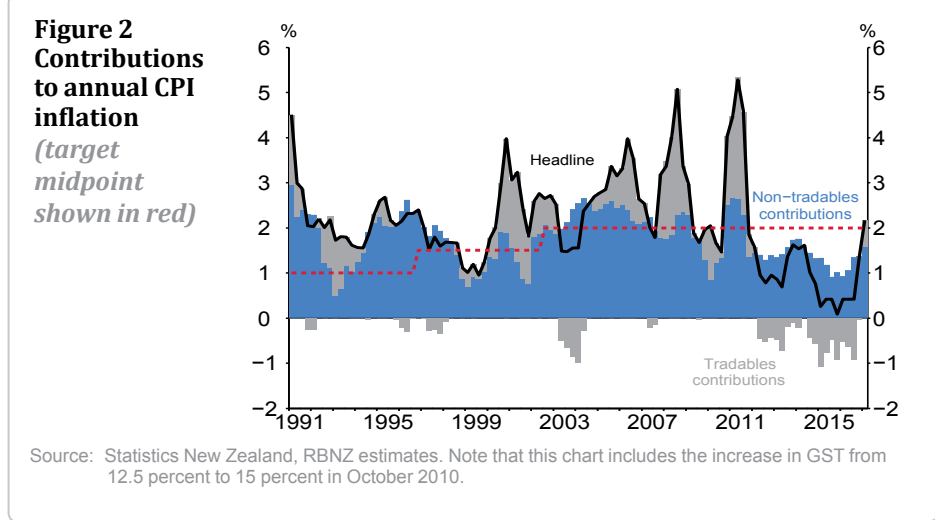
- Record high net immigration, which seems to be less inflationary than in the past;
- Lower potential growth and a continued decline in the neutral interest rate;

- Household consumption that has been less responsive to housing wealth than in the previous expansion;
- Fiscal policy that has been countercyclical in the current expansion; and
- The introduction of macro-prudential policy and its interaction with monetary policy.

This article then presents some broad insights for monetary policy that have been reinforced in the current expansion, including the importance of taking a longer-term perspective when assessing economic relationships and not relying too heavily on those apparent in the most recent expansion.

An aspect of the current expansion that is of particular importance to the Bank has been the low rate of inflation in recent years (figure 2). Annual Consumer Price Index (CPI) inflation in New Zealand has been lower in the current expansion than in previous expansions. Some of the features outlined above have played a role in explaining persistently low inflation in recent years (although inflation has increased in the past two quarters), and so these explanations will be captured in the relevant section. The Bank has previously collated and presented its understanding of this period of low inflation in speeches² and *Monetary Policy Statements*.

² McDermott (2016) contains a summary of work done by the Bank in recent years to better understand the prolonged period of low inflation. Lees (2016) and Reid (2016) assess the Bank's forecasting performance against other economic forecasters and the Bank's suite of statistical models respectively.



2 Key features of the current economic expansion

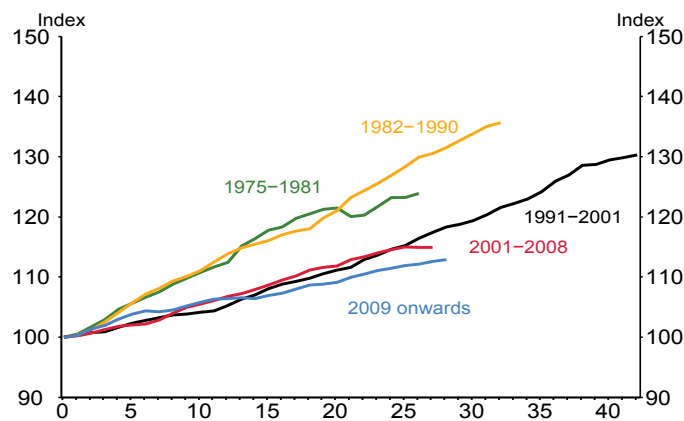
2.1 Prolonged underlying weakness in major advanced economies, and the implications for New Zealand

New Zealand's expansions are heavily influenced by global developments, as expected for a small open economy.^{3,4} The current

³ Recessions in New Zealand are also heavily influenced by global developments. Reddell and Sleeman (2008) argue that each major economic downturn in New Zealand since the 1930s seems to have been triggered in large part by international events.

⁴ Graham (2014) finds that although the global business cycle accounts for only a small proportion of contemporaneous variance in New Zealand's GDP, once lagged effects are taken into account our business cycle is well explained by developments in other countries.

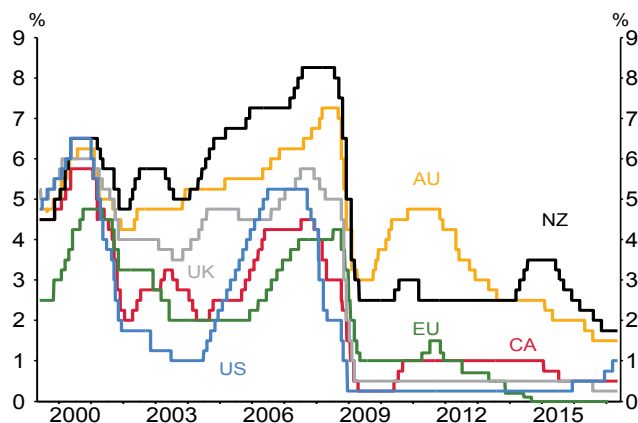
**Figure 3
Real GDP
over OECD
expansions**



Source: OECD, RBNZ estimates.

Note: OECD expansions correspond to periods following global recessions as identified by the IMF (2009), while also including the Dot-Com crash of 2001 that coincided with mild recessions in many advanced economies.

**Figure 4
Policy rates
for selected
advanced
economies**

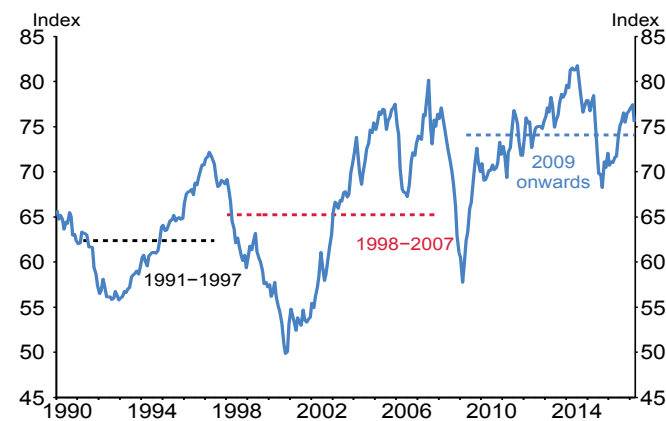


Source: Reuters.

expansion has been significantly affected by underlying weakness in advanced economies post-GFC.

The increase in GDP in the OECD during the current expansion has been somewhat weaker than in previous expansions (figure 3). However,

**Figure 5
Real New
Zealand
dollar
TWI and
expansion
averages**



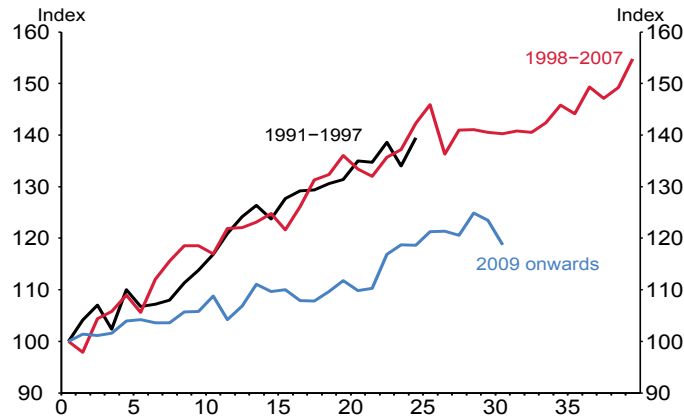
Source: RBNZ estimates. Expansions defined as in figure 1.

focusing solely on GDP ignores the extent to which the expansion has been supported by monetary stimulus⁵ (and in some cases fiscal support) in many of the larger economies (figure 4). The degree of monetary stimulus in some economies is unprecedented; quantitative easing and negative interest rates have become commonplace features of the global economy. The significant amount of monetary stimulus abroad has contributed to the New Zealand dollar TWI being higher during the current expansion than in the past (figure 5), despite interest rates in New Zealand also being very low relative to history.

The underlying weakness in major advanced economies and the related strength in the New Zealand dollar have coincided with slower growth in the volume of goods and services exports in the current expansion than in the previous two (figure 6). Much of the relative weakness in exports in the current expansion is accounted for by services exports (although

5 The policy rates shown in figure 4 do not capture unconventional monetary policies, such as quantitative easing (although these will be reflected in the New Zealand dollar shown in figure 5). The degree of monetary stimulus also depends on the level of the neutral interest rate and expected inflation, which are not captured in figure 4.

Figure 6
Real export volumes in recent expansions



Source: Statistics New Zealand, RBNZ estimates. Expansions defined as in figure 1, shown as quarters from the GDP trough.

these have increased sharply over the past 10 quarters) and exports of metal products, machinery and equipment (figures 7a and 7b).

The high New Zealand dollar during much of this expansion has lowered the domestic price of imports, thereby encouraging substitution away from domestically produced goods and services, and contributing to an increase in import penetration. While the increase in import volumes has been similar to that in previous expansions (figure 8a), weaker aggregate GDP growth means that imports have increased steadily as a share of GDP (figure 8b).

The high exchange rate has significantly dampened tradables inflation in New Zealand in recent years. Tradables inflation has also been dampened by low world prices for our imports, reflecting significant spare capacity in the global economy and continued declines in manufactured goods prices.⁶ As seen in figure 2 on page 5, prices in the tradables

⁶ While the high exchange rate and low global prices for New Zealand's imports have significantly dampened inflation in recent years, Richardson (2015) found no evidence that the pass-through of these factors to inflation in New Zealand has changed since the GFC.

Figure 7a
Real exports of services in recent expansions

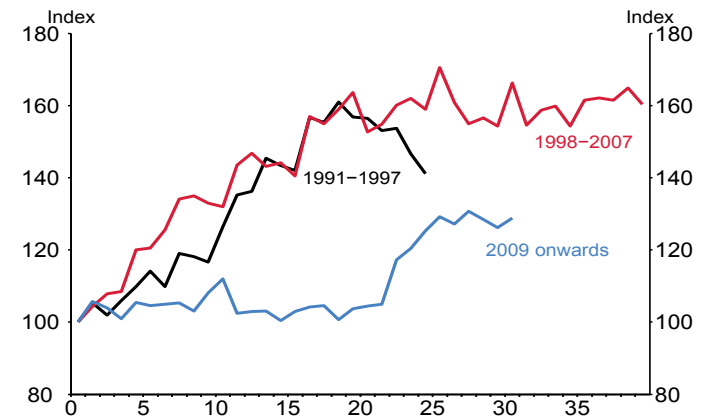
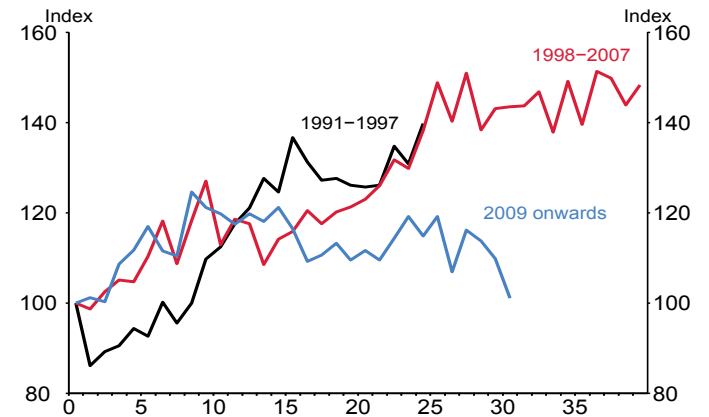


Figure 7b
Real exports of metal products, machinery and equipment in recent expansions



Source: Statistics New Zealand, RBNZ estimates. Expansions defined as in figure 1, shown as quarters from the GDP trough.

sector fell on an annual basis in almost every quarter during the past five years.

This unusually long period of negative tradables inflation, which has in turn accounted for much of the weakness in headline CPI inflation, seems to have had an effect on how households and businesses form

Figure 8a
Real import
volumes
in recent
expansions

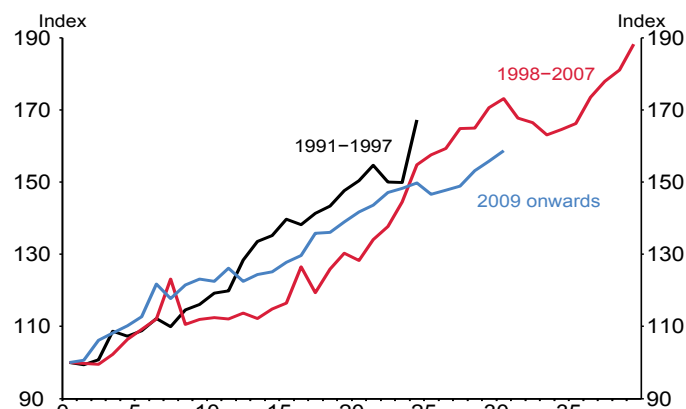
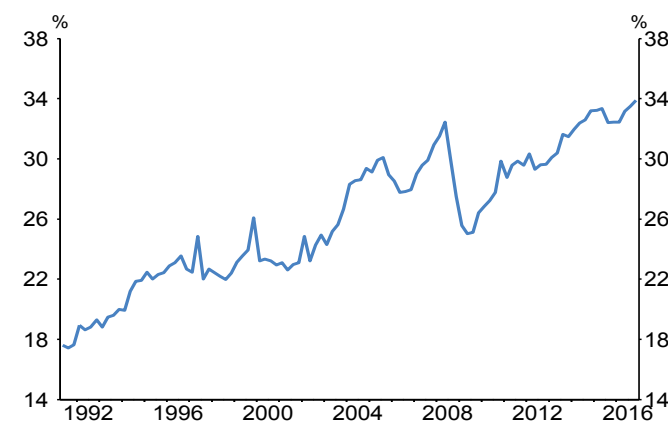


Figure 8b
Real imports
as a share
of potential
GDP



Source: Statistics New Zealand, RBNZ estimates. Figure 8a expansions defined as in figure 1, shown as quarters from the GDP trough.

their expectations of prices. Inflation expectations play a large role in determining how firms set their prices and wages, and on household behaviour. A significant structural change that appears to have occurred during the current expansion is that inflation expectations respond more to actual inflation outcomes than they did prior to the GFC.⁷ That is, price-

and wage-setting behaviour appears to have become more backward-looking.⁸ This suggests that any direct shock to headline inflation – even if the shocks themselves are expected to be short-lived – would appear to have more persistent effects on inflationary pressures than they did in the past, via the expectations channel. The Bank now believes that weak tradables inflation, which largely reflects global developments, has had a greater dampening impulse on general inflation through inflation expectations than would have occurred during previous expansions.

2.2 *New Zealand's increased exposure to emerging Asia, and related developments in the terms of trade*

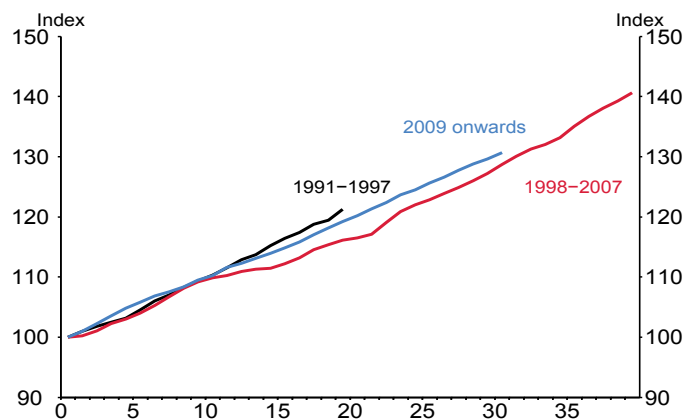
While developments in major advanced economies have had a large influence on the New Zealand economy during the current expansion, New Zealand has at times benefitted from its increasing ties to faster-growing Asia-Pacific economies. Many of these economies are not members of the OECD (The People's Republic of China is a notable example) and are therefore not captured in figure 3 on page 6. When looking at the GDP of New Zealand's trading partners – comprising both advanced and emerging economies, and weighted by trade share – we can see that the increase in GDP has been greater during the current expansion than during the previous one (figure 9).

Part of this increase in trading partner GDP is accounted for by the increasing weight placed on China's GDP during the current expansion, as New Zealand's trade with China has increased substantially. China's share of New Zealand exports (in value terms) has increased from about 5 percent in 2008 to about 18 percent at the end of 2016 (figure 10).

7 Karagedikli and McDermott (2016).

8 In contrast, Drew, Karagedikli, Sethi and Smith (2008) found that inflation expectations had become more forward-looking, and therefore less dependent upon actual inflation outcomes, during the previous business cycle.

Figure 9
Expansions
in real GDP
(New
Zealand's top
16 trading
partners)



Source: Haver Analytics, RBNZ estimates. Expansions defined as in figure 1, and shown as quarters from the GDP trough.

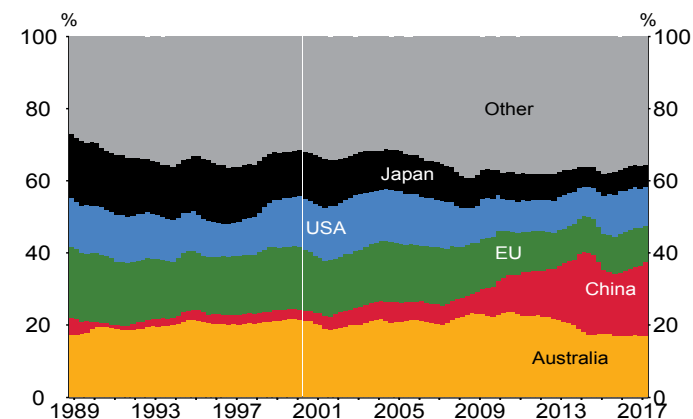
China's increasing share of global output and trade over the past several decades has influenced the New Zealand economy through many direct and indirect channels. Kendall (2014) and Bowman and Conway (2013) discuss the economic linkages between New Zealand and China in detail, and Osborn and Vehbi (2013) estimate the quantitative effect of economic growth in China on New Zealand's GDP.⁹

The continued rise of China as a trading partner during the current expansion has been particularly important for New Zealand's terms of trade. Although the terms of trade have been volatile in the current (GDP) expansion, they have been more favourable than during any economic expansion since the late 1970s (figure 11a), and have continued the upward trend that began in the early-2000s (figure 11b).¹⁰

9 Osborn and Vehbi (2013) find that the accumulated increase in New Zealand GDP from a 1 percent increase in output in China is in the range of 0.2 to 0.4 percent.

10 Steenkamp (2014) discusses volatility in New Zealand's terms of trade since the 1970s and compares this to the experience of other countries, as well as assessing the contributions of export and import prices to this volatility.

Figure 10
Export shares
by country of
destination
(using export
values, annual
total)



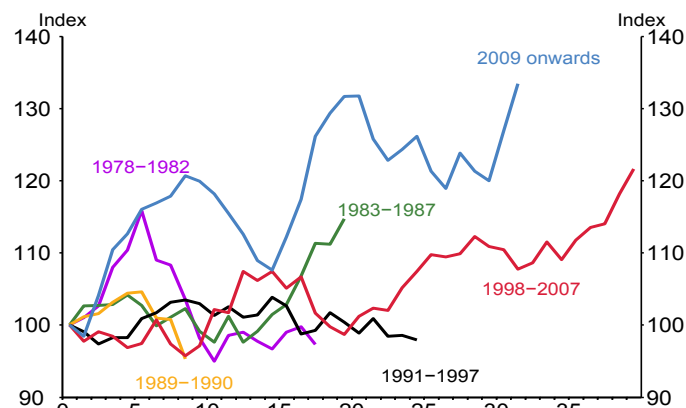
Source: Statistics New Zealand, RBNZ estimates.

The swings in the terms of trade have reflected sharp movements in the international prices of New Zealand's commodity exports and, since mid-2014, lower oil prices. Much of the volatility in New Zealand's terms of trade during the current expansion can be accounted for by global dairy prices (dairy products comprise about one-third of total goods exports). The movements in dairy prices have resulted from shifts in demand and inventory cycles (with China playing a large role), weather-related supply shocks domestically and abroad, and structural changes in large dairy-producing regions such as Europe (where production quotas were removed in 2015 after being in place for nearly three decades).¹¹ The extended period of low dairy prices between 2014 and 2016 contributed to weakness in domestic inflation by dampening confidence, rural spending and investment.¹²

11 Box B of the August 2016 *Monetary Policy Statement* contains some discussion of the structural changes in Europe, as well as global developments in dairy production more broadly.

12 Kamber, Nodari and Wong (2016) estimate the effect of changes in New Zealand's commodity export prices on the economy.

**Figure 11a
Movements in
NZ's terms of
trade (goods)
in recent
cycles (OTI)**



**Figure 11b
NZ terms of
trade (OTI)**



Source: Statistics New Zealand, RBNZ estimates. Expansions defined as in figure 1, shown as quarters from the GDP trough..

2.3 The Canterbury rebuild – less inflationary than initially feared

Against the backdrop of a subdued global and domestic environment in the wake of the GFC, New Zealand's second-largest city was hit by

two large earthquakes in September 2010 and February 2011.¹³ The earthquakes and subsequent rebuild played a significant role in shaping New Zealand's current economic expansion. While the rebuild increased aggregate economic activity, it also clouded the Bank's assessment of underlying capacity pressures in the economy for several years (as noted in Williams, 2017). Residential investment was very weak during the GFC, but increased markedly (and more quickly than in the previous expansion) as reconstruction in Canterbury got under way (figure 12a).¹⁴ Claims on foreign reinsurers arising from the damage caused by the earthquakes also resulted in a large (albeit temporary) decline in New Zealand's net foreign liabilities as a share of GDP (figure 12b), which has since been sustained due to other factors.¹⁵

The global and domestic context in which the rebuild occurred had a large effect on how it evolved and influenced the expansion. The growth impulse provided by the rebuild – despite reflecting the replacement of damaged buildings and infrastructure – meant that New Zealand's economic outlook was more positive than that of other countries, which contributed to upwards pressure on the interest rate outlook and the exchange rate. In addition, the scale of the rebuild required a large increase in the region's labour force, and the Bank was very conscious of the risk to inflation that such strong demand could pose.

In hindsight, although construction costs rose sharply in Canterbury, the degree of spillover in the general level of prices was ultimately much less than the Bank had feared. Domestic and foreign labour market and international immigration policy appear to have been flexible enough to

13 The Canterbury earthquakes and rebuild are discussed in more detail in Box A of Williams (2017).

14 More recently, growth in residential investment has been accounted for by increased construction in Auckland and the rest of the country.

15 Statistics New Zealand (2011) explains how the insurance claims arising from the Canterbury earthquakes have been treated in the international accounts.

Figure 12a
Real residential investment in recent expansions

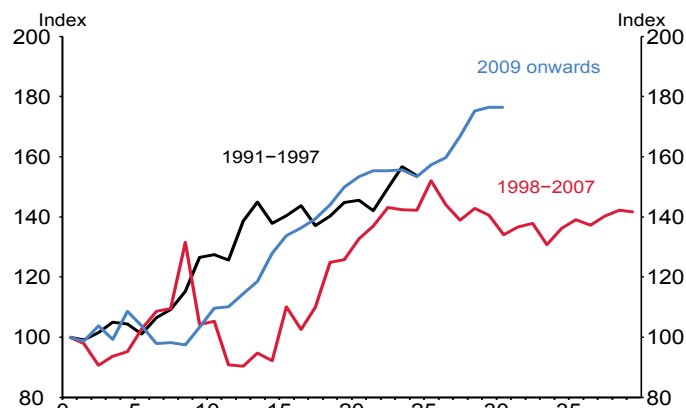
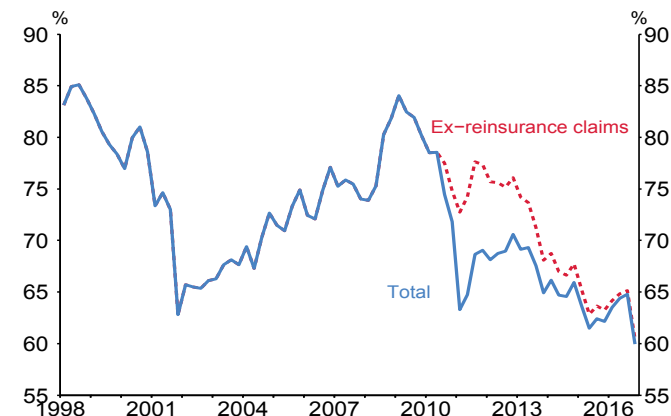


Figure 12b
New Zealand's net foreign liabilities (share of annual GDP)



Source: Statistics New Zealand, RBNZ estimates. Figure 12a expansions defined as in figure 1, shown as quarters from the GDP trough.

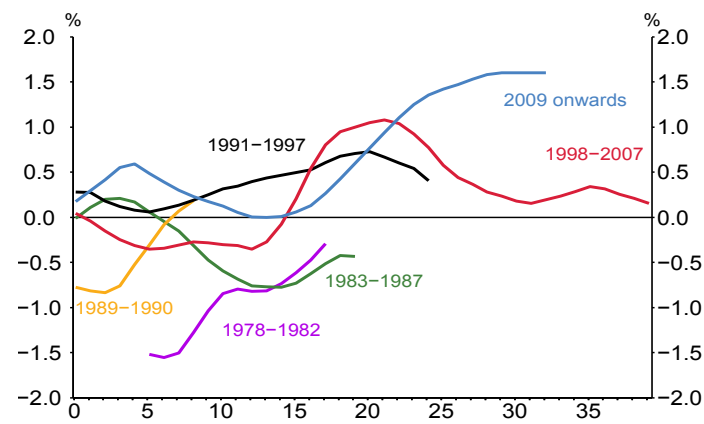
prevent a dramatic increase in national wages and inflationary pressure. The Canterbury rebuild illustrates that New Zealand's interconnectivity with the global economy, including our ability to source both goods and labour from abroad, has important implications for how the economy evolves – even given a purely domestic shock.

2.4 Record high immigration – but seemingly less inflationary than in the past

Another feature of the current expansion has been the surge in net immigration in recent years. Sizable cycles in immigration are a regular feature of the New Zealand economy, but at an annual rate of 1.6 percent of the working age population, the current immigration cycle is much larger than during the previous expansions (figure 13).

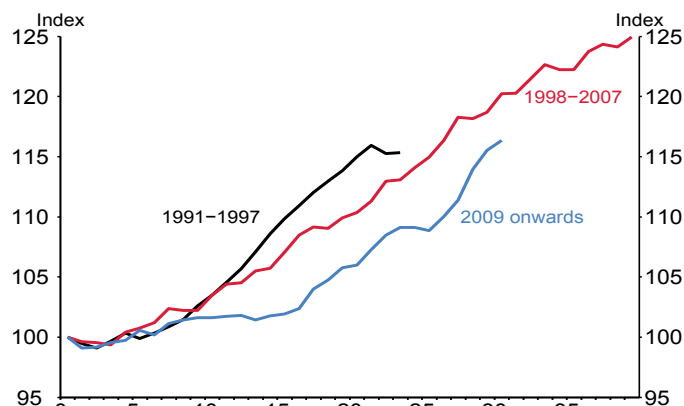
A growing population increases both demand in the economy and potential output (by adding to labour supply). In previous expansions, the increase in demand from net immigration has outweighed the contribution to the supply capacity of the economy. Immigration in previous expansions has therefore typically been associated with an increase in overall capacity pressures and inflation, as well as strong increases in house price inflation.

Figure 13
Net permanent and long-term immigration of working-age persons over recent GDP expansions (annual total, share of the working-age population)

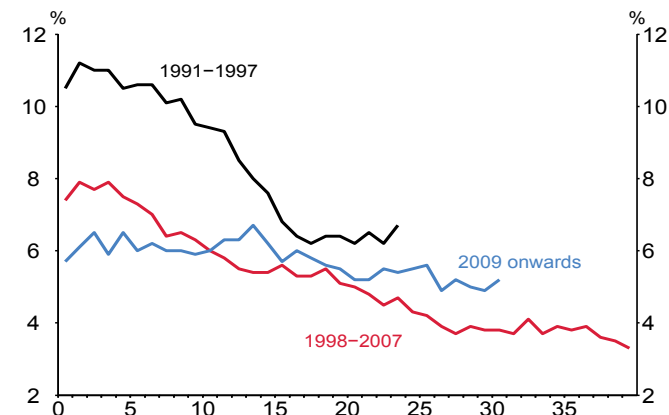


Source: Statistics New Zealand, RBNZ estimates. Expansions defined as in figure 1, shown as quarters from the GDP trough.

**Figure 14a
Employment
over New
Zealand
expansions**



**Figure 14b
Unemployment
rate over
New Zealand
expansions**



Source: Statistics New Zealand, RBNZ estimates. Expansions defined as in figure 1, shown as quarters from the GDP trough.

Recent immigration inflows have also resulted in a net boost to demand and therefore consumer price inflation. However, the degree of inflationary pressure appears much more modest in the current expansion. The Bank has investigated two aspects that could account for this more muted response. First, the current immigration cycle has a larger share of younger migrants than previous cycles, and younger

migrants (17-29 years old) tend to have a smaller impact on net demand, and therefore inflation, than older cohorts (Vehbi, 2016). Second, weakness in the Australian labour market has been a key driver of trans-Tasman flows in the current cycle. Armstrong and McDonald (2016) found that immigration associated with weakness in the Australian labour market resulted in higher unemployment and less inflationary pressure than if migrants were being drawn by the strength of the New Zealand economy, or for other reasons.

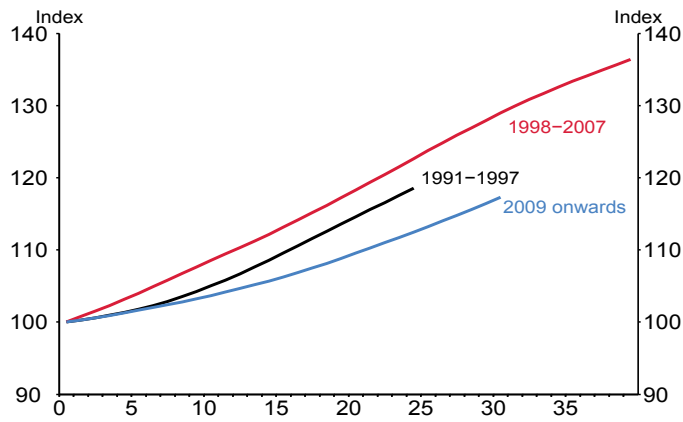
Strong net immigration has added significantly to labour supply in the New Zealand economy over recent years. The labour force participation rate has also increased, and at 70.6 percent in the March 2017 quarter is at a record level. Growth in labour demand – as measured by employment – has also been strong since 2013, particularly so since 2015 (figure 14a). However, employment growth was sluggish in the wake of the GFC. The overall balance between labour supply and demand in the current expansion has seen the unemployment rate decline more slowly than in the previous two expansions, albeit from a lower starting point (figure 14b).¹⁶

2.5 Lower growth in potential output and a continued decline in the neutral rate

The recent increase in net immigration has increased potential output since 2013. Potential output is unobservable, and so inherently difficult to estimate. It is nonetheless an important variable for monetary policy, as fluctuations in real GDP around potential output (known as the 'output

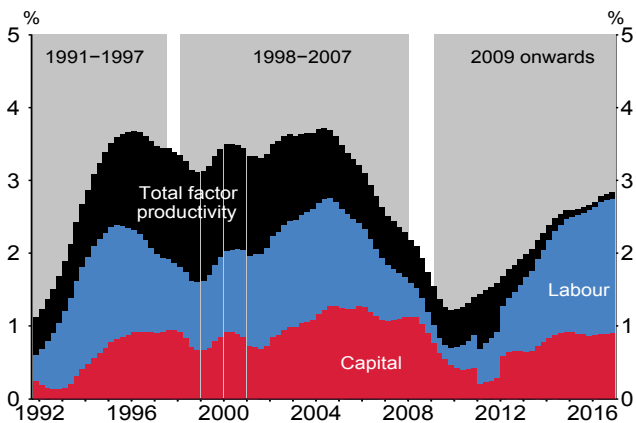
¹⁶ Comparisons between expansions are affected by the redevelopment of the Household Labour Force Survey from the June 2016 quarter; more information can be found at http://www.stats.govt.nz/browse_for_stats/income-and-work/employment_and_unemployment/improving-labour-market-statistics/hlfs-revisions-key-labour-est.aspx.

**Figure 15
Potential
GDP over
New Zealand
expansions**



Source: RBNZ estimates. Expansions defined as in figure 1, shown as quarters from the GDP trough.

**Figure 16
Contributions
to annual
growth in
potential GDP**



Source: RBNZ estimates.

gap¹⁾ are important determinants of domestic inflation.¹⁷ Figure 15 shows that the Bank's estimate of potential output has increased by less during the current expansion than in the past two expansions. Although it has

been weaker overall, it has been stronger than expected in recent years (largely due to stronger than anticipated labour supply) and therefore plays a role in explaining low domestic inflation since mid-2014.¹⁸

Figure 16 shows the Bank's estimates of the contributions of labour, capital and total factor productivity to growth in potential output since 1991. The contribution of capital has been somewhat lower in the current expansion, although in part this reflects some reduction in the capital stock as a result of the earthquakes in Canterbury. Real business investment (which adds to the capital stock) has been slightly weaker in this expansion than in previous expansions, although mainly just in the past 10 quarters (figure 17a). Consistent with this, growth in business sector credit (albeit a nominal variable) has also remained at a lower rate in the current expansion than in the previous one (figure 17b). Discussions from the Bank's business visits programme suggest that many businesses have focused on reducing debt since the GFC.

Productivity growth has slowed considerably since the mid-1990s, and accounts for much of the relative weakness in potential output. The average contribution of productivity growth in the current expansion is less than half of what it was during the past two.

The trend in productivity growth has an influence on another important structural element – the neutral interest rate. The neutral interest rate is the interest rate at which monetary policy is neither adding to nor subtracting from demand in the economy. The Bank needs to understand the extent to which current monetary policy settings are either contractionary or expansionary, to stabilise future inflation around its

17 Lienert and Gillmore (2015) describe the RBNZ's approach to estimating potential output.

18 See figure 9 in McDermott (2016).

Figure 17a
Real business investment in recent expansions

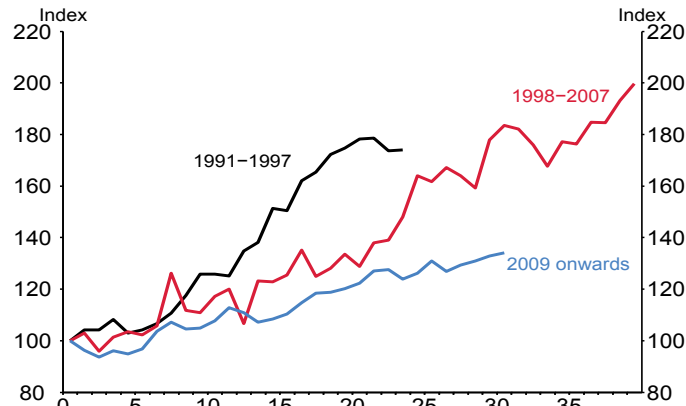
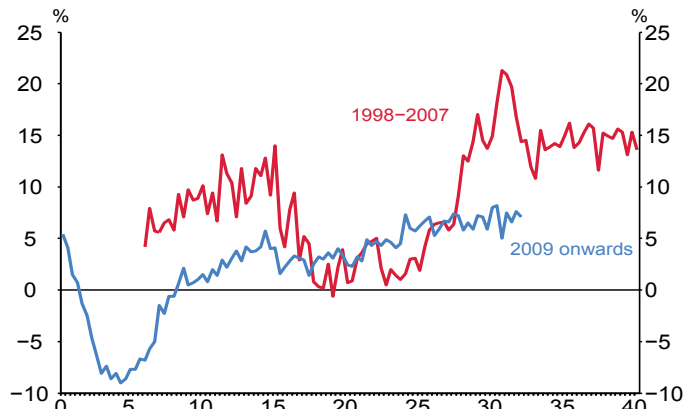


Figure 17b
Business sector credit growth (annual)

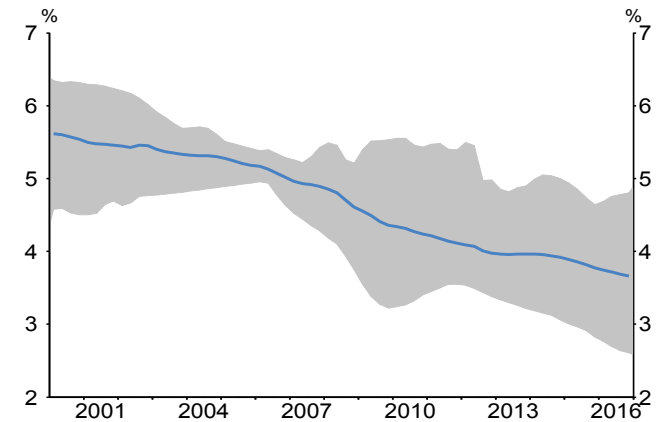


Source: Statistics New Zealand, RBNZ estimates. Expansions defined as in figure 1, shown as quarters from the GDP trough. Figure 17b does not include the 1991-1997 expansion due to data being unavailable.

target.¹⁹ As with potential output, the neutral interest rate is unobservable, and significant judgement is required to estimate its current level. The Bank uses a suite of models to estimate the nominal neutral interest

¹⁹ Richardson and Williams (2015) contains a general discussion of the importance of the neutral rate to monetary policy in New Zealand, and describes the RBNZ's suite of models used to estimate it in real time.

Figure 18
RBNZ suite of nominal neutral OCR



Source: RBNZ. The blue line is the average estimate from the Bank's suite of models. The shaded area represents the range of estimates in each quarter.

rate.²⁰ This suite implies that the nominal neutral interest rate has continued to fall since the GFC, with the mean estimate currently just below 4 percent (figure 18).

Some of the continued decline in the neutral interest rate in the current expansion likely reflects the decline in productivity growth. However, the neutral interest rate is also influenced by many other factors, including the demographic profile of the economy, international developments, and global and domestic preferences for saving and investment.²¹ The apparent decline in the neutral interest rate in the current expansion is not unique to New Zealand; international research suggests that large declines in the neutral interest rate are a common feature of advanced economies since the crisis (with some US commentators suggesting that

²⁰ Inflation expectations, which are used in conjunction with this suite to estimate the real neutral rate, are considered separately – see Lewis (2016).

²¹ McDermott (2013) and Archibald and Hunter (2001) discuss factors that can affect the neutral interest rate.

the real neutral rate in that country has fallen to zero).²² All else equal, a lower neutral interest rate implies that actual policy rates would need to be lower in order to stimulate the economy during cyclical downturns. A lower neutral interest rate also implies that nominal interest rates are more likely to reach the effective lower bound.

2.6 Household consumption – less responsive to housing wealth than in the previous expansion

Real private consumption grew at a similar pace in the earlier part of the current expansion as in the previous two (figure 19a), and increased steadily as a share of GDP (figure 19b). However, growth in real consumption since 2013 has slowed relative to previous expansions. Consumption growth was strong in the June and September quarters of 2016, but it remains to be seen whether such rates of growth will be sustained.

While about its long-run average, growth in real consumption in the latter part of the current expansion has generally been weaker than the Bank initially expected, given population growth, real income growth and house price inflation. In particular, the strong increase in domestic consumption associated with high house price inflation in the previous expansion, partly funded by housing equity withdrawal (figure 19c), has failed to materialise thus far. Growth in housing and consumer credit has also remained lower than in the previous expansion (figure 19d), albeit having started from a higher absolute level.

It is unclear why consumption has been weaker than expected, given developments in its usual drivers, but recent work by the Bank has found that household consumption is less responsive to housing wealth

now than it was in the previous economic cycle.²³ Updated estimates of housing equity withdrawal (shown in figure 19c) also suggest that the previous expansion was unusual in this regard. The Bank initially judged that this relationship between housing wealth and consumption in the previous expansion would be largely maintained, a view that was revised in light of evidence to the contrary.²⁴ As discussed in section 3, this experience has reminded the Bank not to rely too heavily on the relationships between economic variables that were evident in the most recent expansion.

2.7 Fiscal policy – countercyclical during the current expansion

Fiscal policy has played a large role in the current expansion, by providing substantial stimulus in the wake of the GFC, supporting reconstruction in Canterbury, and focusing on consolidation in recent years. This consolidation has been motivated by the benefits of rebuilding fiscal buffers ahead of future shocks, and has meant that fiscal policy weighed on economic growth from 2012.

The pace of consolidation was initially motivated by a number of factors, including the expectation that inflationary pressures were already building in the economy. It was therefore expected that the consolidation would reduce the extent that the Bank would need to raise interest rates, which would in turn place less upwards pressure on the exchange rate.

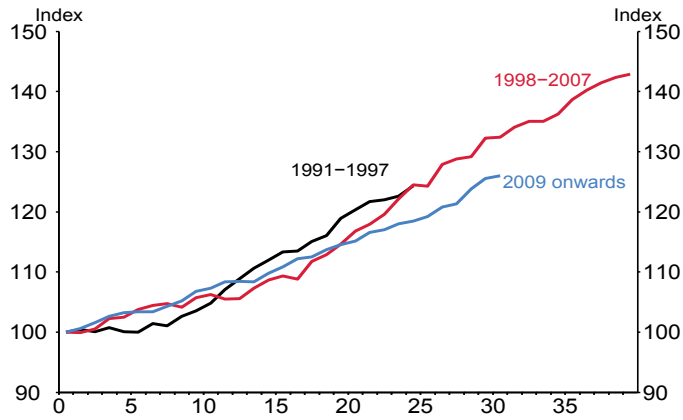
With hindsight, fiscal policy occurred at a time when inflationary pressures were weaker than initially assumed by the Treasury and the Bank. Nonetheless, figure 20 indicates that fiscal policy has been

22 See Holston et al. (2016).

23 Wong (2017).

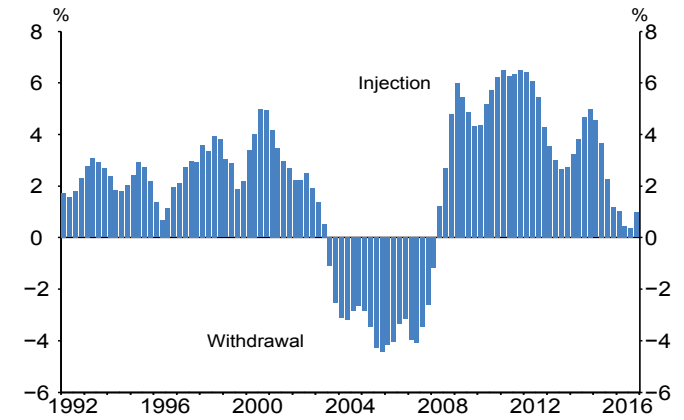
24 Bascand (2016).

Figure 19a
Real household consumption in recent expansions



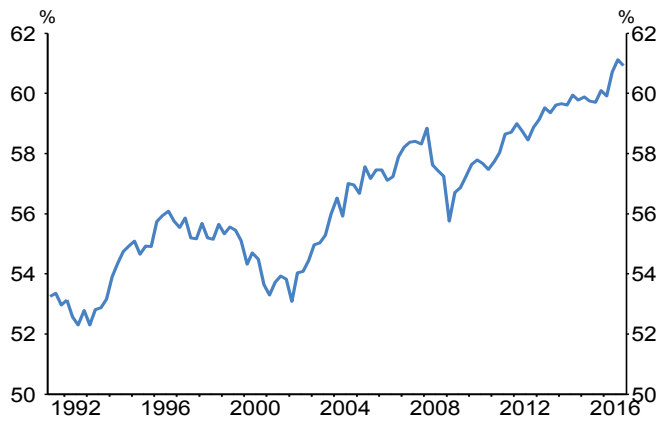
Source: Statistics New Zealand, RBNZ estimates. Expansions defined as in figure 1, shown as quarters from the GDP trough.

Figure 19c
Housing equity withdrawal



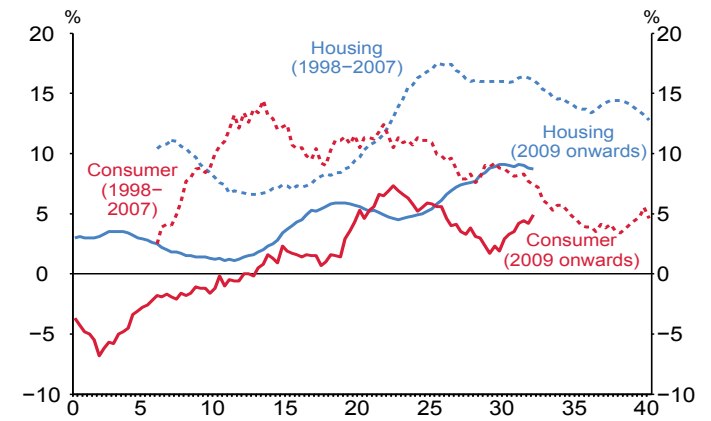
Source: Updated from Wong (2017).

Figure 19b
Real household consumption as a share of potential GDP



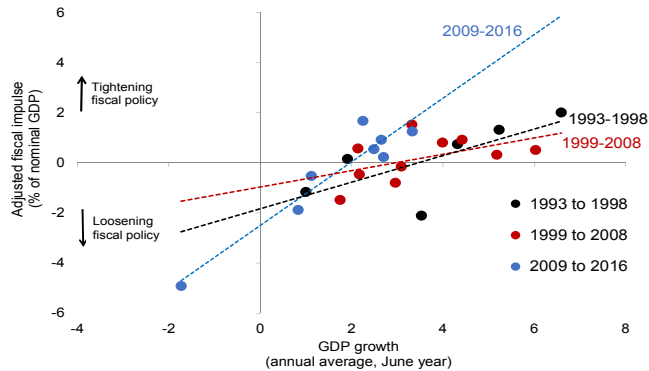
Source: Statistics New Zealand, RBNZ estimates.

Figure 19d
Housing and consumer credit growth (annual) over recent expansions



Source: RBNZ estimates. Expansions defined as in figure 1, shown as quarters from the GDP trough.

Figure 20
Adjusted
fiscal impulse
and GDP
growth
*(dashed lines
show linear
relationship
in each cycle)*



Source: New Zealand Treasury, RBNZ estimates. The adjusted fiscal impulse measure shown here is the headline fiscal impulse measure (core Crown plus Crown entities excluding Southern Response and EQC insurance payments) with the cyclical components (automatic stabilisers) added back in (the headline measure usually published is intended to show the effects of discretionary fiscal policy changes only).

countercyclical during the current expansion. The countercyclical nature of fiscal policy is captured by an upwards slope in the relationship between an adjusted fiscal impulse measure and GDP growth – fiscal policy has tightened as GDP growth has increased.^{25,26} The steeper slope in figure 20 indicates that fiscal policy has been somewhat more countercyclical in the current expansion than in the previous two, at least on the basis of this simple metric.²⁷

25 The motivation for presenting a measure that includes both discretionary fiscal policy and automatic stabilisers is that the overall effect on the economy, and therefore likely inflationary pressures, will depend on both. As automatic stabilisers are naturally countercyclical, figure 19 therefore considers whether discretionary policy has added to or outweighed this countercyclicality.

26 Brook (2013) presents a summary of the literature regarding the stabilisation role of fiscal policy, and discusses the cyclicity of fiscal policy in New Zealand during the last economic expansion.

27 The slope of the blue dotted line is robust to the exclusion of the blue point in the lower left quadrant.

2.8 The introduction of macro-prudential policy and its interaction with monetary policy

A key policy development during the current expansion has been the introduction of macro-prudential tools by the Bank, to address risks posed to financial stability by lending to low-equity borrowers and high house price inflation.²⁸ The introduction of macro-prudential tools – that are essentially prudential tools designed to provide additional buffers that vary with the macro-credit cycle – is novel to the current expansion.

Monetary policy and macro-prudential policy have separate objectives. Monetary policy is primarily concerned with ensuring stability in consumer prices. The objective of macro-prudential policy is to promote stability in the financial system through building resilience during periods of rapid credit growth and rising leverage, by improving bank balance sheets and dampening excessive growth in credit and asset prices (such as housing).^{29,30}

Although these policies have separate objectives, they clearly interact. In 2013, they were working in the same direction; both monetary and macro-prudential policies were acting to reduce growth in house prices. Lower house price inflation with reduced lending at high LVRs meant

28 Williams (2017) provides a brief timeline of developments in these tools; more information can be found at <http://www.rbnz.govt.nz/financial-stability/macro-prudential-policy>.

29 The "Memorandum of Understanding between the Minister of Finance and the Governor of the Reserve Bank of New Zealand" can be found at <http://www.rbnz.govt.nz/financial-stability/macro-prudential-policy/mou-between-minister-of-finance-and-governor-of-rbnz>.

30 While stress tests conducted by the Bank (in conjunction with the Australian Prudential Regulatory Authority) indicated that banks would remain solvent in the event of a severe downturn in the housing market, the tests also highlighted that bank solvency would in part be achieved through reductions in new lending. Such reductions would likely exacerbate the downturn in the housing market and affect other sectors of the economy; a key objective of macro-prudential policy is to dampen such amplification of the financial cycle (see "Response to submissions on adjustments to restrictions on high-LVR Residential Mortgage Lending", available at <http://www.rbnz.govt.nz/-/media/ReserveBank/Files/regulation-and-supervision/banks/consultations/Response-to-lvr-submissions-september-2016.pdf?la=en>).

reduced financial stability risks. For monetary policy, lower house price inflation was also expected to reduce inflationary pressures that were thought to be building. In the September 2013 *MPS*, the Bank estimated that the then newly introduced LVR policy would reduce the outlook for the 90-day interest rate by 30 basis points.

As discussed in Williams (2017), the outlook for inflation weakened from mid-2014. In the face of continued strong increases in house price inflation, low inflation raised the risk that macro-prudential and monetary policy would act on house prices in the opposite direction.³¹ Macro-prudential tools were working to address risks to financial stability by improving bank balance sheets and reducing rapid growth in credit and house prices. But monetary policy needed to be very stimulatory in order to boost activity and increase inflation. Deputy Governor Grant Spencer highlighted the trade-offs in a speech in July 2016 (Spencer, 2016), concluding that “*while the outlook for CPI inflation will ultimately determine the future path of monetary policy, the trade-off against financial stability risk needs to be carefully considered*”. Dunstan (2014) notes that one way the Bank could address tension posed by weak inflation pressure and high house price inflation is by allowing inflation to return to the target mid-point at a slower rate than in the absence of risks to financial stability.

While clause 4(b) of the Policy Targets Agreement was altered in 2012 to instruct the Bank to have regard to financial stability, monetary policy’s regard for financial stability is a long-standing statutory requirement (Kendall and Ng, 2013). Nonetheless, active use of macro-prudential tools in New Zealand – as in many other parts of the world – is new

31 The update to the LVR policy in November 2015 tightened the speed limit for Auckland (particularly for investors) but loosened the speed limit outside Auckland. It is therefore unclear whether the policy change was a net tightening or loosening for New Zealand as a whole with respect to inflationary pressure.

relative to the long history of inflation targeting. The objectives of macro-prudential tools are sometimes opaque and financial stability outcomes are difficult to observe and quantify (see Kamber, Karagedikli and Smith, 2015). Furthermore, and of most relevance to monetary policy, we are only gradually building up experience with these instruments.

That macro-prudential and monetary policies interact is clear. However, it remains an open question as to exactly how co-ordinated decisions on monetary and macro-prudential policy *should* be, in order to provide the most stable backdrop for economic activity in New Zealand and maximise the welfare of its residents.³² Calibration of any trade-off is made particularly difficult by the fact that ‘financial stability’ is not easily defined (although financial *instability* probably is). It is also challenging to estimate the baseline risk of financial instability, given that recent episodes of financial instability in New Zealand are rare. In addition, quantitative estimates of how macroprudential policy intervention may be reducing the risk of financial instability are naturally imprecise.

3 What else can we learn from the current expansion?

The monetary policy narrative contained in Williams (2017) and the key features of this expansion discussed above, have reinforced some broad lessons for monetary policy.³³ The current expansion has reiterated

32 Kamber et al. (2015) note that while the importance of coordination depends on the magnitude of the externalities that each policy has on the other, the materiality of these effects is currently not well understood.

33 Bollard and Ng (2012) discuss some of the lessons from the global financial crisis, which will not be repeated in this review.

the sensitivity of the New Zealand economy to global developments, across both cyclical and structural dimensions, even in the wake of truly domestic shocks such as the Canterbury earthquakes. Experience during the current expansion has also reiterated the difficulties inherent in estimating key unobservables such as potential GDP and the neutral interest rate, as well as imperfectly observed factors such as inflation expectations.³⁴

It is crucial to learn from the past, but the current expansion has reminded forecasters not to rely too heavily on the simple correlations between economic variables that were evident in the most recent expansion. Instead, it is necessary to evaluate the drivers behind developments in economic variables, and take a longer-term perspective when assessing economic relationships (where data availability permits). Two key examples of this are the relationship between net immigration and the output gap, and the relationship between house prices and household consumption.

In the previous expansion, net immigration was associated with significant inflationary pressure, as the effect on demand significantly outweighed the effect on the supply side of the economy. However, as already discussed, the net demand effects of net immigration, in the current expansion appear to have been weaker than in the past, and the Bank has conducted various research to determine why this has been the case. Through much of the period since 2013, the Bank and other forecasters thought that immigration would start to wane shortly. Instead, net immigration in the current expansion has continued to increase. Had the Bank correctly forecast the strength in immigration but been slow to

identify its less-inflationary nature in the current expansion, it is possible that monetary policy could have been tighter than necessary.

As house price inflation began to increase sharply from 2014, the Bank expected to see the increase in household consumption that had accompanied high house prices in the previous expansion (partly enabled by housing equity withdrawal). Recent work by the Bank has found that household consumption is now less responsive to housing wealth than it was in the previous cycle. With the benefit of hindsight it appears that the Bank's initial assumption regarding the relationship between housing wealth and consumption was too strong, and it has subsequently been revised in light of new analysis and extended data.

Conclusion

This article has outlined some of the key features of the current expansion. The New Zealand economy has been affected by the prolonged underlying weakness in major advanced economies via channels such as the exchange rate, trade, and price-setting behaviour. The New Zealand economy has also been influenced by its growing exposure to emerging Asian economies, and by at-times related movements in the terms of trade. The domestic expansion since the GFC was shaped significantly by the Canterbury rebuild, but with hindsight it appears the rebuild was less inflationary than the Bank initially feared. The current expansion has also included the largest net immigration cycle (as a share of the working age population) since at least the late-1970s, but this immigration cycle has been less inflationary than in past expansions.

³⁴ The Bank continues to review its methodology for monitoring these economic factors. See Lewis (2016), Richardson and Williams (2015), Armstrong (2015) and Gillmore and Lienert (2015).

While immigration has contributed to estimates of potential GDP being revised higher in recent years, on the whole growth in potential GDP has been weaker in the current expansion than in the past two. This relative weakness is largely accounted for by weak productivity growth, which is consistent with the (estimated) continued decline in the neutral interest rate since the GFC. The Bank has also found that household consumption now appears less responsive to housing wealth than during the previous expansion. Fiscal policy has been countercyclical during the current expansion. The Bank has also introduced and made alterations to macroprudential policies to address financial stability risks. The Bank continues to build experience with these tools, and best practice coordination with monetary policy remains an open question, here and abroad.

Some of these features (such as the prolonged weakness in advanced economies) have simply been revealed with the passage of time, and some (such as the relationship between housing wealth and consumption) reflect the Bank's evolving understanding of how the economy operates. While the various factors have in some cases been unique to the current expansion, the fact that the Bank and other forecasters have been confronted with unexpected developments or challenges to our current understanding of the economy is nothing new, and should in fact be expected. In an uncertain world, the best monetary policy can do is ensure that it is as robust as possible to this uncertainty. Constant learning through regular review of the economic environment – global and domestic, cycle and trend – enables policy to adjust as quickly as possible when new information comes to light.³⁵

35 McDermott (2017a) discusses policy uncertainty from a central bank perspective. See also McDermott (2017b) on the value of forecasting in an uncertain world.

References

Archibald, Joanne, and Leni Hunter (2001), 'What is the neutral real interest rate, and how can we use it?', *Reserve Bank of New Zealand Bulletin*, 64(3), pp. 15-28.

Armstrong, Jed (2015), 'The Reserve Bank of New Zealand's output gap indicator suite and its real-time properties', *Reserve Bank of New Zealand Analytical Note*, AN2015/08.

Armstrong, Jed and Chris McDonald (2016), 'Why the drivers of immigration matter for the labour market', *Reserve Bank of New Zealand Analytical Note*, AN2016/02.

Bascand, Geoff (2016), 'Changing dynamics in household behaviour: What do they mean for inflationary pressures?', a speech delivered to the Australia National University, 22 November 2016.

Bollard, Alan and Tim Ng (2012), 'Learnings from the Global Financial Crisis', *Reserve Bank of New Zealand Bulletin*, 75(3), pp. 57-66.

Bowman, Scott and Patrick Conway (2013), 'China's Recent Growth and its Impact on the New Zealand Economy', *New Zealand Treasury Working Paper*, WP13/15.

Brook, Anne-Marie (2013), 'Making fiscal policy more stabilising in the next upturn: Challenges and policy options', *New Zealand Economic Papers*, 47(1), pp. 71-94.

Drew, Aaron, Ozer Karagedikli, Rishab Sethi and Christie Smith (2008), 'Changes in the transmission mechanism of monetary policy in New Zealand', *Reserve Bank of New Zealand Discussion Paper*, DP2008/03.

Dunstan, Ashley (2014), 'The interaction between monetary and macro-prudential policy', *Reserve Bank of New Zealand Bulletin*, 77(2), pp. 15-25.

Gillmore, David and Ashley Lienert (2015), 'The Reserve Bank's method of estimating 'potential output'', *Reserve Bank of New Zealand Analytical Note*, AN2015/01.

Graham, James and Amy Wood (2014), 'N-Sync: how do countries' economies move together?', *Reserve Bank of New Zealand Analytical Note*, AN2014/04.

Hall, Viv B. and C. John McDermott (2016), 'Recessions and recoveries in New Zealand's post-Second World War business cycles', *New Zealand Economic Papers*, 50(3), pp. 261-280.

Holston, Kathryn, Thomas Laubach and John C. Williams (2016), 'Measuring the Natural Rate of Interest: International Trends and Determinants', *Federal Reserve Bank of San Francisco Working Paper* 2016-11.

IMF (2009), 'Crisis and Recovery', *World Economic Outlook*, April 2009.

Kamber, Gunes, Gabriela Nodari and Benjamin Wong (2016), 'The Impact of Commodity Price Movements on the New Zealand Economy', *Reserve Bank of New Zealand Analytical Note*, AN2016/05.

Kamber, Gunes, Ozer Karagedikli and Christie Smith (2015), 'Applying an inflation targeting lens to macroprudential policy 'institutions'', *International Journal of Central Banking*, 11(S1), pp. 395-429.

Karagedikli, Ozer and C. John McDermott (2016), 'Inflation expectations and low inflation in New Zealand', *Reserve Bank of New Zealand Discussion Paper*, DP2016/09.

Kendall, Elizabeth (2016), 'New Zealand house prices: a historical perspective', *Reserve Bank of New Zealand Bulletin*, 79(1).

Kendall, Ross (2014), 'Economic linkages between New Zealand and China', *Reserve Bank of New Zealand Analytical Note*, AN2014/06.

Kendall, Ross and Tim Ng (2013), 'The 2012 Policy Targets Agreement: an evolution in flexible inflation targeting in New Zealand', *Reserve Bank of New Zealand Bulletin*, 76(4), pp. 3-10.

Lees, Kirdan (2016), 'Assessing forecasting performance', *Reserve Bank of New Zealand Bulletin*, 79(10).

Lewis, Michelle (2016), 'Inflation expectations curve: a tool for monitoring inflation expectations', *Reserve Bank of New Zealand Analytical Note*, AN2016/01.

McDermott, C. John (2013), 'Shifting gear: why have neutral interest rates fallen?', a speech delivered to the New Zealand Institute of Chartered Accountants CFO and Financial Controllers Special Interest Group in Auckland, 2 October 2013.

McDermott, C. John (2016), 'Understanding low inflation in New Zealand', a speech delivered to the Bay of Plenty Employers and Manufacturers Association, 11 October 2016.

McDermott, C. John (2017a), 'Policy Uncertainty from a Central Bank Perspective', *Australian Economic Review*, 50(1), pp. 103-106.

McDermott, C. John (2017b), 'The value of forecasting in an uncertain world', a speech delivered to the New Zealand Manufacturers and Exporters Association (NZMEA) in Christchurch, 15 May 2017.

Osborn, Denise R and Tugrul Vehbi (2013), 'Empirical Evidence on Growth Spillovers from China to New Zealand', *New Zealand Treasury Working Paper*, 13/17.

Reddell, Michael and Cath Sleeman (2008), 'Some perspectives on past recessions', *Reserve Bank of New Zealand Bulletin*, 71(2), pp. 5-21.

Reid, Geordie (2016), 'Evaluating the Reserve Bank's forecasting performance', *Reserve Bank of New Zealand Bulletin*, 79(13).

Reserve Bank of New Zealand (2016), *August 2016 Monetary Policy Statement*, released 10 August 2016, Reserve Bank of New Zealand.

Reserve Bank of New Zealand (2013), *Memorandum of Understanding between the Minister of Finance and the Governor of the Reserve Bank of New Zealand*, May 2013.

Reserve Bank of New Zealand (2016), *Response to submissions on adjustments to restrictions on high-LVR Residential Mortgage Lending*, September 2016.

Richardson, Adam (2015), 'Can global economic conditions explain low New Zealand inflation?', *Reserve Bank of New Zealand Analytical Note*, AN2015/03.

Richardson, Adam and Rebecca Williams (2015), 'Estimating New Zealand's neutral interest rate', *Reserve Bank of New Zealand Analytical Note*, AN2015/05.

Spencer, Grant (2016), 'Housing risks require a broad policy response', a speech delivered to New Zealand Institute of Valuers, 7 July 2016.

Statistics New Zealand (2011), 'Revised treatment of the Canterbury earthquakes' insurance claims in New Zealand's international and national accounts', Statistics New Zealand, June 2011.

Steenkamp, Daan (2014), 'How volatile are New Zealand's terms of trade? An international comparison', *Reserve Bank of New Zealand Bulletin*, 77(2), pp. 3-14.

Thornley, Michael (2016), 'Financial stability risks from housing market cycles', *Reserve Bank of New Zealand Bulletin*, 79(12).

Vehbi, Tugrul (2016), 'The macroeconomic consequences of the age composition of immigration', *Reserve Bank of New Zealand Analytical Note*, AN2016/03.

Williams, Rebecca (2017), 'Business cycle review: 2008 to present day', *Reserve Bank of New Zealand Bulletin*, 80(2).

Wong, Martin (2017), 'Revisiting the wealth effect on consumption in New Zealand', *Reserve Bank of New Zealand Analytical Note*, AN2017/03.