

Inflation pressures through the lens of the labour market

A speech delivered to Otago University in Dunedin

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By Geoff Bascand, Deputy Governor

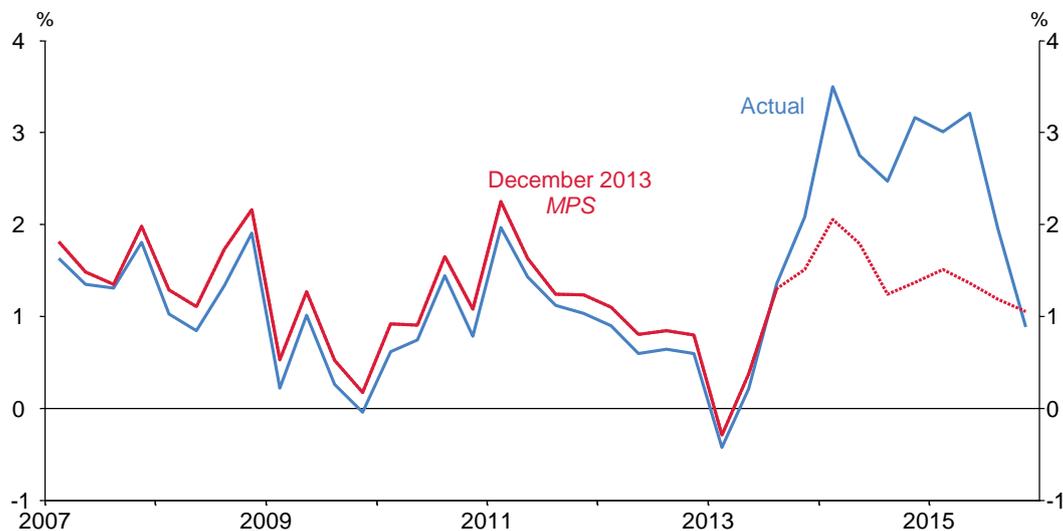
Introduction*

Thank you for inviting me to speak today. It was a pleasure speaking as part of the Visiting Executives Programme last year, and even more so to have been invited back. Today I want to consider inflation pressures through the lens of the labour market. We have seen some extraordinary developments in the New Zealand labour market over the past three years and these pose challenges to our modelling of inflation pressures.

Employment in New Zealand has increased by 180,000 or 8.3 percent over the past three years. In previous periods of very strong employment growth, such as the mid-2000s and the mid-1990s, wage growth accelerated. In the current cycle it has remained moderate. Even in Canterbury, with the demand pressures from rebuilding Christchurch and unemployment falling to around 3 percent last year, wage growth has been modest.

Over the same period, we have experienced the largest recorded surge in immigration in more than 100 years, but without the generalised inflation pressures that accompanied the previous migration wave. The proportion of the population participating in the labour force reached record levels in 2015 and labour force growth has averaged about 2 percent per year since 2012, well above expectation (Figure 1).

Figure 1: Labour force growth



Source: Statistics New Zealand.

The Reserve Bank has undertaken considerable research over the past year on the impact of migration, labour market slack, and wage bargaining by New Zealand businesses. I will discuss what we have learned and the implications for monetary policy.

* I wish to thank my colleagues at the Reserve Bank whose research on the labour market I have drawn upon in preparing these remarks, and in particular Miles Parker and Evelyn Truong. References can be found in the notes.

To cut to the chase, recent low consumer price inflation can be mostly explained by falls in commodity prices and the high New Zealand dollar. However, the higher productive capacity of the economy from rapid growth in the labour force, much of which was unexpected three years ago, explains some of the remaining weakness in inflation.¹ Strong labour force growth has had a moderating influence on wage inflation, and the migration cycle, in particular, has had lower inflationary impact than expected.

I'll begin by discussing how developments in the labour market affect inflation and monetary policy.

Labour supply, demand and monetary policy

Monetary policy works to meet our inflation target by setting interest rates to keep current economic activity close to its long run, sustainable level (i.e. potential output).² When the level of output exceeds potential – that is to say there is a positive output gap – inflation tends to accelerate. Similarly, inflation tends to fall when the level of output is below potential.

There are a number of measures of the output gap, but the balance of labour demand and supply is a central feature in most of them. It determines the cyclical impact on unemployment, wages and consumer prices (this relationship, known as the Phillips curve, was originally specified between wages and unemployment but is now often modelled between consumer price inflation and output).³

There is always some unemployment since it takes time to find a new position and the skills of job seekers may not match up with current vacancies.⁴ For example, many part-time workers in hospitality and retail were made redundant following the Canterbury earthquakes, whereas the vacancies arising from the rebuild are typically full-time construction jobs.⁵

When the level of unemployment deviates from its long-run 'natural rate' it puts pressure on wages, in a similar fashion to the output gap and prices. When unemployment is below its natural rate, additional workers are relatively scarce and businesses will have to increase wages to entice people to seek work (from non-participation) or to move from other businesses. These higher wages increase business costs and put upward pressure on output prices. Indeed, labour costs are the factor most likely to cause price changes according to a recent survey of New Zealand businesses.⁶ Conversely, high unemployment puts downward pressure on wages and prices.

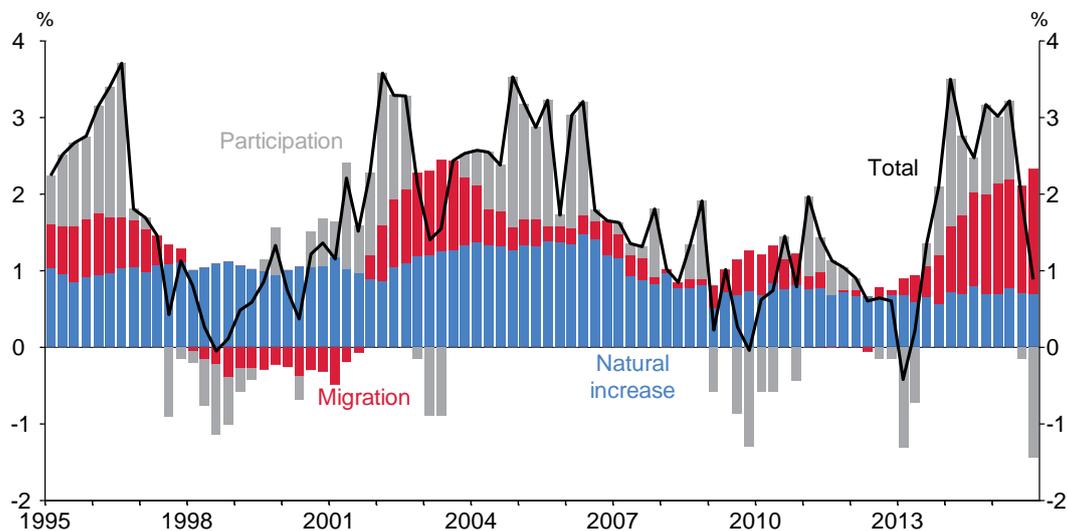
With that framework in mind, we can look more closely at the factors driving the market and the consequences for inflationary pressure.

Labour supply

The labour that is available to be employed (labour supply) is determined by three main factors.⁷ First, is the working age population, itself a function of demographics and migration. Second, is the share of the working age population that participate in the labour force, either by working or by actively seeking work (the participation rate). Third, is the amount of time (number of hours) that people in the labour force are willing to work.

Average hours worked per person have changed little recently. The main drivers of the rapid growth in labour supply are participation and population increase (figure 2).

Figure 2: Components of labour force growth



Source: Statistics New Zealand.

Many of the underlying demographic trends affecting the labour force are slow moving, and do not tend to affect monetary policy decisions from quarter to quarter. They do, however, have bearing on the conduct of policy, affecting long-run supply capacity, potential growth and neutral interest rates, so generally it is appropriate to consider both structural and cyclical forces.

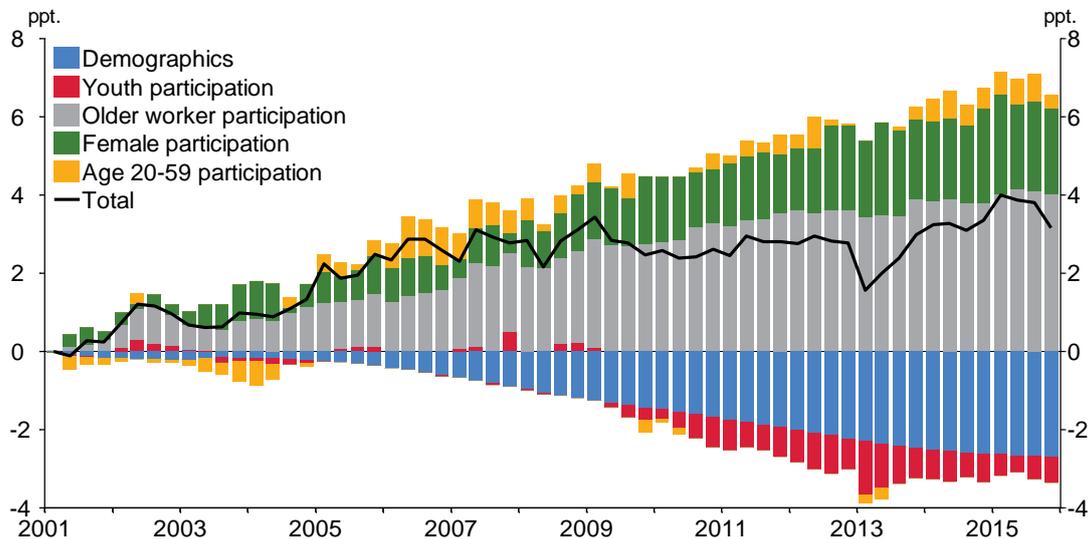
Not so long ago, the then Government Statistician⁸ projected the coming decades would exhibit much slower growth in the labour force and painted a picture of rising labour shortages – albeit over a fifty year horizon. In contrast, labour supply has been growing very rapidly, with cyclical forces dominating the longer-term lower trend.

Participation

The share of the population participating in the labour force, either by working or actively seeking work, has trended higher over the past 15 years, reaching around

69 percent in 2015. The main influences on this trend have been the ageing population, increased participation of older workers, and increased participation of women (figure 3).

Figure 3: Contributions to change in labour force participation since 2001⁹



Source: Statistics New Zealand, RBNZ estimates.

As in many advanced economies, our population is ageing. Because older cohorts, and particularly those past retirement age, have a lower participation rate than the rest of the working-age population, an increase in the proportion of older cohorts, all else equal, decreases the aggregate participation rate.

We've also experienced a significant increase in the participation of older workers, due to improved health and changes to retirement policies that encourage people to remain in the workforce for longer. The participation rate of the over-60s has increased from 14 percent in 2001, to 35 percent currently. This greater participation of older workers has exceeded the negative impact of the ageing population.

Over the past 15 years, the participation rate of females has trended upwards, as social and cultural factors are seeing more women enter the workforce across all age groups. By contrast, the participation rate of men has been broadly stable.

Participation can be cyclical because strong employment and wage growth encourage people to seek work, who otherwise would not choose to participate. Similarly, during downturns when unemployment rises and people spend longer time out of work, some are discouraged from seeking work and no longer participate in the workforce. A recent example of cyclical impact is Canterbury, where the strong rebuild activity encouraged additional workers to join the labour force. Participation in Canterbury rose from 67 percent at end-2011 to around 72 percent at the end of 2015, 4 percentage points above the rest of the country.¹⁰

Research underway at the Bank has identified there are large flows of people from outside the labour force directly into employment. This flow from non-participation

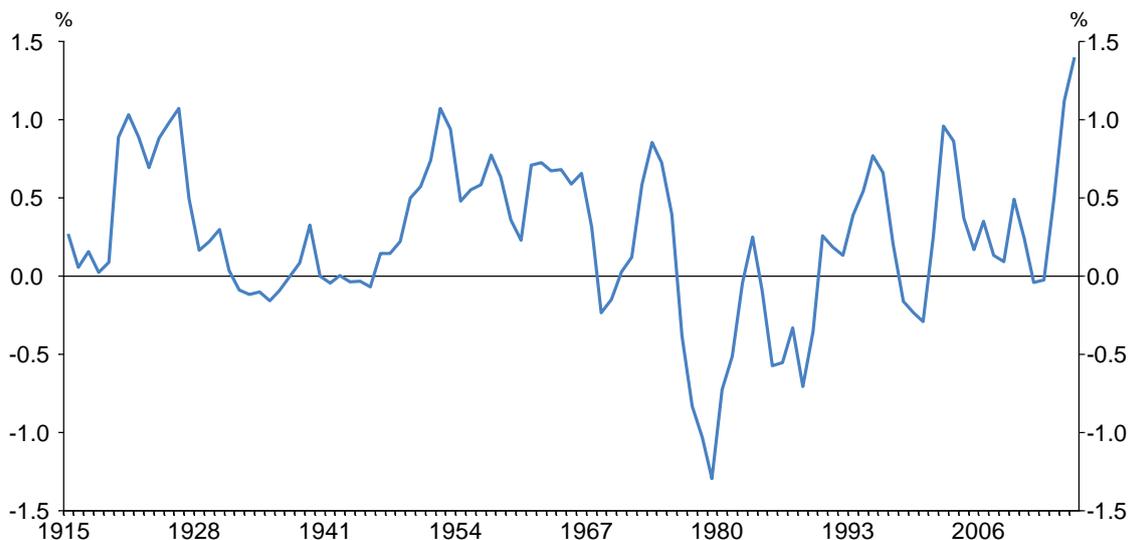
into employment is much higher than that witnessed in other countries.¹¹ Around two thirds of the newly employed – those who are employed in the current quarter but who were not employed in the previous quarter – come from non-participation, while only a third of the newly employed were unemployed in the previous quarter.

One implication is that participation is potentially more sensitive to cyclical variation than previously thought. Another is that the unemployment rate is a weaker indicator of labour market slack and inflationary pressure than previously assumed. I will return to the measurement of slack later.

Population

In recent years, the main driver of population growth has been immigration, which is running at its highest rate for a century (figure 4). Net immigration has added about 130,000 people (3.5 percent) to the working age population in the past three years, and is projected to add a further 120,000 by 2018. Given its importance, I want to explain how migration affects the economy.

Figure 4: Net permanent and long-term immigration as a share of total population



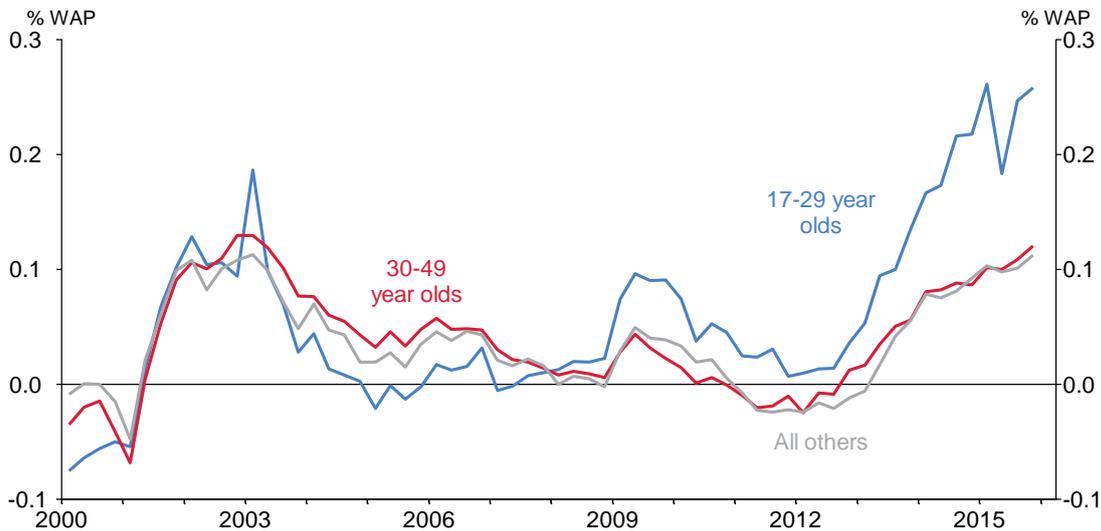
Source: Statistics New Zealand.

Migration increases aggregate demand in the economy. New arrivals require goods and services, and their household spending puts upward pressure on inflation. With housing supply fixed in the near-term, higher demand for housing increases rents and house prices and eventually encourages residential investment. The boost to demand from migrant spending and increasing activity generates additional demand for labour.

However, recent work at the Reserve Bank¹² suggests that the current migrant inflow may be having a smaller impact on demand and inflation than in previous cycles, partly due to the higher share of young migrants (figure 5). The study finds that

younger migrants (17 to 29) have a smaller impact on inflation and real house prices than older migrants. This is probably because younger migrants arrive with fewer financial assets, spend less, and are less likely to purchase a house.

Figure 5: Composition of migrants
(share of working age population)



Source: Statistics New Zealand.

Migration also boosts labour supply. In this cycle, fewer families and more work visas are likely to have boosted migrant participation. While students usually have lower participation, the recent relaxation of rules allowing migrants on student visas to work up to 20 hours per week may have boosted participation.

Since migrants boost both supply and demand in the economy, the net effect on inflationary pressure can be ambiguous. Our historical experience has been that migration increases inflationary pressures in product and housing markets. In the current cycle, however, the migration drivers have been very different and recent research¹³ suggests that these differences matter for labour market outcomes.

In particular, when migration is caused by weakness in the Australian economy (or the rest of the world), it increases labour supply at a time when our businesses are facing lower demand, and hence need less labour. This results in higher unemployment and lower inflationary pressure.

Much of the current surge in net immigration is explained by weakness in the Australian labour market that has made New Zealand a relatively more attractive place to live.

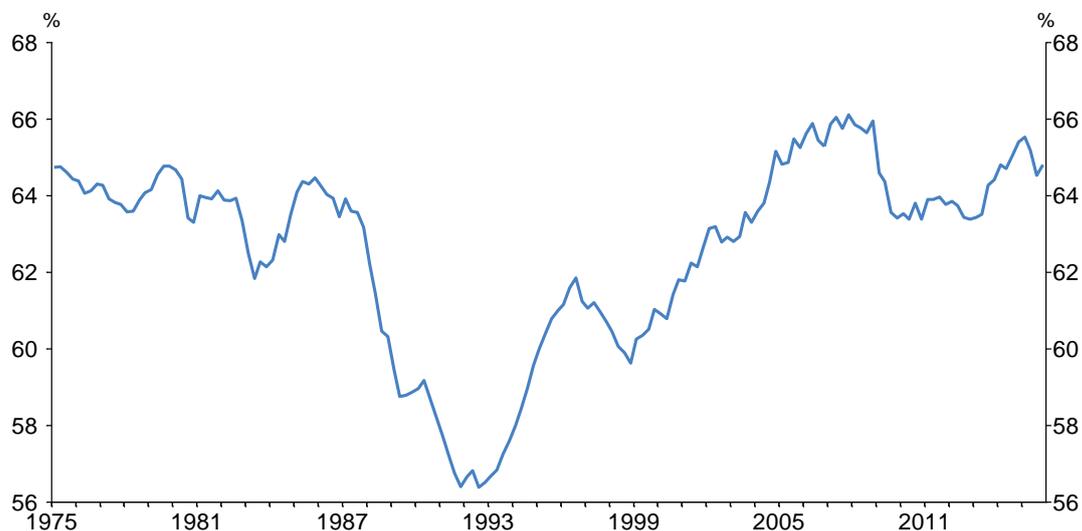
Fewer New Zealanders are departing for Australia, more are returning home, and foreign migrants who may have considered migrating to Australia are coming to New Zealand. The flow of net emigration to Australia has reversed over the past 12 months, and is the largest net inflow for 25 years.¹⁴

The differences in the composition and drivers of migration in the current cycle help explain why inflationary pressures have been more muted than expected.

Labour demand and employment

Following the 2007-08 global financial crisis, employment fell by over 55,000 in 2009. Since then, labour demand has recovered strongly (figure 6) and employment increased by over 8 percent in the past three years, well in excess of historical average growth rates. Higher household consumption arising from strong population and tourism growth and the Canterbury rebuild were major drivers of the employment growth, with jobs in construction accounting for more than a quarter of total jobs growth over the past three years.

Figure 6: Employment as a share of the working-age population



Source: Statistics New Zealand.

Labour market slack, wages, and inflation

Having discussed the underlying causes of the recent strong growth in the labour force, I would like to conclude by discussing the implications for monetary policy.

The labour market most directly influences consumer price inflation through wage outcomes. This is particularly true of non-tradables goods and services, where labour represents a higher share of the total cost of production.¹⁵ Broadly speaking, wage outcomes are determined by three factors: labour productivity, inflation expectations and the balance between the demand and supply for labour.

In the long run, growth in real wages – that is, wage growth beyond the change in consumer prices – should reflect labour productivity. Labour productivity in New Zealand has averaged only 0.8 percent per year since the global financial crisis, thereby limiting the increase in wages due to this factor.

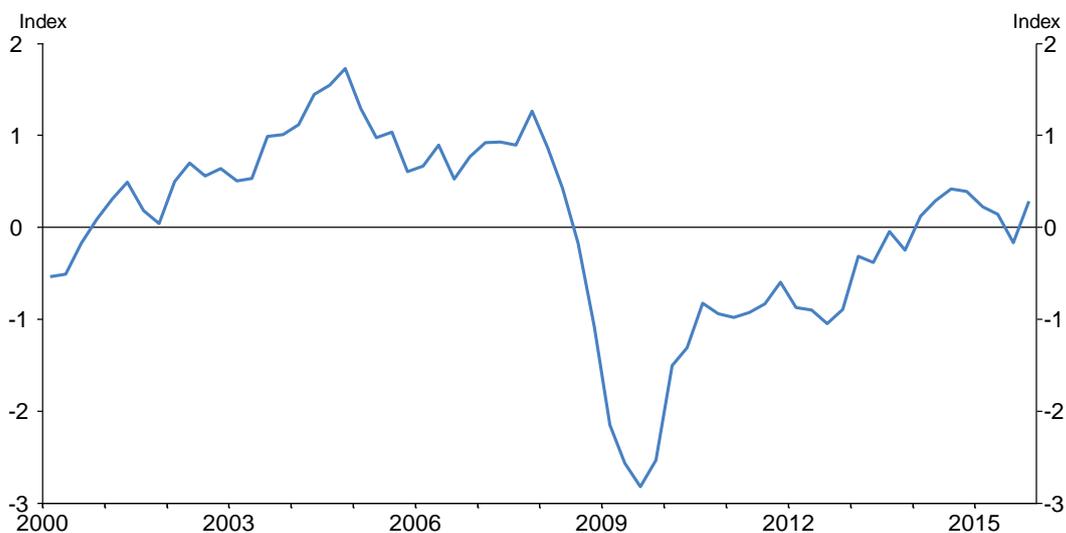
Wages affect consumer prices, but the relationship is complex and flows in both directions. Current and expected rates of consumer price inflation are factored into wage-setting. Recent research by the Bank highlights this relationship, with the majority of businesses, weighted by employees, reporting a direct or indirect link between inflation and wages.¹⁶ Other work has found that wage inflation expectations bear a closer relationship to past inflation outcomes than previously thought.¹⁷ In the March 2016 *MPS*, we expressed concern that recent declines in indicators of inflation expectations could become embedded in low wage settlements, thereby subduing inflation outcomes.

Over the business cycle, a key driver of wage growth is the balance of supply and demand, or labour market 'slack'. However, the unemployment rate is an inadequate indicator of labour market slack, particularly when the participation rate fluctuates. Researchers at the Bank have recently constructed a labour utilisation composite index, or LUCI, to help address this problem. Such indices combine the information in a large number of labour market variables into a single series of labour market tightness, and are used internationally to help gauge labour market pressures.¹⁸ The New Zealand index uses official statistics such as the HLFS and survey measures of the difficulty of finding labour, such as the QSBO.¹⁹

By construction, the LUCI has an average value of zero. A LUCI value above zero indicates greater labour market tightness than usual – a value below zero indicates greater labour market slack than usual. Our research shows that, historically, a higher LUCI has been associated with stronger wage growth.

The LUCI suggests there was a large degree of slack in the labour market at the trough of the 2008-09 recession. The LUCI then gradually returned to zero, and has been around that level since early 2014 (figure 7). This movement is consistent with the range of the Bank's suite of output gap indicators.²⁰ With labour market conditions broadly in balance since 2014, there has been little additional upward pressure on wages recently.

Figure 7: Labour market conditions index

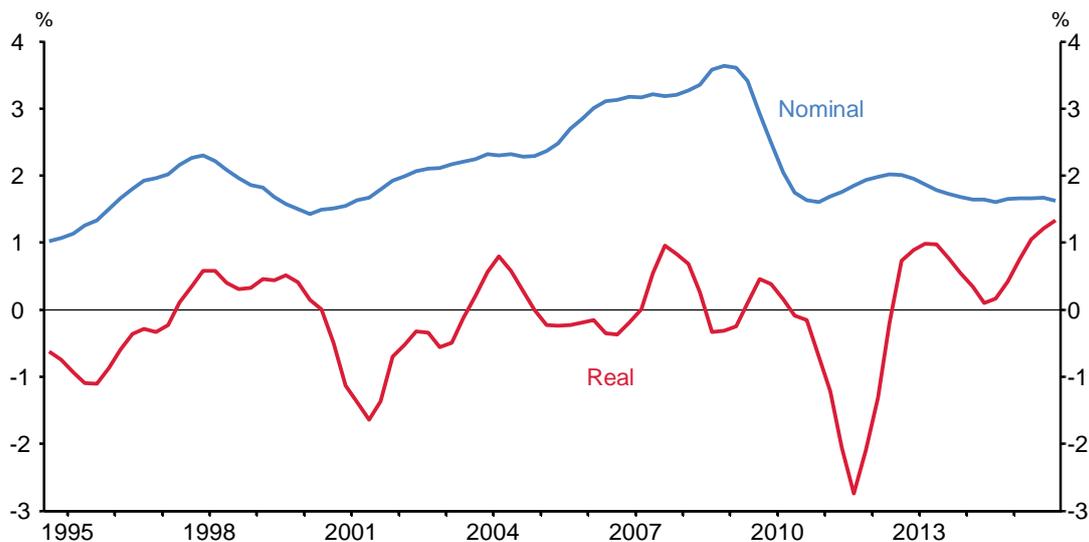


Source: Statistics NZ, NZIER, ANZ Bank, Work and Income New Zealand, RBNZ estimates.

Nominal wage growth is currently around 1.6 percent per annum, noticeably below the rates witnessed in the mid-2000s (figure 8). Current wage growth is consistent with our models and the outturns we have experienced for productivity, inflation expectations and labour market slack.

That current wage growth is lower than we expected two years ago reflects a slower than anticipated reduction in slack due to the unexpected increase in the labour force from migration, weak productivity growth and lower than expected headline inflation, particularly from oil and other tradable prices.

Figure 8: Wage growth (*LCI, all sectors*)



Source: Statistics New Zealand.

Despite the lower nominal wage growth, real wage growth has been historically high. Given the sluggish performance of labour productivity, this high real wage growth likely reflects the downward surprises to headline inflation. In the absence of higher labour productivity growth, these recent increases in real wages are unsustainable in the long run.

Concluding remarks

In the past four years, New Zealand's population has grown by a quarter of a million people, with over half that number coming from overseas. The migration surge has contributed to housing and consumer demand but had less impact on inflation than in previous migration cycles.

The New Zealand economy has expanded steadily since 2011, with strong employment growth. Notwithstanding the 180,000 extra jobs, the unemployment rate has declined only modestly.

The surge in net migration, together with higher labour force participation from women and older workers, has led to rapid labour force growth and an increased

supply capacity of the economy. A new measure of labour market slack (the LUCI) suggests that labour supply and demand are broadly in balance.

Unexpectedly strong growth in labour supply, along with the characteristics of the migration cycle, substantially explains why wage and non-tradables inflation pressures have been weaker than expected. Stronger than expected labour supply, and greater than expected slack, has been a factor in our assessment that it has been appropriate to keep monetary policy accommodative.

In view of the close relationship between labour market dynamics and inflation pressures, we will continue to monitor a broad range of labour market indicators to help inform our monetary policy decisions.

Notes

¹ See **McDermott, J (2015)**, '[The dragon slain? Near-zero inflation in New Zealand](#)', Assistant Governor and Chief Economist, Reserve Bank of New Zealand, speech delivered to the Waikato Chamber of Commerce and Industry and Waikato branch of the Institute of Directors, Hamilton, 23 April.

² Potential output and monetary policy in New Zealand is discussed at length in **McDermott, J (2014)**, '[Realising our potential: Potential output and the monetary policy framework](#)', Speech by John McDermott, Assistant Governor and Chief Economist, Reserve Bank of New Zealand, 9 July.

³ **McDermott (2015)**, *op cit*.

⁴ These frictions are modelled in more detail for New Zealand in **Albertini, J, Kamber, G and Kirker, M (2012)**, 'An estimated small open economy model with frictional unemployment', *Pacific Economic Review*, 17(2): 326-353.

⁵ **Furlanetto, F and Groshenny, N (2012)**, '[Matching efficiency and business cycle fluctuations](#)', Reserve Bank of New Zealand *Discussion Paper*, 2012/06, study the impact of changes in matching efficiency on US business cycles, finding that the impact can vary depending on the type of hiring costs faced by firms. **Craigie, R, Gillmore, D and Groshenny, N (2012)**, '[Matching workers with jobs: how well is the New Zealand labour market doing?](#)', Reserve Bank of New Zealand *Bulletin*, 75 (4, December): 3-12, discuss the New Zealand situation, highlighting the increased matching inefficiency in Canterbury following the major earthquakes there in 2010 and 2011.

⁶ See **Parker, M. (2014)**, '[Price setting behaviour in New Zealand](#)', Reserve Bank of New Zealand *Discussion Paper*, 2014/04.

⁷ Abstracting from considerations about skill levels or the quality of labour input. Given increasing educational attainment, labour's contribution to growth has been stronger than aggregate hours. See **Statistics NZ**, (2008), "Accounting for changes in labour composition in the measurement of labour productivity"

⁸ See **G. Bascand (2012)**, 'Planning for the future: Structural change in New Zealand's population, labour force, and productivity', Government Statistician, Statistics New Zealand, Paper presented at Affording Our Future Conference, Wellington, NZ, December 2012.

⁹ The chart shows the percentage point change in the participation rate since the March 2001 quarter attributable to each of the factors. The contribution from demographic change is calculated by holding the average participation rate of each age cohort fixed, and varying the relative size of each cohort. The contribution from youth participation is calculated by multiplying the change in the participation rate of male 15-19 year olds by the share of both sexes in that age cohort in the working age population in 2001. The contribution from the change in prime-aged (20-59) and older (60+) workers is calculated equivalently. The contribution from female participation is calculated by multiplying the increase in female participation *beyond* the change in the male participation rate by the share of females in the working age population.

¹⁰ The Canterbury rebuild is discussed in more detail in **Wood, A, Noy, I and Parker, M (2016)** '[The Canterbury rebuild five years on from the Christchurch earthquake](#)', Reserve Bank of New Zealand *Bulletin*, 79 (3, February).

¹¹ See, for example, **Elsby, M, Bart Hobijn, B and Sahin, A (2013)**, 'On the importance of the participation margin for market fluctuations', Federal Reserve Bank of San Francisco *Working Paper Series*, 2013-05 and **Gomes, P (2009)**, 'Labour market flows: facts from the United Kingdom, Bank of England *Working Paper*, 367.

¹² **Vehbi, T**, 'The macroeconomic impact of the age composition of migration', Reserve Bank of New Zealand *Analytical Note* 2016/03.

¹³ **Armstrong, J and McDonald, C**, 'Why the drivers of migration matter for the labour market', Reserve Bank of New Zealand *Analytical Note* 2016/02.

¹⁴ Over the last 35 years, New Zealand has lost, on average, 16.5 thousand people per year through net emigration to Australia. In the past 12 months New Zealand gained 1600 people from Australia.

¹⁵ **Dunstan, A, Matheson, T and Pepper, H (2009)**, 'Analysing wage and price dynamics in New Zealand', Reserve Bank of New Zealand *Discussion Paper*, 2009/06.

¹⁶ See **Armstrong, J and Parker, M (2016)**, 'How wages are set: evidence from a large survey of firms', Reserve Bank of New Zealand *Discussion Paper*, 2016/03.

¹⁷ **Lewis, M., McDermott, J., and Richardson, A.**, (2016), 'Inflation expectations and the conduct of monetary policy in New Zealand', Reserve Bank of New Zealand *Bulletin*, 79 (4, March).

¹⁸ See **Yellen, J (2014)** 'Labour market dynamics and monetary policy', Chair, Board of Governors of the Federal Reserve System, Speech given at the Federal Reserve Bank of Kansas City Economic Symposium, Jackson Hole, for the use of an LUCI in the context of monetary policy discussions in the United States. The construction of the US LUCI is detailed in **Hakkio, C and Willis, J (2013)**, 'Assessing labor market conditions: the level of activity and the speed of improvement', Federal Reserve Bank of Kansas City, *The Macro Bulletin*, July 18.

¹⁹ See **Armstrong, J, Kamber, G and Karagedikli, O (2016)**, 'Developing a labour utilisation composite index for New Zealand', Reserve Bank of New Zealand *Analytical Note*, 2016/04.

Preliminary analysis of Statistics NZ's new experimental monthly filled job series suggests it improves the LUCI and provides an earlier indication of changes in labour market slack.

²⁰ See **Armstrong, J (2015)**, 'The Reserve Bank of New Zealand's output gap indicator suite and its real-time properties', Reserve Bank of New Zealand *Analytical Note*, 2015/08.