



# Reserve Bank of New Zealand Analytical Notes

## Low wage growth and job-to-job transitions: Evidence from administrative data in New Zealand

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## Non-technical Summary

Low wage growth since the global financial crisis (GFC) has puzzled policymakers in New Zealand and around the world. Annual wage inflation in New Zealand declined from 2012 to 2017, despite the unemployment rate trending down since 2012.

We find that a compelling explanation for low wage inflation since the GFC is the relatively low number of people switching jobs. People who move from one job to another often receive higher wage offers than unemployed job-seekers. With less people moving from job-to-job, fewer people have received higher wage offers. Overall wage growth has therefore remained weaker than looking at the unemployment rate alone would suggest.

Understanding the link between job switching and low wage inflation supports both elements of the Reserve Bank's dual mandate. Job switching offers a more comprehensive view of labour market slack than is offered by standard measures such as the unemployment rate. In addition, the effect of low job-to-job movements on wages is another factor helping us understand low CPI inflation since the GFC.

## 1. Introduction<sup>1</sup>

Low wage growth has puzzled policymakers in New Zealand and around the world. In this *Note* we show that low wage growth in New Zealand since the Global Financial Crisis (GFC) is strongly associated with the slow recovery of job-to-job transitions (people who change jobs, without becoming unemployed in-between).

Usually when economists predict wage inflation they use models which focus on the unemployment rate. This makes sense – when there are fewer unemployed people, firms have to compete more to fill vacancies. This competition should push up wages.

The unemployment rate has recently been very low in New Zealand, and the Reserve Bank has been puzzled that until around 2017, wage inflation was actually trending down (figure 1).<sup>2</sup> Even the recent uptick in wages since mid-2017 has been largely driven by administrative changes to minimum wages and wage settlements.

One explanation for low wage inflation is that models which focus on unemployment ignore a large portion of people who firms can hire. Often, firms will hire people who already have jobs, creating a job-to-job transition. These people are not unemployed, and they often receive higher wage offers than unemployed job-seekers (Karagedikli, 2018).

**Figure 1: Unemployment rate (inverted) and wage inflation in New Zealand**



Note: Wage inflation measure is the adjusted private sector measure from the LCI, published by Stats NZ.

Source: Stats NZ, author estimates.

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<sup>2</sup> Richardson (2019) outlines the various explanations for low wage inflation that the Reserve Bank has explored and incorporated into our frameworks. These include low global inflation weighing on domestic price and wage-setting behaviour, high net immigration reducing wage pressures, and wage-setting behaviour becoming backward-looking (which adds persistence to already low wages). Job-to-job transitions are another piece of the low-inflation puzzle.

In this *Note* we show that a model which includes job-to-job transitions, in addition to unemployment, is more robustly associated with wage inflation in New Zealand. Essentially, we argue that less people have been making job-to-job transitions since the GFC, which has led to less people are receiving wage increases, and therefore overall wage inflation has remained weak, even though the unemployment rate is very low.

**The accompanying Technical Appendix outlines in more detail the statistical techniques that we use to reach our conclusions.**

## 2. Why does understanding low wage inflation matter for the Reserve Bank?

The Monetary Policy Committee is tasked by the [remit](#) to maintain price stability and support maximum sustainable employment. Wage inflation impacts both aspects of the Reserve Bank's dual mandate. On the inflation side, if wage inflation is low then we would expect overall CPI inflation also to be low. Wages make up a significant portion of firms costs and therefore play a key role in their pricing decisions.

On the employment side, the persistently weak wage inflation that we have seen since the GFC could be an indication that employment is below its maximum sustainable level.<sup>3</sup> Usually, strong wage inflation is seen as the outcome of a tight labour market (that is, employment near or above its maximum sustainable level). However, if wage inflation is subdued despite low unemployment, this could indicate that there are pockets of labour market slack that are not picked up by the standard measures.<sup>4</sup>

## 3. What do we already know about job-to-job transitions?

Economists have long thought that people who look for jobs whilst still employed (a term called on-the-job search) are important for understanding wage inflation in the economy (Tobin, 1972). However, it is only recently that developments in data collection have allowed us to accurately measure job-to-job transitions. Job-to-job transitions are the outcome of people who are conducting on-the-job search filling a job vacancy, without any spell of unemployment between jobs.

Studies have found that the number of job-to-job transitions is much larger than the number of people who move from unemployment into employment. In New Zealand, for example, the number of job-to-job transitions is 5-6 times the number of people moving from unemployment to employment (Karagedikli, 2018). In the US, 40 percent

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<sup>3</sup> As noted in the May 2018 [Monetary Policy Statement](#), 'The Reserve Bank interprets the term 'maximum sustainable employment' to mean the highest utilisation of labour resources that can be maintained over time.'

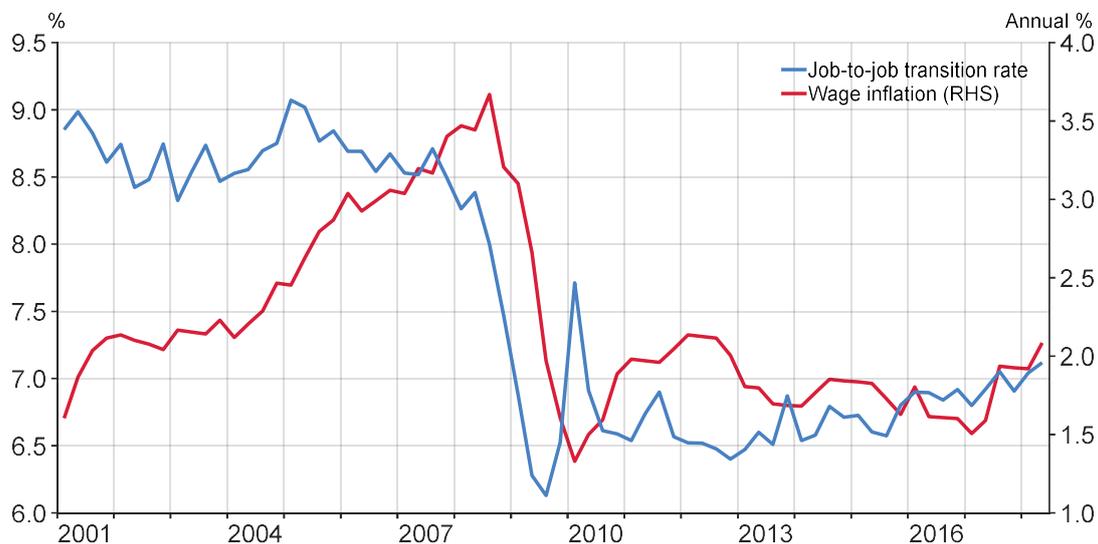
<sup>4</sup> This point is one reason why the Reserve Bank monitors a large range of labour market indicators when forming its assessment of maximum sustainable employment (Robinson, Culling, and Price, 2019).

of all job-vacancies are filled by people moving from job-to-job – people who are not recorded in unemployment data (Fallick and Fleischman, 2004).

Given the size of these job-to-job transitions, it is not surprising that the academic literature has found that job-to-job transitions are very important for understanding wage growth. For example, Karahan et al. (2017) show that “wage growth is tightly linked to variation in the [job-to-job] transition probability” (p. 353).

In New Zealand, Karagedikli (2018) shows that job-to-job transitions are able to forecast wage inflation and non-tradables inflation significantly better than standard measures of labour market slack, including the unemployment rate, unemployment gap, and output gap. Karagedikli (2018)’s finding makes sense when we look at the aggregate job-to-job transition rate compared to wage inflation since the GFC (figure 2).

**Figure 2: Job-to-job transition rate and wage inflation in New Zealand**



Note: job-to-job transition rate is the proportion of employed people who move from job-to-job. This aggregate data is from the Linked Employer and Employee Data, published by Stats NZ.

Source: Stats NZ, author estimates.

#### 4. How do we test if job-to-job transitions can explain low wage growth in New Zealand?

We replicate the approach of Karahan et al. (2017) using New Zealand data. To test whether job-to-job transitions explain low wage growth in New Zealand, we estimate two models. In the first one, we predict wage growth using the proportion of unemployed people who find jobs each quarter – this is the standard measure that most economic models use to predict wages. In the second model, we add job-to-job transitions to the model, and see what happens to our prediction for wage growth. We use regional-level data, which gives us substantially more data points than using

aggregate data, as in Karagedikli (2018). The technical appendix provides more information about these data and the modelling techniques used in this *Note*.

### 5. So what do our models tell us?

Our models confirm that job-to-job transitions are important for understanding wage inflation in New Zealand. Table 1 shows the impact of unemployment to employment transitions and job-to-job transitions on wages. We divide our sample into two:

1. New hires are people who start a new job between one quarter and the next.
2. Stable earners are employees who remain in the same job from one quarter to the next.

Table 1 shows that when we only look at unemployment to employment transitions, this measure appears to be a significant determinant of wages – both for new hires and stable earners (columns marked 1). However, when we include job-to-job transitions in the model, we find that job-to-job transitions are a highly significant determinant of wage growth for new hires. We estimate that a 1 percentage point increase in the job-to-job transition rate is associated with a 1.50 percent increase in earnings for new hires.<sup>5</sup>

In contrast to previous work by Karahan et al. (2017), we find that unemployment to employment transitions are still significant at explaining wage growth once we control for job-to-job transitions. However, job-to-job transitions have a much larger and more significant impact on wages for new hires.

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<sup>5</sup> One concern we had is that the GFC is in the middle of our sample. While the panel regression method we use does allow us to control for events like recessions, the controls may not capture all of the impact. We re-estimated the models for pre- and post-GFC samples, and found that the headline results were robust to the time period analysed.

**Table 1: Main Results: Impact of job flows on wages by type of employment**

| Model                                  | New hires            |                       | Stable earners       |                      | All                   |                       |
|--|----------------------|-----------------------|----------------------|----------------------|-----------------------|-----------------------|
|  | (1)                  | (2)                   | (1)                  | (2)                  | (1)                   | (2)                   |
| Unemployment to employment transitions | 0.5440**<br>(0.1982) | 0.3877*<br>(0.2048)   | 0.1424**<br>(0.0531) | 0.1437**<br>(0.0526) | 0.3813***<br>(0.1281) | 0.2888**<br>(0.1344)  |
| Job to job transitions                 |                      | 1.4987***<br>(0.3439) |                      | -0.0133<br>(0.1212)  |                       | 0.8874***<br>(0.4454) |
| Number of observations: 1184           |                      |                       |                      |                      |                       |                       |

Note: standard errors in parentheses.

\*\*\* Significant at the 1 percent level.

\*\* Significant at the 5 percent level.

\* Significant at the 10 percent level.

## 6. What do our results mean for the Reserve Bank?

Similar to Karahan (2017), our results confirm that wage dynamics are tightly, and robustly, associated with job-to-job transitions in New Zealand. The weakness we have seen in aggregate wage inflation is consistent with fewer people switching jobs since the GFC.

Work remains to be done on job-to-job transitions. Now that we know that these transitions are important for wage dynamics, we need to understand what drives the decision to conduct on-the-job search. And, we need to think about how we best incorporate job-to-job transitions into our overall modelling and forecasting frameworks, to support the Monetary Policy Committee's assessment of the labour market.

## References

- Fallick, B, and C Fleischman (2004) 'Employer-to-employer flows in the U.S. labor market: the complete picture of gross worker flows', Board of Governors of the Federal Reserve System (US), *Finance and Economics Discussion Series*, 2004-34.
- Karagedikli Ö (2018) 'Job-to-job flows and inflation: Evidence from administrative data in New Zealand', *RBNZ Analytical Note*, AN2018/09.
- Karahan, F, R Michaels, B Pugsley, A Şahin, and R Schuh (2017) 'Do job-to-job transitions drive wage fluctuations over the business cycle?' *American Economic Review*, 107 (5), 353–357.
- Moscarini, G, and F Postel-Vinay (2016) 'Wage posting and business cycles', *American Economic Review*, 106 (5), 208–213.
- Richardson, A (2019) 'New Zealand wage inflation post-crisis', *Reserve Bank of Australia 2019 Annual Conference 'Low Wage Growth'*, Reserve Bank of Australia.
- Robinson F, J Culling, and G Price (2019), 'Evaluating indicators of labour market capacity in New Zealand', *RBNZ Analytical Note*, AN2019/09.
- Tobin, J (1972) 'Inflation and Unemployment', *American Economic Review*, 62 (1), 1–18.

## Integrated Data Infrastructure Disclaimer

The results in this report are not official statistics, they have been created for research purposes from the Integrated Data Infrastructure (IDI) managed by Statistics New Zealand. Access to the anonymised data used in this study was provided by Statistics NZ in accordance with security and confidentiality provisions of the Statistics Act 1975. Only people authorised by the Statistics Act 1975 are allowed to see data about a particular person, household, business or organisation and the results in this paper have been confidentialised to protect these groups from identification.

Careful consideration has been given to the privacy, security and confidentiality issues associated with using administrative and survey data in the IDI. Further detail can be found in the Privacy impact assessment for the Integrated Data Infrastructure available from [www.stats.govt.nz](http://www.stats.govt.nz).

The results are based in part on tax data supplied by Inland Revenue to Statistics NZ under the Tax Administration Act 1994. This tax data must be used only for statistical purposes, and no individual information may be published or disclosed in any other form, or provided to Inland Revenue for administrative or regulatory purposes.

Any person who has had access to the unit-record data has certified that they have been shown, have read, and have understood section 81 of the Tax Administration Act 1994, which relates to secrecy. Any discussion of data limitations or weaknesses is in the context of using the IDI for statistical purposes, and is not related to the ability of these data to support Inland Revenue's core operational requirements.