New Zealand wage inflation post-crisis

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Abstract

Nominal wage and consumer price inflation have been subdued in New Zealand post crisis, particularly since 2012. This paper discusses a number of candidate explanations for these muted nominal wage inflation outcomes. The most notable explanations include: a gradual absorption of spare capacity amongst New Zealand's major trading partners; sharp declines in oil and export commodity prices in 2014/15; a significant rise in labour supply, and less inflationary pressure stemming from migration; and a change in price setting behaviour, with inflation expectations becoming more adaptive. This paper also summarises early work using micro-data that offer further insights into the drivers of low nominal wage inflation. A slow rate of job-to-job transitions helps explain some of the weakness in nominal wage inflation. In contrast, preliminary analysis suggests changes in labour market monopsony power of firms do not look to be a significant driver of low wage inflation in New Zealand.[1]

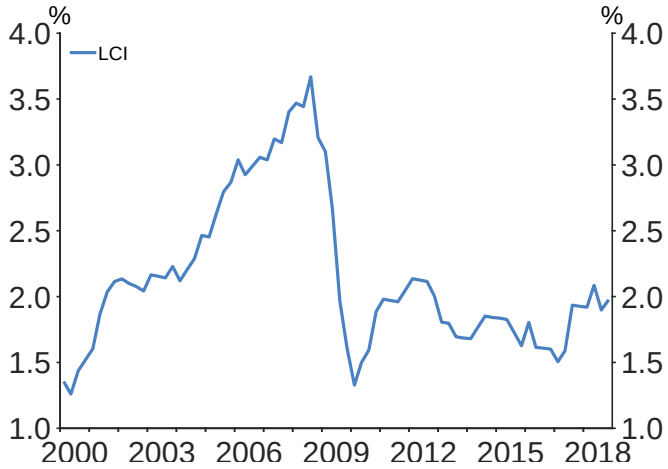
1 Introduction

Measures of the nominal cost of labour to firms have grown slowly in New Zealand since 2009. Figure 1 presents growth in New Zealand's Labour Cost Index (LCI). The LCI measures the amount firms have to pay to have the same job done to the same standard. LCI inflation has tracked below 2 percent for much of the period since 2013. This trend is mirrored in measures of growth in unit labour costs in New Zealand. [2]

[1] The views expressed in this paper are those of the author and do not necessarily reflect the views of the Reserve Bank of New Zealand.

[2] Measures of growth in nominal household labour earnings have also been persistently low in comparison to historical growth rates. However, growth in the real purchasing power of worker's wages has been strong, relecting low rates of consumer price inflation.

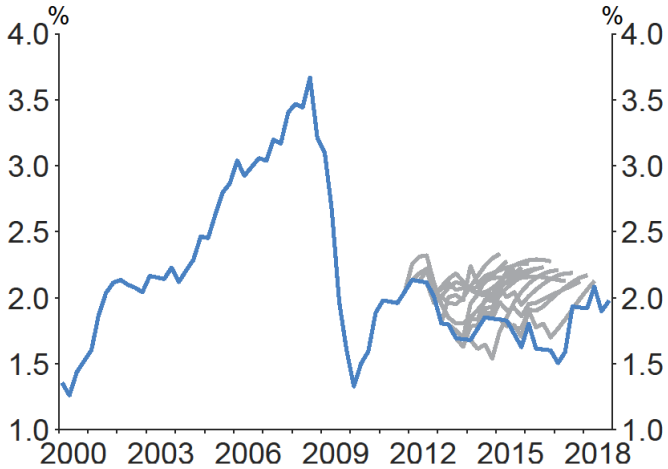
Figure 1: LCI wage inflation (annual)



Source: Stats NZ

The persistence of this weakness in wage inflation was initially a surprise to the Reserve Bank. The Reserve Bank's forecasts for LCI inflation were continuously revised lower over the period 2012 to 2015 (figure 2).

Figure 2: LCI wage inflation (annual, Bank forecasts in grey, 2012Q1-2015Q3)

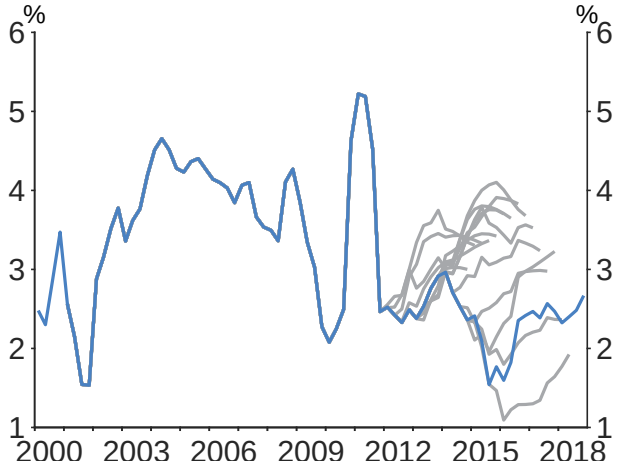


Source: Stats NZ, RBNZ estimates

This is a development that was mirrored in broader consumer prices. CPI inflation and measures of core inflation in New Zealand were weaker than the Reserve Bank expected in the years following the financial crisis. Again, this was particularly evident over the period 2012 to 2015 (figure 3), where the Bank's

forecasts for non-tradables inflation surprised persistently to the downside.

Figure 3: Non-tradables inflation (annual, RBNZ forecasts in grey, 2012Q1-2015Q3)



Source: Stats NZ, RBNZ estimates

Given these persistent forecast errors in consumer prices and nominal wages, the Bank conducted a broad work programme looking at the drivers of weak pricing pressures in the New Zealand economy. They include factors specific to the labour market, developments that have influenced overall capacity pressure, and potential changes in local pricing dynamics. This paper summarises research the Bank's economists have conducted to help explain low price and wage inflation.[3]

The rest of the paper is organised as follows. Section 2 outlines the drivers of low pricing pressure in New Zealand in recent years. Section 3 highlights a new series of research into the New Zealand labour market and wage inflation using micro-data. Section 4 concludes.

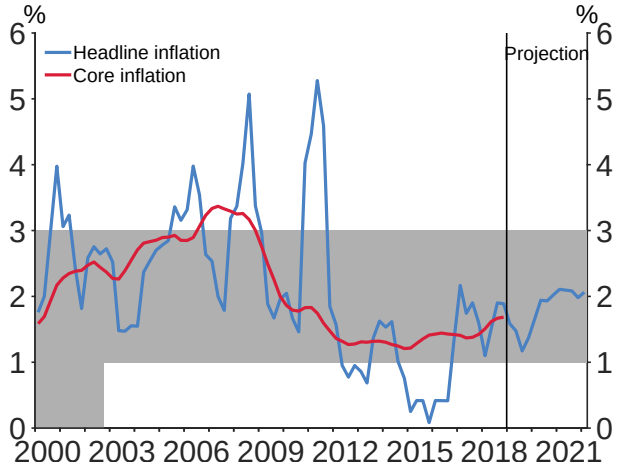
2 Weak inflationary pressure: rounding up the suspects

CPI inflation in New Zealand has been modest since the global financial crisis, with core inflation persistently below the Bank's target mid-point of 2 percent

[3]In particular, I am indebted to Christopher Ball for providing me with early insights into his work on industry concentration and wage inflation; Özer Karagedikli, Murat Ozbilgin, Finn Robinson and Nicolas Groshenny for providing results from their on-going work looking at job-to-job flows in the labour market; and Ross Kendall for earlier work conducted on the drivers of low wage inflation in New Zealand.

(figure 4). About 2012, the Bank initiated a research programme to understand the drivers of persistently weak inflation. This weakness was seen in both product and labour markets. As real wage inflation was generally close to the historical average, our research programme focused on factors that could jointly explain modest nominal wage and consumer price inflation.[4]

Figure 4: Headline and core CPI inflation (annual, target band in grey)



Source: Stats NZ, RBNZ estimates. Note: This measure of core inflation is the RBNZ's sectoral factor model estimate.

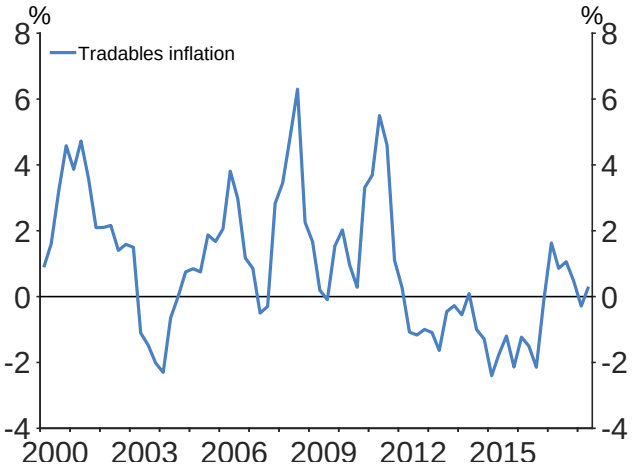
2.1 A weak global economic environment

A weak global economic environment was one of the key factors driving modest inflationary pressure. As figure 5 highlights, tradables inflation has been negative for much of the period since 2011.[5]

[4] See Box B, August 2017 Monetary Policy Statement and Williams (2016b), and references therein, for a broader summary of the Bank's work into low inflation and the implications for monetary policy.

[5] Williams (2016a) describes the drivers of New Zealand's current business cycle in more detail.

Figure 5: CPI tradables inflation (annual)



Source: Stats NZ

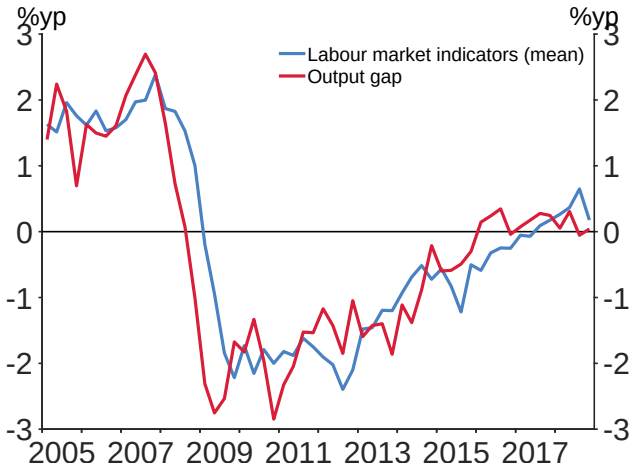
A very gradual elimination of spare capacity amongst our major trading partners was a key contributor to periods of modest and negative inflation for New Zealand's non-commodity imports. At the same time, the New Zealand economy went through periods of strong growth relative to other developed economies. This put upward pressure on New Zealand's exchange rate, and contributed to further weakness in tradables inflation.

In addition, commodity prices also declined after a period of strength, reflecting a slowdown in demand in the Chinese economy, and the significant fall in oil prices seen over 2014 and 2015. The drop in oil prices directly lowered the cost of fuel and had flow on effects to other prices. This put further downward pressure on tradables inflation. Over a similar period, a drop in dairy export prices contributed to a moderation in domestic growth and domestic inflation.

2.2 Strong growth in labour supply

While tradables inflation has largely been negative, non-tradables inflation has also been persistently below average. As in the rest of the world, spare capacity has been only gradually absorbed in New Zealand post-crisis (figure 6).

Figure 6: Measures of capacity pressure

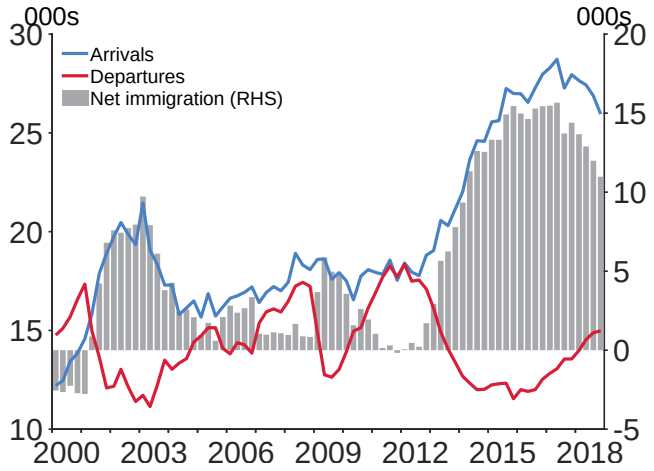


Source: RBNZ estimates

A strong boost to labour supply has been part of the story behind this gradual pick-up in capacity pressure. This strong growth in labour supply has reflected two elements. First, New Zealand has seen a significant inflow of migrants. Total net immigration since 2013 has been equivalent to 8 percent percent of the current working age population (figure 7). At the same time, this rise in net immigration has not had the same extent of inflationary impulse as we have seen in previous cycles. This migration cycle has been driven more by a weaker Australian labour market, and has been made up of more young people. Bank research has found that these factors led to less inflationary pressure than previous cycles in net immigration.[6]

[6]See Armstrong and McDonald (2018) and Vehbi (2016)

Figure 7: Permanent and long-term working age migration



Source: Stats NZ

Second, as migration has been rising, New Zealand's participation rate has also reached record levels. Partly, this reflects a cyclical 'encouraged worker' effect, as the New Zealand labour market recovered post the global financial crisis. At the same time, older New Zealanders have been staying in the labour market for much longer than previously, while female participation has continued to converge towards the male participation rate.[7] The New Zealand participation rate reached a record level of 71 percent in mid-2018.

2.3 A change in price setting behaviour

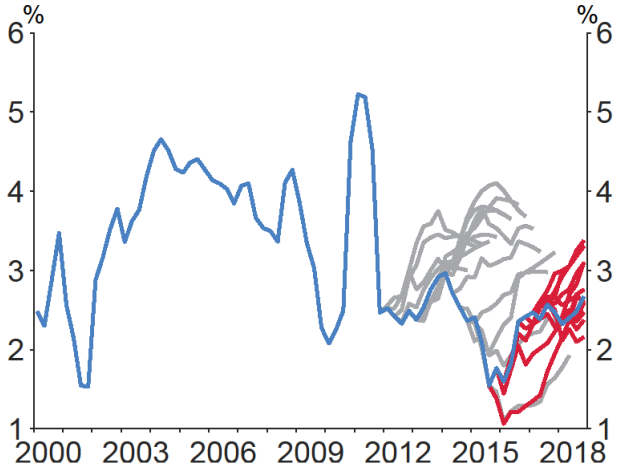
A weak world economy and an only gradual absorption of spare capacity in the New Zealand economy helps explain modest price and wage inflation in the post-crisis period. However, even when accounting for these factors, New Zealand inflation has been surprisingly weak.

As a result, the Bank has conducted work looking into the potential for a change in the New Zealand Phillips curve relationship. We investigated whether the relationship between capacity pressure and inflation had weakened, or if the process of price setting itself may have changed. An empirical study by Karagedikli and McDermott (2018) found that inflation expectations seem to be formed with a greater weight on past inflation, while the link between output and inflation does not seem to have weakened. This is further supported by McDonald (2017), who finds that Phillips curves that use an adaptive measure of inflation expectations have better real-time inflation forecast performance than those that use survey measures of inflation expectations.

[7] For a detailed analysis of the drivers of New Zealand's labour supply and the participation rate, see Culling and Skilling (2018) and Callaghan, Culling, and Robinson (2018)

The Bank took these findings on-board, and incorporated adaptive inflation expectations into its macro-model, NZSIM. Since this adoption, the Bank has made much smaller forecast errors on both non-tradables inflation and wage inflation (figure 8).[8] Adaptive inflation expectations imply that shocks to headline inflation have a more persistent impact on inflation than in the past. As a result, the large negative shock of the global financial crisis, and the subsequent impact of a weak world recovery and a pick-up in labour supply has had a much more persistent impact on inflation than the Bank initially expected.

Figure 8: Non-tradables inflation and Bank forecasts (annual, 2012Q1-2015Q3 in grey, 2015Q4-current in red)



Source: Stats NZ, RBNZ estimates

3 Micro-data research into wage dynamics in New Zealand

While this assumption of adaptive inflation expectations formation has helped lower our forecast errors, we have continued to research other potential drivers of weak price and wage inflation. More recently, the Bank has made greater use of New Zealand micro-data. This has enabled us to explore in greater detail some potential drivers of low nominal wage inflation.[9]

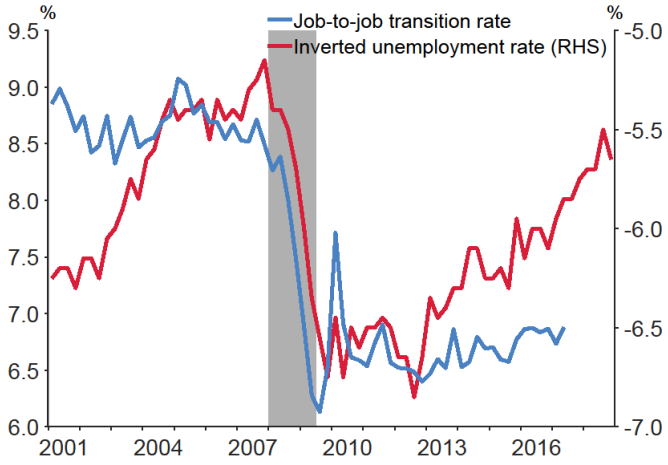
Karagedikli (2018) uses a matched administrative employee/employer data set to assess the role of job-to-job transitions in explaining wage inflation. A

[8] See Box B, August 2017 Monetary Policy Statement for further discussion on these changes.

[9] Our work has made use of Statistics New Zealand's Integrated Data Infrastructure and Longitudinal Business Database. See http://archive.stats.govt.nz/browse_for_stats/snapshots-of-nz/integrated-data-infrastructure/idi-how-it-works.aspx for further detail.

'job-to-job' transition is where one person moves straight from employment in one firm to another. Recent theoretical models have emphasised the importance of 'on the job search' as a friction in labour market search-and-matching models. The paper argues that job-to-job flows are likely a high quality measure of marginal cost in the labour market. For New Zealand, job-to-job flows potentially help explain low wage inflation. Karagedikli (2018) finds that job-to-job flows produce superior real-time forecasts of non-tradables and wage inflation, when compared to standard measures of capacity pressure. At the same time, New Zealand has seen only a very gradual rise in job-to-job flows since the financial crisis (figure 9), much slower than the fall in the unemployment rate – a standard measure of capacity pressure in the labour market. This fits with the broader New Zealand story of a gradual absorption of spare capacity post-crisis, and highlights the need to focus on a broad range of labour market indicators when assessing overall labour market capacity pressure - rather than just the unemployment rate. This work is on-going and we intend to explore potential drivers of the slowdown in the rate of job-to-job transitions.

Figure 9: Job-to-job transition rate and unemployment rate



Source: Stats NZ, RBNZ estimates

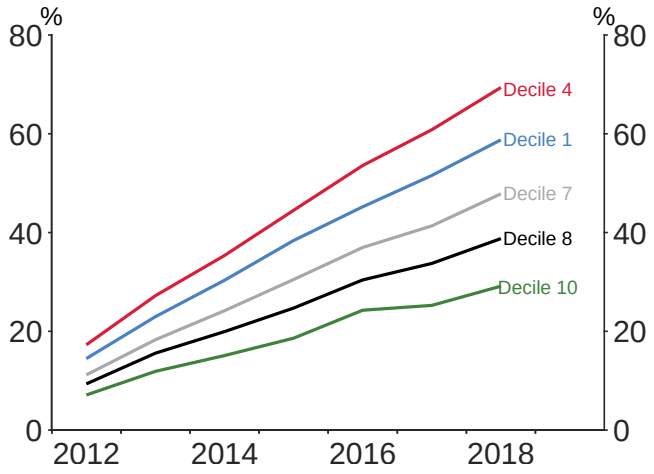
Micro-data has also allowed us to investigate a further candidate explanation for low wage inflation. This work is at an early stage, however we have obtained some useful insights. Recent commentary has highlighted the role that industry competition may play in suppressing wage inflation. The hypothesis is that firms in very concentrated industries can act as a monopsony buyer of labour, and therefore suppress wage inflation through their market power.[10]

At first glance, there is some high level evidence that employees in concentrated industries have lower wage inflation over time in New Zealand. Figure 10

[10]See Benmelech, Bergman and Kim (2018) for analysis of the United States.

shows employee incomes, broken down by the concentration of the industry in which they work (measured using the Herfindahl-Hirschman Index, HHI). The data in this chart are built up from a linked employee-employer data set. Those that were employed in very concentrated industries in 2011 have had much lower wage growth in comparison to those in non-concentrated industries.

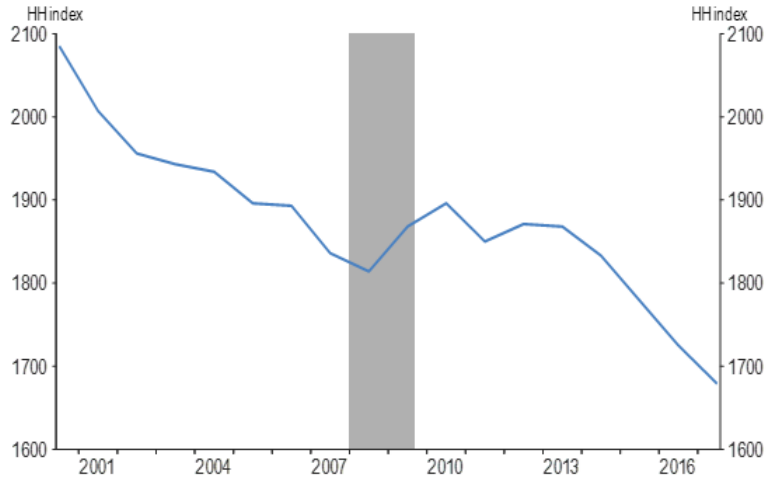
Figure 10: Cumulative wage growth by HHI decile (2011 cohort)



Source: Stats NZ, RBNZ estimates

However, this candidate explanation for low New Zealand wage growth begins to break down when we look at the detail of these data. First of all, industry concentration has actually decreased in New Zealand over the past two decades (figure 11). This is in contrast to developments in the United States.

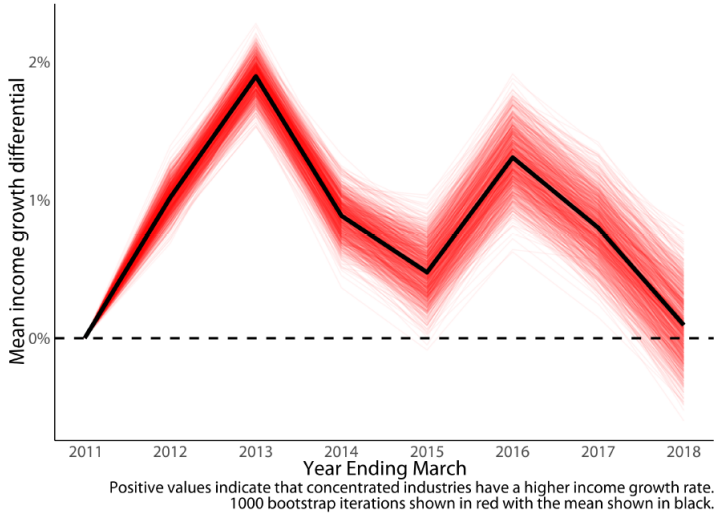
Figure 11: Aggregate HHI index in New Zealand



Source: Stats NZ, RBNZ estimates

Further, when we control for confounding factors, the differences in wage growth disappear or even reverse sign. To account for the potential for different characteristics of workers in different industries, we have matched workers in high and low concentration industries across a range of other characteristics. Figure 12 presents the wage growth differential for matched individuals in the 2011 cohort. The figure shows that, when accounting for the different characteristics of employees across industries, those in concentrated industries tend to see *slightly higher* wage growth than those in more competitive industries.

Figure 12: Wage growth differential between matched groups – 2011 cohort



Source:RBNZ estimates

This work is at an early stage, and there are a number of robustness checks to conduct to see if this broad insight holds up to scrutiny. However, at first glance, firm monopsony power does not seem to explain weak wage inflation in New Zealand.

4 Conclusion

Nominal wage and consumer price inflation have been subdued in New Zealand post crisis, particularly since 2012. The Reserve Bank has investigated a number of candidate explanations for these muted nominal wage inflation outcomes. The most notable explanations include:

- A gradual absorption of spare capacity amongst our major trading partners.
- Declines in oil and export commodity prices over 2014/15.
- A significant rise in labour supply, and less inflationary pressure stemming from migration.
- A change in price setting behaviour, with inflation expectations becoming more adaptive.

More recently, the Bank has made greater use of micro-data, which has offered some further insights into the drivers of low nominal wage inflation. A slow rate of job-to-job transitions helps explain some of the weakness in nominal wage inflation. In contrast, preliminary analysis suggests changes in labour market monopsony power of firms do not look to be a significant driver of low wage inflation in New Zealand.

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