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Do actual or expected OCR changes affect the New Zealand dollar?

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NON-TECHNICAL SUMMARY

In this note, we analyse the relationship between actual and expected Official Cash Rate (OCR) changes and subsequent exchange rate movements.

Looking first at the simple relationship between actual OCR changes and the exchange rate, there appears to be a weak positive relationship between OCR changes and daily changes in the Reserve Bank's trade-weighted index measure, the TWI. This weak relationship disappears when we look at weekly changes in the TWI.

It is better to take account of market expectations of policy changes. We do this by comparing "unexpected" OCR changes with subsequent TWI changes following a rate decision. We find that a 10 basis point surprise in the OCR decision is associated with a 0.4 percent depreciation/appreciation in the TWI one hour after the announcement. R-squared is a measure of how much of the variance, in this case in the exchange rate, is explained by a model. Over the first hour, in a simple two variable regression, the OCR surprises explain 64 per cent of the movement in the exchange rate (R-squared = 0.64). Over a 24 hour period the amount of total variation explained weakens (the R-squared drops to 0.29). After one week the relationship becomes very weak, with the R-squared down to 0.06.

We also look at the general relationship between changes in policy expectations and the TWI. We compared one-week changes in the expected OCR 12 months ahead with one-week changes in the TWI. We find a positive relationship here, with an R-squared of 0.30.

We conclude that there has been a weak positive relationship between OCR changes (or expected changes) and the currency but this only applies over very short time periods. Lots of variables affect the New Zealand dollar and previous research has suggested that there are much more dominant drivers of the currency than interest rates, such as commodity prices¹. Of course, many of these factors (including commodity prices) in turn influence where the OCR is set (and will be expected to be set), to meet the inflation target set out in successive Policy Targets Agreements.

¹ See, for example, McDonald, C (2012) 'Kiwi drivers the New Zealand dollar experience', Reserve Bank of New Zealand Analytical Notes series AN2012/02.

INTRODUCTION²

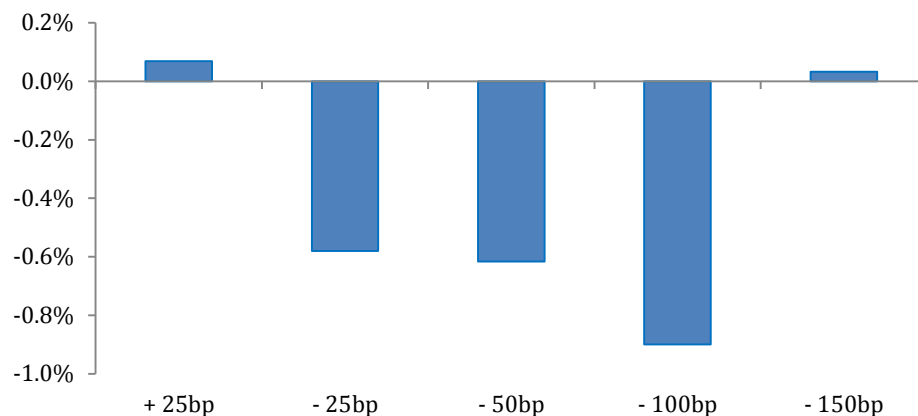
There has been considerable debate recently about the role of monetary policy in influencing New Zealand's exchange rate. This brief note reports some simple empirical analysis, looking at the direct relationship between actual and expected changes in the Official Cash Rate (OCR) and the subsequent movement in the exchange rate. Throughout the period under review, the Reserve Bank was adjusting the OCR to achieve an inflation target, as set out in the Policy Targets Agreement.

A BASIC COMPARISON OF OCR CHANGES AND CURRENCY MOVEMENTS

Firstly, we compare the impact of an OCR change on the average daily and weekly percent change in the Reserve Bank of New Zealand's trade-weighted index measure of the exchange rate (TWI), from 5pm the night before to 5pm on the day of the announcement. Our data sample covers the period 2002 to 2012. This encompasses nineteen tightenings of +25 basis points (bps), four easings of -25bps, four easings of -50bps, one easing of 100bps and two easings of 150bps.

There appears to have been a weak positive relationship between OCR changes and daily changes in the TWI. A 25bps increase in the OCR has little impact on the TWI. The average daily change is only +0.1 percent (and the median change from the nineteen observations is no change in the currency). A 25bps or 50bps rate cut corresponds with a daily 0.6 percent depreciation of the TWI, averaged over the total of eight observations. The sole 100bps cut was followed by a 0.9 percent depreciation of the TWI, while the two 150bps cuts resulted in an average change of near zero (a 1.2 percent appreciation and a 1.1 percent depreciation). This is illustrated in Figure 1.

Figure 1:
OCR decision vs average DAILY change in the TWI



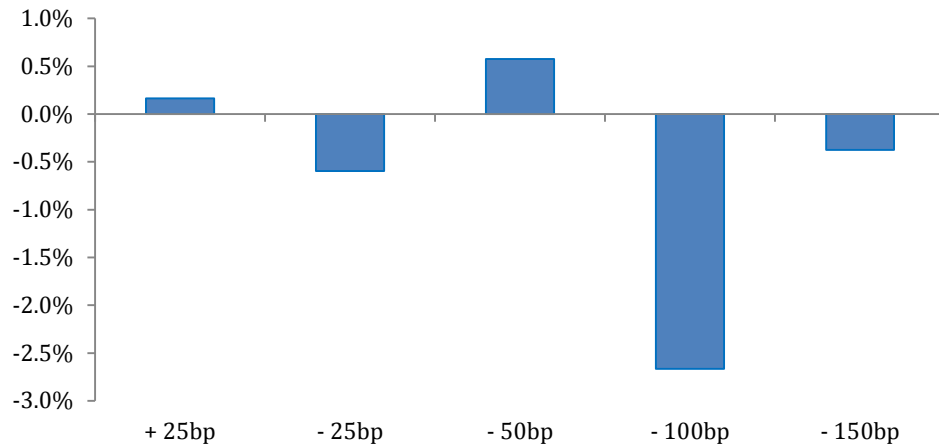
Source: RBNZ

² We would like to thank Michael Reddell for helpful comments on an earlier draft and Raiko Shareef for helping prepare the data.

When we looked at weekly changes in the TWI, the weak positive relationship that existed for daily movements disappears (Figure 2). For example, following 50bps rate cuts, the TWI has appreciated on two occasions over the following week and depreciated on two occasions (with the rises actually larger than the falls).

Figure 2:

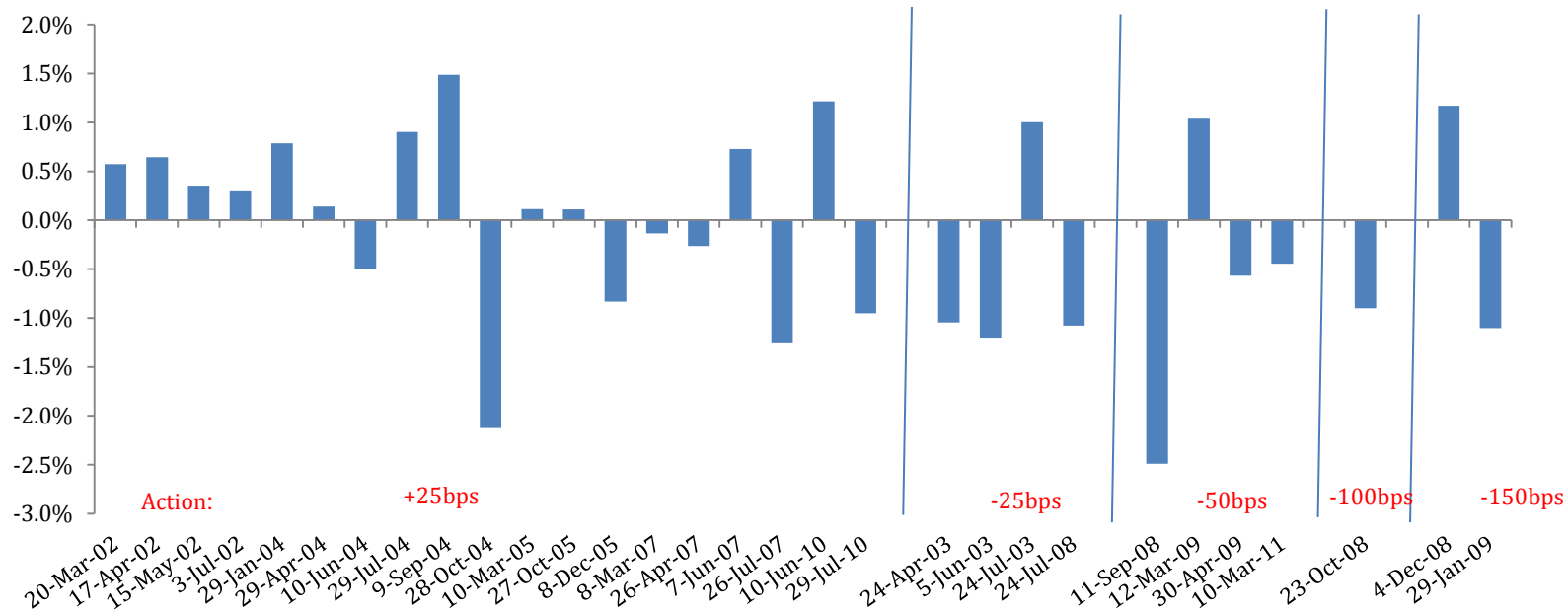
OCR Decision vs Average WEEKLY change in the TWI



Source: RBNZ

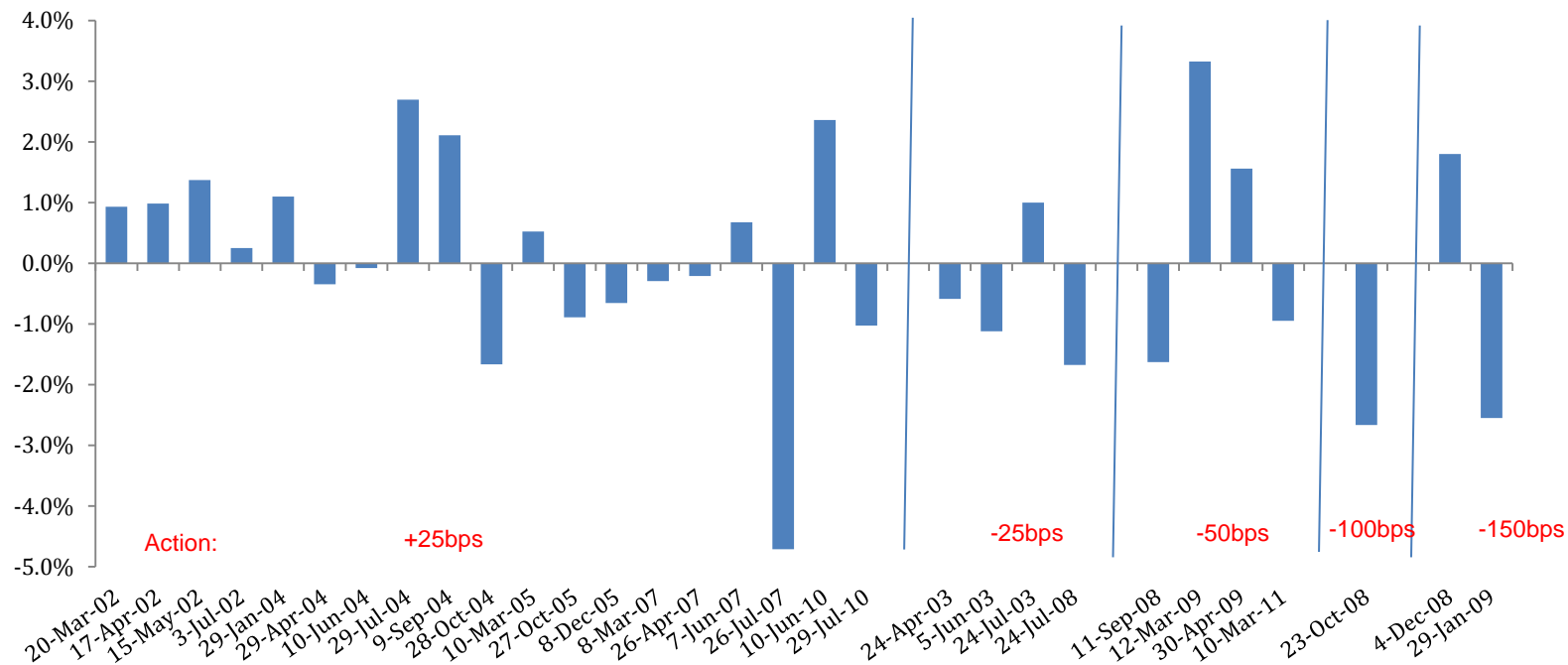
The analysis above focuses on the averages across the various policy changes. Figures 3 and 4 highlight the dataset for all OCR adjustments covered by our sample.

Figure 3:
OCR Decision vs Average DAILY change in the TWI



Source: RBNZ

Figure 4:
OCR decision vs average WEEKLY change in the TWI



Source: RBNZ

The weak relationship between OCR changes and near-term changes in the TWI is not that surprising because markets are likely to have anticipated, and priced in, some of the policy decisions prior to the meetings. (Some of our results might also have been affected by market-moving events between 5pm the previous day and 9am the following morning). What markets expected the Bank to do with the OCR needs to be accounted for when analysing subsequent currency movements. For example, it is possible for a rate cut to have a positive impact on the TWI if markets had expected the RBNZ to cut more aggressively. We analyse the impact of market expectations and the currency for policy changes in the rest of this note.

ACCOUNTING FOR “UNEXPECTED” OCR CHANGES AND TWI CHANGES

We can take account of expectations about the OCR by looking at Overnight Indexed Swap (OIS) markets³ (contracts that directly trade expectations of future overnight rates). The market pricing OIS contracts are about as close as one can get to determining a pure measure of monetary policy expectations⁴. In this analysis we compare the policy “surprise” to the subsequent movement in the currency – thus we are looking at the relationship between “unexpected” rate changes and the TWI. For example, if the market is pricing in a 22bps rate increase just before a 25bp OCR rate increase, we compare the 3bps “surprise” with the subsequent TWI movement.

For this analysis, we use hourly data, which shortens our sample period (owing to data limitations) from 2007 onwards. This gives us 14 meetings to compare OCR changes to currency movements.

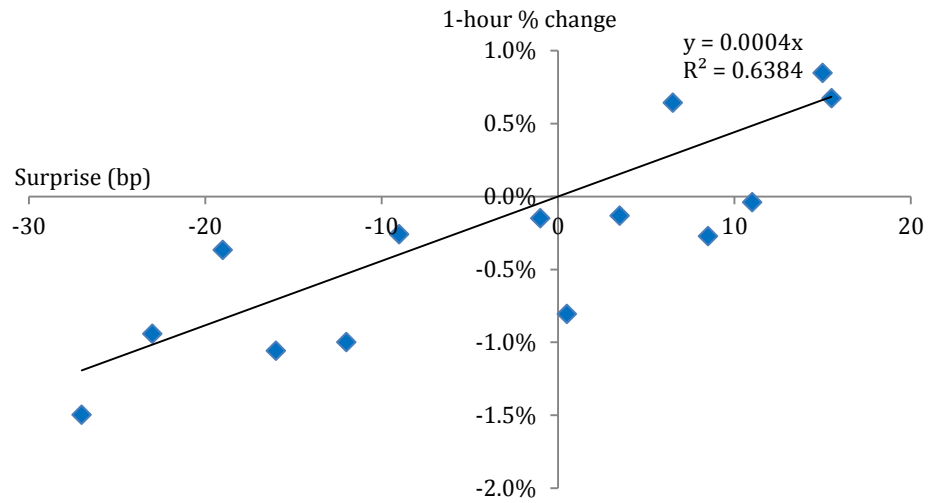
The results suggest a positive relationship between OCR surprises and the TWI. In a simple regression model, a 10bps OCR surprise corresponds with a 0.4 percent appreciation/depreciation in the TWI one hour after the announcement, with an R-squared of 0.64 (Figure 5).

Over a 24-hour period the exchange rate reaction is actually slightly stronger (a 10bp OCR surprise is followed by a 0.7 percent change in the exchange rate), however the relationship is much looser, with a lower R-squared of 0.29 (Figure 6). This result is likely to reflect other events during the day (here and abroad) also affecting the TWI over the longer 24-hour period.

³ See, for example, “Introducing overnight indexed swaps”, by Wai Kin Choy, Reserve Bank of New Zealand Bulletin, March 2003.

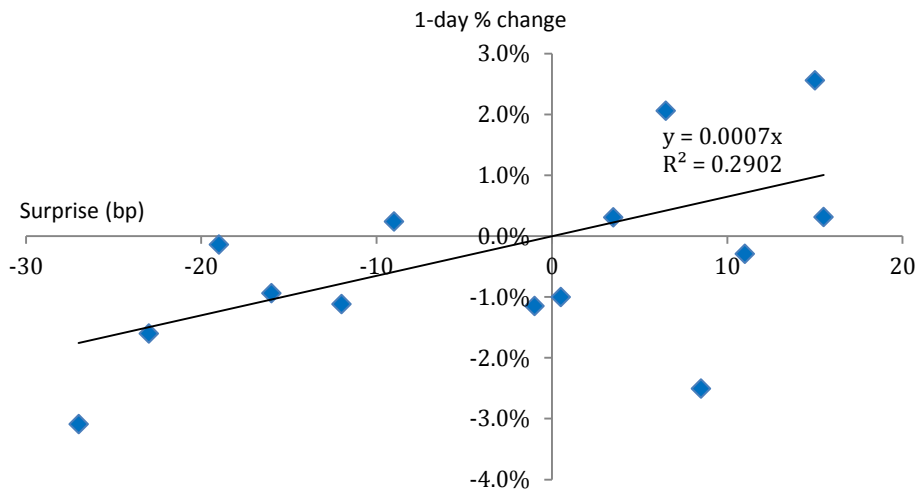
⁴ We could also look at survey measures of expectations, but surveys are typically only of economists (rather than direct market participants) and there is often a few days between the last survey results and the relevant OCR decision.

Figure 5:
Policy surprise vs 1-HOUR change in the TWI



Source: RBNZ

Figure 6:
Policy surprise vs 1-DAY change in the TWI

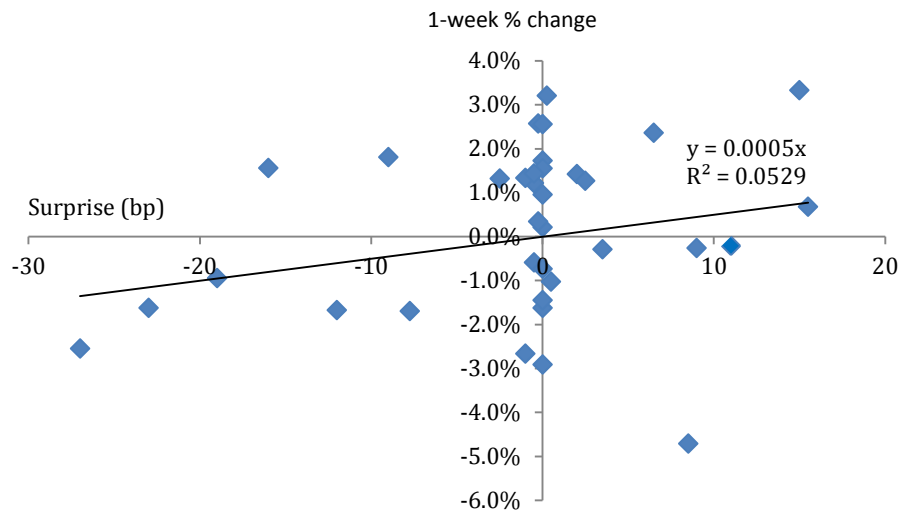


Source: RBNZ

When we analyse the reaction over one week, we find that the amount of variation explained diminishes even further. The one-week TWI reaction to a 10bp OCR surprise is 0.7 percent, but the R-squared is an insignificant and low 0.06 (Figure 7).

Figure 7:

Policy surprise vs 1-WEEK change in the TWI



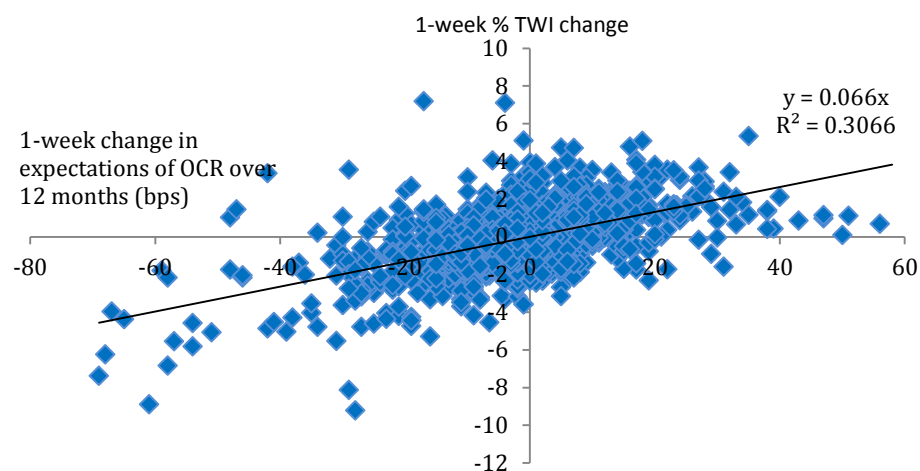
Source: RBNZ

THE RELATIONSHIP BETWEEN OCR EXPECTATIONS AND THE TWI

The analysis in the previous section looked at the possible impact on the TWI from unexpected actual OCR adjustments. We can also look at the possible impact on the NZD from changes through time in expected policy responses. Here we compare 1-week changes in the OIS expectations pricing indicator (expectations measured over the 12 months ahead) and 1-week changes in the TWI. This produces a similar positive correlation to that noted above, and the changes in OCR expectations explain about 30% of the variance in the exchange rate over the week concerned.

Figure 8:

Changes in OCR expectations for next 12 months vs 1-WEEK change in the TWI



Source: RBNZ

If - for whatever reason - markets price in an extra 10bps of rate hikes over the next 12 months, the

NZD TWI appreciates by just under 0.7 percent on average (one-week changes). Lots of other factors affect the exchange rate (including, for example, shifts in policy expectations in the countries in the TWI basket of currencies). The relationship is not overly tight, but this is not too surprising given that they are changes over a week, during which there are likely to be many other factors (other than New Zealand policy expectations) that are affecting the TWI.

OCR expectations themselves will shift in response to a variety of factors, and will at times be correlated with sentiment shifts, which themselves may result from new economic data or other events. Over time, the OCR is adjusted in response to economic and inflation data, which influence the outlook for New Zealand inflation. Markets are aware of the inflation target, and their reactions (in shifting OIS pricing) are often about anticipating the way in which the Reserve Bank will respond at the next OCR reviews to data that market participants see emerging.