# Monetary policy and the volatility of real exchange rates in New Zealand

## Summary of a lecture by Professor Ken West

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This article is a brief summary of a lecture delivered on 19 June at Victoria University in Wellington by Professor Ken West. Professor West was a visiting professor under the Professional Fellowship programme sponsored by the Reserve Bank.

Inflation targeting central banks use monetary policy to reduce fluctuations in inflation and the real economy. Currently, a research focus at the Reserve Bank is thinking about whether the Bank can reduce the cycle in the real exchange rate while continuing to pursue its other objectives (particularly price stability) effectively. This is an important interest for the Bank, because it is crucial to the implementation of the Policy Target Agreement, which states that the Bank should avoid unnecessary instability in the real exchange rate whilst achieving price stability.

Professor Ken West, a recent visitor under the Professorial Fellowship[1] programme that the Bank sponsors, tackled this question during his time at the Reserve Bank.

Essentially, Professor West highlights two potential problems with pursuing exchange rate stabilisation:

- The difficulty of understanding the relationship between interest rates and the exchange rate. Most economists believe that interest rates and the exchange rate are related by the actions of international investors. For example, all else being equal, an increase in interest rates here will prompt international investors to shift capital to New Zealand, pushing the exchange rate up. While there is weak empirical evidence of this relationship, it is clear that exchange rates fluctuate a lot more than short-term interest differentials can justify.
- The fact that active real exchange rate stabilisation will sometimes conflict with other objectives. For example, when the economy is strong and domestic inflation is rising, the central bank will normally want to raise interest rates in order to prevent an inflationary problem from emerging. However, if the exchange rate is rising, that increase in interest rates may tend to push the currency still higher.

Professor West presented simulation results that demonstrated the importance of the second potential problem. His approach was to build a model of the New Zealand economy that included the exchange rate, a stylised monetary policy with similar features to our approach, and a link between interest rates and the exchange rate. He then explored what would happen if interest rates were altered to reduce the quarter-to-quarter ups and downs in the exchange rate.

On the basis of his model, he concluded that there appear to be trade-offs in seeking to reduce variability in the real exchange rate. Reduced variability in the real exchange rate is likely to be associated with increased volatility in other key economic variables, such as interest rates, inflation and real economic growth. Specifically, to cut quarter-to-quarter variations in the exchange rate by one fourth, Professor West suggested we would probably have to accept:

1. 15 - 40 per cent bigger swings in interest rates
2. 10 - 15 per cent bigger swings in the real economy; and
3. up to 15 per cent bigger swings in the inflation rate.

The model these conclusions are based on is fairly simple. For example, monetary policy is represented by a so-called Taylor rule, where the central bank reacts fairly mechanically to the output gap and inflation. To capture dynamic relationships in the data that are not modelled by his simple equations, he imposes an econometrically estimated structure on the disturbances to the model. This structure is artificial,

[1] The Professorial Fellowship in Monetary Economics at Victoria University of Wellington was initiated by (and is funded by) the Reserve Bank. Fellows spend part of their time at Victoria University and part at the Reserve Bank, interacting with staff at both institutions and conducting research relevant to central banking in New Zealand. The views expressed by fellows do not necessarily reflect the views of the Reserve Bank of New Zealand.

but seems to capture the key relationships we would want a small model of the economy to cover.

However, Professor West suggests his estimates represent a lower bound on the costs of greater exchange rate stability. This is because the estimate presumes a solid relationship between interest rates and the exchange rate, and a central bank that fully understands the behaviour of the exchange rate (including sorting out temporary fluctuations from any long-term trend in the equilibrium exchange rate) and that can respond immediately to exchange rate fluctuations.

To see the effects of this in more detail, we need to know how the exchange rate is determined in Professor West's model. In the model, a higher interest rate outlook in New Zealand drives the exchange rate up until the extra interest rate return is offset by expected future exchange rate depreciation. This is an uncovered interest parity or "UIP" relationship between interest rates and the exchange rate. His modelling allows that other things also affect the exchange rate, but this "UIP" relationship is presumed to be operative.

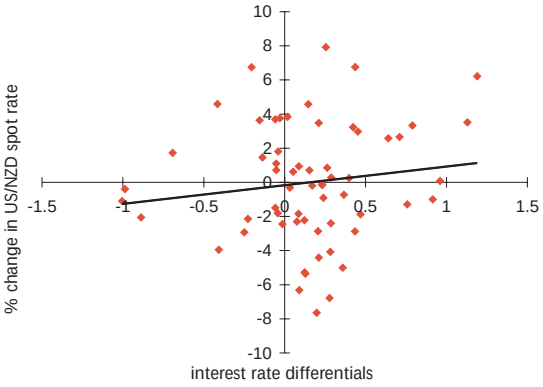
However, as Professor West pointed out when presenting the results of his research at a public lecture in June, we can't be certain that this core component works very well. The graphs below show the actual relationship between quarterly interest rate differentials and quarterly exchange rate changes. The two scatter plots below show there is essentially no relationship in the case of the NZD/USD, and a relationship dominated by other fluctuations in the case of NZD/AUD. If the UIP relationship worked perfectly and dominated other influences on the exchange rate, there should be a much tighter relationship between interest rate and exchange rate changes. Because UIP relates today's exchange rate movements to expected future interest rate differentials, the graph is a bit of a simplification, but more sophisticated studies of UIP also generally fail to demonstrate that it holds in reality.

This means, as noted above, that Professor West's estimated trade-off between a smoother exchange rate ride and a rougher ride elsewhere represents an optimistic case. Like all central banks, the Reserve Bank lacks a solid understanding of the factors behind exchange rate movements, which makes acting to influence the exchange rate much harder.

This research is important for the Bank in the context of its obligations under the Policy Target Agreement to minimise "unnecessary variability" in the exchange rate. To a degree, an inflation targeting central bank has an automatic tendency to lean against exchange rate fluctuations, in order to stabilise inflation and the real economy. Professor West's research suggests that to go further in attempting to stabilise the exchange rate would have significant costs in terms of greater variability in interest rates, inflation and economic growth. We are continuing to think about these results, and analyse them further using our own macroeconomic model (FPS).

The full lecture is likely to be published in a refereed journal in due course.

Quarterly Series of Australia and New Zealand interest rate differentials and exchange rate changes




Quarterly Series of United States and New Zealand interest rate differentials and exchange rate changes