

Buffet or buffer?

Does the exchange rate hinder or help commodity exporters?

- **This research shows that the exchange rate has substantially *reduced* price volatility for NZ commodity producers.**
- **The NZD tends to move in the same direction as NZ commodity prices, which insulates most (but not all) commodity producers from global market volatility.**
- **A policy designed to dampen the NZD cycle would harm more commodity producers than it would help.**
- **Adopting the Australian dollar would be even worse.**

Exporting primary commodities such as milk, meat, and wood has long been the backbone of the New Zealand economy. Today, commodities make up 56% of our merchandise exports. But it is a tough game because conditions can be volatile. Many commodity exporters' fortunes depend on the weather, and all are subject to wild swings in the international price of their product. In recent years, some commodity exporting groups have complained that they also have to contend with volatility introduced by New Zealand's floating exchange rate.

This paper takes a closer look at the exchange rate's impact on commodity exporters. Analysing price data over 17 years, we show that for the majority of commodity producers the exchange rate has actually been a rare stabilising influence in a volatile world, because it has tended to move in the same direction as the relevant global commodity prices. When world commodity prices fall the exchange rate often falls, limiting commodity exporters' pain. Likewise, when commodity prices rise the exchange rate often rises, limiting commodity exporters' gain. By offsetting global market swings, the exchange rate has *reduced* the overall volatility of commodity producers' revenue per unit by 25% since 1992. For the dairy industry, the exchange rate has reduced volatility by 27%. Far from *buffeting* most commodity exporters, the exchange rate has actually *buffered* them.

But there are exceptions. For a significant minority of commodity producers, the exchange rate has indeed been a source of volatility. Exchange rate variation has increased the overall volatility of revenues for beef, wool, seafood and forestry exporters.

Our results imply that a policy designed to stabilise the exchange rate would actually harm the dairy, lamb, horticulture, and aluminium industries (38% of exports). Such a policy would reduce the exchange rate's beneficial buffering effect, exposing exporters in these industries to the vagaries of world markets. A policy of exchange rate stabilisation would, however, be helpful for the beef, wool, seafood and forestry industries (15% of exports), as it would stabilise overall revenues in those industries.

The research turned up a couple of additional facts:

- Adopting (or fixing to) the Australian dollar would have been even worse than fixing to the US dollar for commodity exporters. As a group, commodity exporters' revenues per unit have been 34% more stable than they would have been if New Zealand had adopted the Australian dollar in 1992. However, wool, seafood, forestry, and aluminium exporters would have been better off under the Australian dollar.
- The exchange rate has reduced volatility in the local price of oil by 20%.

Details

It is fairly simple to assess whether the exchange rate has buffered commodity exporters by reducing volatility, or buffeted them by creating extra volatility. We looked at the actual inflation-adjusted New Zealand dollar price that commodity producers have received since 1992. We compared that to the US dollar price commodity producers would have experienced if New Zealand had adopted (or fixed its exchange rate to) the US dollar, adjusted for US inflation.¹ We then assess which scenario would have involved greater volatility in the local price paid to commodity producers.

"Volatility" is defined as the standard deviation of prices. So the more time commodity prices spend away from average, or the further they swing away from average, the higher the volatility.

¹ Assuming that NZ would have experienced the same rate of inflation as the US if we had fixed our exchange rate to the US dollar is both reasonable and incidental to the results. We conducted the analysis from 1992, because that is generally considered the beginning of New Zealand's prevailing macroeconomic regime of low-and-stable inflation, independent central bank, and floating exchange rate.

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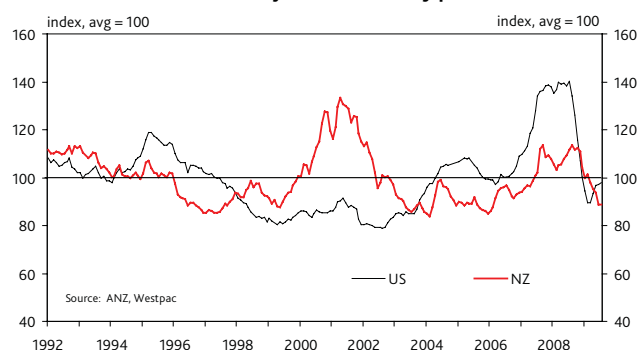
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We chose not to measure volatility on the basis of how “bouncy” prices are from month to month. That’s because a price that bounces a few percent either side of average every month is less damaging than a price that experiences large smooth cycles over periods of years.

For commodity exporters as a group the results were clear. The standard deviation of real New Zealand dollar prices was 25% lower than the standard deviation of real US dollar prices.² Casual observation of the figure below suggests that the effectiveness of the exchange rate as a buffer varies over time. In particular, the exchange rate has been a more effective buffer since 2007 than it was before.

NZD inflation-adjusted commodity prices vs USD inflation-adjusted commodity prices



Breaking the analysis down by product gave a mixed picture, as table 1 shows. Dairy products have benefited most from exchange rate variation. That is not surprising, considering that dairy is the country’s biggest export industry by far, and therefore has the greatest influence on the exchange rate. For example, the dairy boom/bust of 2007 and 2008 saw the NZD appreciate then depreciate almost exactly in tandem with world milk prices, making NZ dollar milk prices substantially less volatile than global prices.

Table 1: Standard deviation of real NZD price vs real USD price
(both indexes scaled to mean = 100)

Product (% of exports)	Std deviation of NZD price	Std deviation of of USD price	Difference
All commodities (59%)	11.0	14.7	-3.7
Dairy (24%)	19.5	26.8	-7.3
Beef (5%)	21.5	17.4	+4.1
Lamb (8%)	15.0	16.4	-1.4
Wool (1%)	29.3	22.4	+6.9
Horticulture (4%)	14.3	18.4	-4.1
Seafood (3%)	20.8	13.9	+6.9
Forestry (5%)	21.8	18.8	+3.0
Aluminium (3%)	15.6	20.3	-4.7

- Exchange rate reduces volatility of revenue
- Exchange rate increases volatility of revenue

² The standard deviation gives a band within which the price remains 68% of the time. The standard deviation of NZD prices is +/- 11%, while for USD prices it is +/- 14.7%.

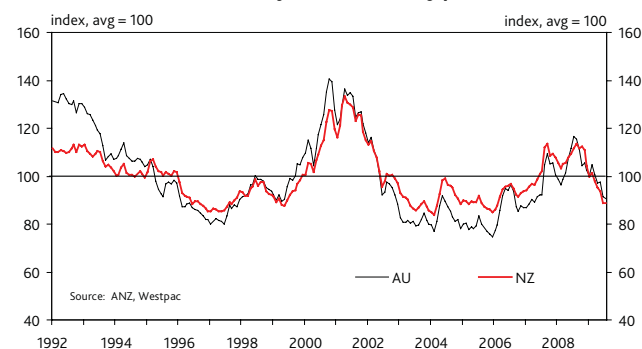
Other commodity products that benefit from exchange rate variability are lamb, horticulture and aluminium.

The exchange rate is a buffeting force for the beef, wool, seafood, and forestry industries. These industries would have experienced less price volatility if the New Zealand dollar had been fixed against the US dollar. For these products, complaints about additional volatility introduced by the currency are valid.

What if New Zealand had adopted the Australian Dollar instead?

If New Zealand had adopted the Australian dollar, commodity producers would have experienced 34% more volatility than they have under the floating New Zealand dollar. Indeed, adopting the Australian dollar would have created even more volatility for commodity exporters than fixing against the US dollar. The graph below shows that AUD prices would have had a similar, but larger, cycle.

NZD inflation-adjusted commodity prices vs AUD inflation-adjusted commodity prices



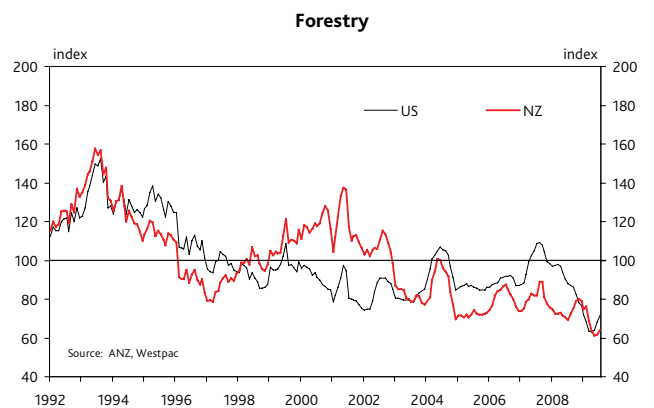
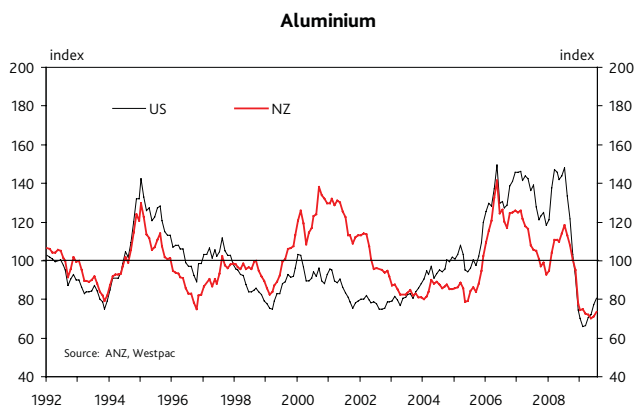
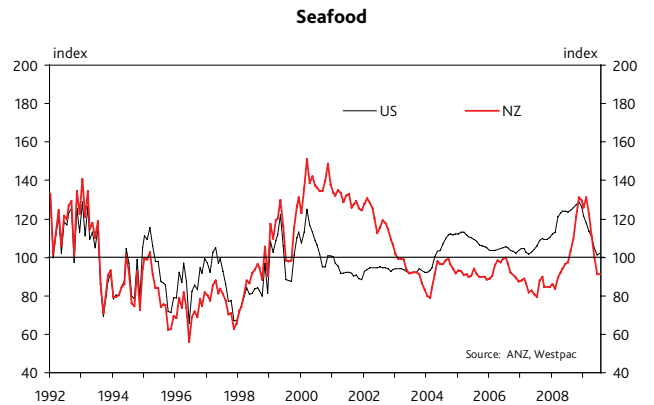
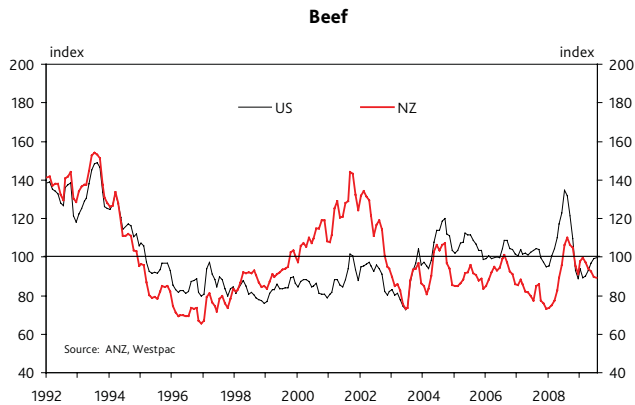
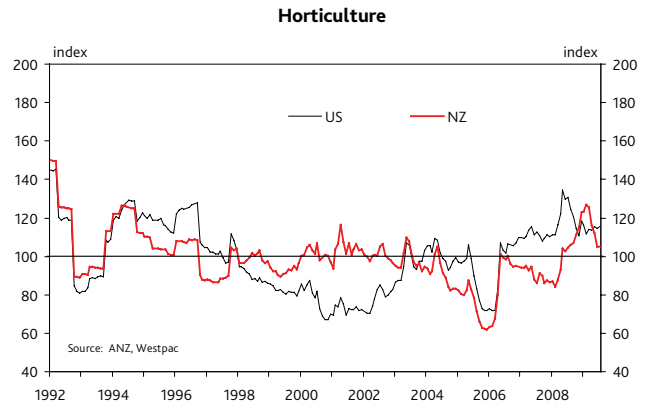
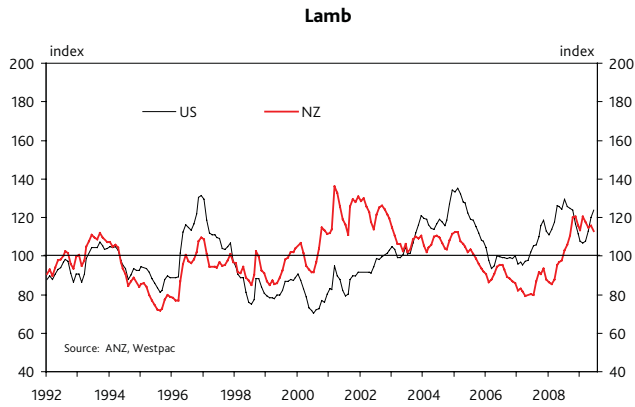
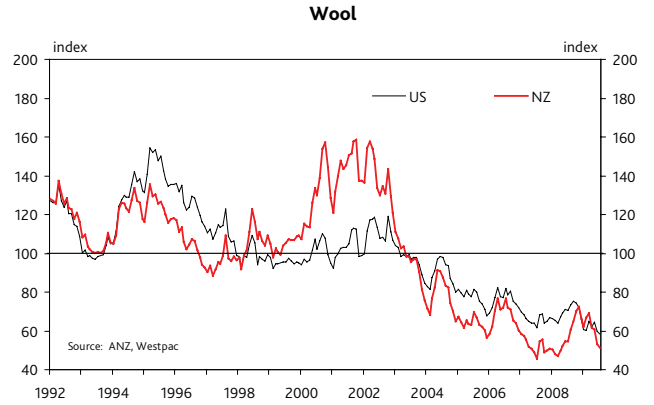
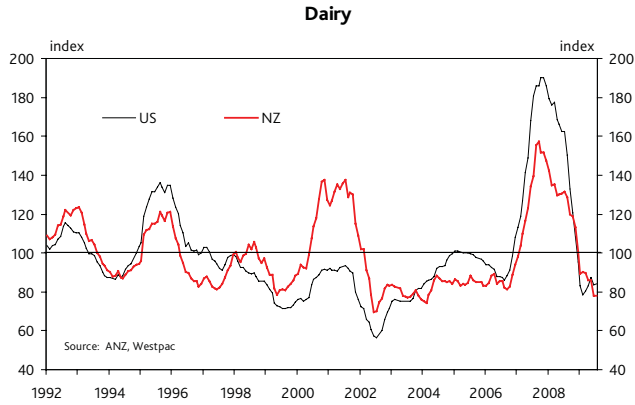
The industry-level analysis for the Australian dollar was similar to the US dollar. The dairy, meat and fruit industries have been better off under the independent New Zealand dollar than they would have been under the Australian dollar. But wool, seafood, forestry and aluminium producers would have experienced less volatility under the Australian dollar.

Table 2: Standard deviation of real NZD price vs real AUD price
(both indexes scaled to mean = 100)

Product (% of exports)	Std deviation of NZD price	Std deviation of of AUD price	Difference
All commodities (59%)	11.0	16.7	-5.7
Dairy (24%)	19.5	22.7	-3.2
Beef (5.4%)	21.5	28.1	-6.6
Lamb (7.7%)	15.0	15.4	-0.4
Wool (1%)	29.3	26.2	+3.1
Horticulture (4%)	14.3	14.5	-0.2
Seafood (3%)	20.8	16.6	+4.2
Forestry (5%)	21.8	19.3	+2.5
Aluminium (3%)	15.6	13.2	+2.4

- Exchange rate reduces volatility of revenue
- Exchange rate increases volatility of revenue

NZD inflation-adjusted commodity prices vs USD inflation-adjusted commodity prices, by sector



The local price of oil

The exchange rate has also buffered New Zealand against variation in the international price of oil. Oil has been 20% less volatile in New Zealand dollar terms than in US dollar terms. This suggests that in addition to buffering most commodity exporters' revenue, the exchange rate also buffers them against volatility in some costs.

Other issues

This paper was not intended as a comprehensive review of New Zealand's floating exchange rate. The exchange rate affects far more than just commodity exporters' revenue. For example, commodity exporters' US-dollar denominated costs are also impacted by the exchange rate. For the remainder of the economy, the many effects of a rising real exchange include:

- Non-commodity exporters' (eg exporting manufacturers) become less profitable.
- Firms that trade locally but import factors of production (eg transport, construction) become more profitable.
- Firms that trade locally but compete with imports (eg cement production) become less profitable.
- All consumers become better-off as tradable goods become cheaper (eg food, clothing, petrol) and as the NZD goes further overseas.
- New Zealand becomes less competitive as a tourist destination.
- Investment goods needed to increase New Zealand's productive capacity become cheaper, allowing greater productivity growth (eg wind turbines, irrigation systems, fibre-optic cables).
- Inflation tends to fall, causing the Reserve Bank to set the OCR lower than it would otherwise, which helps borrowers and hurts savers.

There are a wide range of winners and losers from any change in the exchange rate. Clearly, there is a lot to consider when thinking about the optimal exchange rate regime. In this paper we have addressed one particular aspect that was relatively easy to quantify, and may surprise many people. Exchange rate volatility has been *helpful* for the majority of commodity exporters, by serving to *reduce* revenue volatility.

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