
Issues relating to optimal currency areas: theory and implications for New Zealand

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The creation of the euro at the beginning of this year, and the volatility seen in world financial markets over the last two years, has provoked some interest recently in whether entering a currency union might also be an appropriate policy direction for New Zealand.

Our aim in this article is to facilitate informed economic debate on the issue by identifying the main economic costs and benefits of New Zealand joining a currency area or union. In general, the costs of joining a currency union appear to be reduced macroeconomic flexibility, while the benefits of currency union appear to be improved micro-economic efficiency (eg lower transaction costs and improved economic integration).

1 Introduction

On 1 January, 1999, eleven European Union members launched a new common currency, the euro. The advent of the euro has raised questions as to whether a currency union might be appropriate for New Zealand or whether New Zealand should keep its own freely floating currency.

Although the European experiment will offer valuable insights for New Zealand, it is important to realise that New Zealand's current currency regime is different to the regime in Europe before the launch of the euro. The change in Europe was from a currency area to a currency union. A currency area is typically defined as a group of countries that undertake to fix their exchange rates, at least within narrow bands. In contrast, a currency union is typically defined as an area where a single currency circulates. The bilateral exchange rates are fixed and cannot be changed without a country quitting the union and reintroducing its own currency. The difference between a currency union and a currency area is probably smaller in practice than in principle, since in both regimes capital mobility constrains monetary policy independence. On the other hand, the difference between floating and fixed exchange regimes is significant, and it is this difference that New Zealand faces when it addresses whether it should join a currency area or union.

These issues seem even more pertinent in the aftermath of the Asian financial crisis. Over the last two years, there has been substantial volatility in some of the world's currencies (notably the USD/Yen rate). Also, the 'currency area' spanned by the US dollar has become significantly smaller as coun-

tries such as Korea, Thailand, Russia and Brazil have ended their link to the US dollar. These disruptions have made it clear that choosing an appropriate exchange rate regime remains a key macroeconomic policy issue.

The choice between floating and fixing the exchange rate is a time-honoured policy question in economics. In this article, we use the vast empirical and theoretical literature on currency areas to distil issues relevant to New Zealand's choice of exchange rate regime.¹ While particular attention is given to the option of currency union, many issues identified are relevant under various other alternative exchange rate regimes.

As we see it, the viability of a currency union rests on two pillars, one economic and one political, both essential for a union's success. The strength of the economic pillar depends on whether the economic benefits of using the same currency across the area exceed the costs of abandoning the national currency, while the political pillar depends on institutional support for, and commitment to, the union. The focus of this article is on the economic pillar. The political and institutional issues, although just as important, are only briefly mentioned.

The paper should not be construed as advocating change in New Zealand's current exchange rate regime: partly because the evidence for and against currency union is inconclusive,

1 In a classic early treatment, Mundell (1961) introduced the theory of optimum currency areas to address the issue of whether a country should float or fix its exchange rate. For a recent survey of this literature, see Wyplosz (1997).

and partly because the issue of political commitment to a possible union has not been addressed. Moreover, for many of the economic issues we have identified, the costs and benefits cannot be easily quantified. Even where they can be quantified, there often exists conflicting evidence.

2 Potential costs and benefits of monetary union

The nature of economic shocks

If New Zealand agreed to an arrangement to fix its exchange rate, either by joining a currency area or currency union, then the exchange rate would be unavailable to act as a buffer when shocks hit the New Zealand economy.

How important is the exchange rate as a 'shock absorber'? In general, shock absorption is more important if the shocks across a potential currency area are asymmetric (that is, they affect different parts of the area in different ways). In other words, if the partners to a currency area have a common business cycle rather than a divergent business cycle, the costs of fixing the exchange rate across the union will be smaller.

For example, if New Zealand and a partner in a currency area were often at different stages of the business cycle, then the effective single monetary policy for the entire area would not be appropriate for both partners and could be very costly for one of the partners. New Zealand saw an example of this internally in 1995/96 when the Auckland region grew faster than the rest of the country, and it was difficult to set a single monetary policy appropriate for every region. The idea that different regions within a currency union will sometimes be subject to shocks that cause their business cycles to diverge is fairly uncontroversial. However, how often divergences occur and how serious they are, is an area for empirical analysis.

Empirical evidence on the nature of shocks has generally been drawn from comparisons between the European Union and the United States. The evidence, however, is controversial. A recent study by Tamin Bayoumi and Barry Eichengreen (1992) concluded that asymmetric shocks tend to be more frequent in the European Union than in the United

States, which suggests that the European Union might find a currency union to be costly from a macroeconomic viewpoint. But the degree of asymmetry is considerably smaller if only the subset of European Union countries that have traditionally maintained close economic and monetary links with Germany are considered. Similar Australasian evidence, in another paper by Tamin Bayoumi and Barry Eichengreen (1994), suggests Australia and New Zealand face asymmetric shocks and are hence unsuitable for forming a currency area or union. Analysis by the Reserve Bank of New Zealand suggests the New Zealand economy is often affected by similar shocks to Australia and the United States, but also exhibits some 'irregular' business cycle behaviour consistent with New Zealand also being subject to a significant number of idiosyncratic shocks (see box 1).

New Zealand and Australia's different commodity export baskets are one possible explanation for this: when the gold price is high, and the dairy price low, the New Zealand economy is likely to be in a weaker state than the Australian one. While movements in New Zealand and Australian export prices are correlated, David Grimmond (1992) showed that they did not always move together, and performed a simple analysis which showed a combined currency would be more responsive to fluctuations in Australia's export prices than New Zealand's.

The likelihood of asymmetric shocks tends to be smaller if the potential union partner is a key bilateral trading partner. This is because a boom in the union partner will tend to increase demand for New Zealand's exports, while rising demand in the partner country will also tend to reduce their exports to New Zealand. Although trade with Australia is important, it is not a dominant partner for New Zealand in the same way as the United States is for Canada, for example (see figure 2).²

Figure 2 also shows that New Zealand and Australia have unusually diverse trading patterns. Even in a union with Australia and the United States, New Zealand would trade significantly with countries outside the union. This is not the case for the small countries that have recently joined

2 Lloyd (1990) noted that although Australia was an important export market for New Zealand, it was not the dominant partner, and although trade with Australia has expanded since then, it is still not a dominant partner.

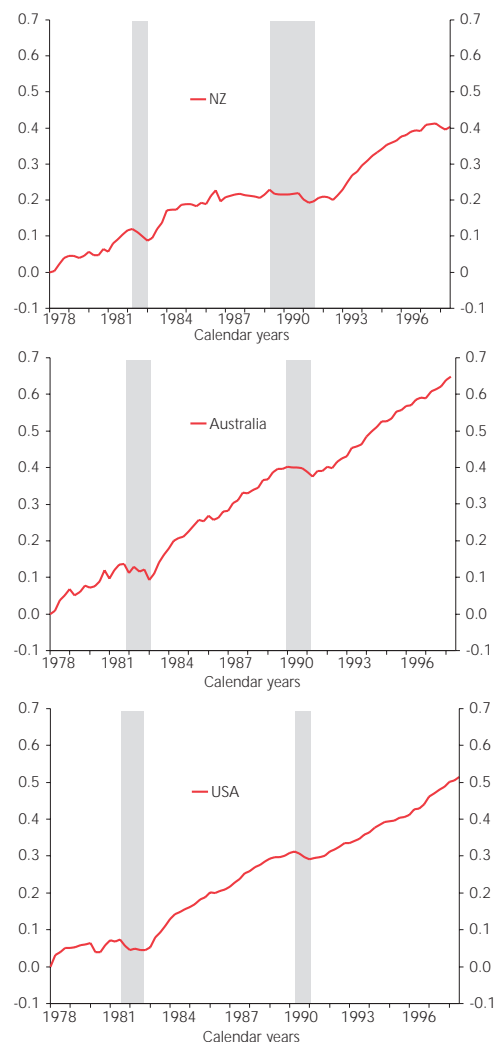
Box One

Dating the business cycle of New Zealand, Australia and the United States

In this box we discuss some recent Reserve Bank analysis comparing cycles in New Zealand's macroeconomic variables with those of Australia and the United States. Table 1 dates the contractions and expansions of the business cycles in Australia, New Zealand and the United States for the last quarter of a century, and figure 1 shows output in the three countries on a log scale, with contractionary periods shaded. During this period, each country has had three major expansions interrupted by two significant contractions. The dates of the turning points in the contractions and expansions are similar in the three countries. In particular, the "Volcker recession" of 1982-83 and the 1991 recession are almost identical. Overall, New Zealand's business cycle is in phase with Australia's over 80 percent of the time and in phase with the United States' cycle three-quarters of the time.³

However, although the timing of the New Zealand business cycles appears similar to those of Australia and the United States, the nature of those cycles is different. The New Zealand business cycle is much more irregular, with shorter expansions. The average expansion lasts less than 6 years in New Zealand compared to about 7½ years in Australia and the United States. Furthermore, economic contractions in New Zealand have been longer and deeper than those experienced in Australia and the United States.

Figure 1
Expansions and contractions in New Zealand, Australia and the United States, 1978-1999



Contractions and expansions in the business cycle are dated using NBER methodology.

Table 1

Contractions and expansion in business cycles over the last quarter of a century

Australia	Contractions		Expansions		
	New Zealand	United States	Australia	New Zealand	United States
81:4 - 83:1	82:2 - 83:1	81:3 - 82:3	72:1 - 81:4	77:4 - 82:2	75:1 - 81:3
90:1 - 91:2	89:2 - 91:2	90:2 - 91:1	83:1 - 90:1	83:1 - 89:2	82:3 - 90:2
			91:2 - present	91:2 - 97:4	91:1 - present

³ Hall, Kim and Buckle (1998) also conclude that the New Zealand business cycle is closely correlated with those of Australia and the United States.

Moreover, there is a conceptual problem with accepting the observation that the economies are contracting and expanding at roughly the same time as evidence that New Zealand has shocks that are similar to those of Australia and the United States. Observed output cycles reflect the effects of exogenous shocks *as well as* the effects of endogenous policy responses to those shocks. Thus, even if asymmetric shocks are widespread, countervailing policy could produce business cycles that look similar. If this is the case, once the ability to shift policy in different directions has been removed, asymmetric shocks will dominate the shape of the business cycle.

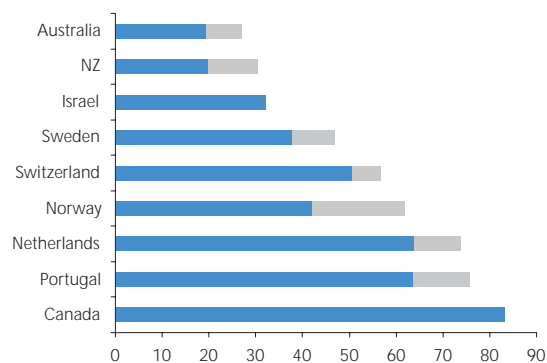
Ideally, we would like to know whether shocks that are not contaminated by policy responses are similar. Because Australia and New Zealand are largely commodity exporters and price-takers in world markets, commodity price fluctuations are important to the two economies. To determine whether shocks to New Zealand from this source are similar to those that hit Australia, we analyse

the cyclical properties of Australian and New Zealand export prices.

Our analysis suggests that aggregate export prices are in the same phase nearly 80 percent of the time. However, while the New Zealand business cycle is heavily dependent on the directions of export prices, the Australian business cycle is not. The New Zealand business cycle is in the same phase as the export price cycle over two-thirds of the time, while the Australian business cycle is in the same phase only half the time. The idiosyncratic shocks emanating from New Zealand's external sector strengthen the case for policy autonomy and suggest that significant costs may be associated with its sacrifice.

Figure 2
Concentration of trade in small industrialised nations (1997)

Source: IMF Direction of Trade Statistics Yearbook, 1998.



EMU (such as the Netherlands and Portugal), nor would it be for Canada in a North American monetary union.

The blue bars in figure 2 show the percentage of each country's exports going to the largest country or currency union the economy trades with (Australia for New Zealand, United States for Canada and Israel, Japan for Australia, Euroland

for the others). The grey bars add the United States to the figures for New Zealand and Australia and the United Kingdom to the figures for the European countries.

How might shocks change in a currency union?

We need to be cautious when interpreting the above-mentioned European and United States evidence because it may be biased. The evidence is drawn from comparing the historical performance of a group of European countries that had not yet formed a currency union with regions of the United States, which have been long-standing members of a union. It might be the case that certain patterns of behaviour now observed in the European Union will tend to evolve towards those in the United States as the currency union is fully established.

Jeffrey Frankel and Andrew Rose (1998) argue that currency union can lead to increased economic integration, which will tend to synchronise business cycles. To give an Australia-

sian example, New Zealand would tend to benefit more from a gold price boom if more New Zealand firms exported to the Australian market. Consider also the case of monetary policy shocks in Australasia. Although the Reserve Banks in Australia and New Zealand have similar monetary policy frameworks, imperfectly co-ordinated national monetary policies can still generate country-specific shocks. This source of asymmetry would disappear instantaneously if a currency union between New Zealand and Australia were implemented.

In contrast, work by Paul Krugman (1993) suggests it is possible that countries become more *specialised* in the course of increasing their trade, making them more sensitive to industry-specific shocks so that the correlation of the countries' business cycles would tend to be reduced. Thus, following the introduction of the euro, the European Union could move in the direction of the United States, with higher regional specialisation. For example, Europe's car producers are currently spread throughout Europe, while America's are concentrated in a single area. If all Europe's car producers moved into one area of Europe, that area would be much more exposed to changes in world supply of and demand for cars than before.

Jeffrey Frankel and Andrew Rose's evidence suggests that the former effects tend to dominate: closer trade links tend to lead to *closer* business cycle correlations. This suggests that as currency union increases trade, the shocks the union partners face will become more symmetric.⁴ However, existing empirical evidence may not be relevant in the New Zealand context. For example, fluctuations in the prices of New Zealand's commodity exports tend to be an important source of shocks for the New Zealand economy. Because commodity trade is unlikely to be greatly affected by currency union, this probably diminishes the potential for New Zealand's business cycle to converge to that of its union partner or partners.

From the above discussion, we can conclude that asymmetric shocks will still exist with or without a currency area. However, the existence of asymmetric shocks is not suffi-

cient to establish the case for retaining a separate currency. A currency area may still be viable in the presence of asymmetric shocks as long as there are alternative adjustment mechanisms available to deal with them. The three traditional mechanisms to consider are: wage and price flexibility, factor (capital and labour) mobility, and fiscal policy.

Alternative means of adjustment to asymmetric shocks

(i) Prices and wages adjustment

As explained in the accompanying article on "Measures of New Zealand's effective exchange rate", also in this *Bulletin*, it is the *real* exchange rate that needs to adjust in response to the asymmetric shocks discussed above. If the nominal exchange rate cannot adjust to an economic shock, these real exchange rate movements would have to come through movements in the general level of prices and wages. How feasible this is depends on how *responsive* prices and wages are to market disequilibria. Experience around the world shows that regional prices and wages respond slowly to shocks. This apparent rigidity may be caused by, for example, downward nominal rigidity in wages and salaries, by governments interfering with relative price adjustments (through agricultural subsidies and the like), or by firms having sufficient market power to dictate prices.

New Zealand's welfare in a currency union would depend on the flexibility of its wages and prices. Because the Australian and United States economies are approximately six and one hundred and twenty-five times larger than New Zealand's respectively, they would tend to dominate the adjustment process. Whenever shocks strike the area, interest and exchange rates (market imperfections aside) would essentially adjust to the rates appropriate to our union partner, rather than those appropriate to New Zealand. This would force our real exchange rate to re-equilibrate through movements in prices and wages.

It is difficult to judge whether there is sufficient price and wage flexibility in New Zealand today to facilitate smooth adjustment to country-specific shocks. While the deregulation of labour, capital, and product markets that New Zealand

⁴ However, more recent evidence by Ballabriga, Sebastian, and Valles (1999) shows that the formation of a common currency area in Europe has not yet led to more synchronised business cycles across Europe.

undertook from 1984 seems likely to have made New Zealand wages and prices more flexible, they are unlikely to adjust at the same speed as the nominal exchange rate.

As with the nature of shocks, price and wage setting behaviour may change under a new exchange rate regime. Price and wage flexibility may strengthen if the exchange rate is given up as an adjustment mechanism. For example, once competitive devaluations are no longer feasible as a way of regaining competitiveness, nominal salary and wage cuts might begin to be seen as 'normal'. It could be argued that independent currencies legitimise wage and price rigidity in the same way that indexing can be seen as legitimising persistent inflation.

(ii) Capital and labour mobility

If there is a shift in relative demand across countries, and the real exchange rate does not adjust, there will be unemployed resources (typically labour) in the country where demand has been reduced, unless there is a migration toward the country where demand has increased.

In the United States, labour mobility has been identified as the key regional adjustment mechanism for adjusting to regional *unemployment*, although migration does not seem to occur so much in response to *wage differentials*. In contrast, labour movements across Europe are very limited compared to those across United States regions.

While it may be that mobility would increase if a union were formed, even mobility *within* European countries is low relative to the United States, suggesting that it is not the existence of separate currencies and borders that inhibits migration. It is more likely that migration is not socially or politically acceptable as an adjustment mechanism in Europe.

In contrast, migration has been an important factor accounting for changes in New Zealand's population and labour force, suggesting it would, potentially, be a useful alternative channel of adjustment for New Zealand in a currency union.⁵

Financial capital can easily be shifted around most of the industrialised world, which facilitates variation in the rate of

investment across countries. But this cannot quickly alter the level of the capital *stock* in response to a shock, as investment assets tend to have lengthy useful lives, and are difficult to physically relocate. Some investment assets are immobile (buildings); others are sufficiently specialised that resale markets are likely to be thin (technical machinery). These factors make *disinvestment* difficult, which suggests that transfers of physical capital cannot be expected to provide a significant shock absorber in place of the exchange rate.

(iii) Fiscal policy

Most existing currency unions are sovereign nations, with a central government capable of spreading fiscal transfers around the regions of the nation. When a region is subjected to an asymmetric shock, automatic fiscal stabilisers ease the burden (taxes paid by the region fall, benefits paid to the region rise).

Is it necessary to introduce a supra-national fiscal mechanism—often termed 'fiscal federalism'—to make a currency union viable? Interregional fiscal transfers effectively create *insurance* against asymmetric shocks. For example, federal tax and spending programs in the United States automatically shift resources from prospering individuals and regions to struggling regions.⁶ This insurance is not available in a currency area without a central fiscal authority, eg in Europe where there is no substantial centralised budget (and what there is tends to be tied up in agricultural subsidies).

However, discretionary fiscal policy (involving borrowing or lending) is still possible within nations, and evidence suggests that national fiscal policies in the European Union appear to have been as effective as federal governments in the United States and Canada in cushioning shocks to incomes. But looking forward, national fiscal policy in Europe

5 For New Zealand research on migration see Poot, Nana, and Philpott (1988).

6 Sala-i-Martin and Sachs (1991) find that for each dollar fall in regional income in the United States, roughly 40 cents is absorbed by the federal government (34 cents through taxes and 6 cents through transfers), while Bayoumi and Masson (1995) using data on states rather than regions report a figure of 27 cents in the dollar for temporary fluctuations in state income, but only 20 cents in the dollar for permanent differences.

may be limited by existing debt levels and the 'excessive deficit procedure' built into the EMU arrangements.

In the New Zealand context, a currency union would be less costly if it incorporated plans for automatic fiscal stabilisers across the union. If this is not possible, then New Zealand would have to assess the extent that present debt levels would allow discretionary fiscal policy to smooth external shocks. The effectiveness of using discretionary fiscal policy instead of monetary policy as a stabilisation tool would also have to be assessed. Moreover, using fiscal policy to smooth fluctuations from external shocks could undermine the current practice of fiscal policy being guided by medium-term objectives.

Is the exchange rate a source of shocks?

At the start of this section we argued that the exchange rate is a useful mechanism to absorb asymmetric shocks. However, the exchange rate can be a source of extraneous shocks as well as a mechanism for adjusting to fundamental shocks. Financial market traders may move in "herds" or otherwise act in a way that pushes the exchange rate around for non-fundamental reasons. Moreover, problems of 'incomplete markets' may make the assessment of the fundamental exchange rate difficult.

The *Journal of Economic Perspectives* (Spring 1990) contains a symposium on some recent economic thinking on perceived excess volatility in financial markets. One idea is that 'bubbles' in asset prices can develop, so that agents feel an asset is incorrectly valued but believe the incorrect valuation is likely to persist. Another idea is that speculators can profit through inducing volatility in financial markets. That is, so-called 'noise-traders' generate volatility (or noise), then provide hedging to people who need foreign exchange for fundamental reasons. Finally, herding behaviour can be generated when traders gradually become aware of the information possessed by others through observing their trades, and this can lead to sudden large exchange rate movements as the traders all try to follow one another.⁷

Evidence that the exchange rate creates shocks, as well as absorbs them, is inconclusive. A notable cross-country study

7 See Coleman (1999) for a further discussion of noise-traders.

by Andrew Rose and Robert Flood (1995) suggests flexible exchange rates are not associated with reduced volatility in real macroeconomic variables. However, it may be that countries choose to float their exchange rate *because* of volatile economic circumstances. Contradictory evidence also exists showing output and employment to be less volatile in countries with floating exchange rates.⁸

Even a finding that floating exchange rates do tend to be excessively volatile would not yield any obvious policy implications with regard to the choice of exchange rate regime. New Zealand trades with a diverse range of partners who tend to have floating exchange rates against each other. So fixing the New Zealand dollar against any one partner would only protect a small proportion of New Zealand's exporters from exchange rate volatility.

While some commentators suggest the size of the New Zealand dollar market may make it more prone to large cyclical movements, there is little evidence that this is actually the case. For example, the December 1998 *Bulletin* provides evidence that the New Zealand dollar appreciation over 1993-97 was by no means unique amongst OECD countries in the 1990s. The International Monetary Fund, in their 1999 review of New Zealand, came to the same conclusion.⁹

Reduced transaction costs

An initial benefit from currency union is the elimination of transaction costs: there is no longer a need to convert currencies when trading with other countries within the union. In principle, the costs involved in exchanging different currencies constitute a net dead-weight loss for a nation as a whole.

Although it is difficult to arrive at reliable estimates of the magnitude of savings involved, official estimates by the European Commission suggest the formation of the euro could save between 0.3 and 0.4 percent of GDP per year for the European Union as a whole.¹⁰ The benefits are expected to

8 For example see Ghosh *et al* (1997).

9 See Brook, Collins, and Smith (1998) and Aziz (1999).

10 Emerson *et al* (1992) surveyed financial intermediaries to estimate the revenues they made on foreign exchange transactions. To corroborate the survey results, BIS capital flow data and assumptions about the margins charged on exchange rate transactions were used to generate alternative estimates, which proved to be similar.

accrue disproportionately to the smaller, less-developed European Union countries, where weaker technology makes foreign exchange transactions more costly, and where trade is frequently denominated in foreign currencies (for example, Greek trade with Germany is more likely to be invoiced in German than Greek currency). The gains for large European Union countries with modern financial systems are only expected to be about half the overall estimate.

It seems likely that Australasia in 1999 has as modern a financial system as Germany and France in 1992, which suggests that the transaction cost reduction in an Australasian context would be less than the European Union average. However, New Zealand might gain more than Australia, if trade between Australia and New Zealand currently tends to be denominated in Australian dollars. If these effects balanced out, adopting the European Commission's central estimate (0.4 percent) and adjusting for the size of trade flows would give an approximate estimate for New Zealand's potential transaction costs saving from an Australasian union. In 1989, intra-European Union trade was 14 percent of European Union GDP. New Zealand trade with Australia comprises just 4.5 percent of New Zealand's GDP. This implies potential transaction cost savings for New Zealand from currency union with Australia of around 0.13 percent of GDP per year (or about \$40 per person). New Zealand's trade with the United States is somewhat smaller, but trade with other countries may often be invoiced in United States dollars, so the transaction cost savings in a US-New Zealand union might be higher.

Besides currency conversion, there are likely to be additional financial costs associated with overseas trade. For example, letters of credit are sometimes required. However, anecdotal evidence suggests that New Zealand trade across the Tasman is increasingly invoiced in much the same way as domestic transactions. Whether currency union would make this practice more common, and generate further cost savings, is not clear.

Overall, these points suggest the transaction cost savings from entry into a currency union would be relatively small for New Zealand, largely because any single union could only reduce transaction costs for a small portion of New Zealand's trade.

Reduced uncertainty

A second benefit from joining a currency union would be a reduction in the degree of uncertainty presently associated with exchange rate movements. Reducing this uncertainty could enhance trade, capital flows, and investment, placing New Zealand on a higher growth path. However, evidence about the effects of exchange rate variability on exports, capital flows, and investment is inconclusive, suggesting that the magnitude of saving may not be very high.

Trade could be enhanced since exporters and importers would face lower risks from exchange rate fluctuations. For example, a contract in the seller's currency can leave the buyer uncertain as to the amount (in their own currency) they will actually have to pay on delivery. On the other hand, exchange rate fluctuations that occur in response to terms of trade movements tend to *reduce* price volatility. For example, conventional wisdom suggests that a dairy price collapse would lead the New Zealand dollar to depreciate, offsetting the reduction in returns to dairy farmers. This may explain why it is difficult to find an adverse effect of exchange rate volatility on international trade in the data—a longstanding puzzle in international finance. Another explanation for this puzzle is the availability of hedging instruments.¹¹

If exchange rate fluctuations deter investors, New Zealand may be paying an exchange risk premium on New Zealand dollar denominated debt.¹² That is, overseas lenders might require a higher return to invest in New Zealand dollar assets than an equivalent foreign currency-denominated asset because they: (i) expect the New Zealand dollar to fluctuate against their home currency; or (ii) are concerned that the small market in the New Zealand dollar could make it costly to exit quickly.

Since a currency union reduces exchange rate variability against the union partner, it may lead to a decrease in the risk premium built into New Zealand interest rates. In turn,

11 There are a large number of empirical papers on the impact of exchange rate volatility on trade. Most studies do not find a negative effect that is statistically significant and/or quantitatively large. For example, see Gagnon (1993).

12 The term 'exchange risk premium' comes from Frankel (1993). The exchange risk premium is technically the gap between the forward discount on the domestic currency and the expected change in the spot rate.

this would tend to increase investment, by making attractive 'marginal' projects that are not currently undertaken owing to the relative higher cost of capital associated with the risk premium.

If the exchange risk premium is large relative to that of a possible union partner, currency union could result in substantial savings. However, it is unclear to what extent the observed yield differentials between New Zealand bonds and those issued by trading partners represent an exchange risk premium. It may relate to expected inflation differentials, expected real exchange rate depreciation, or country risk (such as central government default risk or the risk of exchange controls being imposed).

Uncertainty due to exchange rate volatility may inhibit capital flows, implying that joining a currency union would relax the balance of payments financing constraint. For example, it seems that more substantial current account deficits and surpluses are run *within* countries rather than *between* countries.¹³ Also, the fact that savings and investment in individual countries tend to be highly correlated has been advanced as evidence that the capital account is not accommodating desired current account deficits. However, there are alternative explanations for this correlation, like the fact that a reduction in consumers' spending plans will automatically boost saving and raise inventory accumulation (the latter is recorded as investment). Moreover, recent evidence suggests that the capital account does not constrain desired current account deficits.¹⁴

Overall, the evidence that separate currencies somehow inhibit access to capital, relative to the access available to a region within a single currency area, is inconclusive. Instead,

we suspect most international lenders considering investing here have focused on the quality of the loan and the economic fundamentals of New Zealand, rather than on the current account position. These fundamentals (including our legal structure, fiscal and monetary policy framework, and sound financial sector) are likely to matter much more than effects associated with a separate currency.

Finally, even if exchange rate volatility does impede trade flows, capital flows, or investment, in a modern financial system it is possible to reduce this risk without joining a currency union. Forward contracts and options potentially offer a way of doing this. For example, New Zealand borrowers tend to hedge foreign currency-denominated obligations into New Zealand dollar obligations. However, it is not clear that contracts are readily available for longer horizons.¹⁵

Reduced market segmentation

Different currencies may allow or make it easier for companies to *price discriminate*, that is, sell goods at different prices in different countries. A commonly cited example is the fact that identical cars cost different amounts in different European countries.

The extent to which different currencies allow price discrimination is unclear. A single currency would provide an enhanced basis for price comparison, but institutional/regulatory factors such as indirect taxes, exclusive dealerships, and rules restricting parallel importing may be more important factors.

In Europe and across the Canadian/United States border, many consumers are able to shop across borders fairly costlessly. This would not be the case in, for example, an Australasian or United States /New Zealand currency union. While more purchasers (especially firms and wholesale traders) might make price comparisons between New Zealand and Australia or the United States, the effect is likely to be small. Transport costs, customs duties, GST rates, and the costs of acquiring information about overseas suppliers would seem to be a much more important impediment to cross-border trading than currency conversion.

¹⁵ Wei (1999) finds that the availability of hedging instruments is not the reason international trade is largely unaffected by exchange rate volatility but no alternative reason is offered.

¹³ Helliwell (1998), for example, shows investment and savings in Canadian provinces are basically uncorrelated, suggesting the provinces run substantial current account balances with each other. However, this interpretation of the regional data is open to dispute: Bayoumi (1997) presents results suggesting investment and savings in the larger Canadian provinces are actually quite correlated.

¹⁴ In a well known paper, Feldstein and Horioka (1980) found that in industrial countries savings and investment were highly correlated and claimed that this implies international capital mobility is limited. In contrast, Ghosh (1995) and Cashin and McDermott (1998) find capital inflows are, in many countries, excessively volatile. That is, they fluctuate more than one would expect based on what theory suggest are 'optimal' savings and investment decisions.

Goods market integration

Where economic benefits from joining a currency union may be significant is in promoting market integration and thus eliminating "home-bias" in trade.¹⁶ Recent studies have shown home-bias is surprisingly high. For example, Vancouver's trade with Toronto considerably exceeds Vancouver's trade with Seattle once the size of and distance between these cities are taken into account. This finding is corroborated by similar research suggesting that prices in Vancouver and Toronto for the same item will tend to be more correlated than prices for that item in Vancouver and Seattle.¹⁷

These effects could be caused by the fact that different nations use different currencies. However, there are many other possible explanations for "home bias", such as culture, tariffs and non-tariff barriers. Identifying the extent to which currencies are actually responsible for "home bias" is difficult.

In a study of "home-bias", Shang-Jin Wei (1996) provided country-by-country estimates of the degree of home bias. This study suggests that, controlling for the size and remoteness of New Zealand and of its trading partners, New Zealand had a relatively high "home bias" over the period from 1982-94. This seems contrary to the conventional wisdom that New Zealand is a fairly 'trade focused' nation.

We have analysed this result, and feel it needs to be treated with some caution. The Wei methodology is designed to operate on national export and import data, and estimates of national 'internal trade'. The model needs to correct for the distance between any two countries, and also the average 'internal distance' between any two people within a given country. This last factor (internal distance) is very difficult to estimate accurately, and the degree of "home bias" ascribed to a particular country critically depends on it. Our analysis of the 'internal distance' assigned to New Zealand suggests it is on the high-side, and that this essentially explains the high "home bias" figure we receive.

Even if a definitive study showed New Zealand's "home bias" was high, the policy implications of this would not be clear. Trade is also affected by factors such as tariffs and cultural effects, as well as by separate currencies being maintained. Moreover, because currency union is generally preceded and followed by harmonisation of trading standards and lowering of tariff and non-tariff barriers, the separate impact of currency union on trade is difficult to identify.

However, in addition to reducing "home-bias", closer economic integration with a trading partner could probably facilitate increased diffusion of technology and ideas across the union. This could create an impetus for productivity

Table 2
Correlation of growth in consumption and other variables, 1973-90

Country	Domestic consumption	Domestic consumption	Domestic consumption
	vs other country consumption	vs domestic output	vs other country output
New Zealand	.12	.70	.23
Australia	.36	.73	.55
United States	.62	.88	.68
21-country average	.36	.69	.47

Source: Bayoumi (1997). The table compares the correlation between domestic variables for each country in the 21 country sample (eg domestic consumption) and the average value of that variable for the other 20 countries (eg other country consumption).

¹⁶ Evidence that there is "home-bias" in trade can be found in Wei (1996) and Helliwell (1998).

¹⁷ Engel and Rogers (1996) found evidence that the border effect on price differentials is very high. Coleman and Daghli (1998) produce similar results in a study of prices in a number of cities across New Zealand and Australia.

convergence with the union partner, which could lead to significant benefits if the potential union partner were a 'productivity leader' such as the United States.

Financial market integration

There is also evidence of "home-bias" in financial markets, with people holding most of their financial wealth in domestic assets. This is inconsistent with finance theory, which suggests the optimal strategy is to diversify risk by holding most wealth in overseas assets, rather than domestic ones.¹⁸ Further evidence that financial markets are not fully integrated is the high correlation between nations' consumption and output, but low correlation in consumption across nations. If income were hedged using international asset markets, consumption across nations should be more correlated than the results in table 2 suggest.

If this financial 'border effect' is the result of currency risk, currency union will improve welfare by increasing financial diversification. But as with trade 'border effects', it is unclear how much of the effect is caused by currency risk, and how much by other factors such as capital controls and tax rules. However, it seems likely currency union would at a minimum lead to increased awareness of investment opportunities in other union countries (for example, through greater coverage in the domestic financial press).

New Zealand's size makes a "home-bias" in portfolio allocation decisions potentially more costly here than in larger economies. An investor with a diversified portfolio of United States, European Union, or even Australian assets, is subjected to considerably less risk than an investor diversified across New Zealand only. However, there are alternative policy prescriptions for increasing New Zealanders' investments abroad: for example, education campaigns, and further taxation agreements that facilitate cross border investment.

Finally, currency union might increase national diversification by allowing banks to diversify *lending* portfolios across

a larger area without worrying about exchange risk. For example, a bank in Australia without a New Zealand deposit base is exposed to exchange rate risk if they offer a mortgage to a New Zealand household, but that risk would disappear in an Australasian currency union.

Implications for firm location

Increasing economic integration has implications for firms' choice of location. If currency union promotes economic integration, this may increase the incentives for firms in one part of the union to shift to another.

Trade between industrialised nations is increasingly diverse and complex, but theory suggests trade should depend on *comparative* advantage: how a country's relative productivity in a given industry compares with its relative productivity in other industries. Every country has some comparative advantage (even if it has an absolute advantage in nothing), and so will engage in trade, although labour in relatively unproductive countries will have lower wages. These differences in wages are sustained, in part, by legal and cultural barriers to international migration.

In a single country, within which labour migration is relatively easy, there will be a long-run tendency for wages to be equalised. If all regions must pay more or less equal wages, then it will be the regions that can produce goods with an *absolute* advantage (that is, higher productivity) that will be exporters to other regions and internationally. Relatively unproductive regions will be unable to sustain a large population base.¹⁹

More specifically, while the theoretical idea that wage differentials will converge in a free labour market is not borne out by Australasian evidence, higher Australian wages do seem a likely explanation for migration of labour across the Tasman. The wage differentials seem to indicate that workers in Australia are more productive, creating an incentive for New Zealand workers to emigrate. By making wage differentials more transparent, currency union could accelerate this process.

Currency union could also alter the absolute advantages of some New Zealand industries. In an Australasian union, for

18 Indeed, because so much of the income of domestic agents is derived from wages that are positively correlated with the return on investment in domestic companies, some economists have even argued that a fully hedged domestic agent should hold short positions in domestic financial assets.

19 Krugman and Obstfeld (1994).

example, the elimination of the costs of trans-border capital flows will make it even easier to supply financial services to New Zealand from Australia. The financial services sectors in Sydney and Melbourne are likely to be relatively efficient, because of economies of scale. Other New Zealand industries might benefit from the increasing integration: we might see a larger number of Australian tourists, for example. However, two-thirds or so of the Australasian population lives along the eastern/south-eastern seaboard of Australia. Since this area forms a natural 'core' of the Australasian market, and is easier to service from Sydney than Perth or Auckland, we suspect that there would be greater pressures pulling industry towards Australia than towards New Zealand.

If the overall impact did cause significant industrial relocation across the Tasman, currency union would cause New Zealand output to fall. This has fiscal implications: if significant portions of the productive work force migrate, funding social services and the like will become difficult.

It is also possible that currency union would create pressures for political integration. This could potentially involve some central government functions and ancillary services (law, consultancy) shifting to the union partner, exacerbating the potential for decline in New Zealand economic activity.

3 Political and institutional issues

It is clear that political issues would be extremely important in a full analysis of a currency union. If the union were part of a mutually agreed programme of closer ties between New Zealand and the potential partner, the potential for country-specific shocks could be minimised through a system of fiscal transfers. The 'integration' benefits of union could also be enhanced through further trade liberalisation and regulatory convergence. Otherwise, the costs would likely be higher and the benefits less significant.

It may be that this regulatory convergence, as well as potentially easing the path toward currency union, would be desirable in its own right. To give just one example, if food labelling standards were identical in New Zealand and Australia, Australasian food producers could export to the other

union country without having to worry about re-labelling products. This would facilitate trade and increase economic efficiency.

There would be other political questions to resolve with a potential partner that would specifically relate to the currency union. For example, union countries must agree on a combined monetary policy framework. After entry, the monetary policy framework could not be changed without agreement, and the monetary authority would be less accountable to individual countries within the union.

The fact that a single monetary policy framework must be chosen in a currency union might well have been a sticking point for the idea of an Australasian currency union in the early 1990s. However, since then there has been significant convergence of the Australian and New Zealand frameworks. It is probably fair to say that any remaining differences in monetary policy frameworks could be reconciled, if currency union was thought to be desirable for wider strategic reasons. However, a currency union would still reduce New Zealand's control over future alterations to the monetary policy framework, and would diminish the degree to which the monetary authority is accountable to the New Zealand public.

The division of seignorage between New Zealand and the union partner would also have to be considered. If the 'union' involved New Zealand *unilaterally* adopting an existing currency such as the United States dollar, New Zealand would lose this source of revenue. However, if both parties considered currency union desirable, it seems likely that a 'fair' rule acceptable to both parties could be developed (as in Europe).

Besides seignorage and the monetary policy framework, there are a large number of technical details that would have to be resolved in entering a currency union, which would require co-operation with the partner. For example, New Zealand banks would need access to a settlement system (and discount window) in the new currency, and how financial supervision would be organised post-union would have to be considered.

In Europe, synchronisation of policies is expected to lead to beneficial deregulation. In New Zealand's case, the pres-

asures for synchronisation are unlikely to have this effect. In fact, to the extent that New Zealand is more deregulated than prospective union partners, partial re-regulation might be necessary.

4 Conclusions

This analysis suggests that the primary cost of currency union relates to the fact that monetary independence offers an effective way of adjusting to country-specific shocks, while the primary benefits relate to the possibility of greater microeconomic integration. It appears that while the costs would be incurred under a currency area arrangement, many of the benefits would only be gained under a currency union. For example, merely 'pegging' our exchange rate to a trading partner's would reduce our macroeconomic flexibility, without eliminating the transaction cost associated with converting the trading partner's currency to New Zealand dollars.

The extent to which monetary independence benefits New Zealand hinges on three factors:

- how important country-specific shocks are (and whether that would change in a currency union);
- how alternative adjustment mechanisms can alleviate the costs of shocks; and
- whether the exchange rate generally absorbs country-specific shocks.

The most significant potential microeconomic benefits of currency union appear to be:

- the possibility of a reduced exchange risk premium on foreign debt; and
- the possibility that economic and financial integration would significantly increase.

Economic integration could potentially increase New Zealand's gains from trade, while financial integration could lead to productive risk-sharing between New Zealand investors and foreign investors.

In addition to the economic arguments, the feasibility and desirability of a proposed union also depends crucially on political factors, such as whether both potential union part-

ners are committed to the idea of currency union and in agreement about the institutional details.

On the basis of this analysis, we feel it is impossible to say definitively whether New Zealand should be in a currency union, whether in the near term, or 15-20 years down the track. Further learning from the on-going European experience will provide us with more information, and in-depth research on each of the specific costs and benefits discussed above would also help guide any decision. Ultimately, currency union may come to be seen as an inevitable part of deepening economic and/or political relations with one or more of our trading partners. Alternatively, it may emerge that deepening economic relations can themselves provide many of the potential benefits of a currency union, while allowing New Zealand to maintain an independent monetary policy.

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