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Editor's Note

Oil prices have risen sharply in 2005, a point noted in the Bank's *Monetary Policy Statements* throughout the year. In our first article, Felix Delbruck from the Economics Department looks at the importance of oil to the New Zealand economy and the various ways in which oil prices may affect inflation. Felix finds that New Zealand's oil consumption is relatively high in relation to the size of the economy, increasing the country's potential sensitivity to an oil price shock. But he also notes that any inflationary effects will depend on a range of factors, including the degree of competition across industry and the state of the economic cycle.

Over the past 10 years, a popular topic of debate in New Zealand has been whether the country should adopt a common currency with Australia. Proponents argue that a common currency would be the natural extension to ongoing economic integration between the two countries. Opponents argue that the New Zealand's economy is fundamentally different from Australia's, meaning that a currency and independent monetary policy is warranted.

The Reserve Bank takes no position for or against a common currency recognising that a decision ever to enter into such an arrangement would ultimately be up to the government of the day. It is an issue that has political, foreign policy and national identity dimensions as well as economic ones. However, the Bank endeavours to keep abreast of the theoretical and empirical literature on common currencies in order to contribute to informed economic debate. We last reviewed this topic in the *Bulletin* in March 2001.

In the second article in this issue, Chris Hunt of the Economics Department reviews insights into the common currency debate arising from the first few years of experience with the euro. As Chris notes, the EMU has prompted some rethinking of the traditional literature on currency unions and sparked greater interest in currency unions among policymakers. Chris also briefly reviews recent research work in New Zealand looking at the potential viability of a currency union with Australia.

Our third article, by the Governor, Alan Bollard and Chris Hunt, is an abridged version of a paper prepared for a conference in mid-November commemorating the 80th anniversary of the Banco de México. The article discusses

the linkages between monetary policy and New Zealand's economic performance and asks the question – to what extent can the lift in the country's growth performance since the 1990s be attributed to monetary policy? It concludes that New Zealand's inflation targeting framework has assisted in boosting growth performance, but that many other factors are relevant.

Finally, this issue includes a recent speech by the Governor dealing with the topic of imbalances in the New Zealand economy – a growing current account deficit and falling savings and rising debt in the household sector. The speech discusses the adjustment process that is likely to occur when these imbalances begin to correct and the associated monetary policy implications. You can read all Reserve Bank speeches at www.rbnz.govt.nz.

I hope you find this issue of the *Bulletin* interesting. On behalf of the Reserve Bank, I would like wish all readers a Merry Christmas and a rewarding 2006.

Bernard Hodgetts

Editor

Reserve Bank of New Zealand *Bulletin*

PO Box 2498

Wellington 6001

Telephone 64 4 473-3781

Facsimile 64 4 473 1209

email: hodgettsb@rbnz.govt.nz



Oil prices and the New Zealand economy

Felix Delbruck, Economics Department

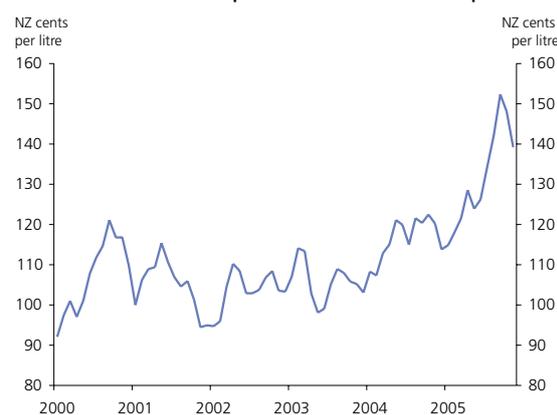
This article looks at New Zealand's oil consumption at a disaggregated level and discusses the consequences of movements in international oil prices for inflation, taking into account New Zealand's industry structure as well as the tax treatment of different fuel types. Relative to the size of its economy, New Zealand uses a comparatively large amount of oil as transport fuel. The evidence suggests that the indirect (cost-push) effects of higher oil prices on consumer prices could be quite large, substantially driven by higher transport services costs. How large they turn out to be, and whether they matter for medium-term inflation and monetary policy, will depend on factors such as the state of the economic cycle, the degree of competition in particular industries, and the extent to which inflation expectations are anchored.

1 Introduction

Since 1999, US dollar oil prices have more than tripled, rising from under US\$20 a barrel to over US\$60 a barrel. Since 2003 alone they have more than doubled, driven up by growing world demand, by tight production capacity, particularly in refining, and, more recently, by the disruptions caused by Hurricane Katrina in the southern US. In inflation-adjusted terms, US dollar oil prices are at levels last seen after the second oil shock in the early 1980s (see figure 1 below). In New Zealand dollar terms, the current level of world oil prices is not quite as high relative to history. When adjusted for inflation, New Zealand dollar oil prices have only very recently exceeded their previous highs in 2000, when they were pushed up by a cyclically low exchange rate, and remain well below levels seen in the first half of the 1980s. Nevertheless, the rate of increase since 2004 has

been considerable, and local petrol prices have also risen sharply from just over \$1 per litre in 2003 to as high as \$1.50 per litre in 2005 (see figure 2 below).

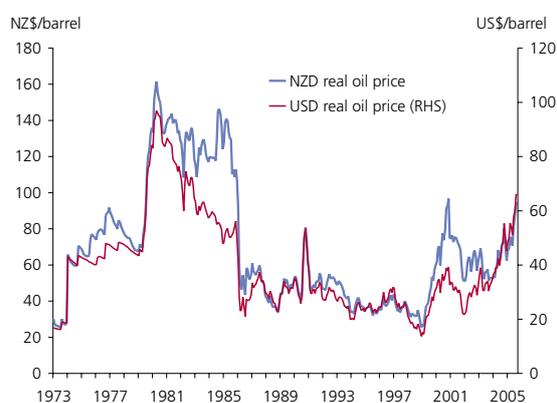
Figure 2
New Zealand retail price of 91 unleaded petrol



Source: Ministry of Economic Development

Figure 1
Real oil prices in 2005 US and New Zealand dollars

(West Texas Intermediate price)



Source: Bloomberg, Datastream, RBNZ estimates

These recent price increases make it timely to examine the importance of oil to the New Zealand economy and the way in which changes in world oil prices affect us. In this article, we look at New Zealand's oil consumption across different sectors and compare it with consumption patterns in other OECD economies. We then examine how changes in the behaviour of international oil prices can influence prices here in New Zealand, taking into account factors such as the use of fuel in different industries and the tax treatment of petrol and other types of fuel.

We find that, relative to the size of its economy, New Zealand consumes a comparatively large amount of oil as transport fuel. A relatively large part of New Zealand's transport fuel use consists of diesel and jet fuel, rather than the petrol

predominantly used to fuel private cars. Consistently with this, we calculate that the indirect effect of a change in oil prices on consumer prices (through higher costs of transport services and other goods and services, as opposed to the cost of petrol itself) could be quite large. However, how large these indirect effects turn out to be will depend very much on how persistent the higher fuel prices are expected to be, the state of the economic cycle, and the degree of competition in individual industries. The effect on medium-term inflation will also depend on how higher international fuel prices affect domestic and external demand, and on how anchored expectations of medium-term inflation are by the monetary policy framework.

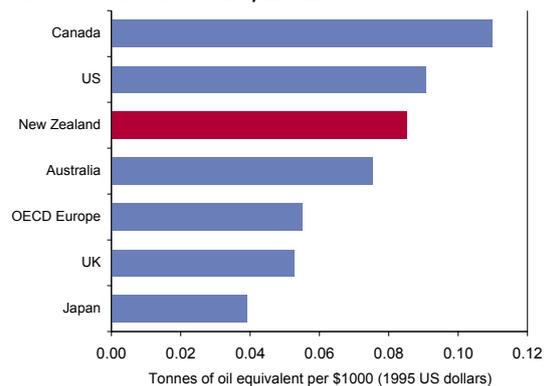
2. NZ's oil dependency in international comparison

To begin, we look at how sensitive the New Zealand economy is to high oil prices compared with other OECD countries - how much oil (in the form of petrol, diesel, jet fuel, and other refined petroleum products) we consume, for what purpose, and what this suggests for the ease with which consumption can adjust.¹ The comparison suggests that while one cannot unambiguously say that New Zealand's total use of oil is unusually large relative to the size of the economy - it depends on how one measures the size of the economy - we do seem to use a relatively large amount of oil for transport fuel. When we break down the source of our oil use for transport purposes, a relatively large part is attributable to diesel and aviation fuel, which are mainly used by businesses. Diesel has also been the main contributor to increases in our oil use over the last decade and a half. While it is not immediately clear what is behind our relatively heavy use of fuel other than petrol, it does suggest that the indirect effects of higher fuel prices - through an increase in

the costs of providing public transport and other goods and services - may be more important than in other countries.²

Figures 3 and 4 show how New Zealand ranked in terms of the intensity of its oil consumption in 2002, relative to GDP and per capita. The results are clearly somewhat sensitive to how the size of the economy is measured. Relative to GDP, New Zealand oil use is relatively high, closer to oil use in North America than to that in Europe or Japan. Per head of population, on the other hand, there is a clear gap between North America and other OECD countries, with New Zealand falling somewhere between Japan and Europe. Evidently, the fact that Japan and Europe use so much less oil relative to their GDP is partly due to the higher per capita GDP in those countries, rather than to a lower per capita use of oil.³

Figure 3
Oil use relative to GDP, 2002



Source: International Energy Agency

If we dig a little deeper into the sources of our oil use, however, it turns out that the reason why New Zealand appears to use so much less oil per capita than the North American countries is that, like Australia, it uses relatively little for purposes other than transport (for example, for heating, power generation, or in manufacturing of plastics). In terms of per capita use of transport fuel, by contrast, New

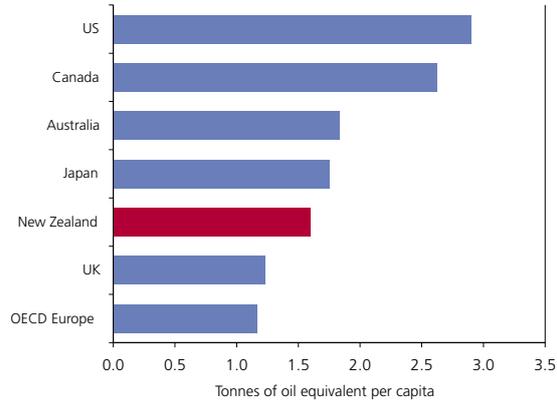
¹ Most of this section makes use of internationally comparable data from the International Energy Agency for 2002. For comparability of energy sources, physical use is given in tons of oil equivalent. One ton of oil equivalent corresponds to 41.868 gigajoules.

² While not directly relevant to the question of how exposed New Zealand is to oil-related cost shocks, another potentially important dimension of our dependence on international oil markets - one which matters for third-round effects through the current account - is the amount of crude oil and refined petroleum that we import

and export. New Zealand's net imports of both crude oil and refined petroleum (relative to total supply) are comparatively high, but not as high as in Japan or some European countries.

³ The GDP data are expressed in US dollars at market exchange rates. If they are adjusted for differences in purchasing power across countries, New Zealand's relative oil intensity falls relative to that of Japan and Europe - expenditure on oil there is high, but other domestic production inputs can also command a higher value than in New Zealand.

Figure 4
Oil use per capita, 2002

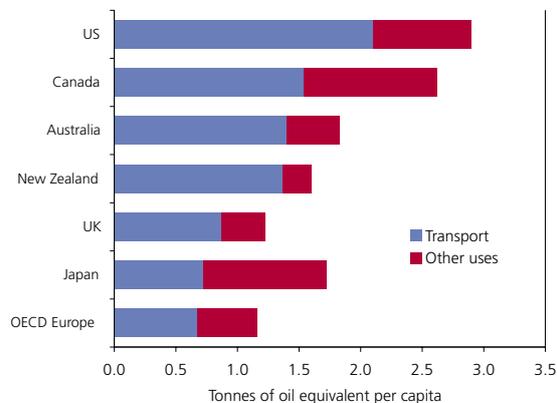


Source: International Energy Agency

Zealand is clearly part of a group of higher-use countries, with the US leading the way (figure 5).⁴

In part, New Zealand's low use of oil for purposes other than transport is likely to reflect our relatively small manufacturing sector. To that extent it may be a misleading indicator of our oil dependency: we rely on imports from countries like Japan which use more oil in industry, and are therefore indirectly dependent on the oil that we are not using in our own manufacturing processes. However, figure 6 shows that non-transport use of oil by households (presumably mainly for heating) is also unusually low in New Zealand.

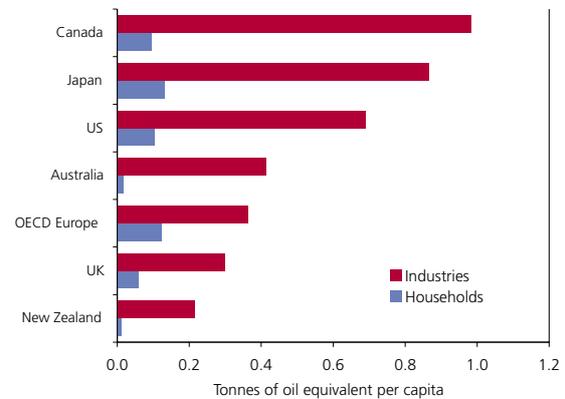
Figure 5
Oil use per capita for transport and other purposes, 2002



Source: International Energy Agency

⁴ Unlike for total oil intensity, here the story is substantially the same if oil use is measured relative to different GDP measures. Our effective transport use is probably somewhat higher still, since the IEA's 'transport' category does not include fuel used for fishing boats and tractors.

Figure 6
Oil use per capita for non-transport purposes by households and industries, 2002

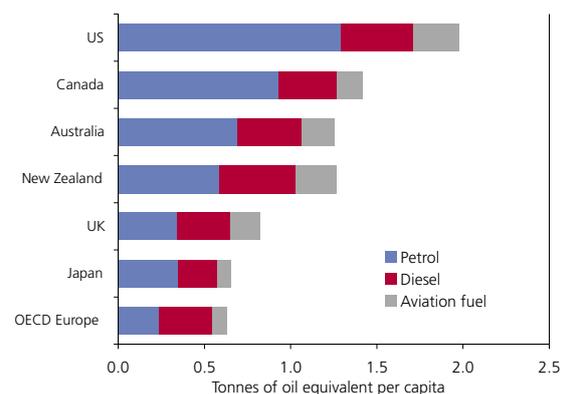


Source: International Energy Agency

It is not possible to break down the use of transport fuel shown in figure 5 by sector. However, breaking it down by fuel type (as in figure 7) is suggestive: use of petrol per capita, while clearly higher than in Japan or Europe, is lower than in North America or Australia, whereas use of diesel and aviation fuel is comparatively high (more strikingly so when measured relative to GDP). Because little diesel is used to fuel private cars in New Zealand, this suggests that our relatively heavy use of transport fuel is partly due to relatively high use of fuel by businesses (or public transport providers) rather than by private households.

It is also instructive to look at how New Zealand's oil use has changed over time. From 1986, when the price of oil fell sharply, oil use per capita in most OECD countries increased.

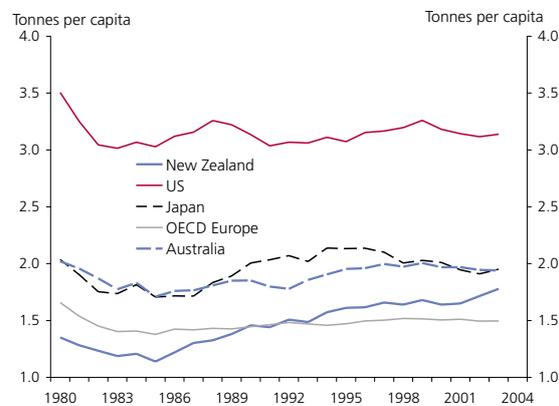
Figure 7
Oil use per capita for transport purposes, by fuel type, 2002



Source: International Energy Agency

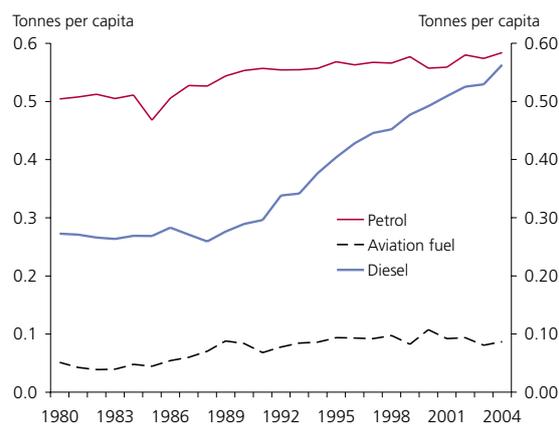
In New Zealand, however, oil use has risen more steeply, increasing by roughly 50 per cent since the late 1980s (Figure 8). Figure 9 shows that although petrol use per capita increased in the late 1980s (reflecting a reduction in car import barriers and an end to subsidies of alternative motor fuels such as CNG), the bulk of the increase is attributable to diesel fuel, and has continued through the 1990s. Data on New Zealand's energy use suggest that by far the main use of diesel is for transport, so this probably reflects an increase in the number of tractors and trucks.

Figure 8
Oil use per capita, 1980–2003



Source: US Department of Energy

Figure 9
New Zealand's oil use per capita, by fuel type, 1980–2003



Source: Ministry of Economic Development, US Department of Energy

It is not immediately clear why the use of fuels other than petrol is relatively high in New Zealand, and what this means for the ease with which the economy could adjust to higher oil prices. New Zealand's relatively heavy use of transport fuel by public transport providers and other businesses may

indicate that our use of oil is dependent on factors such as the combination of a small population and geographical length, or New Zealand's isolation as an island from larger population centres. This may make it more costly to adjust in the face of higher prices than if, say, we had simply chosen to drive big cars.⁵ On the other hand, it may reflect the fact that diesel-powered vehicles are taxed via road user charges which make the tax bill dependent on factors such as vehicle weight and distance travelled, rather than the amount of fuel used. In any case, however, this feature of the data suggests that any indirect effects of higher fuel prices on inflation and economic activity (through higher production costs, rather than through the direct effect of higher petrol prices on consumption costs) may be relatively large in New Zealand.

3 International oil prices and inflation

From the point of view of the Reserve Bank, changes in oil prices are of particular interest in terms of how they affect medium-term inflation pressures. The transmission mechanism linking an increase in international oil prices to CPI inflation is complex and the strength and timing of the different channels depends on the circumstances. Nevertheless it can be conceptually useful to categorise the linkages into first-round, second-round and third-round effects, as shown in figure 10 opposite:

- First-round effects. Changes in international oil prices are passed through to domestic petrol prices almost immediately. Petrol prices are a component of the CPI and so an increase in petrol prices will have a direct and immediate effect on inflation. In addition, oil products such as petrol, diesel and aviation fuel are an input in the production process of many firms, either directly or through their use of transport services such as air freight. Hence an increase in fuel prices will put immediate pressure on the costs faced by those firms. An increase

⁵ The MED's Energy Data File and Statistics New Zealand's Energy Flow accounts together suggest that much of our high use of aviation fuel is due to refuelling on international flights.

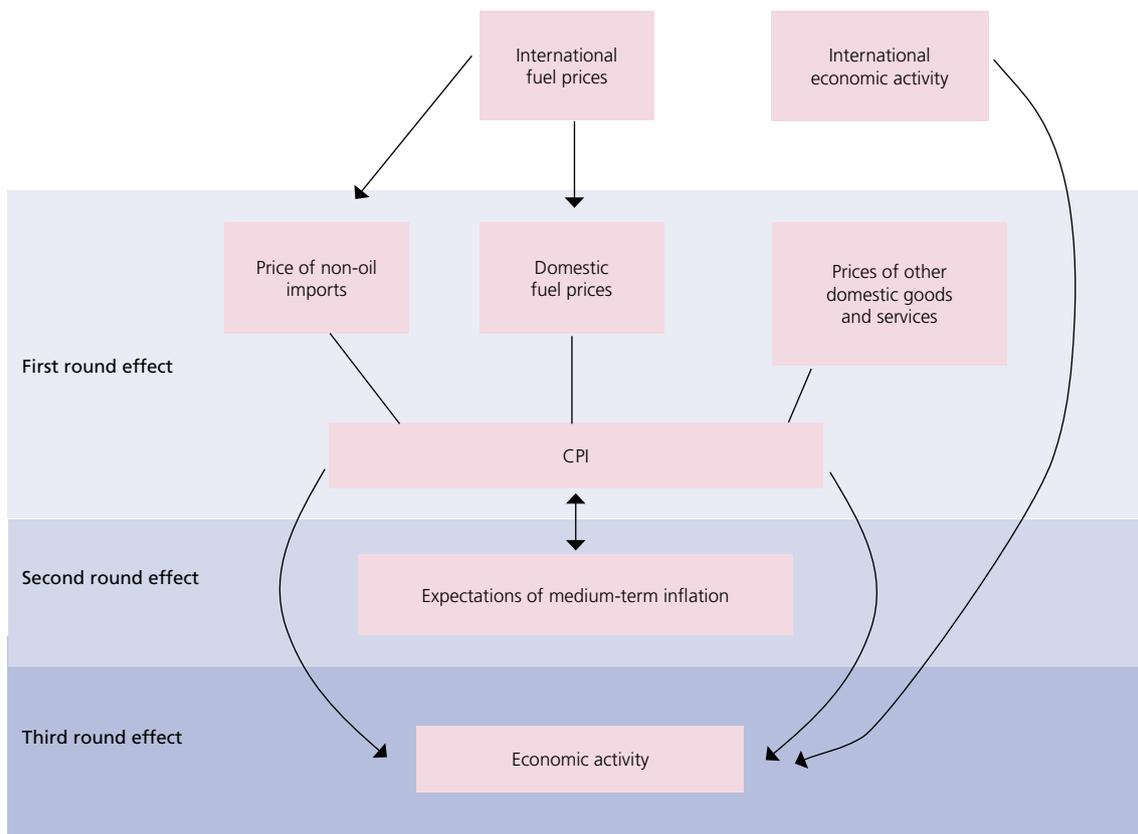
in international fuel prices may also raise the prices of imported goods, by raising international production and freight costs. Even if oil price permanently move to a higher or lower level, these first-round effects on inflation should be temporary.

- Second-round effects. Second-round effects occur if there are compensatory increases in prices and wages as firms and households each attempt to pass on increases in fuel and transport costs, and the first-round effects ‘spill over’ into public perceptions of medium-term inflation. It is through these second-round effects that higher oil prices can lead to higher medium-term inflation.
- Third-round effects. Higher oil prices may also have adverse effects on economic activity, which would tend to reduce medium-term inflation pressure. For example, higher oil prices could cause weaker economic activity if households reduce their non-oil consumption in response to their higher expenditure on petrol, or if firms

reduce investment and employment as a result of lower profitability. New Zealand is also a net importer of oil, so unless non-oil imports fall, an increase in oil prices will mean a decline in the current account balance, implying a higher net foreign debt and lower consumption later. Finally, higher oil prices may also reduce economic activity in many of our trading partners that are also net importers of oil (such as Europe, the US and most of Asia), reducing demand for our exports.

In what follows, we review how international crude oil prices affect domestic fuel prices. We then look in more detail at what the consequences of a given change in domestic fuel prices might be for inflation. We give special attention to quantifying the (direct and indirect) first-round effects. Ultimately, what matters for monetary policy is how these increases in costs feed through to medium-term inflation pressures. However, this depends on numerous factors and is considerably harder to quantify.

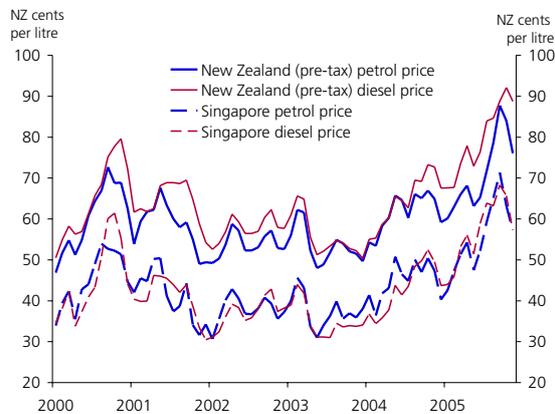
Figure 10
The transmission mechanism between oil prices and consumer prices



The price of crude oil and the price of fuel at the pump

As figure 11 shows for petrol and diesel,⁶ New Zealand prices of refined oil products are fairly closely correlated with the corresponding Singapore spot prices (in New Zealand cents per litre): New Zealand's imports of petrol and other oil products are largely sourced from Singapore (a major refinery centre) and Australia, which in turn imports from Singapore.

Figure 11
The Singapore and domestic (pre-tax) price of petrol and diesel



Source: Ministry of Economic Development

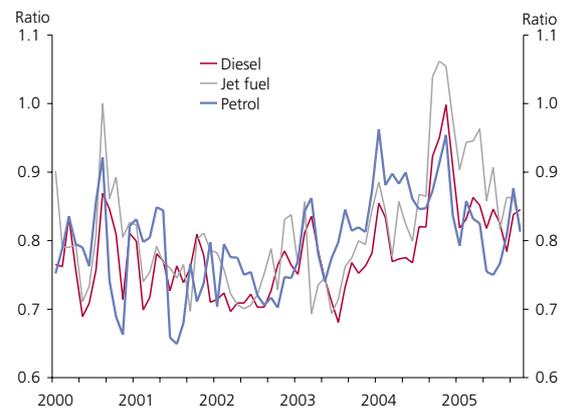
How then do Singapore refined product prices respond to a given increase in international crude oil prices? Under a given refining process, a barrel of crude oil of a given grade yields a certain quantity of a variety of refined products, some higher in energy content and economic value than others. Given the yield of each refined product, once adjustments for quality variations and the like are made and refining and shipping costs are subtracted, the prices of the refined products will imply a breakeven or 'netback' value to the refinery of this particular grade of crude oil. Refining will not be a profitable business if the price of a barrel of crude oil exceeds its netback value. Hence the economics suggest that there should be a long-run relationship between the price of crude oil and the various refined prices.

However, this need not imply a stable relationship between the price of any one refined product and the crude oil

price. The relationship between the crude oil price and the Singapore petrol or diesel price will change as a result of changes in relative refining yields or demands for the different products (for instance, a shift in demand towards 'cleaner' fuels will raise their prices relative to the crude oil price). The relationship may also be non-linear: for large shocks to the crude oil price, differences in the elasticities of demand for the various refined products may become more significant.⁷ Finally, the relationship will vary in the short term as yields, relative demands, and refinery costs fluctuate.

Nevertheless, on the basis of relationships in recent years we believe that, as a rough rule of thumb, we can assume an approximately multiplicative relationship between the crude oil price and the prices of Singapore refined products, at least over the longer term. First, any refining costs that may not vary with the crude oil price (and hence disturb such a proportional relationship) appear to be small.⁸ Secondly, figure 12 below shows the ratio between the Singapore

Figure 12
Ratio of the Singapore petrol, diesel and jet fuel price (in NZ cents per litre) to the Dubai crude oil price (in NZ dollars per barrel)



Source: Ministry of Economic Development, Datastream

⁷ For example, in many situations one would expect the demand for transport fuels to be less elastic than the demand for heating oil. As a result, a substantial increase in the crude oil price would lead to a relatively greater increase in the price of petrol or diesel.

⁸ Indicative estimates by the Australian Department of Industry, Tourism and Resources in 1999 of the costs faced by a representative Singapore Refinery suggest that at the time, operating and freight costs constituted less than 10 per cent of the total refinery price; to the extent that these costs have not risen since with the crude oil price, they would be a substantially smaller component of the total refined price now.

⁶ Comparable data is not readily available for jet fuel.

petrol, diesel and jet fuel price (in NZ cents per litre) and the Dubai crude oil price (in NZ dollars per barrel) since 2000. Although the ratio has been quite volatile over much of that time – highlighting the fact that the relationship between the crude oil price and each refined price is subject to numerous influences – it has not shown obvious trends, it does appear to have increased slightly in the last year or two. A shift up in the refining margin would be consistent with growing demand for refined oil products (especially from China) having absorbed excess refining capacity in Asia as a result of growing demand for refined petroleum. One might expect it to persist for some time, at least until new refining capacity comes on line. The average ratio since 2000 suggests that, on average, an increase in the Dubai crude oil price of NZ\$10 per barrel can be associated with a fairly uniform increase in Singapore petrol, diesel and jet kerosene of about 8 cents per litre; the average ratio since 2004 suggests an increase in the refined prices of 8.5 to 9 cents per litre.

The relationship between the domestic retail petrol price that enters the CPI and the Singapore petrol price is more straightforward. As we have seen from figure 11, the (pre-tax) domestic diesel and petrol price have tended to move fairly closely together with the corresponding Singapore price in recent years. Although the spread between the domestic and Singapore refined prices fluctuates – reflecting freight, insurance and distribution costs as well as retailers' profit margins – over the last six years it has remained fairly stable at about 15 cents per litre for petrol and 20 cents per litre for diesel. This is despite an increase in the Singapore price of 50 per cent or more.⁹

The remainder of the domestic fuel price is made up of excise taxes and GST. Excise taxes are negligible for diesel and aviation fuel, but, at 48 cents per litre, they currently constitute roughly two fifths of the ex-GST domestic petrol price. (See Box 1 for a comparison of New Zealand's fuel taxes with those in other OECD countries; the comparison suggests that our petrol taxes are relatively low.)

⁹ Petrol margins fell sharply between 1997 and 2000 and are at low levels compared to the 1990s (see the MED's July 2005 Energy Data File, Chart I.9b).

The table below summarises the different components of the retail petrol and diesel price (with GST included in each component). Based on the average relationship between the Singapore petrol and diesel price and the crude oil price over the last six years, we might roughly expect to see an 8 cents per litre increase in the Singapore price for every NZ\$10/bbl increase in the Dubai crude oil price (perhaps 9 cents per litre if the refining margin has increased). And if we assume that petrol and diesel importer margins and excise taxes do not change in response to a change in international fuel prices, we can expect this increase in the Singapore price to translate into a 9 or 10 cents per litre increase in the domestic retail petrol and diesel price (including GST). This would represent a 0.6 per cent increase for a NZ\$1.40 per litre petrol price, and a 1 per cent increase for a NZ\$0.95 per litre diesel price.

Table 1
Components of domestic petrol and diesel prices
(NZ c/L, each component includes GST)

	Petrol	Diesel
Singapore refined price	0.9 to 1 times the Dubai crude oil price (in NZ\$/bbl)	
Import, transport and trade costs and margins (average 1999 - 2005)	18	23.6
Excise taxes	53.7	0.3

Domestic fuel prices and inflation

As noted at the beginning of this section, the first-round effect of higher fuel prices on consumer prices can be separated into a 'direct' and an 'indirect' effect. The direct effect reflects the fact that households find themselves having to spend more on petrol; the indirect effect reflects an increase in the cost of public transport and of other goods and services which use petroleum products as a production input.

The direct effect is easy to quantify if we assume no substitution towards or away from oil in response to a

Box 1

New Zealand's fuel taxes in international comparison

The table below compares New Zealand fuel tax rates to those in other countries. These numbers include any GST component, which would move in proportion to changes in the ex-GST fuel price. Nevertheless, the GST component will be comparatively small, and the table suggests that while taxes in New Zealand make petrol and diesel prices less sensitive to movements in international oil prices in New Zealand than in the US or Canada, New Zealand prices are considerably more exposed than in Japan or some European countries. We are also unusual in imposing a much higher charge on petrol use than on diesel use. Diesel-fueled vehicles in New Zealand face road user charges that are not directly linked to the amount of fuel used. Given that diesel is used almost exclusively for commercial purposes, this suggests that commercial users in New Zealand may on average be fairly exposed to oil price movements, in international comparison.

Proportion of total petrol and diesel price paid as tax (as at September 2005)

	Petrol	Diesel
UK	65%	57%
France	62%	45%
Germany	62%	48%
Italy	60%	42%
Spain	51%	35%
Japan	44%	34%
NZ	42%	11%
Canada	29%	24%
US	14%	17%

Source: International Energy Agency, Ministry of Economic Development

change in prices (this is a reasonable approximation in the short run at least). Suppose that international oil price developments led to a 10 cents per litre increase in the local price of petrol. In the current CPI regimen (last re-weighted in the June quarter of 2002), petrol has a weight of 3.12 per cent. This implies that in 2002, when the petrol price was about 100 c/L, a 10 c/L increase in the petrol price would have led to an increase in the average household's living cost of about 0.3 per cent. Because the total CPI has increased by about 8 per cent since then, however, the impact today would be closer to 0.28 per cent.

As we shall discuss, the size of the indirect effect is harder to estimate. However, to get a sense of how large it might be, we use data from the Energy Flow Accounts and the Input-Output tables produced by Statistics New Zealand for the 1995/1996 year (the latest for which the Input-Output tables are available). These contain information about the share of refined oil products in the production costs of different industries in 1996, as well as the weight of each industry's output both in other industries' production costs and in total household consumption expenditure (see Box 2 for a summary of the industries that, according to the data, are likely to face the biggest increases in production costs as a result of higher fuel and domestic transport services prices). The expenditure data strip out taxes on products (including fuel excise taxes),¹⁰ and so automatically account for the fact that users of diesel or aviation fuel are, other things being equal, more sensitive to a given dollar increase in the price of those fuels than users of petrol. They therefore allow the calculation of indirect flow-on effects on consumer prices corresponding to a given increase in the petrol price, under the following assumptions:

- The pre-tax prices of diesel and aviation fuel increase in proportion to the pre-tax petrol price;
- firms fully pass any increase in costs on to each other and to households;
- there are no changes in wages or other factor prices.

¹⁰ The input-output data for expenditure on a given industry's output do not include taxes in the first place. The Energy Flow Account figures include the excise tax on petrol, but we have adjusted the expenditure numbers on petrol accordingly.

Of course, just as the 2002 weight of petrol in the CPI would overstate the direct inflation effect of a 10 cents per litre increase in the petrol price today (given the drift in the CPI since then) these industry expenditure weights are likely to overstate the corresponding indirect effects. However, it turns out that the relative size of the direct and indirect effects that we calculate for 1996 should remain valid today, provided we make the additional assumptions that

- there have been no material changes in real consumption patterns since 1996;
- relative producer prices have moved in the same proportion as the corresponding consumer prices.

Under these assumptions, the data suggest the indirect effect of an oil price shock on consumer prices might be quite large - about as large as the direct effect. In other words, for a 10 cents per litre increase in the petrol price, the calculated indirect effect would add another 0.2 to 0.3 per cent on to the direct effect of 0.27 per cent. Roughly one third of this can be attributed to the effect of higher domestic transport prices on the CPI, reflecting the fact that households indirectly consume petroleum as taxi, bus or airplane passengers. Most of the remainder is due to firms passing on either higher fuel or transport costs onto consumers (for instance, transport costs would raise the retail price of food). In fact, the first-round effect might be even larger. We have seen from figure 9 that the physical use of diesel (mostly used by firms) has increased significantly relative to petrol since 1996.¹¹ Also, the calculations do not account for the effect of international fuel prices on the price of non-oil imports (due to higher international transport

costs and to the fact that oil is a production input overseas as well, for example in the manufacture of plastics).¹²

However, the assumption that industries fully pass on their higher costs is crucial to these numbers, and is undoubtedly an overstatement. The degree to which higher fuel and transport costs are passed on will depend on the state of the economic cycle and the amount of competitive pressure in a particular industry. It will also depend on how long the higher costs are expected to persist. In many cases – for example, for export-oriented industries taking world prices as given – the higher fuel costs may simply lower profitability and reduce competitiveness relative to exporters located closer to overseas customers and suppliers.

To the extent that both output and factor prices rise to compensate for the higher fuel costs, an increase in oil prices will lead to a more widespread and persistent increase in prices. At the extreme, there could be a series of compensatory wage and price adjustments that end up affecting expectations of medium-term inflation. The likelihood and size of such ‘second-round’ effects on medium-term inflation is very difficult to quantify, but it will again depend on how persistent the increase in fuel costs is expected to be and on the degree of competition in labour and product markets. It will also be influenced by how anchored inflation expectations are. On the whole, we can be fairly confident that second-round effects have become less likely than in the 1970s: labour and product markets have become more competitive, inflation expectations are likely to be more tied down by the current monetary policy framework, and higher oil prices have also been offset in recent years by lower prices of other imported goods as a result of low production costs in countries such as China.

On the other hand, if consumers or firms do not adjust wages and prices, then higher oil prices will mean less spending on other consumer goods by households and lower value added (profits and wage payments) by businesses. For example, if households reduced their spending on other goods and services by a dollar for every dollar increase in expenditure on petrol, then for a 10 cents per litre increase in the price of petrol we would expect to a roughly 0.3 per cent fall in non-oil consumption (given the weight of petrol in the CPI). Alternatively, if domestic non-oil spending does not fall,

¹¹ Also, because of tax differentials, the prices of diesel and jet fuel – mainly used by firms – have been more sensitive to increases in international fuel prices than petrol prices. However, because the input-output tables give expenditure on fuel excluding taxes, they strip out this effect.

¹² There is also the possibility of a direct link between oil prices and other energy costs such as natural gas (and hence electricity) or coal, which is not captured in the input-output framework, but the case for this looks less compelling. International coal prices are largely divorced from international oil prices, and natural gas markets are fairly segmented as a result of transportation costs. (This would change as the world LNG market develops, and as New Zealand develops the infrastructure to import LNG. However, the degree of linkage between international oil and LNG prices is not fully clear.)

Box 2***Which industries' costs are sensitive to higher oil prices?***

The table below shows those industries for which petroleum products and domestic transport services (such as air freight and trucking services) made up a relatively large proportion of their total output in 1996. The table suggests that petroleum products are a fairly large cost component of domestic transport services and agriculture. In 1996, a uniform 10 per cent increase in the pre-tax price of refined oil products would, if fully passed on by those industries, have directly led to a 1 per cent increase

in prices in the domestic transport industry, to a 0.5 per cent increase in prices in agriculture, hunting and fishing, and to a 0.2 per cent increase in prices in wholesale and retail trade. Transport services have a larger share in many industries' production costs than petroleum products do directly. Industries for which domestic transport services costs (before taxes and margins) made up more than 2 per cent of their output price in 1996 include forestry, meat processing, construction-related manufacture, extractive industries, and most manufacturing industries.

Expenditure on refined petroleum and domestic transport services (excluding taxes) as a share of various industries' gross output in 1996

Refined oil products		Domestic transport services	
Domestic Transport and Storage	10.4%	Forestry and Logging	10.5%
Agriculture, Fishing and hunting	4.6%	Slaughtering and Meat Processing	6.6%
Central Government and Defence	2.2%	Concrete, Clay, Glass and Related Minerals Manufacture	4.9%
Wholesale and Retail Trade	2.0%	Extraction, Mining, Quarrying and Exploration - including gas distribution and supply	4.2%
Extraction, Mining, Quarrying and Exploration - including gas distribution and supply	2.0%	Basic Metal Industries	4.1%
Forestry and Logging	1.3%	Beverages, Tobacco, Confectionery and Sugar, and Other Food	4.0%
Basic Metal Industries	1.2%	Wholesale and Retail Trade	3.9%
Construction	1.1%	Petroleum Product Refining, Distribution and Supply	3.8%
Chemicals, Related Products and Plastics	1.1%	Wood Processing and Wood Products	3.8%
Beverages, Tobacco, Confectionery and Sugar, and Other Food	1.1%	Paper and Paper Products, Printing and Publishing	3.3%

Source: Statistics New Zealand, Reserve Bank calculations

higher oil prices imply an increase in New Zealand's import bill and net foreign debt, which will need to be paid for by lower consumption and investment later on. Expenditure on imports of oil and refined oil products makes up roughly 2 per cent of nominal GDP, so if expenditure on crude oil and imported petroleum products increased by 10 per cent and there was no reduction in other imports, the trade balance would decline by about 0.2 per cent of GDP (although exports of petroleum products would provide a small offset). The impact of higher oil prices on New Zealand growth also depends on how they affect trading partner growth. IMF estimates suggest that as a rule of thumb, a persistent 20 per cent increase in the price of oil reduces growth in our major trading partners by 0.4 per cent after one year. Such 'third-round' effects of higher fuel prices on demand could dampen domestic inflation pressure in the medium term.

4 Summary and conclusion

In view of recent sharp increases in oil prices, this article has taken a closer look at how oil prices matter for the New Zealand economy. We compared New Zealand's oil consumption with that of other countries and found that New Zealand is a relatively heavy user of transport fuel, but a light user of oil products for residential heating and other non-transport purposes. More than in other OECD

countries, our use of transport fuel is weighted towards diesel and jet fuel, which play only a minor role in fuelling private transport. This – as well as the fact that diesel and jet fuel are much more lightly taxed than petrol in New Zealand – suggests that the indirect effects of higher oil prices on inflation and the economy, through an increase in the cost of providing transport services and other goods and services, may be relatively large. We then reviewed how higher oil prices are likely to feed through to CPI inflation in the short term and the medium term.

Examining the cost-push effects of higher fuel prices on inflation more closely using an input-output framework, we found that the indirect effects on the CPI could potentially be quite sizeable – mostly as a result of higher costs of transport services. However, the result crucially assumes that firms are fully able to pass on any higher costs, which is undoubtedly an overstatement. While higher fuel prices will lead to higher inflation in the short term, they may reduce inflation pressure in the medium term by dampening non-oil consumption. On the other hand, they may also lead to higher medium-term inflation expectations, which would otherwise boost inflation. The balance of these various effects is likely to depend on the degree of competitive pressures across different industries, other inflation developments, and on the state of the economic cycle.

A fresh look at the merits of a currency union

Chris Hunt, Economics Department

This article provides an update on the ongoing debate as to whether New Zealand should enter into a currency union with Australia. While the decision to adopt a common currency would ultimately be a political one, assessing the specific economic costs and benefits is important for informed debate. Theoretical developments in the currency union literature and the experience of actual currency unions are both relevant considerations. Experience with the European Monetary Union has focussed attention on the 'endogeneities' of optimal currency areas, where a common currency can be the catalyst for further economic integration between member states. However, the jury is still out on this front. Since our last review in 2001, there has also been some further local research looking at how a common currency might influence the New Zealand economy, but the implications of this research remain inconclusive. The case for a common currency for New Zealand and Australia, at least in economic terms, continues to be open for debate.

1 Introduction

The pace of economic integration between New Zealand and Australia has intensified over the last decade or so, as trade and investment flows deepen and regulatory practices become increasingly harmonised. Trans-Tasman economic integration reflects a regionally specific process of cooperation that began with the New Zealand Australia Free Trade Agreement (NAFTA) in 1966 and more significantly with the signing of the Closer Economic Relations (CER) agreement in 1983. Regional economic integration is also the counterpart to a broader, and more recent process of financial and economic integration embodied in the ubiquitous term 'globalisation'.

A natural question to ask is whether the full benefits of economic integration that have developed between New Zealand and Australia can be realised without a common currency. Indeed a common currency may be a catalyst for deepening the process of economic integration already well underway. Alternatively, one must also be cognisant of the economic costs of giving up one's national currency and the ability to pursue an independent monetary policy that an individual currency provides.

This article is the third in a series of periodic reviews of the currency union debate, following Björkstén (2001) and Hargreaves and McDermott (1999). The Reserve Bank takes no specific position for or against Trans-Tasman currency union per se. Rather, by reviewing both the academic and empirical literature we hope to contribute to an informed economic

debate in the New Zealand context. Ultimately however, any decision to enter into a currency union arrangement with Australia will be a political one, heavily influenced by the government of the day's vision for economic and political cooperation between the two countries.

In the next section we provide a brief overview of exchange rate regimes in general, and the traditional arguments for and against a currency union in particular. Section 3 then examines some of the insights that can be gathered from the first few years of the euro's existence. Europe's monetary experiment has precipitated a rethinking of the earlier literature assessing the costs and benefits of currency unions, while sparking a renewed interest in single currencies at a policy level. The New Zealand specific-context is then discussed in section 4. This is complemented by New Zealand focussed research undertaken since the publication of the last review. The conclusion at that time was that the "existing exchange rate system is viable and successful" (Björkstén 2001, p. 53). There is little reason to depart from this conclusion since the economic 'evidence' for or against a Trans-Tasman currency continues to be far from definitive either way.

2 Costs and Benefits of a Common Currency

At present, approximately three quarters of all independent countries have their own currencies.¹ The remaining 25 per cent either share a common currency via a monetary union, or have adopted the currency of another sovereign country – termed ‘dollarisation’.²

The decision to give up using one’s own currency and enter into a currency union – thereby irrevocably fixing one’s own currency – represents one end of an exchange rate continuum, with flexible regimes at the other. As figure 1 illustrates, in between the polar opposites of fixed and flexible exchange rate regimes lie a variety of intermediate regimes with varying degrees of intervention required to

Table 1

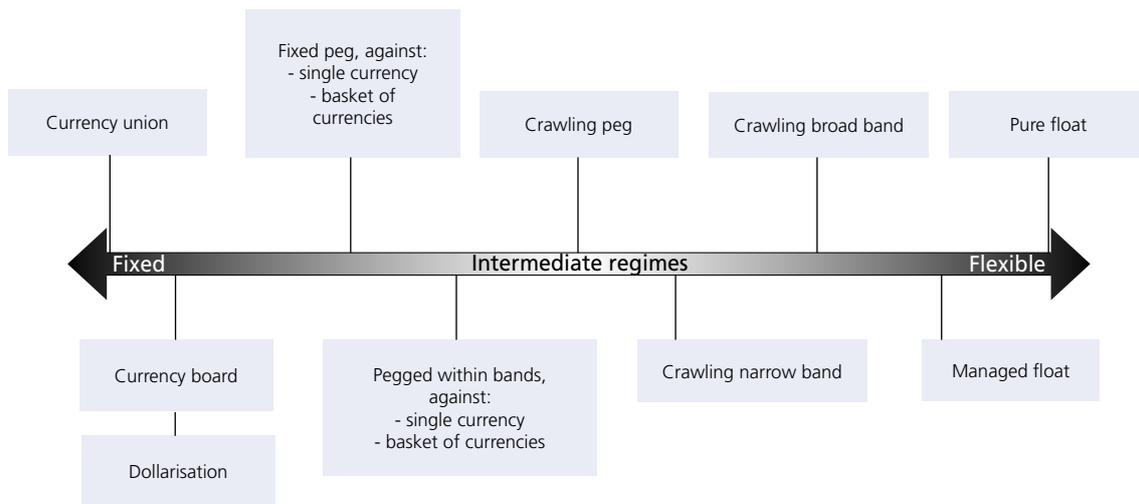
Sovereign Currencies

Sovereign countries with own currency	145	75.5%
Sovereign countries sharing a currency	32	16.7%
Fully ‘dollarised’ sovereign countries	15	7.8%
Number of independent countries	192*	100%

* 191 members + Vatican City

maintain a currency’s value.³ The particular exchange rate regime influences the various economic policy objectives that can be pursued. Economists often speak of the ‘impossible’ or ‘unholy trinity’. This says that a country cannot simultaneously have free capital mobility, a fixed

Figure 1
Exchange rate regimes



¹ An independent country is defined here by membership of the United Nations, plus the Holy See (Vatican City), which although not a member of this international organisation, is generally considered to be the smallest independent nation-state. There are other inevitable definitional grey areas as to what constitutes sovereignty, with Taiwan a prime example.

² At present there are four examples of currency unions using a shared currency – the 8 country Eastern Caribbean Currency Area (ECCA) formed in 1983; the 12 country euro zone; and 2 separate franc zones in Africa comprising 14 countries, both established in 1945. The majority of independent ‘dollarised’ countries use the US dollar. In addition, there are many non-sovereign countries which

may or may not have their own currencies. For example, Hong Kong, which is now part of China, continues to use its own currency the Hong Kong dollar which is fixed against the US dollar. By contrast, the many small overseas territories or dependencies of sovereign states tend to adopt the currency of their sovereign. The Cook Islands, Niue and the Tokelau, for example, all use the New Zealand dollar. The French dependencies in the South Pacific – French Polynesia, New Caledonia and Wallis and Fortuna – all share the CFP franc issued in Paris.

³ See the appendix for a brief description of alternative exchange rate regimes.

exchange rate, and operate an independent monetary policy directed toward domestic goals. A country which enters into a common currency arrangement, for example, gives up the ability to use domestic monetary policy instruments directed toward stabilising inflation or attaining full employment. By contrast, a country which wants to stabilise both the exchange rate and the domestic economy must impose some form of capital controls.⁴

The costs and benefits of various economic policy objectives that are traded off in the respective choice of exchange rate regime, therefore come to define the nature of any given debate. In the context of the common currency issue, this is reflected in debate over the net benefits (costs) of exchange rate stability versus the costs (benefits) of giving up monetary independence. Table 2 below summarises the costs and benefits traditionally ascribed to a common currency. Entering into a common currency arrangement reduces both the uncertainty associated with exchange rate movements vis-à-vis other partner countries, as well as eliminating the costs associated with dealing in multiple currencies. These microeconomic efficiency gains may also be matched by macroeconomic benefits in the form of lower interest rates and lower inflation rates.

But joining a currency union, whether a fully fledged monetary union like EMU, or through dollarisation, comes with a cost. An individual economy no longer has at its disposal tools to manage monetary policy directed at domestic objectives. In this regard it no longer manages inflation, nor can it use monetary policy to respond to macroeconomic shocks it faces. Indeed one of the virtues of a floating exchange rate is that it acts as a shock absorber for terms of trade shocks – that is, depreciating when an economy faces a negative demand shock from the rest of the world for example. However, if all countries within a currency union face the same shock, then the cost of losing domestic monetary policy is less of a concern, since the central bank’s response in terms of changing interest rates will be appropriate for all member states. It is when a member state faces ‘asymmetric shocks’ – shocks that affect it differently from other member states – that the relative costs of giving up an independent monetary policy will be apparent. Asymmetric shocks can occur due to different production and consumption structures across countries, or differences in the degree of exposure to international trade. In addition, a common global shock could still have differential effects on members within a currency union

Table 2
Costs and benefits of a common currency

Benefits	Costs
<ul style="list-style-type: none"> • Ties domestic inflation to partner’s inflation/or targeted currency area inflation rate – establishes an anchor for monetary policy and imports credibility. • Decreases transaction costs. • Improves microeconomic efficiency by increasing price transparency between partners. • Eliminates costs associated with exchange rate uncertainty vis-à-vis partner countries – eg hedging. • Can reduce the risk premium on interest rates in home country – currency and inflation risk. • Catalyst for further economic integration – endogenities. • Protects against domestic lobbies promoting ER manipulation. • Reduces risk of speculative attack on home country currency. 	<ul style="list-style-type: none"> • Loss of ability to maintain an independent inflation rate. • Loss of exchange rate adjustment to terms-of-trade, and other shocks. • Shocks to partner countries can get transmitted to home country. • Loss of national sovereignty. • Weakened accountability of policy makers to national citizenry. • Loss of seigniorage (under dollarisation). • One-off changeover costs.

⁴ In the aftermath of Asia’s experience during the currency crisis of 1997/98 many have questioned the efficacy of intermediate exchange rate regimes. This episode illustrated how economies with fixed but adjustable exchange rates could become more susceptible to currency speculation. In this regard, there is an

emerging consensus on the need for a ‘corner solution’ or ‘hollowing-out’ of exchange rate regimes (Wyplosz 2001, p. 124). Countries should choose either float their currencies or enter into fixed arrangements like currency boards, dollarisation, or monetary union.

owing to differences in the flexibility of product and labour markets or other regulatory differences.

Until 1999 and the creation of the euro, any weighing up of the costs and benefits of a common currency, at least in terms of full monetary union, was largely a theoretical exercise. Neither the two franc zones in Africa formed in 1945, nor the Eastern Caribbean Currency Area (ECCA) formed in 1983 proved particularly illustrative for developed economies such as New Zealand. The European monetary experiment however, has become an important marker in the common currency debate, both in terms of its technical and operational success or failure, and the way in which it influences theoretical discussions of optimal currency areas. Moreover, as Grimes notes in the context of the New Zealand debate, “[t]he economic and political success of the euro might influence the direction in which these matters evolve over the coming decade” (2002, p. 289).

3 Lessons from the Euro zone

EMU: overview

The euro came into existence in 1999 amid much fanfare as the final stage in a somewhat long, erratic and laborious process of economic integration in Europe that began back in the 1951 with the establishment of the European Coal and Steel Community. In many ways economic and monetary union (EMU) represents a pragmatic response to the wider process of economic and political integration, where exchange rate stability came to be viewed as an integral plank in the commitment to increasing trade between member states.

President of the European Central Bank (ECB) Jean-Claude Trichet has recently remarked “...the full benefits of the European common market could not be realised without the single currency”. In other words, a single currency can be seen as the catalyst for further integration - a win-win for all euro zone members.

However, this is certainly not a universally held view. Within Italy for example, there has been a significant groundswell against the euro and even calls to bring back the Italian lira. Much of this dissatisfaction has arisen because monetary

conditions set for the Euro area as a whole appear too have been too tight from an Italian perspective given that Italy is in recession.⁵ Under a currency union, the country no longer has the option to foster a competitive devaluation via nominal exchange rate adjustment or reduce interest rates since these are now set in Frankfurt.

Hence the familiar tension between macroeconomic stabilisation and microeconomic efficiency is clearly apparent in the current rhetoric. But what the ECB president’s remarks also point to is that the relative costs of losing one’s monetary policy maybe lower if a single currency can unleash endogenous forces of deeper economic integration.

Endogeneities of optimal currency areas

The evolution of European economic integration has been shadowed by the development of a theoretical apparatus within which to assess the economic merits of irrevocably fixing one’s exchange rate and entering into monetary union.⁶ This ‘optimal currency area’ (OCA) literature has outlined necessary common properties or conditions among prospective member countries for any proposed currency area to be regarded as economically viable. These properties include:

- Price and wage flexibility;
- Mobility of the factors of production;
- Financial integration;
- A degree of economic openness;
- Similarity of inflation rates;
- Diversification of production and consumption structures;
- Fiscal integration, and;
- Similarity of shocks and some degree of political integration.

According to the OCA, the need for individual floating currencies and independent monetary policies is reduced

⁵ Part of the criticism involves the allegation that when Italy’s exchange rate was irrevocably fixed in 1999 it was set at too high a rate.

⁶ For a useful overview of this literature see Mongelli (2002).

when countries share these properties. For example, if wages and prices are flexible then it is less likely that any disturbance or shock to any economy will result in sustained unemployment or loss of output. When the exchange rate is fixed there is no nominal exchange rate adjustment so the onus is on the real side of the economy to adjust. Significant nominal price and wage rigidity therefore increases the cost of losing the exchange rate as an adjustment mechanism. Financial market integration and fiscal integration both imply risk sharing mechanisms (private and public respectively for negative shocks that might affect one or more members of a currency union. In the former capital can flow more efficiently across members, while fiscal transfers can mitigate the effect of asymmetric shocks via a common supranational fiscal authority.

The traditional OCA literature saw these properties as prerequisites for the formation of a common currency, although the relative importance of each property was hotly debated. By contrast, 'new OCA theory' suggests that these properties should be thought of as characteristics that may well emerge ex post, following the formation of a common currency. In other words, a common currency area may become optimal with the passage of time. According to Mongelli (2002) this notion has shifted the overall balance in favour of currency unions vis-à-vis maintaining an independent monetary policy.⁷

In this regard, initial assessments of the progress of the euro have come to focus on the degree to which the euro area may be taking on the properties of an optimal currency area over time⁸ De Grauwe and Mongelli (2005) state in their overview paper, the evidence points to "moderate optimism" on this front (p. 29). Nevertheless, the authors

acknowledge that the European monetary project is in its infancy preventing firm conclusions on this front.

The catalyst for this reworking of traditional OCA theory came from Andrew Rose and Jeffrey Frankel's research on the relationship between currency unions and reciprocal trade. The 'Rose effect', as it has come to be known, suggested that the mere act of forming a common currency could increase trade between member countries by 200 per cent, or 3 times more than without a common currency. Moreover, the authors posited a positive correlation between trade integration and income growth, which suggests that common currencies are a vehicle for higher standards of living. According to the OECD, a 10% per cent increase in the trade to GDP ratio increases GDP per capita by 4 per cent (Cotis 2004).

Many economists, surprised by the magnitude of the Rose effect, have set about pruning the results, focussing on the nature of the sample countries used to generate the results, and specific econometric issues related to model specification.⁹ In terms of the Euro zone, Baldwin (2005) argues that some form of the Rose effect is occurring, but probably more in the order of a 5-10 per cent increase in intraregional trade (p. 41) – much smaller than the seminal Rose effect, but significant nevertheless.¹⁰ Possible explanations for the effect include the obvious reduction in transaction costs (conversion of currencies and hedging for example) increasing the volume of exports per firm, heightened competition among euro area firms via greater price transparency, and the increased number of firms engaged in exporting within the Euro zone as a result of the elimination of exchange rate uncertainty.

The removal of borders associated with multiple currencies creates other 'endogeneities' including changing the price setting and inflation process, fostering financial integration, greater symmetry of shocks and business cycle

⁷ This point is reinforced by current monetary policy orthodoxy which states there are long run neutralities associated with monetary policy. Monetary policy in the long run can only affect prices and the inflation rate as opposed to real economic variables such as output and employment. Hence the cost of giving up national monetary policy sovereignty is a short run cost at best. In addition there are question marks about the nominal exchange rate as an adjustment mechanism. If for example, the nominal exchange rate becomes a source of shocks rather than a buffer then the loss of this mechanism becomes less important.

⁸ See in particular the collection of papers from the ECB workshop 'What effect is EMU having on the euro area and its member countries', held 16 June 2005. These are available from their website at www.ecb.int.

⁹ See Baldwin (2005), Kenen (2002) and Smith (2002) for discussion of many of these issues.

¹⁰ As de Grauwe and Mongelli (2005) note, it is unclear how much of the purported trade creation effects come from the Single Market programme as opposed to the introduction of the euro per se. In addition, any trade gains are likely to occur over a 15-20 year time frame, so initial estimates may understate the ultimate trade benefits of the single currency (p. 5-6).

synchronisation and promoting product and labour market flexibility.

Price setting and inflation dynamics

By eliminating any differences in the units of accounts between members, the euro potentially makes the price system more efficient and transparent, thereby changing the way prices are set and the behaviour of aggregate inflation over time. By enhancing price transparency and price comparison for example, the euro could be a trigger for promoting price level convergence across the Euro zone, more price flexibility and the reduction of discrepancies in the size and frequency of price changes within some sectors across the Euro zone. (Angeloni, Aucremanne and Ciccarelli 2005, p. 26). Moreover, the ECB's mandate of price stability could decrease the persistence of inflation due to more firmly anchored expectations around a targeted low and stable level. In turn this could reduce inflation differentials between members of the Euro zone.

Evidence of an EMU effect is tentative at best. In terms of the frequency, size and sign of price changes, there is no clear evidence of a change since 1999, when the euro was introduced.¹¹ Similarly there is no evidence of any change in inflation persistence either (which decreased in the pre-EMU years). That said, structural changes in the price formation process that occurred before the euro's introduction could still have been caused by it given private sector expectations and policies designed to prepare each member country for EMU. Similarly, inflation differentials between member countries were significantly lowered over the course of the 1990s, but have increased slightly since the euro was introduced.

Financial Integration

Financial integration encompasses an assortment of financial instruments, financial intermediaries and a market segments. Financial market integration in this sense implies that potential market participants (with the same characteristics), face a single set of rules across the euro zone, have equal access

to a set of financial instruments or services, and are treated equally when in the market (de Grauwe and Mongelli 2005, p. 18). An integrated financial market provides insurance against shocks that affect member countries differently, by improving the interregional allocation of capital, and therefore reduces the costs of giving up national monetary policy sovereignty.

In essence, financial integration facilitates cross-country asset holdings which can act as a risk sharing mechanism. By holding claims to dividends, interest income and rental revenue in other countries of the currency area, residents provide themselves with ex ante insurance against shocks, provided these are imperfectly correlated across the member countries. In addition, an integrated financial market enables better ex post adjustment in response to income fluctuations, where residents can more easily buy/sell assets or borrow/lend in credit markets in order to smooth transitory shocks.

Some progress has been made toward financial integration within the Euro zone, particularly in the bond and money markets.¹² But it is far from a unified market (de Grauwe and Mongelli 2005, p. 22).

Symmetry of shocks and business cycle synchronisation

In the OCA literature the extent to which individual members of a currency union face similar supply and demand shocks is somewhat of a catch-all to encompass the net costs and benefits of monetary policy autonomy. When an economy experiences a shock it can respond in various ways via wage and price changes, changes in the demand and supply of factors of production such as labour or through the nominal exchange rate. As we noted earlier, this adjustment process depends on the degree of wage and price flexibility, labour mobility and the degree of risk sharing or insurance. If an individual country does not have policy autonomy, and these other adjustment mechanisms do not work well, then various shocks impacting the currency area could have a potentially detrimental impact on economic activity in the country concerned.

¹¹ There is some evidence of a cash changeover effect in 2001 however on price adjustment.

¹² For a discussion see Cappiello et al (2005).

The extent to which asymmetric shocks exist within a currency union is determined by the general co-movement of economic activity between member countries. This in turn is influenced by the relative exposure to extra-union trade, the degree of intra-regional trade, the degree of diversification in production of each country and the similarity of consumption patterns across the currency area. If production is diversified - an economy produces a bit of everything - then this dilutes the impact of shocks specific to any one sector. If, on the other hand, an economy specialises in the production of few goods and services, then this accentuates the impact of shocks.¹³

In Europe members states have similar consumption patterns, the diversification of production is reasonably high and business cycles have become more synchronous over time (Giannone and Reichlin 2005, MPC Taskforce 2004). However, the degree of specialisation in the US between states or regions is far higher. As Partridge and Rickman (2005) note, no one questions that the US is not an example of a successful currency union, despite the fact the US regional business cycles have become more idiosyncratic over the last 30 years. So it may be that the role of asymmetric shocks in the debate about the costs and benefits of a common currency has been overplayed (p. 375).

In other words, a common currency could promote more or less diversification (more specialisation) of production structures – and it is too early to prejudge the outcome. As the US example highlights, regions within the US have become more different over time in what they produce and so their business cycles have become less synchronised. All else equal, this would magnify the differential impact of economic shocks. Given that the Federal Reserve does not target monetary policy on a geographic basis, other adjustment mechanisms must operate to ameliorate these asymmetric shocks. These include local and state level fiscal policy, high interregional labour mobility and a highly integrated financial system that provides the insurance function described above. De Grauwe and Mongelli (2005) suggest it is too early to tell whether Euro zone economies will become more specialised over time. However, the

important point to note here is that “[a] common currency could be shared by countries subject to idiosyncratic shocks as long as they ‘insure’ one another through private financial markets” (Mongelli 2002, p. 13). Financial integration may even promote specialisation. This relationship between economic integration and business cycle synchronisation is shown in the figure opposite.¹⁴

Product and labour market flexibility

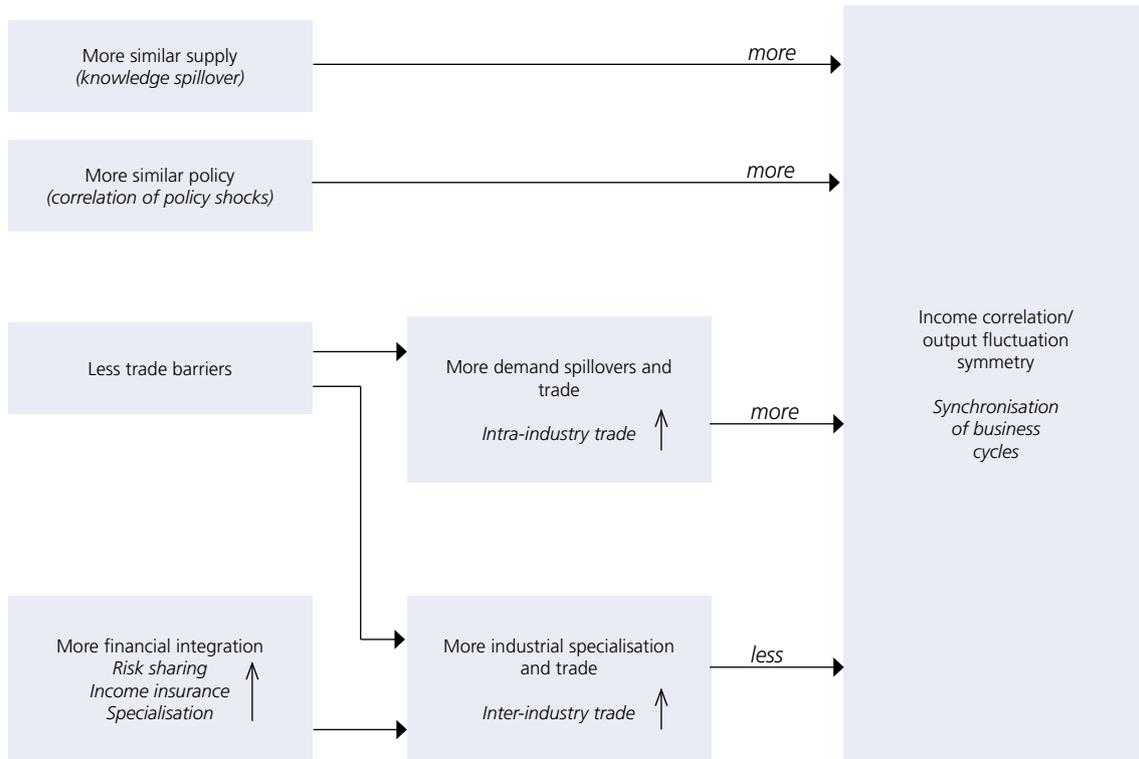
Another OCA property that has been identified as important in reducing the costs of giving up a national currency and independent monetary policy is flexibility in both labour and product markets. The way wages and prices respond to both common and idiosyncratic shocks and how factors of production are reallocated as a consequence, will determine how painful any adjustment process will be for the economy as a whole. The issue of structural reforms is high on the EU’s agenda given persistently high unemployment, weak productivity growth and low labour force participation. Indeed it has been suggested the Euro zone economies have been much less resilient to recent global shocks such as the IT tech crash, terrorist attacks and high oil prices, than a number of other economies such as New Zealand (Duval and Elemskov 2005, p. 3).

A key question is the extent to which EMU will promote or reinforce existing measures directed at structural reform in the area. On this front, Duval and Elemskov argue that, conceptually at least, the euro could be ambiguous for the pace of product and labour market reform. On the one hand, with an independent monetary policy and the nominal exchange rate no longer available to facilitate adjustment, this could act as an incentive to strengthen wage and price responsiveness to changes in demand and supply conditions. This market based adjustment is aided by the transparency created by a single currency where the costs of rigidities are more easily revealed. For example, if this transparency precipitates increased product market competition and lowers associated product market rents, then political opposition to reform may also be lower as there is less rent to be shared. This competition may also reduce the ability

¹³ On sectoral specialisation in the EU see the ECB’s MPC Taskforce publication (2004)

¹⁴ Taken from de Grauwe and Mongelli 2005, p. 23.

Figure 2
Economic integration and business cycle synchronisation



of labour unions to appropriate rents by lowering insider power, hence facilitating reform in the labour market.

On the other hand, EMU could hinder structural reform as it means the upfront costs of structural reforms are large within a currency union - a national government does not have the interest rate or exchange rate depreciation at hand to boost demand as the reform process adds supply capacity. This 'crowding in of added supply' takes longer within a currency union.

For Duval and Elemskov, it is difficult to draw any firm conclusions to-date about the relationship between EMU and the pace of structural reform. The intensity of reforms has softened somewhat since 1999, although the increase in the years preceding could be an expectational effect of EMU. In addition, this deceleration in reform intensity contrasts to non-EMU EU members for whom the pace of reform has remained constant (p. 22).

Euro Enlargement

The prospective enlargement of the euro zone to include the 10 new members admitted in 2004 crystallises a number of

issues discussed above. The 10 new members are obliged by the *acquis communautaire* to ultimately adopt the euro. Based on this agreement they must anchor economic policy with this end point in mind, although the precise timing of euro adoption is somewhat open ended. They must bring down inflation, promote real and nominal convergence, develop their financial sectors and ensure a sound monetary policy and exchange rate strategy.

In relation to the exchange rate stability, adoption of the euro involves a compulsory two year membership of an exchange rate mechanism known as ERM II. To avoid exchange rate volatility and to help anchor inflation expectations, member exchange rates will be allowed to fluctuate within a broad +/-15 per cent band. The philosophy behind ERM II is that it tests policy consistency and the appropriateness of the central parity rate as a permanent rate when the exchange is irrevocably fixed with euro adoption.

One issue that arises is how long the new entrants should wait before entering the final stage ERM II process. How far should these countries go in promoting trade integration with the euro zone and achieving cyclical convergence as

a means of satisfying the classical OCA properties, given the risks associated with asymmetric shocks. Jeffrey Frankel argues that some of these countries might have to wait up to 5 years before they are mature enough to qualify. But we have already noted the endogeneity argument where these countries could qualify ex post. The problem however, as the Chief Economist of the OECD Jean-Philippe Cotis argues, is that EMU has not stood the test of time. So there is a real possibility that these new members could be joining a sub-optimal currency area.

The second issue is how the new entrants will run monetary policy and what exchange rate regime is consistent with ERM II.¹⁵ Essentially monetary policy will be faced with multiple objectives of controlling inflation, keeping the exchange rate competitive and meeting the exchange rate stability criterion. This suggests that monetary policy is not unconstrained since parity against the euro must be more or less maintained for two years.

The recent rejection of a common currency by Denmark, Sweden and the UK, coupled with current dissatisfaction with the economic performance of the euro zone by members itself, clearly points to the fact that the case for a single currency is far from cut and dry. Moreover, with the rejection of the EU constitution by French and Dutch voters, a politics of scale is unfolding in Europe embodying the inevitable tension between national sovereignty and supranational control in an age of globalisation.

4 The Trans-Tasman Debate

The current state of the debate

In the New Zealand context the debate has ebbed and flowed with our own economic fortunes vis-à-vis Australia's. When we last reviewed the issues surrounding a common currency there was heightened public consciousness over a common currency. The Australian economy fared better than New Zealand's in the immediate period following the Asian crisis - which some attributed to differences in monetary policy. Grimes et al (2000) surveyed 400 firms in 2000, and found a majority in favour of an irrevocable link to Australian

dollar, particularly among smaller firms. Similarly a nationwide NBR/Compaq poll showed 45 per cent in favour of an Anzac dollar (but less support for dollarisation - i.e adopting the Australian dollar). Furthermore, comments by the new Labour government at the time hinted at the long-run inevitability of a common currency.

While a common currency is not part of the current Government's policy platform, debate on the merits of a common currency continues to wax and wane over time, partly depending on economic conditions. The basic economic arguments for and against a common currency continue to endure and frame the debate. Lower transaction costs and reduced exchange rate uncertainty from a single currency would enhance greater trade between the two economies, reinforcing existing policy efforts to increase integration. It is likely too that adopting Australian monetary conditions would reduce or eliminate the relative risk premium embedded in the New Zealand interest rate structure.¹⁶ That is, a single currency would eliminate the need to pay a currency risk premium for which international investors demand for holding assets in small, illiquid currencies such as the New Zealand dollar. This could lower the cost of capital facing New Zealand firms and hence boost investment.

On the flip side, higher interest rates could be thought of as the price we pay for independent monetary policy - the premium we pay as insurance against shocks to the New Zealand economy. An independent monetary policy would be useful in relation to a variety of ongoing shocks due to differences in industrial structure between the two economies. Australian exports are mainly hard commodity-based (coal, iron and gold) while New Zealand's continue to be mainly dairy, meat and forestry. So differences in the terms of trade movements between the two economies could see different monetary policy settings as a result. But the true value of an independent monetary policy could well lie in the ability to respond to major shocks. After all, firms and households typically take out insurance for the low probability, but large scale shocks that may significantly

¹⁵ For a comprehensive discussion see Schadler et al (2005).

¹⁶ But remove the chance of New Zealand interest rates ever going below that of Australia's if we consistently kept inflation lower than Australia, or if the fiscal finances were kept in better order over the longer run.

affect them – earthquakes, fire and the like. However, were disease to strike the New Zealand agricultural sector, the option to have a large shift in the real exchange rate via changes in the nominal value of the currency may be invaluable (Brash 2002, p. 193).

In addition, a single currency would not eliminate exchange rate uncertainty. It would eliminate it only for the 22 per cent of exports that currently go across the Tasman. Nominal exchange rate uncertainty would still be a fact of life for the majority of New Zealand exporters, notwithstanding any endogenous trade effects that may develop as a result.

At present there is no formal political imperative from either side of the Tasman to create a genuine single trans-Tasman market, along the lines of the European Union. This partly explains the absence of discussion of a common currency as a logical end point for economic and monetary integration across the region.¹⁷ This is not to deny the progress that has been made over the years on joint regulation (e.g food safety), the increasing harmonisation of some policies and the general increase in trade and cross-border investment.

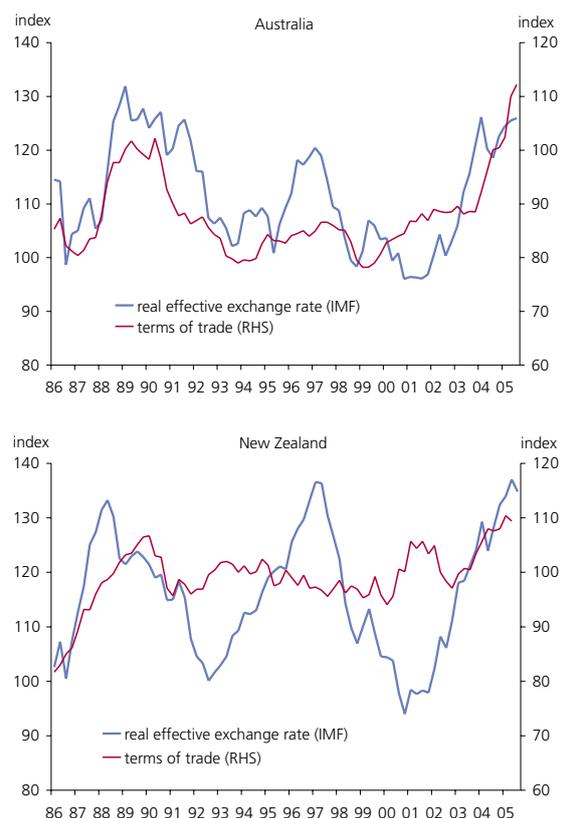
Recent New Zealand Currency Union Research

Since our last review of the currency union debate in the Bulletin in 2001, there have been a number of contributions which have addressed a variety of issues related to the costs and benefits of a single currency.

Grimes (2002) focussed on the necessity of an independent floating exchange rate in relation to its purported buffering properties. For a small open economy like New Zealand for example, one would anticipate a close relationship between movements in the terms of trade and the real exchange rate, as nominal exchange rate movements reflect the shocks coming from changes in the relative price of exports and imports. From figure 5 however, the terms of trade and real exchange rate are much less correlated in New Zealand compared to Australia. This implies the New Zealand

exchange rate acts as much less of a buffer to external shocks compared to Australia's. According to Grimes, an independent exchange rate for New Zealand has been "neither disastrous on the one hand nor necessary on the other" (p. 287).

Figure 3
Real exchange rates and the terms of trade



If an independent exchange rate is not necessary, and if there are the obvious gains from trade coming from lower transaction costs, then there is a prima facie case for a single currency. A single currency may also be optimal if New Zealand experiences similar shocks to Australia and the two economies generally move in tandem. In this regard, research is currently underway at MOTU, led by Arthur Grimes, to examine the relationship between the New Zealand economy and individual Australian states.

If one thinks of Australia as a monetary union, where individual states are possibly subject to idiosyncratic shocks, then it would be interesting to see how different New Zealand is in this respect. The research hopes to "paint a picture of whether New Zealand shares similar economic cycles with all or any of the states, perhaps leading some

¹⁷ For example, a joint Australia-New Zealand Leadership forum made up of community and business leaders was established in 2004 to push the progress towards a single economic market for the region. At the outset they have parked the 'iconic' issue of currency union in the too hard basket, focussing instead on the further work necessary on fostering greater harmonisation. See the statement by the co-chairs, Jackson and MacDonald (2005).

cycles or lagging others”.¹⁸ This work is in its infancy, but early indications suggest New Zealand is not too dissimilar to the Australian states Western Australia, South Australia, Queensland and Tasmania, as opposed to NSW or Victoria. Moreover, any “cyclical differences from Australasia are almost wholly attributable to NZ-specific shocks rather than to industrial structure differences (Grimes 2005, p. 18).

This notion that New Zealand may be little different from an individual Australian state is the premise of Björkstén et al (2004). The authors calculated implied interest rates for individual Australian states and New Zealand, given actual inflation out turns from a target inflation rate and actual output movements from potential output. These Taylor rule recommendations are similar across the individual states and New Zealand. This implies that the “cost to New Zealand associated with abandoning its independent currency and monetary policy may not be substantially greater than the costs associated with the individual Australian states not having independent monetary policies” (p. 19).

Similar in spirit, Coleman (2002) asked whether it made sense for Queensland to adopt its own currency given that shocks hitting this state are not necessarily highly correlated with those hitting the rest of Australia. And if Queensland and New Zealand face regionally specific shocks, why does it make sense for one to be in a monetary union with Australia and the other not. Part of the answer of course lies in the historical development of the Australian Commonwealth since 1901. Related to this is the nature of the institutions that have subsequently facilitated economic adjustment within Australia despite regional differences in shocks and business cycle activity. As we have discussed previously, generically these include factor mobility across sectors/regions, wage and price flexibility and the degree to which private capital markets and government fiscal transfers smooth the adjustment process.

Should New Zealand adopt the Australian dollar, or a shared currency, the question is how important these adjustment mechanisms would be given the loss of the nominal exchange rate and interest rate instruments. A supranational fiscal authority is unlikely, and without a genuine commitment

to a single market for the region the other adjustment mechanisms would not operate efficiently.

In other recent research, Drew et al (2004) perform a counterfactual modelling exercise, and ask how both inflation and output would have evolved over the 1990s had New Zealand adopted the Australian dollar. Using the Reserve Bank’s model and data from 1990-1999, they find that output would have been slightly higher over the 1990s, but at the cost of higher inflation. They also find that adopting Australian monetary conditions would have yielded greater inflation and output volatility. In short, adopting the Australian dollar would not have led to superior monetary policy in New Zealand.¹⁹ These results have been reinforced by Hall and Huang (2004), who perform a similar exercise using the US dollar as the reference currency.

Haug, Karagedikli and Ranchhod (2003) compare the respective Australian and New Zealand monetary policy transmission mechanisms. Differences in the way a single monetary policy works through the respective economies could exacerbate existing cyclical variation. The effect of a single monetary policy would not be known until it became a reality, but some insight might be gained from examining the two existing transmission mechanisms. The authors find qualified evidence that the two transmission mechanisms are similar in terms of the speed and nature of adjustment of inflation and output to monetary policy changes. However, the magnitude of GDP and particularly the exchange rate changes are different. This implies that in a currency union directed to Australian conditions, a given interest change would have a large impact on GDP in New Zealand since the nominal exchange rate is fixed.

In sum, the New Zealand-specific research since 2001 suggests there is no obvious theoretical consensus on the efficacy of a common currency. Abrogating monetary policy in favour of a single currency may make us no worse off than any given Australian state, or it may make the New Zealand economy subject to greater macroeconomic instability – we are no closer to any resolution in this respect. And it is unlikely that resolution can ever be achieved, for this

¹⁸ Media release [www.motu.org.nz].

¹⁹ These results only refer to the specific historical period under examination, and do not assume any endogenous effects of a common currency described in section 3.

would imply unanimity surrounding the economic costs and benefits, and economists are rarely ever of one mind. What we can say with more certainty is that a common currency is ultimately a political decision driven by what is perceived to be in the best interests of the majority of citizens - a route that the Danes and Swedes for example are not prepared to take at this point in time.

5 Conclusion

This article has examined theoretical and empirical contributions to the evolving Trans-Tasman common currency issue since the Bank's last review in 2001. In particular, the early years of EMU provide the natural laboratory experiment to assess many of the arguments surrounding a common currency. Cautious optimism characterises the more considered assessments of European monetary integration. EMU has arguably been a technical and operational success. In addition, the European experience has been the catalyst for a reassessment of the earlier optimal currency area literature. The theoretical literature is now less focussed on the prerequisites of entering an optimal currency area, but rather on the endogenous forces that promote economic

integration following monetary union. These insights arguably shift the relative balance toward a common currency – at least at a conceptual level.

However, EMU has not been without growing pains. The Euro zone economy has been growing below that of its trading partners, and appears less resilient to external shocks. Arguably Europe's problems are a consequence of specific structural rigidities in member countries, rather than a single currency per se. Nevertheless, the euro has been a convenient lightning rod for those who attribute the current malaise to the loss of national sovereignty.

In the Trans-Tasman context, the issue of a single currency has been in hibernation for a while. This can be partly attributable to the robust economic growth New Zealand has experienced relative to Australia over the past 5 years. In addition, the issue is not presently on the political agenda. That said, New Zealand specific research continues into the common currency issue. Perhaps unsurprisingly, this research is far from conclusive – the case for and against a common currency remains an open issue from an economic perspective.

Appendix

Exchange Rate Regime	Main Features
Pure float	ER determined by demand and supply. Central bank does not intervene in the foreign exchange market
Lightly managed float	Demand and supply predominately determine ER. Occasional intervention in FX market
Managed float	Central bank actively intervenes in FX market but not precommitted to any path for the ER
Crawling broad/narrow Band	ER maintained in a broad/narrow band around a central rate that is adjusted periodically at a fixed preannounced rate
Crawling peg	ER pegged to another currency but adjusted periodically
Pegged within Bands	ER allowed to fluctuate within a band around a central peg, either a single currency or basket of currencies
Fixed peg	ER pegged at a fixed rate against single currency or basket of currencies. Rate can be adjusted if major misalignment occurs
Currency Board	Central bank stands ready to convert any amount of domestic currency into foreign currency at a fixed rate
Dollarisation	Official adoption of another currency as predominant or exclusive legal tender. Domestic currency confined to secondary role, usually in the form of coins

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Monetary policy and economic performance: the experience of New Zealand

Dr Alan Bollard, Governor and Dr Chris Hunt, Economics Department

This article is an abridged version of a paper prepared for a conference commemorating the 80th anniversary of the Bank of Mexico held on 14–15 November. The theme of the conference was ‘Stability and Economic Growth: The Role of the Central Bank’. The article reviews New Zealand’s economic performance, which has improved significantly since the early 1990s. The article suggests that New Zealand’s monetary policy framework is likely to have played a role in lifting economic performance, along with many other factors, most notably the widespread economic reforms. The article discusses the ways in which inflation may affect economic growth and briefly summarises some empirical literature. It also ponders the benefits of business cycle stabilisation – which may be a by product of inflation targeting – a subject of some controversy in the economic literature. A full version of the paper can be accessed at www.rbnz.govt.nz.

1 Introduction

New Zealand’s economic experience over the past 40 years or so, shows how small changes in annual growth rates can compound over time to produce large differences in income levels, and hence living standards. In 1960 New Zealand was the sixth richest country in the world, today we are ranked 21st in the OECD. In the intervening period, many other economies grew faster, overtaking New Zealand in the per capita rankings. New Zealand suffered more than most in the turbulent period of the 1970s, particularly with Britain’s entry into the European Community, which effectively closed off a key market for our primary exports. Policy reform and economic restructuring that followed in the 1980s and early 1990s only exacerbated our relative economic decline as New Zealanders struggled with the financial challenges posed by deregulated markets.

However, changes to economic policy settings and institutional reform laid in this earlier period have started to bear fruit. New Zealand has experienced a marked improvement in the rate of real economic growth over the last decade, growing above the OECD average for most of this period. However, there are long lags associated with structural reform, and, as the New Zealand Treasury notes, the “full effects of these changes are likely to be still emerging” (2004, p. 5).

Monetary policy also has a role in shaping economic growth. The 1970s and 1980s taught us that high and

variable inflation has adverse consequences for both welfare and growth. The legislated goal of price stability, couched within an evolving inflation targeting regime is an explicit recognition of the lessons of this period. The creation of a low and stable inflation environment is the first and foremost contribution that a central bank can make to long-run living standards. In addition, a central bank which is concerned with the short-run volatility of economic variables such as real output and the real exchange rate, can also contribute to economic welfare by creating a stable and more certain environment for the decision making of private agents.

This article provides an overview of New Zealand’s recent economic performance, presenting various stylised facts and summarising the broader policy agenda to increase our sustainable growth rate. This sets the scene for a discussion of monetary policy’s contribution to the recent improvement in New Zealand’s growth rate. The role of price stability as the main contribution to improved long-run growth is highlighted in section 3. This is followed in section 4 by the way the pursuit of price stability impacts short-run economic activity. Regard for short run volatility in output, interest rates, and the exchange rate is dictated by the Policy Targets Agreement. Section 5 brings together the insights from the preceding two sections and speculates whether smoother cycles contribute to higher average growth rates.

2 New Zealand's recent economic performance

Over the past five years, New Zealand has been a standout performer among the advanced industrialised economies of the OECD. Real Gross Domestic Product (GDP) growth has averaged 3.9 per cent on an annual basis, compared to 2.7 and 3.3 per cent for the United States and Australia respectively, and 2.4 per cent for the OECD as a whole (see table 1).¹ Driving this strength, at least initially, was a low exchange rate over 2000–01 and favourable climatic conditions which boosted the incomes of New Zealand's primary exporters. And while the exchange rate has appreciated considerably over the past few years, exporters have received an additional fillip from rising world commodity prices, reflecting strong global demand and tight global supplies for key exports such as beef, lamb and dairy products.² In addition, a surge in net migration since 2001 has added to domestic demand, reflected in robust growth in private consumption and a booming housing market.

Table 1
Comparative real economic growth

(annual average percent change)

	US	Australia	OECD	NZ
1970s	3.3	3.5	3.9	2.7
1980s	3.0	3.3	3.0	1.8
1990s	3.1	3.3	2.6	2.3
2000-	2.7	3.3	2.4	3.9

The immediate benefits of this macroeconomic strength have been manifested in one of the lowest rates³ of unemployment in the OECD at 3.4 per cent, rising household incomes, strong growth in company profits and sustained fiscal surpluses. A corollary to this prosperity has been nascent inflationary pressures associated particularly with the non-tradable sector. A booming housing sector has been key in adding to demand pressures, as will an expected fiscal expansion resulting from recent election promises. High oil

prices are another key risk to the inflation outlook, and the Bank is watching closely for signs that higher energy prices will start to impact core measures of inflation.

The other major feature of New Zealand's recent economic performance has been a widening current account deficit (CAD) that reached 8 per cent of GDP in the June quarter. This has both a cyclical and structural dimension. Strong domestic demand for imports has outstripped the growth in exports, while the rising income of foreign-owned New Zealand firms and returns to foreign direct investment have widened the investment income deficit component of the CAD.⁴ While the CAD partly reflects strong investment in New Zealand's productive resources (financed by the 'surplus savings' of the rest of the world), the flip side in the equation is significant and unprecedented dis-saving by New Zealand households.

Leaving aside the current economic situation and concomitant policy challenges, it is worthwhile situating the recent step-up in economic growth within a longer timeframe. The trials and tribulations of the New Zealand economy are reasonably well known to an international audience, given the radical and wide ranging set of economic reforms embarked upon in 1984. These reforms have generally resulted in a more competitive environment in the product and labour markets. The changes to monetary policy during this period were instituted to overcome the classic time inconsistency problem, or politicisation of policy, by conferring independence to the central bank with the passing of the Reserve Bank of New Zealand Act in 1989. As figure 1 (overleaf) shows, this institutional change, and the inflation targeting framework with which it has become synonymous, coincided with the achievement of price stability in the early 1990s.

Complementing the new monetary framework was the passing of the Fiscal Responsibility Act 1994. The *raison d'être* of this Act has been to direct government spending and taxation policy within a medium-term planning horizon, while avoiding the volatility associated with short-term attempts to 'pump prime' the economy.

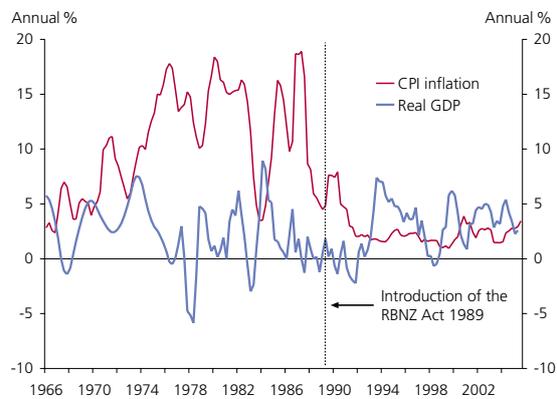
¹ Up to the June quarter 2005.

² As a consequence of the low exchange rate period and the boost to incomes, many exporting firms were able to improve their balance sheets and position themselves well to weather the subsequent strength in the New Zealand dollar. Moreover, the large-scale prevalence of currency hedging has enabled firms to smooth incomes over this period. See Briggs (2004).

³ New Zealand has the lowest unemployment rate among those OECD countries with a standardised measure.

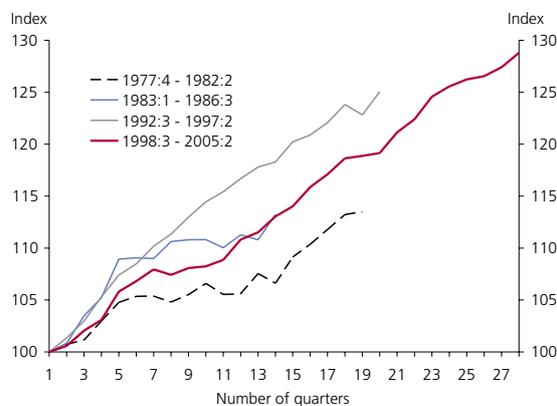
⁴ New Zealand's CADs are traditionally driven by deficits in investment income as opposed to trade deficits - the later becoming important only over the last few years.

Figure 1
Real GDP growth & Inflation
(annual per cent change)



The product and labour market reforms, together with more stable macroeconomic policies, broadly explain the improved performance of the New Zealand economy over the past decade or so, while exogenous factors such as favourable commodity prices and migration have driven the current cyclical upturn (Bollard 2005). Following the economic maelstrom of the late 1980s and early 1990s, average rates of real economic growth have steadily improved. Growth over the past decade has averaged 3.3 percent per annum, compared to 1.5 per cent for the preceding decade. In cyclical terms, New Zealand's GDP growth has become less volatile – a global phenomenon partly explained by the shift to more stable macroeconomic policy, better inventory management, lower volatility of the components of GDP, and smaller and

Figure 2
Economic expansions – trough to peak⁵



⁵ An expansion here is defined as at least two consecutive quarterly expansions in the level of GDP following a contraction (at least two consecutive quarterly declines in GDP).

less frequent shocks. The suggestion that monetary policy may be complicit in lower output volatility is reassuring and deserves fuller discussion.

Along with the lower volatility of economic growth there have been fewer contractions together with longer expansions. Indeed, the current expansion is the longest in recent New Zealand history (see figure 2). Again this phenomenon is not unique to New Zealand, as the propensity for longer growth cycles over time is a general feature of the OECD economies (Cotis and Coppel 2005). The lesson here is that structural reform not only improves an economy's potential output growth – the primary reason for undertaking such reform in the first place – but that the interaction between deregulated product and labour markets and macroeconomic policy can significantly influence the trajectory of short-run economic growth.

Of course, raising long-term economic growth is the key to materially increasing New Zealand living standards, as opposed to cyclical economic activity that will affect welfare over the short run. In this regard there is a concerted effort from various economic policy institutions in New Zealand to examine the determinants of economic growth, and devise appropriate government policies to foster a higher and sustainable growth rate.⁶ The New Zealand Treasury and Ministry of Economic Development (MED), among others, are working to implement the current government's Growth and Innovation Framework, with the stated objective of returning New Zealand per capita GDP to the top half of the OECD.⁷

The 2005 Economic Development Indicators produced by the New Zealand Ministry of Economic Development and The Treasury provide a useful way of summarising the growth agenda that is currently directed at improving our relative standard of living. GDP per capita can be decomposed into labour productivity and labour utilisation. These proximate drivers of growth are in turn influenced by a number of deeper determinants, summarised in the report as: investment,

⁶ See The Treasury (2004) for a comprehensive review of New Zealand's economic performance and policy issues. For a more succinct overview see Whitehead (2004).

⁷ See MED and The Treasury (2005) for a 'report card' on achieving the government's growth objectives.

innovation, enterprise, international connections, skills and talents, and economic fundamentals.

New Zealand scores very well on the labour utilisation measure, with low unemployment and labour participation high relative to the OECD mean. Indeed, the trend increase in real GDP per capita growth has been primarily driven by labour utilisation, as opposed to increases in labour productivity where New Zealand scores poorly (see figure 3). The low level of labour productivity is particularly disappointing given the pervasive product and labour market reforms since 1984. Indeed, the suspicion is that the reforms may have had the perverse impact of changing the relative price of capital and labour such that firms have found it more profitable to source from cheaper labour as opposed to investing in capital (The Treasury 2004, p. 25). Nevertheless, there is ample scope to increase labour productivity via some of the deeper determinants such as skill-enhancing innovation, greater physical capital per worker and improved educational achievement.

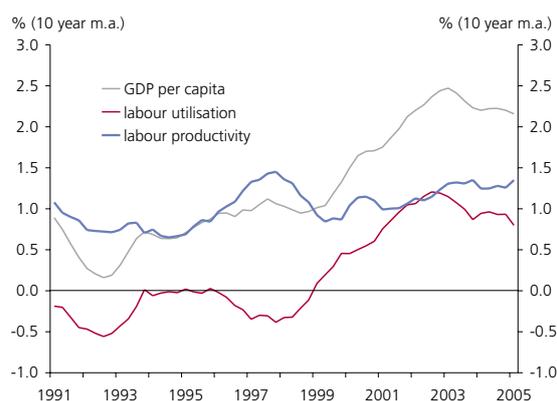
New Zealand does score highly, however, on enterprise - the degree of firm entry and exit. A recent OECD study also concludes that New Zealand markets are well exposed to competition (Mourougane and Wise 2005). New Zealand's macroeconomic policy foundations are also very strong. The Economic Indicators report card highlights the role that low and stable inflation contributes to economic growth – a point few would argue with. A slightly more contentious issue, however, is their inclusion of lower GDP volatility

as integral to better economic growth. This connection is also emphasised in the broad ranging Treasury overview of economic growth (2004, p. 35). The relationship between economic cycles and long run economic growth is a natural connection to make, and it is a peculiarity of the economics profession that for so long the two phenomena have been treated separately. However, economic theory has not been very helpful in establishing whether the relationship between business cycle volatility and trend growth is positive or negative.

3 Monetary policy and long run economic growth

The Reserve Bank of New Zealand operates monetary policy within the confines of the Policy Targets Agreement (PTA). The PTA is a formal agreement between the Governor and the Minister of Finance that operationalises the pursuit of price stability, as required by the Reserve Bank of New Zealand Act 1989 (the Act).⁸ The Act and the PTA framework were motivated by the negative experiences of high and variable inflation from the 1970s onwards.⁹ The experience of the 1970s and 1980s showed how high and variable inflation can impair efficient resource allocation, create uncertainty, and adversely impact economic growth. Given the arbitrary redistribution of wealth between borrowers and savers that high and variable inflation entails, the intergenerational and distributional impacts of inflation have important consequences for economic welfare.

Figure 3
Growth accounting decomposition of real GDP per capita growth



⁸ Section 9 of the 1989 Act requires that the PTA sets out specific price stability targets and that the agreement, or any changes to it, must be made public. A new PTA must be negotiated every time a Governor is appointed or re-appointed, but it does not have to be renegotiated when a new Minister of Finance is appointed. The PTA can only be changed by agreement between the Governor and the Minister of Finance (section 9(4)). Thus, neither side can impose unilateral changes. The Act can be browsed online at <http://www.legislation.govt.nz/>.

⁹ The Act and the PTA framework can also be viewed in the context of the broader public sector reforms that occurred during the late 1980s. An underlying philosophy guiding these reforms was the need to establish clear, achievable policy objectives, while assigning appropriate responsibilities and the necessary delegated authority.

The first PTA was signed in 1990, and the six successive PTAs have continued to operationalise the objective of price stability in terms of stabilising consumer price inflation within a specified target band. This inflation targeting framework provides an anchor for changes in the general price level, and to the extent that it delivers the intended outcomes, for expectations of future price changes. Section 2 of the most recent PTA signed in 2002 stipulates that the Bank's inflation target shall be inflation outcomes between 1 and 3 per cent on average, over the medium term.

By maintaining price stability as the primary goal of monetary policy, the Bank believes that it is making the best contribution it can to sustainable long-term growth.¹⁰ This policy prescription arises from theoretical reasons substantiating inflation's negative growth consequences, and empirical evidence supporting the benefits of a low and stable inflation environment

There are two channels through which inflation can impede long-run growth – via its negative effect on the rate of growth in the capital stock, and through its negative effect on productivity growth. Inflation can be considered a 'tax on investment' (OECD 2003, p. 64). Where there are nominally denominated allowances in the tax system for example, high inflation reduces tax credits and the effective cost of investment increases. In addition, if money is used to purchase capital goods, the effective cost of capital rises with the inflation rate. This decreases the accumulation of physical capital that is one of the key drivers of growth. In addition to the level of inflation, the variability of inflation might affect capital accumulation since it acts to induce more 'noise' in the price signalling mechanism. In a relatively more uncertain environment, planning horizons are shortened and longer-term commitments avoided. In this context the introduction of new technology becomes riskier given volatility in factor prices and more tenuous relationships with suppliers.

It can be argued that the introduction of new capital may facilitate better organisation within firms, or help them to learn how to produce more efficiently. The growth of labour

productivity is therefore probably related to investment in new technologies. This insight from the endogenous growth literature suggests that there may be externalities from capital accumulation which feed through to growth, particularly if one broadens the notion of capital accumulation to include investment in education (human capital) and research and development (knowledge capital).

Over and above the effect on investment, inflation affects the general environment for private sector decisions and hence distorts the efficient allocation of society's resources. Transaction costs or 'shoe leather costs' rise as economic agents attempt to economise on the use of money holdings (since inflation reduces the real purchasing power of money balances). In addition, inflation's interaction with the tax system may also produce distortionary effects on the allocation of resources owing to the compositional effects.¹¹

In the 1970s, policymakers attempted to engineer a permanent trade-off between the growth rate of output and the level of inflation and ultimately failed. What originally was specified as a statistical relationship between nominal wages and unemployment by Bill Phillips in the 1950s, was trumpeted as the holy grail of Keynesian macroeconomic policymaking during the 1960s. This short-run relationship seduced policy makers into thinking they could permanently increase output and reduce unemployment at the expense of permanently higher long-run inflation. Alas the events of the 1970s confounded the Keynesians, and the positive long-run relationship between inflation and output proved illusory.

The consensus view that emerged was that the Phillips curve was in fact vertical: in the long run there is no relationship between nominal and real variables, and monetary policy has no effect on long run economic growth.

In practice, inflation may well have a deleterious effect on 'long-run' growth. Over the past decade or so there has

¹⁰ The Bank's view on the relationship between monetary policy and long-run growth is summarised in Smith (2004).

¹¹ Inflation is associated with a heavier tax burden and lower non-residential investment. Inflation may therefore affect the composition of investment by raising the cost of physical capital relative to housing for example (Temple 2000, p. 399). This induces a shift into housing investment.

been a boom in research on the relationship between economic growth and a host of variables including macroeconomic policies. Macroeconomic stability has been increasingly identified by international organisations such as the OECD and the International Monetary Fund (IMF) as a key prerequisite for sustained economic growth for both developed and developing economies. This has been borne out empirically by the cross-country growth literature. The majority of studies find a negative relationship between inflation and growth (Haslag 1997, p. 17). Thus by reducing inflation, a central bank can positively contribute to increasing long-run growth.

There are a number of econometric issues related to this cross-country growth literature.¹² One is the possible non-linearity of the relationship between inflation and growth. In general, the negative correlation identified in cross-country regressions clearly holds for inflation above some threshold level. Below this level the relationship may in fact be positive. That said, the threshold studies do not provide a definitive guide as to the precise level of average inflation that may be 'growth enhancing'.¹³ According to their review of the literature, Brook, Karagedikli and Scrimgeour note that this threshold level could be 1, 3 or 8 per cent. It is not clear therefore, whether there would be any significant long run growth differences from average inflation outcomes that were 1 percent, as opposed to say 3 per cent.

Another issue is that high-inflation economies also tend to experience highly volatile inflation rates. If only the average level of inflation is included in a regression equation, then it is difficult to determine whether the negative relationship stems from inflation per se, or the uncertainty associated with variable inflation. That said, Khan and Senhadji (2001, p. 2) conclude that most empirical studies find that the level of inflation is more important than its variance in explaining the negative correlation.

The empirical inflation growth literature described above should provide comfort for central bankers. The pursuit of price stability is legitimate because it bears some relationship

to economic growth. Whether this relationship holds over a 'long run' of 30 years, or out to an abstract steady state is debatable. Furthermore, the fact that no central bank targets negative or zero rates of inflation – despite such rates being optimal in some theoretical models – is consistent with the importance of non-linearities in macroeconomic relationships.¹⁴

4 Flexible inflation targeting – price stability and short-run economic growth

Section 2 of the PTA operationalises the pursuit of price stability with the aim of achieving inflation outcomes between 1 and 3 per cent on average over the medium term. To achieve this end monetary policy typically influences real variables such as output and the (real) exchange rate in the short run. These real effects arise principally because of the sluggishness of prices and expectations due to a variety of frictions and transaction costs in an economy. These include informational costs arising from uncertainty about the economy, and the cost of continuously changing one's prices, or continuously renegotiating labour contracts.

A central bank can therefore affect both real interest rates and the real exchange rate via its monetary policy lever - the Official Cash Rate (OCR) in the case of New Zealand. This in turn affects real economic activity. Changes in the real interest rate affect the intertemporal price of borrowing and spending, while changes in the real exchange rate affect the relative cost of buying another country's output. The lag from the real interest rate and exchange rate channel to aggregate demand is typically around a year, with a further lag to domestic inflation. For a small open economy there is also a more direct nominal exchange rate channel to inflation, since import prices enter the domestic CPI basket. This channel works faster than the aggregate demand-to-inflation channel, although it is dependent on the extent

¹² See Brook, Karagedikli and Scrimgeour (2002) for a summary.

¹³ This can be described as the 'grease effects' of inflation (Gosh and Phillips, 1998, p. 673).

¹⁴ A positive inflation target also acts as a buffer against the zero-bound on nominal interest rates and the deflation trap.

and speed of pass-through from the exchange rate to the domestic price of imports.¹⁵

One way to think about the monetary policy transmission mechanism and associated inflation pressures is via the price pressures induced by the intensity of resource use in an economy. The bank uses the output gap to assess this degree of pressure. An output gap is the difference between current output used to satisfy demand and an economy's trend or potential output. Positive output gaps typically imply increasing pressure on resources given excess demand – firms are able to raise prices in response to strong demand and workers are in a better position to demand wage and salary compensation as labour becomes in short supply. To meet the medium-term price stability requirements of the Act and the PTA, the Bank would be expected to respond to positive output gaps by raising the OCR.

The essence of a flexible inflation targeting approach to monetary policy rests on the decision a central bank must make on how to appropriately respond to positive or negative output gaps to order to achieve price stability. This choice is affected by the nature of the trade-offs involved between price stability and the variability of output, interest rates and the exchange rate. For instance, in New Zealand we think that monetary policy affects inflation mainly with a lag of up to six to eight quarters. If we wanted to affect inflation say within a six-month time frame, this would require very large changes in the Official Cash Rate. It is likely that a negative output gap would open up over successive months. This policy-induced recession would then require the policy rate to be lowered if the impending fall in inflation were to be similarly managed within a 6 month time frame. This 'instrument instability' associated with a lag mismatch would involve considerable variability in real GDP growth.

So, one element of a flexible approach to inflation targeting is to match up the policy horizon to the output gap-to-inflation lag. Another characteristic of flexibility is shaping the

policy response to match the nature of the macroeconomic disturbance. Consider a temporary oil price shock not unlike the one the global economy is currently experiencing. We could respond to this effective supply shock to the New Zealand economy by responding aggressively to the increase in headline inflation. Aided by the direct exchange rate channel, inflation would return to target quite quickly. Alternatively, we could adopt a more cautious approach and look through the shock, or not respond as aggressively. This would have a smaller negative effect on output, with less instability in interest rates and the exchange rate. The cost, however, would be higher short-term inflation. The key policy judgement would rest on a view as to how temporary the supply-side shock might be, and any implications for inflationary expectations.

Note, no such variability trade offs arise from aggregate demand shocks since demand pressures move prices and output in the same direction. A positive demand shock opens up a positive output gap necessitating a policy response given anticipated inflationary pressures 6-8 quarters in the future. Controlling inflation results in less inflation variability, and a more stable path for output around its trend. This does assume, however, a match between the policy horizon and the output gap-inflation relationship. A lag mismatch would again cause a variability trade-off even in the face of a demand shock which moved prices and output in the same direction.

Over time central banks have faced a more favourable trade-off between inflation and output variability. Possible explanations include a better understanding of the lags involved in monetary policy and a better match between these lags and the policy targets horizon. Monetary policy has also become less of a shock to the economy itself, as central banks have taken on board lessons from the 1970s. Finally, inflation expectations have become anchored at a low level of inflation following disinflation policies of banks around the world. Economic agents are able to divest themselves of the costly process of forming inflation expectations, if they believe actual inflation outcomes consistently cohere with a central bank's stated inflation goals.

If inflation expectations are stable, then monetary policy has more degrees of freedom in conducting policy. As Lars

¹⁵ Over time however, this channel has become more muted (Hampton 2001). This may reflect a change in behaviour of firms as they have tended to absorb exchange rate related changes in costs in margins, rather than risk market share by changing prices. This in turn reflects recognition that exchange rate fluctuations are temporary, and inflation expectations are now perhaps better anchored.

Svensson notes, “a gradual move towards more flexible and medium-term inflation targeting [in New Zealand] is to a large extent a natural consequence” of increased credibility and well-anchored expectations (p. 38).¹⁶

This evolution of New Zealand’s flexible inflation targeting regime is reflected in the various changes to successive PTAs since the first was signed in March 1990.¹⁷

March 1990

Initially, the Government and Reserve Bank agreed to a phased move towards the initial inflation target of 0–2 per cent, with the original target date being December 1992.

December 1990

The target date was extended to December 1993.

December 1996

The target band was widened to 0–3 per cent in December 1996 to enable a somewhat greater degree of inflation variability.

December 1999

A clause 4(c) was included requiring the Reserve Bank to have regard for ‘unnecessary volatility’ in interest rates, output and the exchange rate in the course of conducting monetary policy.

September 2002

The lower bound of the inflation target was raised to 1 per cent, on the grounds that at extremely low or negative rates of inflation, the volatility trade-off probably worsens. In addition, clause 2(b), specifying the inflation target, was amended from ‘12-monthly increases in the CPI’ to keeping future CPI inflation outcomes within the target band ‘on average over the medium term’. This change made explicit the medium-term focus for price stability, further enhancing monetary policy flexibility. Clause 4(c) was retained with modified wording, as clause 4(b).

Clause 4(b) is an explicit recognition that unnecessary volatility in output, interest rates, and the exchange rate is detrimental to economic welfare, and may even have adverse

consequences for economic growth.¹⁸ Smoother output cycles may be beneficial for trend growth, since output volatility amplifies the cost of recessions, while unsustainable expansions generate inflation with attendant consequences for welfare and growth. Similarly, large swings in interest rates are probably unhelpful for businesses and households from a longer-term planning point of view. Uncertainty regarding the cost of borrowing may cause investment decisions to be deferred, or worse still, the wrong decision to be made.

For a small open economy with a floating exchange rate, large fluctuations in the relative value of one’s currency puts pressure on a key sector of the economy. When the exchange rate is high, profits in the traded goods sector are squeezed and firms that may be profitable and leading edge over the longer haul are forced to shut down. Conversely, when the exchange rate is low, marginal businesses may be wrongly encouraged to enter into foreign markets – resources that could have been better employed elsewhere over the longer run. So a natural question to ask is whether we should be trying to explicitly stabilise the exchange rate.

Overall, the literature tends to find that there is little to be gained in terms of improving the inflation–real economy variance trade-off from an explicit response to exchange rate movements, over and above the response that will result from standard flexible inflation targeting.¹⁹ This question has also been specifically looked at within the Reserve Bank recently.²⁰ West (2003) examined what would happen if interest rates were used to attempt to stabilise the exchange rate in a model of the New Zealand economy. He found that reducing quarter-to-quarter exchange rate variance would result in greater output, interest rate, and inflation variance. West’s results have also been supported by Reserve Bank research.

¹⁶ Svensson (2001). Svensson’s comments are drawn from his review into the operation of monetary policy in New Zealand, initiated by the Government in 2000.

¹⁷ See RBNZ (2000b) for a fuller discussion of successive PTAs.

¹⁸ For a discussion on the relationship between clause 4(b) of the PTA and the primary goal of price stability see Hunt (2004).

¹⁹ See Dennis (2001) for an overview. Standard inflation targeting in this sense implies some weight on the output gap along with inflation deviations from target.

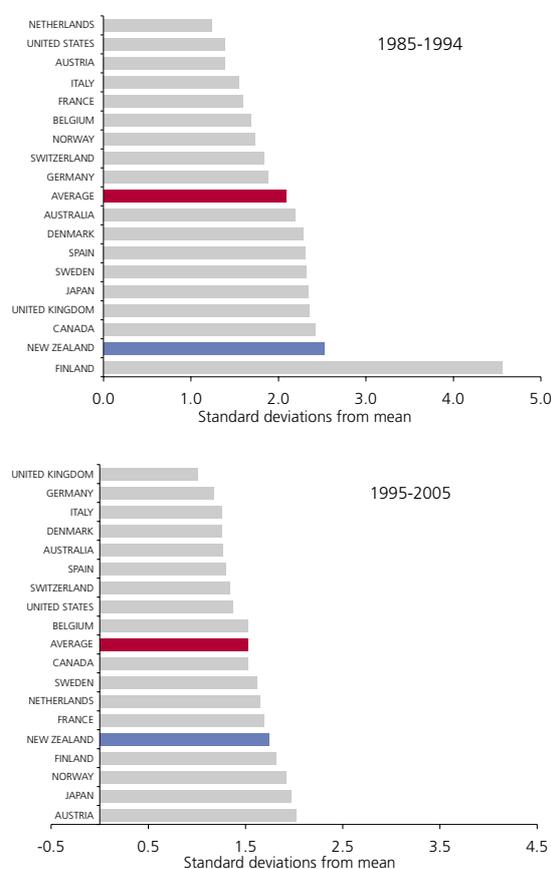
²⁰ See Hampton, Hargreaves and Twaddle (2003); and West (2003).

The evidence clearly suggests inflation targeting has reduced both the level and variability of inflation. This is likely to have occurred largely through lower and more anchored inflation expectations. However, other factors have also contributed to New Zealand's low and stable inflation environment, over and above the role of inflation expectations. These include the more muted response of prices to exchange rate fluctuations, global disinflation, lower imported inflation (the China effect), structural change increasing the degree of product market competition, and a weakening of the traditional wage-cost dynamic in the inflation process (Hodgetts 2005).²¹

Figure 4 highlights the more stable GDP growth New Zealand has enjoyed of late, compared to the 1970s. The volatility of output, as measured by the standard deviation from mean growth rates was 3.1 per cent in the 1970s and 2.6 per cent in the 1980s, compared to 1.7 per cent for the past ten years. This improvement comes in spite of major shocks to the New Zealand economy associated with the Asian financial crisis 1997-98, back-to-back droughts in 1997 and 1998, and the global stock market downturn 2001.

However, as discussed in section 2, there has been a more general global improvement in business cycle stability, and in relative terms New Zealand remains a volatile economy owing to our size and degree of openness (RBNZ 2000a). The international literature suggests more stable macroeconomic policy is partly responsible for this global improvement. To date, evidence distinguishing the possible causes in New Zealand is scant. One study that has examined the issue highlights lower industrial sector output variance, especially in services and manufacturing (Buckle, Haugh and Thomson, 2001). In relation to monetary policy, Treasury research has found that, on the whole, monetary policy has been counter-cyclical, and improved the output-inflation variance trade-off.²² At the very least, monetary policy in New Zealand appears not to have aggravated output variability.

Figure 4
Comparative GDP volatility rankings
(annual change)



5 Are there long run benefits to business cycle stabilisation?

In sections 2 and 4 we noted that New Zealand's business cycle has become more stable since the 1970s, and one candidate explanation for this lower output volatility is 'better' monetary policy. 'Better' in this sense refers to monetary policy acting less as a shock itself to aggregate demand, but rather acting as a more effective counter-cyclical stabilisation tool, in the course of achieving price stability. A flexible approach to inflation targeting explicitly enhances this property by placing some weight on output gap stabilisation in the 'loss function' of the monetary policy decision maker.

Associated with the more stable macroeconomic environment (exchange rate movements aside), has been higher average growth rates, at least since the early 1990s. The question that immediately arises is whether this stabilisation imparted

²¹ These explanations are not mutually exclusive, since lower pass through and a breakdown of wage-push inflation may be themselves a consequence of lower inflation expectations.

²² Buckle, Kim, and McLellen (2003).

by monetary policy is entirely independent of the evolution of economic growth over the medium-to-long run. Can monetary policy in fact increase potential output via its stabilisation role? A small but growing body of work suggests that this might be the case since cycle and trend are interwoven and inextricably linked via the process of capital accumulation. This position contrasts with the dominant view that suggests that cyclical fluctuations around some trend can be considered analytically separate from the determinants of trend growth.²³

On the one hand there are those that argue that recessions and the volatility of the business cycle are detrimental to economic growth.²⁴ Recessions are essentially lost opportunities for acquiring experience or improving productivity. There are a variety of channels for this cycle-trend link including 'learning-by-doing', uncertainty and a direct investment mechanism.

That macroeconomic instability, as manifest by output volatility, has detrimental growth effects seems plausible. However, there is also a strand of thinking that suggests that there might be 'virtue to bad times'.²⁵ Recessions are periods where less productive firms are eliminated; where the opportunity cost of productivity improving activities such as reorganisations or training is lower; and where the heightened threat of bankruptcy induces a disciplinary effect of firm activity. So recessions become integral to the subsequent expansion and hence potential output over the longer run.

If this view were to hold, then there would be little or no role for stabilisation policy to positively affect potential output. Indeed, stabilising the business cycle may actually depress

long-run growth. By contrast, those endogenous growth theories which rely on some sort of pro-cyclical learning-by-doing propagation mechanism do foresee a positive relationship between macroeconomic stability and potential growth. Mitigating downturns as much as possible, *ceteris paribus*, will have growth enhancing implications. As Martin and Rogers (2000) state, "if the amplitude of the business cycle has a negative impact on long-run growth, this has important policy implications because it gives counter-cyclical stabilization policies a new strong role" (p. 360).

In practice monetary policy decisions are never made *ceteris paribus*, central banks inevitably face trade-offs since macroeconomic shocks affect both inflation and output variability. But as long as medium-term inflation remains well contained and expectations well anchored, tolerating short-run deviations from the inflation target can reduce output fluctuations and as a consequence possibly increase the long-run level of output, if not its growth rate.

6 Conclusion

New Zealand has significantly improved its economic performance over the past decade, both in terms of higher average real GDP growth, and reductions in broader macroeconomic volatility. Following a long and painful period of socio-economic restructuring from the mid-1980s to the early 1990s, New Zealand has started to claw back the gap in relative per capita living standards that opened between ourselves and the rest of the OECD. However, if we are to achieve the current government's objective of climbing back into the top half of the OECD, this recent good growth performance must continue for a sustained length of time.

What lessons can we take from all this? New Zealand's growth performance reaffirms the now conventional view that a low and stable inflation environment is conducive to improved growth outcomes. If economic agents are able to undertake saving and investment decisions with the knowledge that money will retain its value, then the effects of any microeconomic reform can be fully realised. This general lesson about the relationship between inflation and economic growth holds for any economy, be it developed or developing.

²³ A related point is the debate around the welfare costs of business cycle volatility initiated by Lucas in the mid-1980s. From a household consumption perspective, he argued that the cost of US post-WWII output volatility was trivial compared to the benefits of long run growth. Hence stabilisation policy did not merit the high priority accorded to it from legislation such as the Full Employment and Balanced Growth Act 1978. See Barlevy (2005) for a survey of critiques of Lucas, where the volatility-output growth link is but one element involved in assessing the costs of business cycles.

²⁴ See, for example Fatás (2000 and 2002); Martin and Rogers (1997 and 2000); Ramey and Ramey (1995); Stadler (1990); and Stiglitz (1993).

²⁵ See, for example, Aghion and Howitt (1999); Blackburn and Galindev (2003); and Li (1998).

The nature of the evolving inflation targeting regime and the learning that has accompanied it, suggests that a flexible approach to the pursuit of price stability is appropriate. However, flexibility is predicated on well anchored inflation expectations, so the extent to which this flexibility can be exploited by the policymaker is limited.

Although the adoption of inflation targeting seems to have contributed to better economic performance, it can only be part of the story. New Zealand's experience serves as a reminder that monetary policy is only a small part of what determines a country's economic fortune. In our case, we have seen the benefits of product and labour market reform, which have helped make the economy more flexible and resilient to economic shocks. Ultimately it is the accumulation of physical and human capital, together with how efficiently these resources are used, that determines long-run per capita growth.

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Imbalances in the New Zealand economy

An address by Dr Alan Bollard, Governor, Reserve Bank of New Zealand, to the New Zealand Credit and Finance Institute, Rotorua

14 October 2005

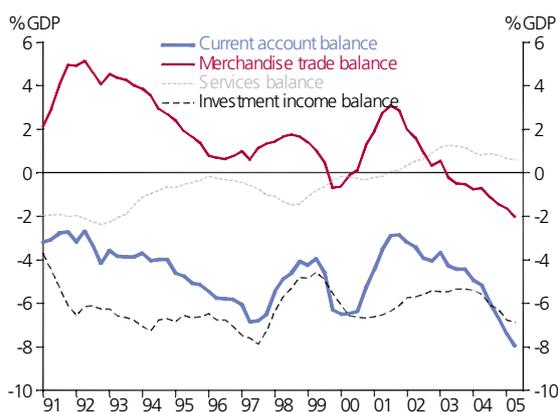
1 Introduction

The New Zealand economy has grown strongly over the past four years. Initially concentrated in the export sector, this expansion gradually shifted toward the domestic economy. While a sustained expansion in economic activity is obviously pleasing, we have also seen some significant 'excesses' develop in the economy. Productive resources have become severely stretched, which has led to an increase in inflation pressures. There has also been a widening in New Zealand's current account deficit – the difference between what the country earns overseas from its exports and investments and what it pays for its imports and the investments foreigners have in New Zealand. These two developments largely share a common underlying driver – very strong growth in spending, particularly by the household sector, much of which has been debt-financed.

2 Looking at the imbalances

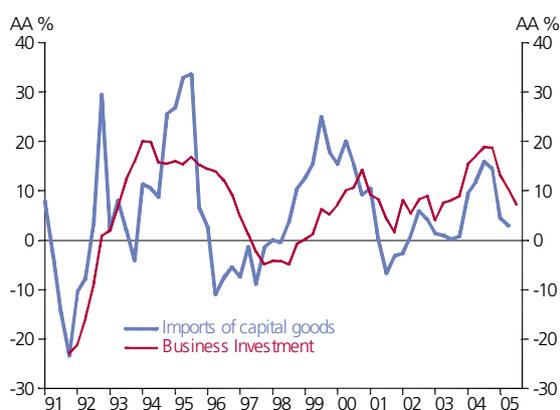
Some of the drivers of the recent current account deficit are not necessarily a cause for major concern. New Zealand has been undergoing a strong business investment cycle which has necessarily meant high demand for imports of capital goods, which we can't or don't produce locally. Investment is obviously necessary for sustaining future growth in activity.

Figure 1
Current account deficit reaches 8% of GDP



The profits paid on foreign investment in New Zealand have also been growing, due to the relative strength of many parts of the economy.

Figure 2
Businesses importing capital goods

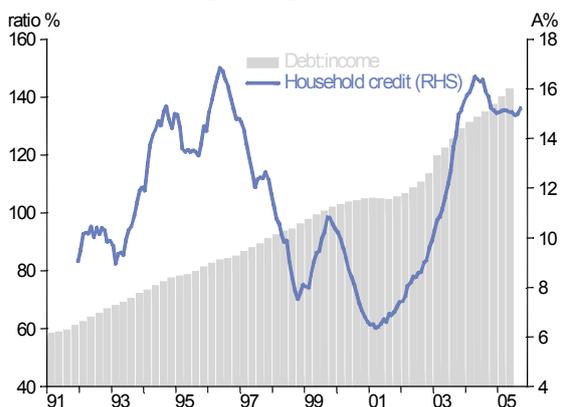


But while some components of the current account simply mirror cyclical strength in the economy and the efforts of businesses to increase their long-term productive capacity, the widening deficit has also reflected very strong spending on part of the household sector. At a time when government and the business sector have increased their savings (with growing fiscal surpluses and higher profits), household savings has continued to decline.

During the past few years, we have seen very sharp rises in house prices in New Zealand, reflecting strong demand by New Zealanders and overseas investors alike. Associated with this buoyancy in the housing market has been a strong tendency among many households to 'unlock' housing equity built up through capital gains to fund consumption. This often involves borrowing more against the equity in the home. Rising house prices have boosted the perceived wealth of home owners and, along with an increased access to debt, have underpinned very strong consumption spending. Strong consumption spending has in turn fuelled much of the demand for imports that has led to a widening of New Zealand's trade deficit.

In effect, we have seen a continued decline in the New Zealand household savings rate – the proportion of current income that households put aside to invest for future consumption. Statistics New Zealand figures suggest that, on average, households in New Zealand do not actually save anything out of current income but instead dis-save to the tune of around 12 per cent of income per annum. Of course, there is plenty of room to debate whether this is the most relevant or accurate saving statistic.¹ But comparative figures show that, typically, households in most developed countries save at least some of their current income. It is clear that the New Zealand household sector stands out as having one of the lowest savings rates of any OECD country.

Figure 3
Household credit growing faster than income



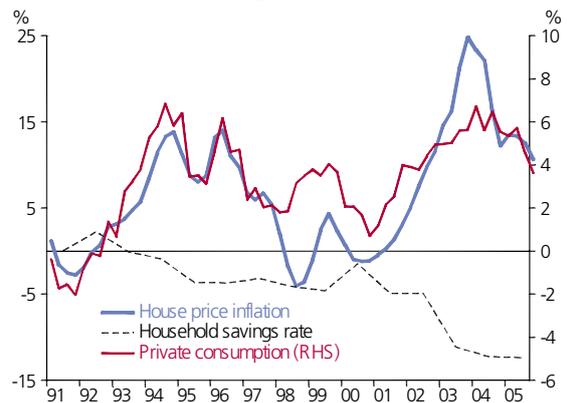
It is possible that households' expectations of the capital gains from housing have been so strong that many households have seen scope to unlock recent capital gains, whilst still expecting to be able to build up their equity sufficiently over the long run to meet their savings goals. If so, they would have seen little need to save anything out of current income. Obviously the success of this strategy will depend on the extent to which house prices do in fact continue to rise from here. The Reserve Bank has noted several times in the past few years that some households may have had unrealistic expectations in this regard; indeed a fall in house prices cannot be ruled out. In Australia, house prices today

¹ For example, the blurred boundary between households and firms these days might suggest that total private savings, including by firms, is more relevant. Another issue is that saving is measured as the difference between income and consumption, making it prone to measurement error in either of those aggregates.

are, if anything, lower than they were a year ago, certainly so in Sydney.

We are also conscious that there may be subtle changes occurring around what households regard as an acceptable target level of wealth in retirement. This may be driving current consumption and savings decisions. Traditionally, the bequest motive has been a driver of many New Zealanders' savings strategies. Some baby boomers may be opting to spend more of their accumulated wealth during their lifetime and not make a significant bequest. It is also possible (but hard to gauge) that some households have viewed the recent increase in government savings (ie, fiscal surpluses) as a sign that they can afford to save less themselves.

Figure 4
Households consuming from debt



Recourse to debt-financing has been an important part of the process. Despite an Official Cash Rate that has been high by international standards, households appear to have been very willing to increase debt levels to fund their housing and consumption activity. Strong competition among home loan providers – which has meant lower home loan rates than might otherwise be the case – has certainly done little to discourage households in this regard. In some cases, interest rates for fixed rate home loans appear to have been priced below the all-up cost of lending, as lenders have competed for market share. Lenders have clearly seen home loans as a relatively low risk activity and have priced loans accordingly.

Household behaviour is not the only influence on the current account. The rise in the exchange rate over the past few years has reflected rising commodity prices, New Zealand's strong relative growth performance, and our correspondingly

Figure 5
Effective mortgage rate



higher interest rate structure relative to the rest of the world. The high exchange rate has reinforced the widening of the current account deficit, placing pressure on export sector revenues, whilst making imports relatively cheaper. Although the factors behind the appreciating exchange are easy to identify, what has been surprising has been the continued willingness of investors to continue investing in New Zealand dollars through the likes of Eurokiwi and Uridashi² issues, notwithstanding a growing consensus that the exchange rate has reached unsustainable levels. Over the past year alone, we have seen an additional \$20 billion of such issues, and demand has continued to remain very strong in recent months. Flows into these two particular products were larger than was the case for any other currency.

New Zealand is not the only country to have experienced a widening of its current account deficit in recent years. A

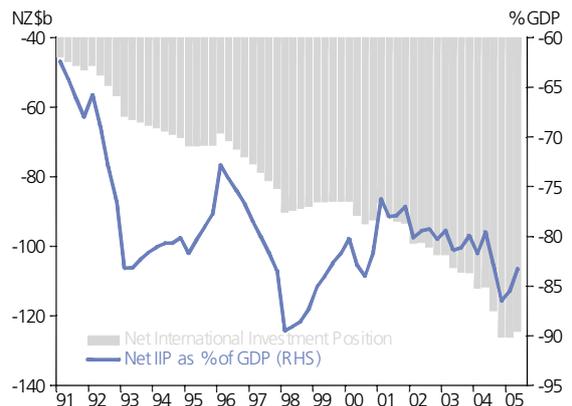
Figure 6
NZD since float



² See Drage, D, A Munro and C Sleeman "An update on Eurokiwi and Uridashi bonds", Reserve Bank of New Zealand Bulletin, Vol. 68, No. 3, September 2005.

number of others, including the US and Australia, have also experienced widening deficits. Strong household demand has likewise been an important driving factor behind the increases although, as in the case of New Zealand, not necessarily the only factor. However, New Zealand stands out in one important respect. Over time, current account deficits have to be financed either through equity investment by foreigners or by borrowing from overseas. New Zealand's foreign liabilities currently outweigh its foreign assets to the tune of \$124 billion (81 per cent of GDP), a much higher net liability position than in virtually any other developed country. This reflects our long history of running current account deficits.

Figure 7
New Zealand's net International Investment Position



3 The adjustment process

Currently standing at 8 per cent of GDP, New Zealand's current account deficit is at levels that cannot be sustained indefinitely. Doing so would imply a continued increase in New Zealand's indebtedness, and debt servicing costs, relative to the income available to service that debt (i.e. its GDP). History tells us that at some point the deficit will 'correct' back to lower levels.

The process of current account correction is likely to involve some combination of an expenditure reduction through lower domestic demand and expenditure switching away from imported goods towards locally produced goods and services. It is also likely to involve an increase in exports. Such adjustments are likely to be prompted by a lower exchange

rate and/or higher interest rates. The transition to a lower current account deficit effectively means reducing New Zealand's reliance on foreign savings and increasing the saving we do ourselves. For the household sector, which has been relying heavily on debt in order to finance spending, this adjustment process may not be painless. A correction in the housing market – a slowing in house price inflation or even an outright fall in prices – is likely to be part of this process.

A reduction in the exchange rate from its current high level is likely to be an integral part of the adjustment process. Significant parts of the export sector, such as manufacturing and services have been under pressure, while those supplying local markets have faced considerable competition from falling import prices. There also appears to be a growing sense among analysts and commentators that the exchange rate is materially overvalued and that a substantial fall is both desirable and inevitable at some stage in the next couple of years.

No one can reliably predict when the exchange rate will decline nor what path it is likely to take. Factors outside our control – including the path of the US dollar -- could have a significant bearing on developments. It should also be emphasised that, even once the exchange rate begins to fall, an increase in exports and a reduction in imports will not occur instantaneously. Export markets take time to rebuild and consumer buying patterns take time to respond to changes in relative prices.

Although projecting when the exchange rate may begin to head lower is a difficult task, the likely precursors for such an adjustment seem clear. As the current account deficit continues to increase, one would expect the foreign providers of capital to reassess the relative exchange rate risk attached to their investments in New Zealand dollar assets, increasingly recognising that the exchange rate cannot be sustained at current levels. In addition, a slowing domestic economy is likely to see expectations of future returns on such investments being revised down.

4 Why is the Reserve Bank concerned about all of this?

The Reserve Bank's interest in the current account deficit, and its associated macroeconomic effects, stems from our key areas of responsibility:

- Our role in helping to maintain macro-economic stability. The Bank is required to maintain price stability whilst avoiding unnecessary instability in interest rates, exchange rates and output; and
- Our financial stability role. The Bank is obliged to make sure the financial system remains resilient in the face of imbalances (such as a large current account deficit and growing debt levels) and subsequent adjustments that might occur.

We will say more about our financial stability role when we release our next *Financial Stability Report* in November. While we believe the New Zealand financial system is well placed to weather strains that may be borne by its customers, we will be monitoring the risks closely as we go forward.

On the price stability front, we are required to maintain inflation within the 1–3 per cent target band 'on average over the medium term'. That task has been particularly challenging of late due to several factors:

- As noted, household demand has remained very strong over recent times, despite relatively firm monetary policy settings. Consequently, inflation pressures have remained strong in many parts of the domestic economy, including housing and construction.
- The recent sharp rise in world oil prices is putting upward pressure on inflation as higher petrol prices 'at the pump' and the effects of higher fuel prices risk becoming entrenched in inflation expectations. At the same time, we are expecting these increases to exert a dampening effect on household and business demand. Estimating the balance of these effects is difficult.

The likelihood of a more expansionary fiscal policy over the coming period has the potential to add inflation pressure in what remains a rather stretched economy. A growing fiscal surplus has clearly made higher levels of government expenditure affordable in the longer term. However, in the

short-term, a more expansionary fiscal stance also has the potential to aggravate the current account deficit as well as increasing the work monetary policy has to do in order to contain inflation. These pressures will need to be borne in mind as the incoming government considers its fiscal options.

We are conscious that the eventual adjustment of the high current account deficit could make the job of maintaining price stability more difficult in these circumstances. In the short term, an exchange rate adjustment has the potential to boost inflation via its direct effect on tradables prices. How problematic this might be for monetary policy would largely depend on the timing and magnitude of the exchange rate adjustment, which is something over which the Bank has little control. A falling exchange rate in the context of continued strength in domestic spending would tend to generate stronger inflation pressures. Conversely, the inflationary effects of an exchange rate decline that occurred following a cooling in domestic demand are likely to be more easily managed.

As far as possible, the Bank will not stand in the way of an exchange rate adjustment, accepting that a short-term boost

to tradables inflation may be an unavoidable consequence of adjustment. Clearly, a more orderly and gradual exchange rate adjustment would pose less of a challenge for monetary policy. However, whatever the adjustment path, our job will be to focus on medium-term inflation stability. The extent to which monetary policy will need to continue leaning against domestic inflation pressures will largely depend on the spending and savings behaviour of households.

5 Conclusion

Strong household demand associated with a buoyant residential property market has contributed to an increase in inflation pressures and a widening of New Zealand's current account deficit. The Reserve Bank remains focused on ensuring that the inflation outlook remains consistent with the medium-term target, whilst recognising the macro-economic adjustments that are likely to occur in the face of a large and unsustainable current account deficit. We are concerned to see that, as far as possible, such adjustments occur in as orderly a manner as possible.

DISCUSSION PAPERS

This section sets out the abstracts of recently issued Reserve Bank Discussion Papers. Papers are available for download on www.rbnz.govt.nz, and may also be requested in hard copy from the Reserve Bank.

DP2005/02

Mind your P's and Q's! Improving ARMA forecasts with RBC priors

Kirdan Lees and Troy Matheson

We utilise prior information from a simple RBC model to improve ARMA forecasts of post-war US GDP. We develop three alternative ARMA forecasting processes that use varying degrees of information from the Campbell (1994) flexible labour model. Directly calibrating the model produces poor forecasting performance, whereas a model that uses a Bayesian framework to take the model to the data, yields forecasting performance comparable to a purely statistical ARMA process. A final model that uses theory only to restrict the order of the ARMA process (the p's and q's), but that estimates the ARMA parameters using maximum likelihood, yields improved forecasting performance.

DP2005/03

A happy 'halfway-house'? Medium-term inflation targeting in New Zealand

Sam Warburton and Kirdan Lees

The 2002 Policy Targets Agreement (PTA) between the Reserve Bank of New Zealand and the Government asks the Reserve Bank to target inflation 'over the medium term' rather than over an annual target. This medium term objective shifts inflation targeting towards a 'halfway-house' between inflation targeting and price level targeting. Extending the inflation averaging horizon to the medium term improves the inflation-output tradeoff by influencing inflation expectations. But how long should the medium term be? Characterising the New Zealand economy with a small new-Keynesian model, we show that the happiest halfway house is located around a two- or three-year averaging horizon which leads to mild, but non-trivial, improvements in the efficiency of monetary policy.

DP2005/04

Reaction functions in a small open economy: What role for non-traded inflation?

Ana Maria Santacreu

I develop a structural general equilibrium model and estimate it for New Zealand using Bayesian techniques. The estimated model considers a monetary policy regime where the central bank targets overall inflation, but is also concerned about output, exchange rate movements, and interest rate smoothing. Taking the posterior mean of the estimated parameters as representing the characteristics of the New Zealand economy, I compare the consequences that two alternative reaction functions have on the central bank's loss, for different specifications of its preferences. I obtain conditions under which the monetary authority should respond directly to non-tradable inflation instead of overall inflation. In particular, if preferences are relatively biased towards inflation stabilisation, responding directly to overall inflation results in better macroeconomic outcomes. If instead the central bank places relatively more weight on output stabilisation, responding directly to non-traded inflation is a better strategy.

DP2005/05

UIP, expectations and the Kiwi

Anella Munro

This paper looks at reduced form descriptions of changes in the USD/NZD exchange rate, with emphasis on the interest rate-exchange rate relationship. In the estimated reduced form equations, high domestic short-term interest rates relative to foreign interest rates are associated with continued upward pressure on the New Zealand dollar. This effect is most pronounced for the 6-month forward interest differential, and is reinforced by some 'inertia' but moderated by deviations from equilibrium as 'over or under-valuation' erodes expected returns. Changes in commodity export prices are estimated to have short-term effects. Some aspects of the estimated equations are consistent with forward-looking rational expectations, a standard feature

of open economy models. Other aspects of the estimated equations suggest random walk exchange rate expectations consistent with Meese and Rogoff (1983). The cross-correlation between interest differentials and the exchange rate may be difficult to reconcile with rational expectations. The forecasting performance of a reduced form equation is also assessed.

NEWS RELEASES

Royal Canadian Mint selected to mint coins

31 August 2005

The Reserve Bank announced today that it has selected the Royal Canadian Mint to mint New Zealand's new low-value coins.

"After a rigorous tender process the Bank is confident that the Royal Canadian Mint will be able to manufacture high-quality coins for New Zealand," commented Brian Lang, Reserve Bank Currency Manager.

"The Canadian Mint impressed the Bank with their quality of coins, in particular their durability and their electromagnetic signature, which is important for the vending industry. The Mint has an excellent reputation and extensive experience in making plated-steel coins for Canada."

On 31 March 2005, the Reserve Bank announced its decision to modernise New Zealand's silver-coloured coins. The decisions are to make the current 50, 20, 10 cent coins smaller and of lighter, lower-cost plated-steel, and to remove the 5 cent coin from circulation. The \$1 and \$2 coins will be retained, as will the existing images on the 50, 20 and 10 cent coins, including that of the Queen.

"The changes to New Zealand's silver coins will give New Zealand a coherent and logical set of coins that will be more convenient for the public, easier for those handling coin in bulk, such as banks and security firms, and less costly to manufacture, saving the taxpayer approximately \$2 million annually," commented Brian Lang.

"These are important changes that will affect everyone in New Zealand. They will bring major benefits to the users of coins – the general public – as well as businesses involved in handling cash and their staff."

The Reserve Bank plans to issue the new coins in July 2006. The Reserve Bank is working closely with banks, security companies, vending machine suppliers, retailers and community groups to ensure a smooth transition.

OCR unchanged at 6.75 per cent

15 September 2005

The Reserve Bank has left the Official Cash Rate (OCR) at 6.75 per cent.

Reserve Bank Governor Alan Bollard said: "Since our June *Monetary Policy Statement*, economic indicators have broadly confirmed the slowdown in activity that commenced in the second half of 2004. The slowdown has been concentrated in sectors such as manufacturing and tourism that have been exposed to the high exchange rate. The non-traded sectors of the economy on the other hand, such as household and business services and construction, have maintained their high growth of recent years. The housing market in particular has remained strong, underpinning consumption growth. Reflecting the slow pullback in domestic demand, capacity and labour shortages are expected to persist well into 2006.

"New developments in oil prices have made the future more uncertain. Oil prices have surged in recent months and are now 20 per cent higher than projected in June, some 60 per cent up from the end of 2004. As a consequence, headline CPI inflation is now forecast to approach 4 per cent over the next few quarters before returning below 3 per cent by early 2007. Monetary policy will not attempt to offset the unavoidable first-round price effects of the oil price spike. However, it will be used to resist any flow-through to ongoing price and wage inflation. Further out, the higher oil prices are expected to have a dampening effect on both world and domestic economic activity, thus taking some pressure off monetary policy in the medium term.

"Fiscal policy is also adding to uncertainty. The shape and economic impact of new post-election policies is not clear at this point. However, it does appear likely that fiscal policy will become more expansionary in the period ahead.

"Right now, it is too early to make a call on the relative strength of the emerging cross-currents and how these will translate into medium-term inflation pressures. It will be several months before the persistence and global impact of the oil shock become more apparent. A similar period could be needed for the fiscal outlook to be clarified. We are concerned, however, that the risk of higher medium-term

inflation has increased. Consequently, further monetary policy tightening may still prove necessary to ensure inflation is kept within the 1 per cent to 3 per cent target band on average over the medium term. Certainly there remains no prospect of a cut in the OCR in the foreseeable future."

RBNZ releases revised outsourcing policy for banks

4 October 2005

The Reserve Bank today published a revised draft policy on the requirements which will apply to large New Zealand banks that have entered into outsourcing arrangements. The revisions to the draft policy follow feedback on an earlier consultation paper issued in November 2004. The Reserve Bank is seeking to finalise the policy in late 2005.

Reserve Bank Deputy Governor Adrian Orr said: "While outsourcing of banks' business functions is increasingly common and often a sensible business practice, it can expose banks and the financial system to new or increased risks that must be managed appropriately."

"Bank and bank service provider failures are low-probability events, but they can have a potentially high and immediate impact economy-wide. The draft outsourcing policy aims to provide safeguards to the stability of the New Zealand banking system against the possibility of such occurrences."

The draft policy focuses on ensuring that the New Zealand bank board maintains the necessary legal and practical ability to control outsourced functions so that the bank can continue to provide critical services in a crisis situation. This also requires the New Zealand boards of large banks to exercise meaningful control and oversight over the bank's chief executive and staff.

"We have ensured that our proposals do not involve excessive costs for banks by focusing on the outcomes we require, rather than being prescriptive about banks' systems. This approach allows banks more flexibility in meeting the requirements. The emphasis also remains on bank directors to manage outsourcing risk as part of their normal business process," commented Adrian Orr.

The Reserve Bank will be working with each bank to implement the draft policy, taking into account its individual circumstances and investment cycles.

Imbalances in the New Zealand economy

14 October 2005

In a speech to the New Zealand Credit and Finance Institute today, Reserve Bank Governor Alan Bollard said very strong household spending was a common factor in the widening current account deficit and the inflationary pressures facing the New Zealand economy.

Dr Bollard said the Bank's task of maintaining inflation within the 1–3 per cent target band on average over the medium term was particularly challenging because of household spending, oil price rises, and the prospect of a more expansionary fiscal policy.

While these factors were adding to inflationary pressures, the current account deficit had also widened as a result of strong domestic demand and the high level of spending on imports that was resulting from the strong exchange rate.

Dr Bollard acknowledged the New Zealand economy had grown strongly over the past four years.

"While a sustained expansion in economic activity is obviously pleasing, we have also seen some significant 'excesses' develop in the economy," he said. Productive resources remained severely stretched, resulting in ongoing inflation pressures and a widening in New Zealand's current account deficit.

"These two developments largely share a common underlying driver – very strong growth in spending, particularly by the household sector, much of which has been debt-financed," he said.

Dr Bollard said many households were funding their consumption by 'unlocking' the equity in their houses, as house values had risen sharply and effective mortgage rates had remained relatively low, due to strong competition among loan providers, low international interest rates and a strong inflow of offshore capital from the European and Japanese markets.

“Households in New Zealand do not actually save anything out of current income but instead dis-save around 12 per cent of income per annum. New Zealand households stand out as having the worst savings record in the OECD area,” Dr Bollard said.

He warned that house prices were very cyclical and that the current upward trend would not be sustained. The Reserve Bank has noted several times in the past few years that some households may have had unrealistic expectations in this regard. Household should always consider the downside scenario when making borrowing decisions.

The high exchange rate had also contributed to the current account deficit, by placing pressure on export sector revenues, whilst making imports relatively cheaper. Dr Bollard said the exchange rate appeared to have reached an unsustainable level. Overseas investors in New Zealand dollar instruments should also consider the downside scenario when making their investment decisions.

“At the margin, fiscal policy has the potential to worsen the domestic imbalances. A more expansionary fiscal stance has the potential to aggravate the current account deficit as well as increasing the work monetary policy has to do in order to contain inflation. These pressures will need to be borne in mind as the incoming government considers its fiscal options.”

“History tells us that at some point the external deficit will ‘correct’ back to lower levels,” Dr Bollard commented. He said the process of current account correction was likely to involve some combination of an expenditure reduction through lower domestic demand and expenditure switching away from imported goods towards locally produced goods and services. It would also likely to involve an increase in exports. “For the household sector, which has been relying heavily on mortgage debt to finance spending, this adjustment process may not be painless,” he said.

“As far as possible, the Bank will not stand in the way of an exchange rate adjustment, accepting that a short-term boost to tradables inflation may be an unavoidable consequence of adjustment. But the Bank will remain firmly focused on the medium-term inflation outlook, which largely means

ensuring that domestic inflation pressures are contained,” Dr Bollard stated.

Reserve Bank increases OCR to 7.00 per cent

27 October 2005

The Reserve Bank has increased the Official Cash Rate (OCR) by 25 basis points to 7.00 per cent.

Reserve Bank Governor Alan Bollard said: “As noted in our September *Monetary Policy Statement*, medium term inflation risks remain strong. Persistently buoyant housing activity and related consumption, higher oil prices and the risk of flow-through into inflation expectations, and a more expansionary fiscal policy are all of concern. While there has been a noticeable slowing in economic activity, and a particular weakening in the export sector, we have seen ongoing momentum in domestic demand and persistently tight capacity constraints. Hence, we remain concerned that inflation pressures are not abating sufficiently to achieve our medium-term target, prompting us to raise the OCR today.

“The most serious risk to medium-term inflation is the continuing strength of household spending, supported by a relentless housing market and rapid growth in mortgage lending. Significant dis-saving by the household sector is showing through in a worsening current account deficit, now 8 per cent of GDP. Borrowers and lenders alike need to recognise that the current rate of debt accumulation is unsustainable. The correction of these imbalances and associated inflation pressures will require a slowdown in housing, credit growth and domestic spending. We also expect a significantly lower exchange rate. The longer these adjustments in behaviour and asset prices are deferred, the more disruptive they are likely to be.

“Today’s increase in the OCR, combined with higher world interest rates and pipeline effects from the repricing of fixed rate mortgages, are expected to slow the housing market and household spending over the coming months. However, the prospect of further tightening may only be ruled out once a noticeable moderation in housing and consumer spending is observed. Certainly, we see no prospect of an easing in the foreseeable future if inflation is to be kept

within the 1 per cent to 3 per cent target range on average over the medium term.”

Reserve Bank releases Annual Report

28 October 2005

The Reserve Bank today released its 2004-2005 *Annual Report*.

Reserve Bank Governor Alan Bollard said many of the achievements in the *Annual Report* in 2004-2005 were firsts for the Bank.

These included the first of the Bank’s six-monthly Financial Stability Reports, assessing the robustness of the financial system; a Statement of Intent; consultation with our stakeholders (New Zealanders) on changes to our ‘silver’ coins; and the Bank’s admission to CLS Bank’s settlement system, Dr Bollard said.

The Annual Report draws particular attention to the designs and colours of the new ‘silver’ coins which are to be introduced in mid-2006.

“The Bank, like our currency, is changing with the times. There are several other areas where extensive new work began,” he commented.

“This includes work on the formation of a Trans-Tasman Council on Banking Supervision and reviews of financial regulation and supervision. We also consulted with banks on a draft outsourcing policy for banks.”

Dr Bollard said the Bank had continued to put considerable effort into explaining its monetary policy decisions and soliciting feedback on economic conditions from the business community.

From a financial aspect, the *Annual Report* shows that the Bank spent a net \$29.1 million on activities covered by the Bank’s Funding Agreement. This was 12 per cent below the \$33 million permitted. The Bank generated a surplus of \$272.7 million, of which \$139.3 million was paid as a dividend to the Crown.

The 2004-2005 *Annual Report* is available on the Bank’s website at www.rbnz.govt.nz

PUBLICATIONS

Annual Report
Financial Stability Report

Monetary Policy Statement

Reserve Bank of New Zealand Statement of Intent, 2004–2007

Snakes and Ladders – a guide to risk for savers and investors

Published in October each year.

Published six-monthly. A statement from the Bank on the stability of the financial system. First copy free.

Published quarterly. A statement from the Bank on the conduct of monetary policy. First copy free, subsequent copies \$12.00.

Recent Reserve Bank Discussion Papers

2005

DP2005/01	Factor model forecasts for New Zealand Troy Matheson
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DP2005/04	Reaction functions in a small open economy: What role for non-traded inflation? Ana Maria Santacreu
DP2005/05	UIP, expectations and the Kiwi Anella Munro

Full lists of Discussion Papers are available from Administration, Economics Department. Lists of the Working Papers and the Research Notes can also be obtained from the Economics Department.

Pamphlets

Central banking in New Zealand
This is the Reserve Bank
Monetary policy over the business cycle
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For further information, go to www.rbnz.govt.nz, or contact:

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Knowledge Services Group
Reserve Bank of New Zealand
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Articles and speeches in recent issues of the Reserve Bank of New Zealand *Bulletin*

Vol. 67, No. 4, December 2004

Articles

Liquidity management in the New Zealand banking sector

Currency hedging by exporters and importers

GDP-12 – the Bank's measure of trading partner demand

A note on the Reserve Bank inflation calculator

Speeches

Systemic financial crises – resolving large bank insolvencies

A prosperous but vulnerable nation

Vol. 68, No. 1, March 2005

Articles

Foreign reserves for crisis management

The Reserve Bank's new foreign exchange intervention policy

An overview of the manufacturing sector

Amendments to bank disclosure requirements

New Zealand economic and financial chronology 2004

Speech

New Zealand's potential growth rate

Vol. 68, No. 2, June 2005

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The modernisation of New Zealand's currency and cash distribution

Savings and the household balance sheet

Developments in the New Zealand corporate sector

Overview of the New Zealand retail sector

Speech

Bank regulation and supervision in New Zealand: recent and ongoing developments

Vol. 68, No. 3, September 2005

Articles

Basel II: a new capital framework

Recent trends in foreign exchange turnover

An update on Eurokiwi and Uridashi bonds

Funding agreements for the Reserve Bank

Speech

New Zealand payment system