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Editor's Note

This edition of the *Bulletin* contains five articles and one speech. The predominant themes of this edition relate to the foreign exchange market and financial stability, with all of the articles dealing with different aspects of these themes.

The first article, *International capital flows, external debt, and New Zealand financial stability*, continues the series of articles in the *Bulletin* on external vulnerability issues. It discusses New Zealand's continuing reliance on foreign capital to fund significant proportions of New Zealanders' investment and consumption expenditure, and the potential vulnerability to which this gives rise. The article explains the sources of much of New Zealand's external debt and discusses the factors that influence investors' decisions to hold New Zealand dollar assets. In assessing the potential vulnerability associated with an adverse change in market sentiment, the article draws out a range of factors that assist in reducing the economy's vulnerability, including the importance of sound economic policy and transparency arrangements, and high quality risk management in the financial and corporate sectors.

The external theme is continued in the second article, *Trends in foreign exchange trading*. This article discusses recent trends in foreign exchange markets, both globally and locally, drawing on data contained in a recent survey conducted by the Bank for International Settlements. As noted in the article, there have been some significant changes in the size and structure of the New Zealand foreign exchange market in recent years, including a migration of a significant proportion of New Zealand dollar trading to Australian markets. The article also comments on developments in liquidity and volatility in the New Zealand foreign exchange market, drawing comparisons with markets in other countries.

The foreign exchange market is also the theme of the third article, *Foreign exchange settlement risk survey*. This article discusses an important aspect of the foreign exchange market - one that is receiving increasing attention, both internationally and in New Zealand - the settlement risk on foreign exchange transactions (commonly known as "Herstatt risk"). Herstatt risk arises when there is a difference between the time at which an entity makes an irrevocable payment in one currency and the time at which that entity receives the other leg of the transaction (ie the other currency being traded) in final, settled terms. In some cases, this timing difference can be relatively long - more than one day - and tends to involve very large

amounts of money. It can therefore pose a risk to a bank (or non-bank corporate) in circumstances where the bank or corporate has paid away in one currency, but has not received the amount owed to it on the other side of the transaction. This risk can become an actual loss where the party owing the currency has become insolvent. The article discusses the various factors that influence the size and duration of Herstatt risk and the means by which this risk can be reduced.

Still on a foreign exchange theme, the fourth article in the *Bulletin*, *The current state of New Zealand monetary union research*, deals with the issue of currency union - an issue the Reserve Bank has addressed in a number of *Bulletin* articles and speeches in recent times. The article notes that the choice of currency, including a decision to enter into a currency union, is ultimately a matter that lies with a country's government and is generally considered as part of a broader range of economic integration issues. However, given the interest in currency union issues, both globally and in New Zealand, the Reserve Bank continues to conduct research on this subject in order to promote a well-informed public debate. This article summarises some of the literature on currency union matters, including work undertaken within New Zealand. It provides an indication of some of the issues on which the Bank is likely to conduct further research in the future.

The final article in this *Bulletin*, *Policy lessons on promoting financial stability*, deals with a wide range of financial stability issues. The article is a slightly amended version of a paper released recently under the auspices of the APEC Finance Ministers' process. The paper, authored by the Reserve Bank with assistance from other APEC economies, summarises the policy issues discussed at a Policy Dialogue on Banking Supervision - a workshop of policy practitioners from APEC economies held earlier this year in Mexico. The Policy Dialogue was chaired by the Reserve Bank and the National Banking and Securities Commission of Mexico. The article sets out a wide range of policy issues relevant to the promotion of financial stability, including banking supervision, corporate governance, financial disclosure, financial market structure and aspects of economic policy.

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International capital flows, external debt, and New Zealand financial stability

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New Zealand is unusually dependent on foreign capital. Many of these substantial external liabilities are denominated in foreign currency, yet it is often correctly noted that we are not very exposed to the impact of changes in the exchange rate on the value of net external liabilities. This article goes beyond the aggregated data to further our understanding of the capital flows into and out of New Zealand, and to try to get a little closer to understanding who is taking the foreign exchange risks in these substantial cross-border flows. We then extend the analysis to examine potential points of vulnerability for the New Zealand financial system.

1 Introduction

This article examines the nature and composition of capital flows and the possible implications for New Zealand financial stability.

Heavy reliance on foreign capital is one characteristic New Zealand shares with many (though not all) of the countries that have experienced financial crises over the last 10-20 years. Being able to draw on foreign capital to help finance investment, or indeed to consume in anticipation of expected future income growth, is attractive. However, there are also risks.

New Zealand differs from typical crisis countries in many important respects, but this does not mean that we are invulnerable. Whatever the general lessons of international financial crises, our points of vulnerability may be rather more specific to New Zealand.

The aim of this article is threefold. First, we briefly describe the overall trends in capital flows into and out of the New Zealand economy over the past decade, and put this, and the overall level of net external indebtedness, into some sort of international perspective.

Official statistics break down the stock and flow of capital according to the international standards for balance of

payments accounting.² It is also useful – and the second objective of this article – to think about capital flows from a different viewpoint, that of the component markets (the bond market, equity market, government issuance, and so on). Doing so offers insights on what drives capital flows and, by extension, on the potential points of vulnerability.

Finally, we discuss the implications of the analysis, and characteristics of the sorts of capital flows New Zealand has experienced, for the stability of our economy and financial system.

In many respects, the material in this article should be thought of as something akin to “work in progress”.³ The Reserve Bank has an ongoing commitment to build its understanding in these areas, but on many points the data are relatively fragmentary and the sorts of issues of particular relevance to New Zealand are not covered well in the burgeoning international literature.

¹ Sean Comber worked at the Reserve Bank when this article was written, but now works at the ANZ bank.

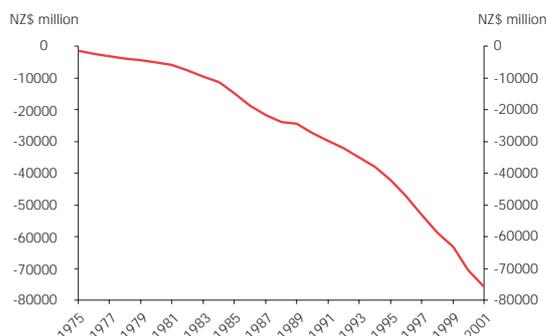
² This standard is known as Balance of Payments Manual 5 (or BPM5) and is determined by the International Monetary Fund.

³ For example, as New Zealand has substantial net external liabilities the focus here is largely on gross foreign claims on New Zealand, and discussion of the smaller, but still substantial, gross New Zealand claims on foreigners is left for another article.

2 Background

Since the mid-1970s New Zealand has consistently imported more goods and services than it has exported. It has, in other words, consistently run a current account deficit. Each of these deficits had to be financed by capital inflows (a “financial account surplus” in the official jargon). Figure 1 shows the accumulated current account deficit since 1975 and indicates how each deficit has added to a net stock of external liabilities.⁴ The best official measure is Statistics New Zealand’s International Investment Position (IIP) data.⁵ At the end of June 2001 this showed a net liability (of New Zealand resident firms and households to non-residents) of \$87.5 billion, or just over 75 per cent of GDP. Figure 2 illustrates that our level of (net) dependence on foreign capital (also known as net foreign assets or NFA) is high by world standards, especially for a well-developed and relatively mature economy.⁶

Figure 1
Cumulated current account deficit 1975-2001



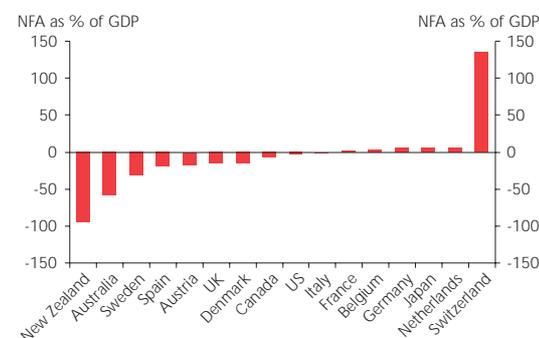
Source: Statistics New Zealand

At a very simplified level (and things are never quite that simple in reality), foreign investors can provide capital either as debt (New Zealanders owe a fixed amount of money) or as equity (the investor takes a claim on some percentage of

the earnings of operating businesses). The debt can be expressed either in New Zealand dollars or in foreign currency. Many of the debts New Zealand entities have taken on are denominated in foreign currency (see figure 3), but an unusual feature of the New Zealand financial system is that virtually all of these loans are hedged.⁶

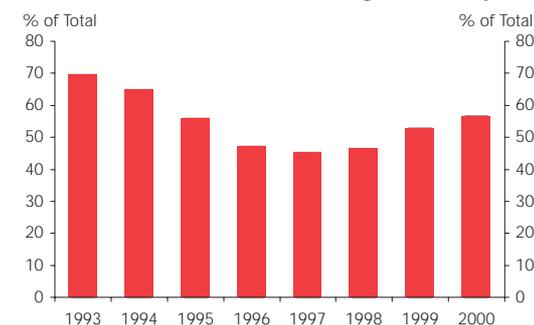
Statistics New Zealand (SNZ) estimates that in each of the past 4 years, more than 95 per cent of the outstanding foreign exchange debt exposures were hedged (either naturally or by derivative instruments). In the case of foreign

Figure 2
Actual NFA/GDP ratio



Note: March 1999 data, except for Switzerland, Italy, and France (December 1998), and Netherlands (December 1997). Source: RBNZ estimate.

Figure 3
International liabilities in foreign currency



Source: Statistics New Zealand

debt held by banks, the extent of hedging is even greater, with hedging mainly taking the form of derivatives, such as swaps or forwards contracts. In this case, a derivative is just a “side contract”: a firm might borrow in foreign currency,

⁴ Note that figure 1 illustrates the accumulated flows of current account deficits from 1975, not the stock of net external obligations at a point in time. That is, although the accumulated deficit is charted from 1975 this doesn’t imply that New Zealand’s net international investment position was close to zero at that time.

⁵ See St Clair (1998) and St Clair, Tether, and White (1998) for a detailed discussion of the component accounts. While these articles were based on the previous version of the Balance of Payments Manual (BPM4), the basic structure outlined – including the three main investment components of Portfolio, Direct, and ‘Other’ – and the discussion of their key characteristics, are still broadly relevant.

⁶ See box 1 for an illustration of how the hedging can work.

but then enter into another contract under which another party takes on the foreign exchange risk on that loan. Using these derivative contracts means that borrowers can raise funds in any of a number of foreign currencies (and have them recorded on the balance sheet and in official statistics as foreign currency debts) but can transform them into what are effectively New Zealand dollar liabilities, removing the foreign exchange exposure. Highly indebted countries are typically unable to borrow in domestic currency (directly or indirectly by way of hedging) and borrowers wanting to tap international debt markets therefore have to take on foreign exchange exposures.⁷

But if New Zealand residents are not directly exposed to foreign currency exchange rate risk, this invites the question ‘who is taking the risk’? If we can effectively borrow from abroad in New Zealand dollars, someone must be willing to lend in New Zealand dollars – someone, most likely, without a strong “natural” interest in holding New Zealand dollar assets. We try to offer some pointers on this later in the article, but should note here that the answers are neither readily identifiable from the IIP statistics, nor from any other directly observable statistics.

3 Making sense of capital flows

Before turning to some of the component markets, it is useful to stand back and take a broader view of the capital flows over the last decade or so.

Over the decade as a whole, several broad trends emerge. First, New Zealand’s dependence on international capital (both debt and equity) has increased substantially, to the point that New Zealand is more dependent on net external capital than any other developed country is currently, or probably has been at any time in recent decades. Secondly, more than all of the increased external indebtedness is attributable to the private sector: the government has dramatically reduced its indebtedness (domestic and external) from abroad. Households’ appetite for debt has been the

largest single factor in our increased need for foreign capital – and, with few exceptions, households cannot directly borrow from abroad.⁸ Perhaps most striking of all, however, was the much-increased role of banks as intermediaries for foreign savings, particularly in the second half of the 1990s. Bank borrowing from abroad has increased very substantially, and now makes up a large proportion of both net and gross external exposures.

Turning to the corporate sectors, the mix between debt and equity appears to have fluctuated (and the distinction between debt and equity instruments is not always clear, as with, for example, the development of hybrid instruments). In the early 1990s the privatisation programme and substantial Crown debt repayments tilted the balance towards equity. The period from around 1994 until 1997/98 was characterised by a combination of very high interest rates, and also a high exchange rate for much of the period. Taken together with the relatively “low-tech” nature of most of our firms at a time when high-tech stocks were increasingly favoured, this meant that almost all the net external financing for several years probably took the form of increased debt. Only in the last 18 months or so has the picture changed decisively. A very low, probably under-valued exchange rate and a reassessment of global equity values appear to have left many New Zealand real assets looking quite cheap to international investors. That has prompted renewed, and very substantial, equity inflows at a time when the current account deficit itself (the need for net new funding each year) has narrowed quite considerably.

We now turn to look more closely at individual markets to try to help illustrate the flows and get some idea of “who is bearing the foreign exchange risk”. In most of this area the data are less comprehensive or easy to interpret than would be desirable, but even bringing them together in one place helps highlight the issue and areas for future research.

⁷ See McLean and Shrestha (2001) for a detailed, if inconclusive, discussion on why Australia, New Zealand, and South Africa were able to borrow internationally in their respective domestic currencies.

⁸ There is no legal impediment to individuals borrowing abroad, but there are some practical difficulties in doing so.

Table 1
Marketable New Zealand securities held by non-residents (NZ\$m)⁹

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Equity (listed)	n/a	n/a	23,884	28,417	28,798	25,466	28,202	20,168	16,028
Traded debt securities									
Government bonds	4,309	7,396	7,475	11,375	11,631	10,779	9,655	7,913	8,481
Treasury bills	2,932	2,875	4,046	3,511	2,934	1,998	651	714	696
Other debt									
Other Government debt	30	66	49	111	27	11	23	31	18
Private sector debt	270	883	1,302	2,077	2,685	873	2,198	1,062	1,961
Total debt	7,540	11,221	12,872	17,074	17,277	13,661	12,527	9,721	11,156
Total									
(Debt and listed equity)	n/a	n/a	38,316	51,818	59,810	58,528	60,205	45,874	40,609
Eurokiwis (memo item)	2,050	1,635	1,560	6,327	13,735	19,401	19,476	15,985	13,425

4 Component markets

Our best estimates of the value of offshore ownership across a number of types of marketable New Zealand securities are shown in table 1. The following discussion looks in more detail at what sense we can make of what has been going on in the equity market, the market for government securities, the corporate bond market, banks' own funding activities, and also the offshore market for New Zealand dollar denominated debt (the eurokiwi market).

4.1 Equity market

There has undoubtedly been a substantial increase in offshore equity investment – that is, increased foreign ownership of New Zealand companies (see figure 4). A number of relatively large merger and acquisition transactions have made the headlines over the past decade, many of which have resulted in the acquisition of domestic entities by offshore investors.

Official SNZ data on the International Investment Position, as reflected in table 2, highlights how recorded offshore equity investment into New Zealand has been relatively stable over the past 5 years, while there has been a marked increase in non-equity sources of foreign investment into New Zealand. This would appear to be at odds with other indications. Moreover, the numbers in table 1 also show a drop. So what is going on here?

Dealing with the easier item first, the numbers in table 1 include only companies listed on the New Zealand Stock Exchange as at the date of the estimate. A number of listed companies that had substantial foreign ownership have been taken over in full by offshore firms. In such cases, the firm remains domiciled in New Zealand, but as a wholly owned subsidiary it is no longer a listed company. A good recent example was Fletcher Paper. While offshore investment in New Zealand increased as a result of the full takeover, holdings in listed companies (estimated in table 1) drop.

Table 2
Foreign debt and equity claims on New Zealand (as at March, NZ\$m)¹⁰

	1997	1998	1999	2000	2001
Equity	45,144	50,994	51,085	51,786	48,473
Other	67,822	73,062	76,176	83,665	115,825
Total	112,966	124,056	127,261	135,451	164,298

Source: Statistics New Zealand

⁹ Data are based on RBNZ surveys with the exception of the equity market, which is an estimate based on market capitalisation and private sector organisations' estimates of offshore ownership.

¹⁰ Note that SNZ changed the methodology for the survey upon which this data is based, and as a result the data in 2001 is not directly comparable with earlier years.

The data in table 2 do not suffer from that problem, and are the best comprehensive estimates of offshore ownership we have. But they still need to be interpreted carefully. For example, the data will change depending on where a company's head office is located. Several large companies (notably Brierley Investments and Lion Nathan), have shifted their head offices from New Zealand in recent years, without changing the nature of their underlying operational businesses at the time the head office moved.

The effect of this is best shown by an example (see below). Suppose XYZ Limited has (for simplicity) \$4000 of equity and no debt, and is based in New Zealand. Offshore investors own 70 per cent of the equity and New Zealand residents own 30 per cent. What happens if the shareholders of XYZ Limited decide to move the company's base overseas?

Moving the corporate headquarters of the company without uprooting any investment (such as buildings or plant and machinery) from New Zealand, results in a major shift in the composition of ownership recorded in official data. In the example, XYZ Ltd was New Zealand based and had 70 per cent offshore ownership. By moving its headquarters overseas, New Zealand statistics record XYZ Ltd as moving from a net foreign investment in New Zealand of \$2800 to a net foreign investment by New Zealanders abroad of \$1200.

The plant and machinery, the manufacturing processes and everything else remained in New Zealand, and the company was owned by the same people – only its head office and residency have changed.

It is not obvious that either number is a better representation of the "true" nature of the economy's exposure (especially as companies typically relocate because they increasingly have operating activities in a variety of countries). The possibility of such changes suggests that the time-series is less reliable than we would like and that these data should be used cautiously.

Looking specifically at actual merger and acquisition activity in recent years can help give us a more direct indication of some of the flows. Table 3 shows the biggest cross-border equity market deals involving New Zealand listed companies in the past decade (the 10 largest involving inflows, and the 10 largest involving outflows).

Figure 4 and the tables illustrate the growth in large cross-border equity market flows since the late 1990s. By simply summing the two aggregate numbers from the tables, the inflows exceed the outflows by around \$14 billion since 1991. Offshore investor take-overs of New Zealand listed companies have clearly been an important source of capital inflows over recent years.

Example: How relocating a company head office offshore affects the IIP statistics

Before moving offshore:			After moving offshore:		
Offshore investment in NZ	70% of \$4000 =	\$2,800	Offshore investment in NZ		\$0
NZ investment in NZ	30% of \$4000 =	\$1,200	NZ Investment in NZ		\$0
NZ investment offshore		\$0	NZ investment offshore 30% of \$4000 =		\$1,200

Table 3a
10 largest merger and acquisition deals involving cross-border transactions
Offshore firm acquiring share in New Zealand company

	Date	Target	Acquirer	Acquirer nation	Value NZ\$m
1	Jul 00	Fletcher Challenge Paper	Norske Skogindustrier	Norway	5,965
2	Mar 01	Fletcher Challenge Energy	Shell	United Kingdom	2,895
3	Aug 96	Brierley Investments	Malex Industries	Malaysia	2,030
4	Apr 95	Carter Holt Harvey	International Paper	USA	1,750
5	Mar 93	Fletcher Challenge Methanol	Methanex	Canada	1,725
6	May 96	Trust Bank New Zealand	Westpac	Australia	1,275
7	May 99	Contact Energy	Edison Mission Energy	USA	1,215
8	Aug 01	Montana Group	Allied Domecq	UK	1,080
9	Apr 98	Lion Nathan	Kirin Brewery	Japan	925
10	Mar 96	Brierley Investments	Delham Investments	Singapore	805
		TOTAL			19,665

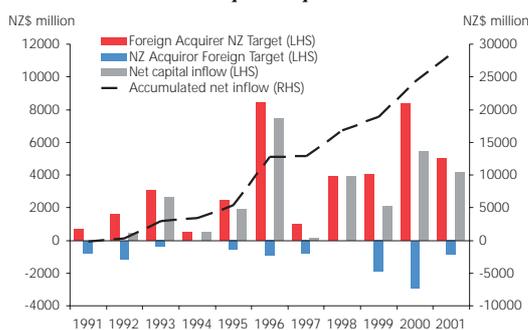
Table 3b
10 largest merger and acquisition deals involving cross-border transactions
New Zealand firm acquiring share in offshore company

	Date	Target	Acquirer	Target nation	Value NZ\$m
1	Nov 99	AAPT	Telecom	Australia	1,480
2	Jun 00	Ansett Australia	Air New Zealand	Australia	925
3	Jul 92	National Breweries	Lion Nathan	Australia	685
4	Oct 00	AAPT	Telecom	Australia	570
5	Jul 91	Cape Horn Methanol	Fletcher Challenge	Chile	485
6	Sep 00	CSR	Carter Holt Harvey	Australia	455
7	Feb 95	Bowater Industries	Carter Holt Harvey	Australia	375
8	Sep 96	Ansett Australia	Air New Zealand	Australia	375
9	Jun 97	Australian Newsprint	Fletcher Challenge	Australia	330
10	Dec 96	John Fairfax Holdings	Brierley Investments	Australia	295
		TOTAL			5,975

Source: CSFB, Bloomberg

These numbers are likely to overstate the level of new offshore investment in recent years because in many cases a significant proportion of the acquired shares may already be in foreign ownership (the Fletcher Challenge letter shares were a well-known example). However, much of that foreign ownership is likely to have been built up in a series of smaller inflows earlier in the decade, which are not captured in these numbers.

Figure 4
Cross-border M&A activity (NZ\$ million)
(includes estimates of impact of privatisation)



Source: Statistics New Zealand, Treasury, and RBNZ estimates.

These numbers refer only to activities involving companies already listed on the New Zealand Stock Exchange. Privatisation of state-owned assets also needs to be factored in. These sales have raised around \$19 billion since the late

1980s, of which offshore investors are estimated to have purchased around one half.¹¹

This discussion has abstracted from the issue of how merger and acquisition activities have been financed. Understanding financing structures is important for trying to understand the short-term impact of take-over activity on the exchange rate, for example, but is much less important when thinking about longer-term systemic issues and vulnerabilities. Internationally, it is normal (although not universal) for overseas controlling interests in local companies not to be hedged, and we understand that this is the case in New Zealand too.¹² Equity stakes are rather different from debt: owning a company, or even a stake in it, gives the owner a claim to the earnings on real assets (operational businesses). Over time, holding equity provides a high degree of natural hedging: for example, if it involves a stake in a company operating in the tradables sector, where the New Zealand dollar value of the business will itself be somewhat responsive to movements in the exchange rate. Nonetheless, many companies are not in the tradables sector at all, and even for those that are, the real (foreign currency) value of their New Zealand investment typically fluctuates with the movements in the value of the New Zealand dollar.

¹¹ Our estimate is based on Treasury data, but should be treated as indicative only.

¹² This is of course quite distinct from the question of whether the management of the firm hedges the foreign exchange flows in the operating company itself.

4.2 Corporate bonds

Of late, foreign investment in the large and relatively liquid US corporate bond market has been an important source of funding for that country's large current account deficit. However, the New Zealand corporate bond market is quite small and relatively unimportant as a vehicle for overseas investment in New Zealand. At the end of 2000 there was approximately \$7.5 billion of corporate debt on issue, and there were fewer than 30 issuers (compared with the \$25 billion of government debt on issue). Of this, only about \$2 billion was held by non-resident investors.

Each month, the Reserve Bank surveys non-resident holdings of non-government bonds (see figure 5).¹³ The proportion of private sector securities owned by offshore entities has fluctuated over the past 5 years. Foreign ownership rose strongly from 1995-97, when interest rate differentials were at their widest, but has dropped in recent years. In any event, the level of offshore investment in this market was always small, and these modest fluctuations do not contribute much to our understanding of the broader trends and exposures.

Figure 5
Offshore ownership of New Zealand private sector debt



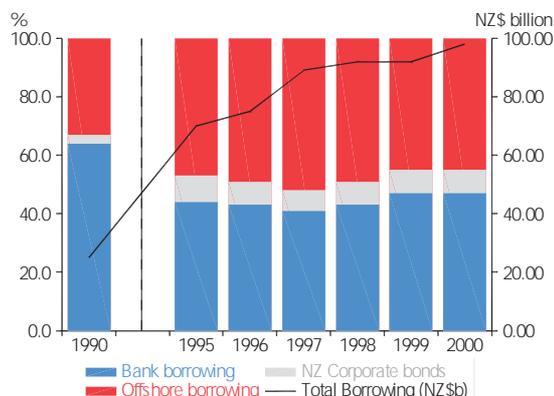
Source: RBNZ

4.3 Non-bank corporate borrowing

Larger local corporates can borrow directly from abroad, typically in foreign currency. Figure 6 suggests that, over the decade as a whole, the corporate sector has increased the foreign share in its total borrowing, placing less reliance on domestic bank financing now than in the past. Again, it is

worth highlighting that most foreign currency borrowing is hedged – some naturally (given the cash flows of the underlying business, such as export revenue), and some using derivatives (by finding a foreign investor willing to take an exposure to the New Zealand dollar). Given the major changes in the corporate sector over the decade, however, it is probably unwise to draw strong conclusions from these data.

Figure 6
Business (non-farm) borrowing



Source: RBNZ

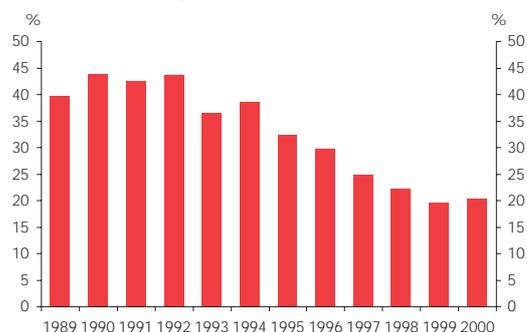
4.4 Government borrowing

A decade ago, around 45 per cent of the New Zealand government's net debt was owed to non-residents. Today that figure is around 20 per cent.

In 1990, almost all the foreign claims on the New Zealand government took the form of foreign currency debt. The government's net foreign currency debt was then \$16 billion, equivalent to 22 per cent of GDP and a considerably larger proportion of total net foreign claims on New Zealand at that time. By late 1996, that net foreign currency debt had fallen to zero, as part of a deliberate strategy to reduce the Crown's direct exposure to exchange rate fluctuations. Privatisation proceeds and substantial fiscal surpluses were used to achieve this. But New Zealand continued to run current account deficits, so the resulting \$16 billion outflow had to be replaced by other forms of external capital.

¹³ The survey includes holdings of the limited number of local bank bond issues, which are not included in our other measures of the corporate bond market.

Figure 7
Public sector net external liabilities
(as a share of total public sector net debt)



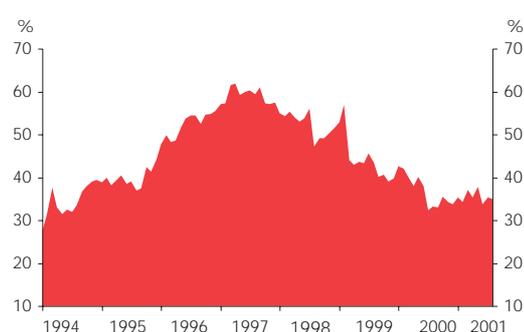
Source: Statistics New Zealand

One form was direct foreign purchases of New Zealand dollar government bonds and Treasury bills issued locally. The market for government bonds is the most liquid debt market in New Zealand (and there is currently \$26.3 billion of government bonds and treasury bills on issue). However, a decade ago there were few foreign holdings of domestic government securities.

Between 1993 and 1996, offshore holdings of government securities increased very rapidly, as interest rates here rose to levels well above those in other comparable countries.¹⁴ At their peak in 1997, foreign holdings made up almost 60 per cent of the total government securities on issue, representing a substantial inflow of capital during those years (roughly \$11 billion). Some of those holdings are themselves hedged, and that proportion fluctuates through time, but most probably involved institutional investors taking an outright exposure to the New Zealand dollar.

Figure 8 shows how the amount of foreign ownership of New Zealand government debt has changed in recent years.

Figure 8
Proportion of government securities owned by offshore investors



Source: RBNZ survey

Investors have clearly become less willing to hold New Zealand government securities since 1997, resulting in a net outflow of around \$6 billion between 1996 and 2000. The most likely explanation is that, for most of that period, the gap between New Zealand and foreign interest rates was generally closing. Over the same period, the exchange rate has also fallen sharply, making outright New Zealand dollar investment appear less attractive. Again, given that New Zealand's total claim on world savings has continued to increase this net outflow needed to be replaced.

Table 4 highlights the decline in offshore investment in New Zealand government securities.

4.5 Bank borrowing

The slack has been taken up by local banks. New Zealand banks now rely heavily on foreign funding, and much of it is delivered through their parent, or related entities. Figure 9 illustrates the increase in offshore funding by local banks. In just over three years total bank funding from non-resident

Table 4
NZ government debt owned by offshore investors (\$m, March years)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Bonds	2,860	4,309	7,396	7,475	11,375	11,631	10,779	9,655	7,913	8,481
(%)	(17.3)	(23.5)	(37.1)	(39.5)	(62.3)	(64.6)	(59.7)	(47.1)	(39.3)	(41.6)
Bills	619	2,932	2,875	4,046	3,511	2,934	1,998	651	714	695
(%)	(13.9)	(45.6)	(46.8)	(56.5)	(41.1)	(40.1)	(29.3)	(11.9)	(13.1)	(11.8)
Total	3,479	7,241	10,271	11,521	14,886	14,565	12,777	10,306	8,627	9,176
(%)	(16.6)	(29.2)	(39.4)	(44.2)	(55.5)	(57.5)	(51.4)	(39.7)	(33.8)	(34.9)

Source: RBNZ

¹⁴ Changes to withholding tax arrangements in 1993 also helped facilitate new interest and activity.

Figure 9
Bank foreign borrowing
(per cent of total bank borrowing)



Source: RBNZ

sources has doubled from around \$30 billion to around \$60 billion (inevitably concentrated on the balance sheets of a small number of institutions). Recall that the country's overall dependence on foreign capital is around \$88 billion. The foreign currency borrowing component has more than doubled (from just under \$17 billion in 1998 to just under \$38 billion in August 2001, although some of this increase simply reflects the fall in the exchange rate over the period).

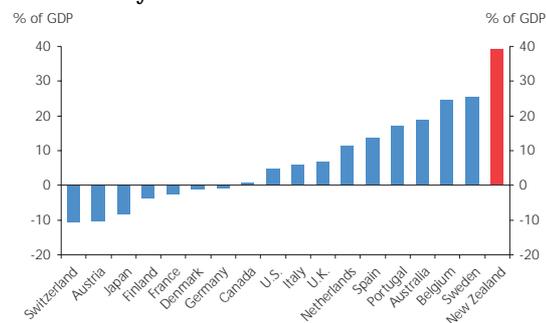
Banks' ability to raise New Zealand dollars directly from abroad comes and goes. In periods when New Zealand had relatively high interest rates, banks were able to attract very substantial volumes of retail deposits in Asia (typically channelled through to the New Zealand bank through an associated company operating in those markets). That activity has shown some signs of picking up again recently as the gap between New Zealand and overseas interest rates has begun to widen this year.

To raise foreign currency funding, some local banks tap international capital markets directly, but others borrow predominantly or exclusively through their overseas parents or associated entities. An individual bank chooses to tap the foreign currency market largely because it is the cheapest on offer at the time the funds are required. At a system-wide level, however, the bank foreign currency borrowing is something of a residual item – it rose very rapidly in the period in the late 1990s when the current account financing requirement was high, and there were net reductions taking place in other forms of foreign financing of the New Zealand economy, notably foreign holdings of government securities.

Both Statistics New Zealand and the banks' own disclosure statements indicate that hedging activity enables the banks to manage their exposures in such a way that they face virtually no foreign exchange risk. (Box 1 describes how swaps and forwards are used to do this hedging.)

The fact that a good deal of banks' funding is sourced from offshore in foreign currency, without exposing banks to foreign exchange risk in the normal course of business, is a reflection of the opportunities created by financial liberalisation, and in particular by product innovation. Twenty years ago, when swaps were in their infancy, this sort of activity would simply not have been possible. Even in a liberalised market, banks would have found it much more difficult to find for themselves sufficient investors who were willing to invest in New Zealand dollars with a New Zealand institution. Nonetheless, as we note below, opportunities that increase flexibility also tend to bring with them some risks.

Figure 10¹⁵
Financial system net external liabilities



Source: Standard and Poors.

The international comparisons are interesting. As figure 10 shows, across all the developed economies, the New Zealand banking system is the one with the largest dependence on foreign sources of finance. Looking closely at the data also reveal that in recent years the New Zealand banking system's reliance on foreign funding has increased faster than in other countries.

¹⁵ In the source data for the latest year, Cyprus shows a materially larger number than New Zealand. However, the Cypriot numbers appear to be very volatile and accordingly we have excluded them from the graph.

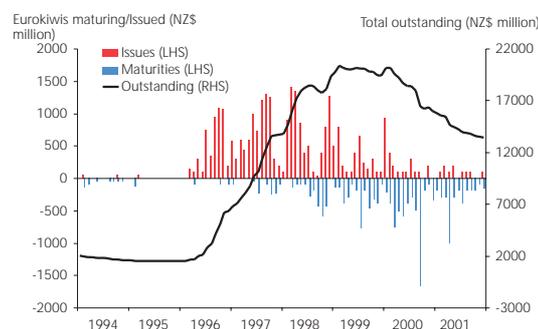
4.6 Eurokiwis¹⁶

So where does the eurokiwi market fit into all this? This somewhat esoteric market achieves considerable prominence from time to time, but its place in financing New Zealand's demand for foreign capital has not always been well appreciated.

The eurokiwi market developed in the mid-1980s following the liberalisation of New Zealand financial markets, but then activity died away and the market only returned to prominence in the mid-1990s. Put simply, a eurokiwi is a New Zealand dollar bond issued, typically by a non-New Zealand borrower, to investors based outside New Zealand. This market provides offshore investors with an opportunity to invest in New Zealand dollar-denominated bonds issued by borrowers they are familiar and comfortable with.¹⁷ However, unless the borrower is a New Zealand company, buying a eurokiwi bond does not typically result in an investment flow into New Zealand – one set of foreigners is borrowing from another set of foreigners.

That does not mean these bonds are unimportant for New Zealand. In fact, they play a significant part in the overall story. They provide a way of tapping the interest of some investors who are willing to be exposed to the New Zealand dollar but who would otherwise have no easy way of doing so. The foreign issuer is able to raise New Zealand dollars but has no need for them, and does not want to be exposed to fluctuations in the value of the New Zealand dollar. Instead, in effect, local banks take on the New Zealand dollar exposure, in exchange for the foreign exchange risk they

Figure 11
Eurokiwi issuance, maturity, and amount outstanding



have incurred on their own foreign currency borrowings. Eurokiwis should be thought of as one (and only one) source of New Zealand dollar hedging – in particular, to enable the banks to hedge their substantial foreign currency borrowings discussed above - rather than directly as a net additional capital flow to New Zealand residents.

As table 5 shows, the level of eurokiwis over 1996-98 was so strong that this retail demand – to hold New Zealand dollar assets at the then relatively high interest rates – was sufficient on its own to enable New Zealanders to hedge all their net new foreign financing requirements for those years.

The outstanding stock of eurokiwis peaked above \$20 billion in late 1998, but issuance of this form of debt has reduced sharply in recent years. Currently only \$13 billion remains on issue, representing a significant reduction in the willingness of that portion of the investor community to provide the ongoing demand for New Zealand dollars that is needed.

Table 5
Net eurokiwi issuance and the current account deficit

(\$ million)	1994	1995	1996	1997	1998	1999	2000	2001
Eurokiwi net inflow	-415	-75	4,765	7,410	5,665	75	-3,490	-2,560
Current account deficit	-3,085	-4,105	-5,015	-6,015	-5,580	-4,385	-7,390	-5,340

Source: Bloomberg, Statistics New Zealand

¹⁶ See Eckhold (1998) for a detailed description of the eurokiwi market. Note that we are including both euro bonds and global issues in the generic term "eurokiwi".

¹⁷ The typical investor in this market has been characterised as the "Belgian dentist" – a relatively well off European retail investor who is seeking high, but relatively safe, returns on their investment. An example of such a borrower would be a well-regarded German bank, a supranational organisation such as the World Bank, or an internationally known financing company such as Ford Motor Credit.

Investors in eurokiwi bonds typically became less interested in New Zealand eurokiwi bonds from 1998 as the gap between New Zealand and offshore interest rates decreased markedly. The sustained fall in the exchange rate probably also played a role – many investors in eurokiwis may have found that the actual returns they achieved were not particularly attractive (although the New Zealand dollar has depreciated less against the euro than against many other currencies).

5 Possible points of vulnerability

So far, this article has focused on trying to identify and better understand the forms that net capital flows into New Zealand have taken over the last decade or so. But it is also important to stand back and ask whether the financing structures or related issues bring to the fore any systemic vulnerabilities for the economy and/or financial system of New Zealand. It is perhaps worth stressing that, since capital account liberalisation 17 years ago, the increasingly large external financing requirement has been met remarkably smoothly, and in a series of different forms, through a variety of international crises and changing domestic economic conditions.

However, the perennial question for policy analysts is ‘what are the types of potential shocks associated with capital flows, or points of vulnerability, that policy-makers should be alert to?’ What, in other words, might the picture look like if circumstances were to take an unpropitious turn? Without automatically presuming that there are problems, central bankers should always start prodding and probing when financing structures or behaviours look very different from international norms, or when structures and stocks change very rapidly in a relatively short space of time. Low probability – but potentially threatening – events tend to be a focus of central banks’ financial stability analysis.

Where might the “probing and prodding” points be in New Zealand? A number are highlighted by the analysis in this article:

- We are very heavily reliant on foreign capital, more so than any other developed economy, and that

dependence has increased sharply in the last decade.

- A very large proportion of the financing now takes the form of (hedged) foreign currency financing, mainly in the form of debt: again the numbers stand out against international averages.
- That borrowing is undertaken through a relatively small number of banks whose ability to tap the international markets, and to continue effectively to hedge the foreign currency risks, is likely to be closely linked to (a) their own financial health, and (b) the financial health of overseas parents.
- New Zealand is a small economy, with few “natural” foreign holders of New Zealand dollar assets.

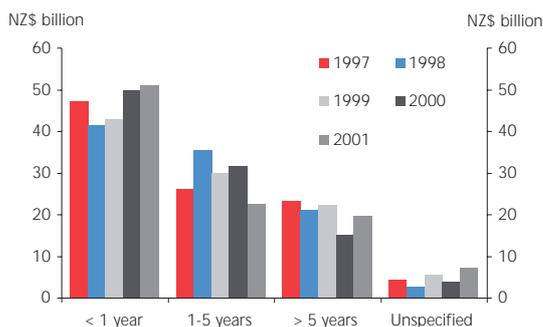
One set of issues relevant across all countries relates to the composition of capital flows. Several dimensions may have a bearing on the potential vulnerabilities including: the maturity structure, the relative proportions of debt and equity, and the currency the liabilities are denominated in. The conventional wisdom is that the risk of financial instability tends to increase as a) the proportion of short-term liabilities increases, b) the proportion of debt (versus equity) increases, and, c) the greater the proportion of liabilities denominated in foreign currency.

Of course, these are simple rules of thumb, not immutable laws of nature. They do not always hold. For example, long-term debt can be more ‘sticky’ than equity (in both term and price): an investor’s equity stake could be short-term in nature, while long-term debt holdings might be part of an overall relationship between highly-integrated foreign parents and local subsidiaries. Even if the underlying equity exposure is retained – and it can often be difficult to offload large or controlling interests quickly – equity holders may move to hedge themselves against currency risk if they fear that the exchange rate is vulnerable to a fall. That sort of selling could exacerbate any pressures on the exchange rate.

Figure 12 illustrates the relatively short-term nature of New Zealand debt liabilities (on a residual maturity basis). As at March 2001, approximately 50 per cent of the debt had a remaining term to maturity of less than one year. There also appears to have been a modest increase in the share of short-term debt. The greater the share of short-term maturities the more exposure there is to rollover risk (ability to renew

the transaction when it matures), both on the instrument itself and on the hedging contracts associated with foreign currency borrowings. This latter risk is perhaps a more likely point of vulnerability than the former, because the markets are less deep.

Figure 12
New Zealand international debt maturity structure



Source: Statistics New Zealand

So long as lenders have confidence in the New Zealand economy – including the macroeconomic framework and policy settings, and the creditworthiness of borrowers – these risks should remain relatively low. Indeed, we are not facing an incipient crisis, and in a sense, this highlights what is probably the real issue for New Zealand, which is our heavy dependence on international capital and our (highly positive) ability to continue to hedge ourselves against assuming unwanted direct foreign currency exposures. This dependence, and associated reliance on hedging, may mean that the New Zealand economy, and the New Zealand dollar, could become more vulnerable if:

- the economic fundamentals, and the quality of bank and corporate sector assets, were to deteriorate materially, or
- there was to be - for whatever reason - a widespread retreat from the ready international cross-border flow of capital, or
- risk aversion increased markedly in respect of peripheral indebted countries more generally.¹⁸

¹⁸ All countries that borrow internationally face the same *potential* risks – it is our relatively high level of indebtedness that make us relatively more vulnerable than many other developed countries.

The direct credit risk of lenders not being repaid is largely, and very closely, linked to the quality of assets on bank and corporate balance sheets. A strong risk management culture in New Zealand banks, and overseas parents, is a helpful buffer in this respect. However, in the unlikely event that the quality of assets did drop materially (and particularly if bank or corporate credit ratings were to fall markedly because of such a deterioration), then the dependence on foreign financing could exacerbate any domestic problems. (For example, swap agreements can contain provisions under which the swaps can be unwound immediately if the counterparty drops below a certain credit rating, leaving a borrower with, say, an unhedged foreign exchange exposure at just the time when its balance sheet and profits were already under pressure.)

Relatively small shifts in foreign investors' portfolio allocations to New Zealand can have quite a large influence on New Zealand capital markets because of the small size of our markets, and because of the large size of the portfolios of global investment funds. That can work both ways, and this article has highlighted the sheer scale of some of the swings in the way in which our external financing requirements have been met in the last decade or so without causing any particular problems.

It is a somewhat open question as to why foreign investors are as willing as they seem to have been in allocating a portion of their portfolio to New Zealand. New Zealand is in very few of the investment "benchmarks" against which the performance of international funds managers is measured: that means there is little "natural" or near-automatic demand for New Zealand dollar assets among the professional funds management community. Therefore, any investment in New Zealand (and especially in New Zealand dollars) is less likely to be held in a time of financial difficulty than an investment in a country that is included in international investment benchmark guidelines. The aura that surrounded the economic reforms that began in the mid-1980s may have played some part in attracting capital in the early days, but the main reason for continued investment demand has tended to be the relatively high yield offered on New Zealand assets compared to those in other developed countries. In this sense, New Zealand has attracted international investors into New Zealand dollar assets. We have been able to tap

international debt markets, and find buyers for equity stakes too.

One way to gauge the level of exposure to the risks associated with capital flows is to look at both gross and net capital flows. Gross flows reflect the decisions of many agents about the levels of risk they are willing to take, the desired structure of their portfolios, etc. Net flows indicate the current account funding requirement in any particular year, but don't necessarily provide a sense of the scale of the underlying flows. If the flows into a country exactly match the flows out of a country, the net flow is zero (or, as is the usual case, they do not match and there is a net inflow or outflow).

A numerical example illustrates why relatively small changes in asset allocation decisions could affect the price, volume and direction of capital flows (see table 6). While net flows appear moderate (six per cent of net outstanding external obligations, three per cent of gross exposures), gross flows in a particular year easily account for more than a third of the stock of outstanding net external obligations. A relatively small change in foreign investment in New Zealand, could, in adverse circumstances, have a large impact on asset prices (including the exchange rate).

All these sorts of risk should be kept in perspective. It would probably take a quite extreme scenario, in which the fundamental state of our economy had already deteriorated badly, for the inflow of capital to simply dry up. In most plausible scenarios, the 'tap' would not be turned off, although some markets and financing sources might become unavailable if, for example, New Zealand's credit rating dropped below minimum thresholds for many classes of international investors. In the first instance at least, the

volume of capital available for bank or corporate funding would probably continue to be available, but it might not be available at the price the bank (or company) wanted to pay. That is, the pressures might show up predominantly in prices rather than volumes. Of course, even if finance was still available, a sharp increase in the cost might itself prompt relatively sharp dislocations to underlying spending and borrowing patterns in the economy. All this ultimately highlights the need for continued attention to maintaining credible economic policies, a solid economic performance, and a strong asset quality and risk management framework in the banking and corporate sectors. These things become that much more important when one is heavily dependent on other people's money – as for individuals, so also for economies in aggregate.

6 Conclusion

This article has discussed the potential risks and vulnerabilities that arise from New Zealand's high level of dependence on foreign capital. Its purpose has been less to reach conclusions, as to begin to open up the issues. It is important to understand that identifying vulnerabilities and understanding risks is not a prediction of future events, nor even a judgement that New Zealand would have been 'better off' if the risks had not been taken. Understanding the flows, the financing structures, and the motivations of the investors on whom we rely will be integral parts of our ongoing work programme in thinking about possible areas where the New Zealand economy and financial system might (with a low probability) become vulnerable. Future *Bulletin* articles are likely to refine and extend the analysis.

Table 6
Total capital flows (year to March 2001)(\$m)

Total inflows	17,215
Total outflows	12,156
Total gross flows	29,371
Net (in)flows	5,059
Net International Investment Position	-86,533
Gross foreign claims on New Zealand	-164,298

Source: SNZ and RBNZ estimates

Box1: Generating NZ dollars in the offshore markets to fund local lending

As noted, domestic banks have come to rely increasingly on offshore investors for the funds that they lend to New Zealand businesses and households. Banks wish to avoid the risk that the exchange rate may depreciate, as that would expose them to very large losses which could not be recouped from New Zealand dollar borrowers. One way that banks can avoid this risk is through the basis swap market, as described below.

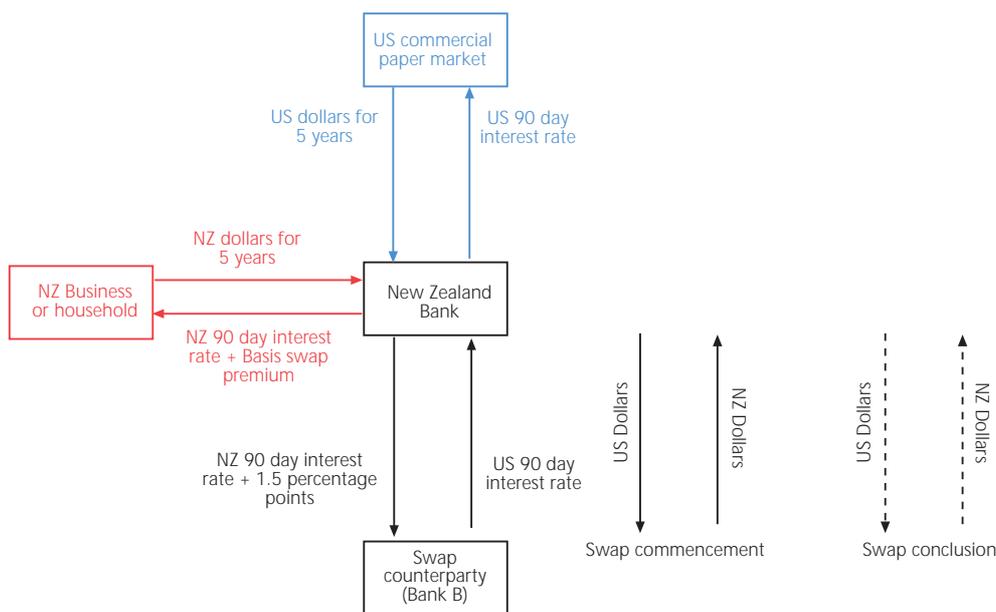
In this example, the domestic bank, "New Zealand Bank" (NZB), lends money to a New Zealand business at a floating interest rate (the 90 day bank bill rate plus a margin) for five years (shown in red in the diagram). To fund this lending, NZB borrows US dollars for five years from the US market at a floating interest rate (shown in blue). This is the "core" business of the bank - the rest of the diagram is about avoiding the exchange rate risk.

In the basis swap market, NZB enters into an agreement with Bank B. At the commencement of the agreement,

NZB lends their US dollars to bank B, who agree to pay US 90 day interest rates to NZB. At the same time, Bank B lends NZ dollars to NZB at the NZ 90 day interest rate plus a margin (the basis swap premium). By doing this, NZB has swapped the currency basis of their funding from US dollars to NZ dollars (hence the name "basis swap"), and has passed on the currency risk to Bank B. At the end of the five year period, both banks repay each other the NZ dollars and US dollars that they have borrowed from each other (at an exchange rate that was agreed to at the commencement of the deal). NZB benefits from this transaction by eliminating the foreign exchange risk. Bank B benefits because they receive a higher interest rate on their New Zealand dollars than they would otherwise have done (because they receive the basis swap premium).

Foreign exchange forwards provide another way for banks and others to hedge a foreign exchange exposure. A forward contract is one where two parties agree now to exchange currencies at a rate determined now at some date in the future. By fixing the rate at which they will exchange the currencies in the future, this removes the risk of an unfavourable exchange rate movement.

Figure 13
New Zealand banks



References

Eckhold, Kelly (1998), "Developments in the Eurokiwi bond market" *Reserve Bank of New Zealand Bulletin* vol 61 no 2.

Eichengreen, B and Ricardo Hausmann (1999), "Exchange Rates and Financial Fragility" *NBER Working Paper No W7418*.

IMF (1991), "Determinants and systemic consequences of international capital flows" *International Monetary Fund Occasional Paper No 77* March, 1991.

IMF (2001a), "IMF Committee on balance of payments statistics: Annual Report 2000" International Monetary Fund Statistics Department.

IMF (2001b) "International Capital Markets Report" International Monetary Fund.

McLean, B and S Shrestha (2001), "International borrowing in domestic currency: What does it Take?" Mimeo, Reserve Bank of Australia.

Reserve Bank of Australia (2000), "Foreign exchange exposures of Australian Banks" *Reserve Bank of Australia Bulletin* August 2000

St Clair, Robert (1998) "The balance of payments accounting framework" *Reserve Bank of New Zealand Bulletin* vol 61, no 1.

St Clair, R, C Tether, and B White (1998), "The intermediation of international capital flows" *Reserve Bank of New Zealand Bulletin* vol 61 no 2.

Statistics New Zealand (2001), "Balance of payments Sources and Methods 2001" SNZ.

White, Bruce (1998), "Monetary policy and the structure of the capital account: the New Zealand experience" *Reserve Bank of New Zealand Bulletin* vol 61, no 4.

Woolford, Ian (2001), "Macro-financial stability and macroprudential analysis" *Reserve Bank of New Zealand Bulletin* vol 64 no 3.

Trends in foreign exchange trading

Lauren Rosborough, Financial Markets Department¹

In this article, Lauren Rosborough discusses how global and domestic foreign exchange markets have changed in recent years. These trends are illustrated using the latest Bank for International Settlements triennial foreign exchange and derivatives market survey and other indicators of foreign exchange market liquidity. The size and structure of the New Zealand foreign exchange market has altered in recent years. Trading in the New Zealand dollar now occurs predominately in Australia. There is some evidence to suggest that New Zealand dollar spot market liquidity has fallen but the New Zealand dollar remains quite liquid considering the small size of the New Zealand economy.

1 Introduction

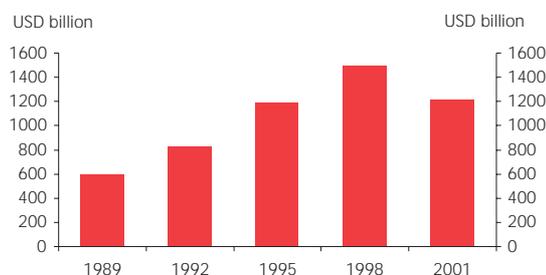
Over recent years the structure of the global foreign exchange market has altered significantly, reflecting a number of events such as the introduction of the common currency in Europe and changes in the way that market participants have chosen to manage their foreign exchange exposures. Significant changes have also occurred in the New Zealand dollar and the way that it is traded. A particularly important development has been the tendency of banks to shift their wholesale trading operations to Australia. Market participants and commentators have also noted that the New Zealand dollar seems less active and liquid than it has been in the past. An often-cited factor for the decline in activity has been a generally reduced presence of offshore investors in New Zealand's most actively traded asset markets and hence in the New Zealand dollar. The recent release of the latest BIS global survey of global foreign exchange market turnover provides a good opportunity to explore some of these issues.

The article proceeds as follows. Section two describes and explains recent changes in the structure of the global foreign exchange market and shows how trends in the structure of the New Zealand market fit into that context. Section three looks into trends in the domestic market more closely. Section four introduces the concept of foreign exchange market liquidity and examines the evidence there is to hand on the liquidity of the New Zealand dollar. Section five concludes the article and summarises the main findings.

2 Global trends in foreign exchange markets

During April 2001, 48 countries participated in the Bank for International Settlements' (BIS) triennial central bank survey of foreign exchange and derivatives market activity.² Each central bank reports to the BIS on a number of aspects of the trading activities occurring in their own countries. The BIS then aggregates the results. Many central banks also release their national results.

Figure 1
Global foreign exchange market turnover
(daily averages for April of each year)



The size of foreign exchange markets

Total global foreign exchange activity was USD 1, 210 billion on average per day in April 2001 – a fall of 19 per cent between 1998 and 2001.³ While the decline in traded volumes is large, it comes after a decade of significant growth (see chart above). Over half (56 per cent) of global foreign exchange turnover occurred in the United Kingdom, the

¹ The author would like to thank Kelly Eckhold and Michael Reddell for their significant contributions to this paper.

² Bank for International Settlements, Central bank survey of foreign exchange and derivatives market activity in April 2001: preliminary global data, 9 October 2001, www.bis.org/publ/rpfx01.htm. A more detailed report from the BIS will be available in 2002.

³ At constant exchange rates, this fall was 14 per cent.

Table 1
Global foreign exchange market turnover in April 2001
Average daily turnover by country for the five largest markets

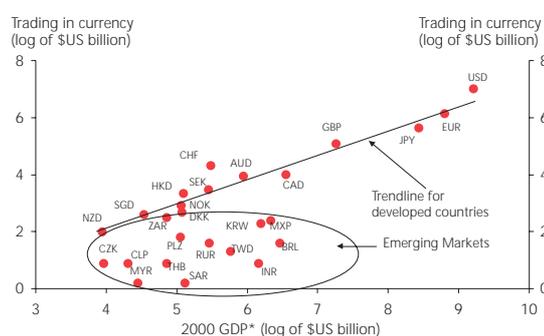
Ranking 2001	Ranking 1998	Country	USD billion	%
1	1	United Kingdom	504	31.1
2	2	United States	252	15.7
3	4	Japan	147	9.1
4	3	Singapore	101	6.2
5	5	Germany	88	5.4

United States and Japan (with London the pre-eminent global centre for foreign exchange trading) – see table 1. Since the first BIS survey in 1989, these three countries have usually been the three largest trading centres, traditionally capturing around 55 per cent of global turnover. While the proportion of total turnover that occurred in these main markets held steady during 2001 relative to 1998, there have been some interesting changes in the shares of the individual markets and in the shares of many other smaller markets. Box 1 (at the end of section 2) discusses this issue and shows that there has been a tendency for trading to gravitate towards regional hubs, which has resulted in some trading centres gaining significant market share at the expense of others.

Perhaps more interesting is which currencies are traded. As figure 2 illustrates, it is no surprise that larger economies typically have more heavily traded currencies. New Zealand seems to fit well in the mainstream group of developed economies, which includes, for example, Singapore, Australia, Norway, Canada and the UK. The currencies of a group of emerging markets (for example, Russia, Poland, Thailand and the Czech republic) tend to be less actively traded as compared to the size of their economies. Trading volumes in the New Zealand dollar are roughly similar to that seen in a number of other emerging market countries, which are much larger in GDP terms than New Zealand.⁴

The US dollar is the most frequently traded currency. In April

Figure 2
Currency turnover relative to GDP



* Source: OECD Economic Outlook

2001 the US dollar accounted for 45 per cent of total global turnover; a very high ratio given that trading in any one currency cannot exceed 50 per cent (since every trade involves two currencies). In other words, ninety per cent of the value of all trades included the US dollar. That is unsurprising, since the US dollar is the standard that most other currencies are traded against – that is, it is the most common numeraire in foreign exchange. For example, to exchange New Zealand dollars for euros a trader would usually need to exchange New Zealand dollars for US dollars and then exchange US dollars for euros. A common numeraire exists because having only one or two currency pairs that are actively traded in each currency tends to concentrate trading activities in those few pairs, leading to a more liquid market. In terms of currency pairs, trading in the euro against the US dollar is the most active (30 per cent of all trades are EUR/USD trades), with the US dollar against the Japanese yen and the British pound at 20 per cent and 11 per cent respectively.

Trades that involved the New Zealand dollar accounted for

⁴ Note that the chart's currency mnemonics can be found in the appendix to this article.

Table 2
Global foreign exchange turnover by currency and currency pairs in April 2001

Ranking	Currency ¹	%	Currency pair	%
1	US dollar	90.4	EUR/USD	30.0
2	Euro	37.6	USD/JPY	20.0
3	Japanese yen	22.7	USD/other	17.0
4	Pound sterling	13.2	GBP/USD	11.0
5	Swiss franc	6.1	USD/CHF	5.0
..				
7	Australian dollar	4.2	USD/CAD	4.0
..				
16	New Zealand dollar	0.6	AUD/USD	4.0
..				
22	Czech koruna	0.2	EUR/JPY	3.0
23	Indian rupee	0.2	EUR/GBP	2.0
24	Thai baht	0.2	EUR/other	2.0
25	Malaysian ringgit	0.1	EUR/CHF	1.0
26 ²	Saudi riyal	0.1		
	TOTAL	200.0	TOTAL	100.0

¹ As there are two currencies in every exchange rate transaction, the total of all currency shares adds to 200 per cent.

² Even though there were 48 countries surveyed, only the 28 largest currencies were reported in the preliminary results.

0.6 per cent of global turnover, making the New Zealand dollar the 16th most traded global currency.⁵

Types of trading activity

A number of different types of trading activities occur in the foreign exchange market. The BIS survey captures the main types and segregates turnover into four broad categories: spot, forward, swaps, and derivative market activity. All of these types of trades involve exchanging one currency for another (at least in principle) even though in many respects the nature of the different types of trades are quite different.

Spot market transactions are the simplest instrument for transacting foreign exchange and are often considered the market standard. A *spot foreign exchange transaction* is the exchange of one currency for another, at the spot (or today's) exchange rate. Although the exchange rate is agreed at the time of the transaction, market convention dictates that the exchange of funds (*settlement*) will occur two business days later (*the spot date*). The lag between the day of the transaction and the ultimate exchange of currencies gives the parties time to arrange to have the transaction processed

through clearing systems.

But sometimes market participants do not want to exchange currencies in two business days' time. For example, let's say that an exporter is expecting to receive payments for their goods in one month's time. Those receipts will be in US dollars, but the exporter wishes to receive New Zealand dollars. In addition, this exporter wishes to fix today the amount of New Zealand dollars they will receive. The requirements of this exporter cannot be satisfied with a spot transaction (a spot transaction would be settled in two days but the exporter isn't going to receive their US dollars for another month), but they can be satisfied via an *outright forward transaction*. An *outright forward transaction* is identical to a spot transaction, except that the settlement date (and the exchange of currencies) is more than two business days ahead.⁶ Hence spot and forward transactions are usually analysed as one type of instrument since the only difference is the date on which the exchange of funds occurs.

In general, the spot exchange rate will not be same as the forward exchange rate. The difference between these two rates largely reflects the differences in short-term interest

⁵ The survey has only this year required each country to report on the extent of trading in a number of smaller currencies, including the New Zealand dollar, hence this number cannot be directly compared to the 1998 figure of 0.3 per cent (which included results compiled from the survey of New Zealand banks alone).

⁶ It is possible to have a forward transaction that settles sooner than a spot transaction. These are called *value today and value tomorrow outright forwards*, and settlement is either the current day or the next day respectively.

rates between the two countries in question. To explain, let's use an example when interest rates are higher in New Zealand than in the United States. An exporter would expect to get a few more New Zealand dollars by waiting for the forward date, as the alternative would have been to undertake a spot transaction when the export contract was agreed, borrowing the US dollars required to settle the spot transaction (at a lower interest rate than available in New Zealand) and investing the New Zealand dollars received from the spot transaction at the higher New Zealand interest rate. Thus, the spot exchange rate will be higher than the forward exchange rate. The difference between the spot and the forward exchange rate is known as the *forward premium*.

Outright forwards are used predominately by customers to hedge their future trade receipts.⁷ Banks typically only transact outright forwards with their customers at their customers' request, and to maturity dates that suit the customer. Banks will not typically trade outright forwards with other banks. There isn't a liquid inter-bank market in outright forwards, largely because each outright forward settles on a different date, depending on customer needs. Instead, banks will tend to use a combination of spot foreign exchange and interest rate markets (both of which have liquid inter-bank markets) to satisfy their own hedging needs. When banks hedge their transactions with their customers in the spot market, they often cause others to transact as well – boosting spot market volumes relative to underlying forward volumes. In addition, large wholesale capital flows usually occur in the spot market. As the value of capital flows typically dwarfs those transactions related to trade flows (estimates generally suggest a 5:1 to a 10:1 ratio), market trading volumes are usually large relative to that of outright forward transactions.

Lastly, a *foreign exchange swap* is an agreement to exchange two currencies at the current spot date and to reverse the transaction at a specified future date. In fact, a swap is equivalent to a spot transaction and an offsetting outright forward transaction rolled into one. Given that the exchange rate on the spot date and at the future settlement date is

fixed at the time of the foreign exchange swap transaction (FX swap), movements in the exchange rate after the deal is entered into will have no impact on the value of a swap. Instead, the value of a FX swap is given by the forward premium which is largely determined by the interest rate differential between the two countries. Hence, the value of a FX swap is exposed to changes in interest rate differentials after the deal is entered into. Market participants use swaps to manage mismatches in their holdings of currencies (that is, if a trader holds one currency, but owes in another, a swap can be used to offset the mismatch by exchanging one for the other for a set period of time).⁸

Globally, FX swaps continue to be the most heavily traded product. A significant reason for this is due to market players' preference to repeatedly transact short-term FX swaps rather than transacting one longer maturity swap. For example, perhaps overseas investors without established credit lines locally want to establish a position in the New Zealand dollar for two months and finance it using the swaps market. It would be quite normal to do this using a succession of one week swaps. Over two months there would be eight swaps to finance the single underlying position initially transacted in the spot market. The result is very high turnover and volumes.

Activity in the FX swaps market is largely a demand derived from activity in other markets. An active inter-bank market operates to help clear banks' own and their customers' funding and hedging requirements, but the traders do not themselves typically take large risk positions (on the difference between the forward points and the actual interest rate differential). Another factor is that the value of the average FX swap is inherently less volatile than a corresponding spot or outright forward transaction of the same face value (because interest rate differentials are much more stable than spot exchange rates). Thus from a trader's perspective, one can trade a much larger volume of FX swaps and be exposed to the same amount of risk (and potentially make the same return), hence the larger FX swap volumes.

In New Zealand, FX swaps are a greater part of our total

⁷ See Brookes, A, D Hargreaves, C Lucas, and B White, (2000), "Can hedging insulate firms from exchange rate risk?" *Reserve Bank of New Zealand Bulletin*, vol 63, no 1, 21-34, for a more in-depth analysis of the use of outright forwards by customers.

⁸ Hawkesby, C (1999), "A primer on derivative markets", *Reserve Bank of New Zealand Bulletin*, vol 62, no 2, 24-43 describes the dynamics of the swap market in greater detail.

Table 3**Transaction type by country – absolute value (USD billion) and shares of total turnover**

Country			April 2001				April 1998					
	Spot	%	Swap	%	Forward	%	Spot	%	Swap	%	Forward	%
United Kingdom	151.2	30	302.4	60	50.4	10	223.1	35	369.6	58	44.6	7
United States	103.3	41	113.4	45	35.3	14	147.4	42	164.9	47	38.6	11
Japan	36.8	25	91.1	62	19.1	13	61.2	45	68.0 ¹	50 ¹	6.8 ¹	5 ¹
Australia	13.0	25	35.4	68	3.6	7	19.6	42	24.7	53	2.3	5
New Zealand	1.0	25	2.8	70	0.2	5	2.1	30	4.5	65	0.3	5
All Countries	399.3	33	677.6	56	133.1	11	560.0	40	714.0	51	126.0	9

¹ All transactions are in US dollar billion.

² Estimated.

turnover than in many countries. This reflects New Zealand's high reliance on foreign capital to finance domestic lending. New Zealand banks and companies use foreign currency borrowing extensively and use the FX swaps method to convert the foreign currencies they have borrowed into the New Zealand dollars they need for a period of time. The article by Ian Woolford, Michael Reddell and Sean Comber in this volume of the *Bulletin* examines this issue in more depth.

As can be seen in table 3, in the 2001 BIS survey, global FX swap market activity rose to 56 per cent of global foreign exchange market volumes (from 51 per cent in 1998), while the share of spot activity to total turnover fell from 40 per cent to 33 per cent. The share of outright forward market activity was unchanged at around 10 per cent. In absolute terms, swap market activity fell by six per cent, but this decline is smaller than that seen in the spot market (a decline of 32 per cent in US dollar terms). Most countries, including New Zealand, tended to follow a similar trend to that seen in the global figures.

Factors behind the global trends

Three significant factors have been cited by many commentators as being responsible for the decline in overall foreign exchange market activity and the changes in the relative importance of the various instruments. These factors are the introduction of the euro; an increase in electronic broker trading; and a tendency for institutions and trading centres to consolidate.

The BIS survey results note that trading in the eurocurrencies in 1998 accounted for 52 per cent of all foreign exchange

transactions, while in 2001 the common currency of the euro accounted for just 38 per cent of global trading. Part of that drop can be attributed to the introduction of the euro, as some currency pairs simply no longer exist, and for example any previous trading between Italian and German firms involving the lira and the deutschemark that was previously a foreign exchange transaction is now just a domestic euro payment. Exactly how much of the drop reflects the introduction of the euro, as opposed to the decline in foreign exchange trading in general over the past three years, is more difficult to discern. The BIS survey results show that turnover in non-euro-affected currencies fell by 2.5 per cent between 1998 and 2001. Given that the total decline in turnover in the euro is 40 per cent, and assuming that the underlying reduction in trading in the euro followed the global trend, then a significant part of the decline in global turnover simply reflects the introduction of the euro.⁹ Note also that the value of the euro has depreciated significantly against the US dollar since 1998, which also helps to explain a large part of the 40 per cent decline in turnover in the euro-area currencies (in US dollar terms).

The rapid growth in trading via electronic-based systems has also been a significant factor behind the fall in global turnover in the 2001 survey. An electronic broker is a screen-based exchange where buyers and sellers can place the amounts they wish to buy or sell of a particular currency, and at what price they wish to trade at. In electronic-based systems, trades

⁹ A research piece from Lehman Brothers Inc. estimated that the introduction of the euro reduced global turnover by around 13 per cent in 1999. Committee on Gold and Foreign Exchange publication, 'Structural change in foreign exchange markets', Discussion Note No 1, July 2001.

occur only when both parties to the trade actually want to trade. One party will place an order with the electronic broker, and other traders will then choose whether to trade (or not) by placing an offsetting order. The technology brings together the interests of buyers and sellers. By contrast, the heart of the foreign exchange market has typically been inter-bank “market makers”. Under that sort of arrangement banks are typically requested to *make a market* (quote a buying and selling price on an exchange rate if asked by

another bank) and can often be “forced” to trade even if they have no immediate need to. (This is one of the unwritten rules between participants in the foreign exchange market. The market functions in this manner to ensure that a market will exist at all times.) If a bank trades when it doesn’t need to, then it will trade with other banks in the inter-bank market to clear that position, which will, in turn, prompt other traders to trade and so forth until eventually someone who actually needs to trade, does so. To the extent that the use of

Box 1 Recent movement in trading centres

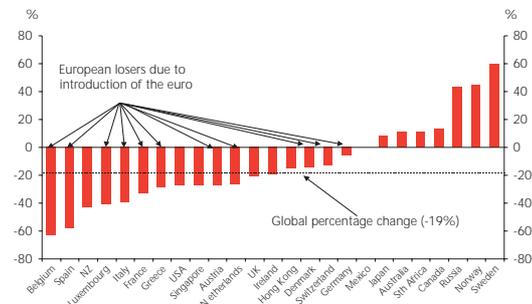
The 1998 BIS survey showed a tendency for financial institutions to consolidate their trading operations globally.¹ The 2001 survey results suggest that this trend has continued further. This has meant that, whereas ten years ago financial institutions may have had various offices in many of the middle-sized or larger financial centres of the world, now they tend to focus on the larger financial centres, especially for trading the major currencies.

There is a variety of reasons for this trend. Better technology, such as electronic broking and communications systems, has lowered geographical barriers, meaning that banks find it less necessary to be physically located in a country to participate effectively in its foreign exchange market. A reduction in hedge funds’ and other large investment funds’ participation in foreign exchange markets following the Asian and Long-Term Capital Management crises in 1997/98 has also reduced the need for an extensive network of institutions in different countries. In addition, institutions have tended to manage their risk by ‘pooling’ divisions in an attempt at cost control. Finally, there has been a tendency of financial institutions to merge in recent years (for example the Deutsche Bank/Bankers Trust merger in 1999 and the J P Morgan/Chase merger in 2000), reducing the number of offices around the world.

The effects of this consolidation have been seen in most countries. For example, Japan’s market share has risen to

¹ Lucas, C and L Rosborough, (1999), “The foreign exchange market and derivatives survey,” *Reserve Bank of New Zealand Bulletin*, vol 62, no 1, 79-86.

Figure 3
Change in foreign exchange market turnover 1998 – 2001



the detriment of Singapore, while trading in Europe has increased in Germany at the expense of other centres in Europe. The evidence suggests that some banks have consolidated their operations in the Asian time zone in Australia as well (which may also explain why turnover in Australia has increased, seemingly against the global trend). To an extent, the rise in market share in Australia has come at the expense of New Zealand’s share of global turnover, given that a number of banks’ core treasury functions have migrated from New Zealand to Australia. This shift in trading of the New Zealand dollar from New Zealand to Australia has had a significant effect on the turnover trends in our own survey in the last few years.

There is also some evidence that financial institutions have tended to consolidate their activities within countries. For example, trading of the Swedish krona in Sweden, and the New Zealand dollar in New Zealand, now constitute a larger proportion of turnover. A number of central banks have noted that a smaller number of trading institutions now capture a larger share of turnover in their own market.

electronic broking systems decreases this 'pass-the-parcel' type activity, then turnover will decline. Electronic broking systems are used much more extensively in spot markets. Therefore, the increase in electronic broking has had a larger impact on spot market activity than on outright forwards or FX swaps. Accordingly, the ratio of spot transaction volumes to total volumes has declined globally, while the ratio of FX swaps and outright forwards transactions has tended to increase. Further to this, the BIS survey reports that trading between reporting dealers (inter-bank trading) has fallen from 64 to 59 per cent of total turnover, most likely as a result of electronic broking.

Electronic broking systems have been very successful, especially in a simple product like spot foreign exchange, as they are cheaper and faster than traditional trading techniques. Screen-based systems allow for direct processing of trades into clearing and settlement systems and are more transparent than traditional 'dealer' markets. Their popularity has grown rapidly since the mid-1990s. The Federal Reserve of New York notes that automatic order-matching systems accounted for 54 per cent of spot turnover, while the Bank of England estimates that two-thirds of spot market activity now occurs via electronic broking systems.¹⁰ So far, electronic brokers have been less successful in establishing a presence in the New Zealand dollar. Hard numbers are not available, but the impression from market participants is that only around 30 per cent of total New Zealand dollar spot volumes are transacted via electronic brokers.

Finally, industry consolidation appears to have played a role in the fall in global turnover. There has been a continued consolidation of trading centres and institutions back to their home countries, while large bank mergers have tended to consolidate trading within countries (see box 1 for further discussion of these issues). In addition, as institutions have merged, there is now more netting of individual customer transactions within institutions, as opposed to trading

between institutions in the foreign exchange market.

3 Changes to the New Zealand foreign exchange market

Currency pairs traded

The foreign exchange market physically located in New Zealand has also seen some significant changes in recent years. Nearly three quarters of trades in 2001 directly involved the New Zealand dollar, while 86 per cent of currency pairs traded involved the antipodean currencies, down from 80 per cent in 1998. The NZD/USD currency pair is the most frequently traded, accounting for two-thirds of total New Zealand turnover. Another 7 per cent of turnover involves the New Zealand dollar against other currency pairs, while 11 per cent of transactions involved the AUD/USD. The changes to currency pair trading in the last three years are less significant than those that occurred between 1995 and 1998, when the New Zealand and Australian dollar shares of total turnover transacted in New Zealand rose significantly, from 68 to 80 per cent.

Part of the explanation for increased trading of the home currency reflects the fact that there has been a tendency for banks operating in peripheral financial centres to specialise in the currencies (and customers) that they know well – their own. In the case of New Zealand, banks have tended either to stop quoting prices in the major currencies altogether, or to shift those activities to the larger financial centres in the region.

Trends in total turnover

Average daily turnover in April 2001 in New Zealand was USD 4.0 billion, down from USD 7.0 billion in April 1998; a fall of 46 per cent.¹¹ On the face of it, this is a significant drop in activity, and much greater than the 19 per cent global fall. So what has caused this fall in activity? Electronic broking systems are not as heavily used in New Zealand, so the fall in

¹⁰ Federal Reserve Bank of New York, *The foreign exchange and interest rate derivatives markets survey: Turnover in the United States*, 9 October 2001. www.newyorkfed.org/pihome/triennial/fx_survey.pdf, Bank of England: *The UK foreign exchange market and over-the-counter derivatives markets in April 2001 – results summary*, www.bankofengland.co.uk/statistics/bis-survey/foxotcsum01.pdf

¹¹ In April 1998 there were 20 business days, while in April 2001 there were only 18.

Table 4
New Zealand foreign exchange market turnover
(average daily total market turnover by currency pair)

	April 2001		April 1998		April 1995	
	USD billion	%	USD billion	%	USD billion	%
NZD/USD	2,630	65.5	4,741	67.7	3,740	51.9
NZD/Other	291	7.2	235	3.4	284	3.9
EUR/USD ¹	229	5.7	208	3.0	934	13.0
AUD/USD	498	12.4	665	9.3	881	12.2
USD/JPY	190	4.7	695	9.9	852	11.8
GBP/USD	137	3.4	154	2.2	239	3.3
USD/Other	23	0.6	246	3.5	184	2.6
All Other	20	0.5	72	1.0	87	1.2
TOTAL	4,018	100.0	7,006	100.0	7,201	100.0

¹ In the 1998 and 1995 surveys this is USD/DEM.

activity cannot be attributed to that. Similarly, it is hard to see how the introduction of the euro could have reduced turnover in New Zealand, as there were never material trading volumes in non-deutschemark euro-area currencies.

However, there are two New Zealand specific factors that explain some of the decline in turnover. First, the exchange rate has depreciated by 26 per cent since 1998, which explains around half the fall in turnover in US dollar terms.¹² Probably at least as importantly, the trading bases of a number of wholesale banks have shifted to Australia since 1998 (HSBC and much of Deutsche Bank, for example), while some

banks that still operate in New Zealand have shifted their main functions to their parent banks in Australia. This means that New Zealand dollar trading by these institutions is included in the Reserve Bank of Australia's component of the survey.¹³ Fortunately, the Reserve Bank of Australia has been collecting information on the volume of New Zealand dollars traded in Australia in each of the last three surveys.¹⁴ Putting this information together with our own gives us a better sense of the trends in overall New Zealand dollar trading.¹⁵

Table 5 shows that the amount of New Zealand dollars traded

Table 5
Total NZD/USD turnover in Australia and New Zealand¹
(USD million)

Country	April 2001		April 1998		April 1995 Turnover
	Turnover	% change	Turnover	% change	
New Zealand	2,630	-44.5	4,741	26.8	3,740
Australia ²	4,412	41.8	3,111	105.1	1,517
TOTAL	7,042	-10.3	7,852	49.4	5,257

¹ Traded volumes are daily averages over the month.

² Source: Reserve Bank of Australia

¹³ The 2001 survey includes the ANZ, BNZ, Deutsche Bank, NBNZ and Westpac.

¹⁴ For clarification, the figures added here are NZD/USD trading only. Unfortunately, the Reserve Bank of Australia's data do not enable a time series breakdown of trading of New Zealand dollars against other currencies.

¹⁵ The New Zealand dollar is also extensively traded in New York and London in their respective time zones. The Federal Reserve's survey indicated that US 1 billion was traded daily, on average, in New York in April 2001. Unfortunately, the Bank of England did not disaggregate their figures for the New Zealand dollar.

¹² From an average of 0.5531 in April 1998 to an average of 0.4066 in April 2001.

Table 6
NZD/USD spot and outright forward market turnover in Australia and New Zealand¹
(USD million)

Country	April 2001		April 1998		April 1995 Turnover
	Turnover	% change	Turnover	% change	
New Zealand	597	-61.1	1,533	10.1	1,392
Australia ²	609	-35.7	948	128.5	415
TOTAL	1,206	-51.4	2,481	37.3	1,807

¹ Traded volumes are daily averages over the month.

² Source: Reserve Bank of Australia

in Australia is 42 per cent higher than in 1998. As a result, total turnover in New Zealand dollars in New Zealand and Australia has only fallen by around 10 per cent since 1998. Relative to the fall in turnover reported from other central banks around the world, this fall in turnover is less than the global average (see table 3), and is around the global median. Table 5 also shows that more trading in New Zealand dollars occurs in Australia than in New Zealand. This observation is not that unusual these days; for example, the euro is more highly traded in London than in Frankfurt, while a significant proportion of turnover in the Swedish krona occurs in London.

The drop-off in turnover since 1998 comes after a period of strong growth in volumes over the decade before. Total Australian turnover in the New Zealand dollar is 34 per cent higher than it was in 1995 and the fall in the value of the New Zealand dollar since then, if anything, understates this total growth in turnover.

New Zealand spot and outright forward market activity

As can be seen from table 6, turnover in New Zealand dollar spot and outright forwards in New Zealand and Australia fell by 51 per cent between 1998 and 2001 in US dollar terms. This fall is larger than the 26 per cent fall in trading in spot and outright forwards seen globally since 1998. Note, however, that the New Zealand dollar exchange rate has been weaker than most currencies over this period, which explains some of the larger fall noted here. The fall from 1995 to 2001 is not as marked as that seen from 1998 to 2001 - a fall of 33 per cent (much of which can be explained by the percent fall in the NZD/USD exchange rate over the period).

New Zealand swap market activity

Daily average turnover in New Zealand dollar foreign exchange swaps was USD 5.5 billion in April 2001, down only slightly from 1998 – see table 7. As expected, turnover

Table 7
NZD/USD foreign exchange swap market turnover in Australia and New Zealand¹
(USD million)

Country	April 2001		April 1998		April 1995 Turnover
	Turnover	% change	Turnover	% change	
New Zealand	1,920	-48.0	3,691	61.7	2,283
Australia	3,803	75.8	2,163	96.3	1,102
TOTAL	5,523	-2.2	5,854	72.9	3,385

¹ Traded volumes are daily averages over the month.

² Source: Reserve Bank of Australia

Box 2

New Zealand derivative market activity

The triennial survey also covers foreign exchange and interest rate derivatives activity. Derivatives are not the focus of this article, but some results are reported briefly here.

In New Zealand, the over-the-counter options market (options written specifically to fit the needs of a particular client) has grown substantially since 1998. Average turnover in currency options has risen from USD 62 million, to USD 495 million, a five-fold increase. Despite this seemingly large increase, options turnover still accounts for less than one per cent of total turnover in New Zealand.

Turnover in interest rate derivatives has increased since the mid-1990s, reflected in greater trading in forward rate agreements and interest rate swaps. A forward rate agreement (FRA) is similar to a bank deposit which begins at some time in the future, whereas an interest rate swap transforms a series of fixed rate obligations into a series of floating rate obligations, or vice versa.¹⁶ Interest rate swaps have become more actively traded since 1998, reflecting an increased need by banks to manage the

interest rate risks on their much larger fixed mortgage portfolios. (Total lending, of which fixed rate mortgages account for around 60 per cent has increased by around 30 per cent since 1998). In addition, there has been a tendency for some banks and investors to invest using interest rate swaps as an alternative to holding New Zealand government bonds.

The growth in interest rate swaps in New Zealand is part of a global trend. In some markets, interest rate swaps have become the 'benchmark' trading instrument, reflecting the declining size of government bond markets.¹⁷ The increased tendency for banks to securitise mortgages and other credit receivables in recent years may also have contributed to increased activity in the interest rate and currency swap markets.

Interest rate option activity has fallen since 1998, possibly due to the change to the OCR in 1999. Short-term interest rates are now not as volatile, and hence offer fewer short-term trading opportunities. In addition, lower interest rate volatility has led to a reduced need for companies to hedge movements in interest rates. This is a similar trend to that seen in the interest rate futures market.

Table 8

New Zealand interest rate derivatives market turnover* (Including exchange traded futures)

Instrument	April 2001		April 1998		April 1995
	NZD million	% change	NZD million	% change	NZD million
Forward Rate Agreements	1,052	77.4	593	390.1	121
Swaps	375	86.6	201	235.0	60
OTC options	9	-90.7	97	79.6	54
TOTAL	1,436	61.1	891	279.1	235

* Traded volumes are daily averages over the month.

¹⁶ Hawkesby, (1999) describes interest rate swaps and their uses in greater detail

¹⁷ See (2000), "The changing shape of fixed income markets", *BIS Working Paper* no 104, for a review of the growth of global interest rate swap markets.

in New Zealand fell significantly. This was countered, however, by a dramatic rise in swap market activity in Australia.

This substantial rise in New Zealand dollar swap market activity as a proportion of total foreign exchange turnover in New Zealand and Australia is consistent with the global trend towards a greater emphasis on swap market activity. In New Zealand, an important driving factor has been the fact that wholesale banks have increasingly used the FX swaps market to help convert their short-term borrowings in overseas countries (such as in the US commercial paper market or US dollars borrowed directly from parent banks) into the New Zealand dollars that they require. Since their commercial paper is issued in US dollars, they hedge against movements in the US and New Zealand interest rates by engaging in foreign exchange swap transactions.

The BIS survey also covers derivative market activity. An overview of the main results is available in box 2.

4 The liquidity of the New Zealand dollar

The fall in New Zealand dollar trading volumes has led some market commentators to suggest that the New Zealand dollar has become less liquid since the mid-1990s. This section examines this issue and compares New Zealand's experience to that of other countries. We analyse trading volumes in spot and outright forwards when considering the liquidity of the spot exchange rate, since it is spot and outright forward transactions that determine, and are determined by, the spot exchange rate.

What is liquidity and why is it important?

Foreign exchange liquidity is best thought of as the ability to transact in the foreign exchange market without significantly affecting the exchange rate. The liquidity of the market is important, given that liquid markets more easily facilitate large capital flows. Furthermore, a less liquid foreign exchange market will generally be associated with more volatility in the exchange rate, all else being equal (see box 3). Increased exchange rate volatility can potentially result in higher risk premia, and hence higher interest rates, as

investors seek compensation for the greater uncertainty, or 'liquidity risk', associated with transacting in the currency.

Foreign exchange trading does not generally respect geographic barriers when capital markets are open, given that communications and trading systems enable investors to easily trade with each other in different countries. Because of this element to trading, what is important is whether investors are prepared to trade with each other, rather than the exact physical location of individual traders. In Australasia, financial institutions can easily transact with each other, as the Australian and New Zealand markets are open at around the same time. Therefore, it is the size of the market for New Zealand dollars in Australasia that is of prime importance for the liquidity of the New Zealand dollar.

The various facets of foreign exchange market liquidity

We define three main facets to foreign exchange market liquidity, these being: the *depth* of the market (most commonly measured by trading volumes); the *tightness* of the market (often defined as the width of the bid/ask spread); and the *immediacy* of the market (or the speed at which traders will quote prices to other traders).

The BIS survey provides us with a rich database to assess the depth of the market. The 51 per cent fall in New Zealand dollar spot and outright forward foreign exchange turnover in US dollar terms in Australia and New Zealand since 1998 (table 6 above) suggests a fall in the depth of the New Zealand dollar. However, as noted earlier, this seemingly large fall needs to be taken in context with the substantial fall in the NZD/USD exchange rate of 26 per cent since 1998. That is, trading volumes in New Zealand dollar terms have fallen by half of that indicated by the US dollar figures. In addition, the fall in New Zealand dollar turnover is in the range of global averages – albeit a little larger than seen in many other currencies.

There are some reasons to believe that focusing on the 1998-2001 period overstates the drop off in the depth of the market. New Zealand capital markets developed rapidly following deregulation in the 1980s and the early 1990s,

which resulted in large capital inflows and an increase in the liquidity of the New Zealand dollar. The mid-1990s was a period of especially strong growth of the markets, reflected in a significant rise in offshore investment in New Zealand dollar products via the New Zealand dollar denominated eurobond market and in the government bond market.¹⁸ Furthermore, 1998 was an unusually active period in many global markets (New Zealand included), reflecting an increased interest in trading and investing by hedge funds and other large investors. In addition, the Bank's monetary policy implementation approach during the mid/late 1990s may have also generated increased foreign exchange trading.¹⁹ Hence, it is likely that turnover in the foreign exchange market was temporarily inflated during 1997/1998 relative to both the size of the New Zealand economy and its asset markets, and relative to the trend level of liquidity and turnover. A better indication of the underlying trend in the depth of the New Zealand dollar is obtained by comparing the level of spot and forward market activity in 2001 relative to that in 1995. This comparison shows that turnover fell by 20 per cent between 1995 and 2001 in US dollar terms, and grew by around 25 per cent in New Zealand dollar terms.

Another way of assessing the depth of the market is to examine the *first-line liquidity* of the inter-bank foreign exchange market. The inter-bank market consists of a group of banks that agree to quote each other bid and ask prices (the buy and sell price) at a prescribed spread (the *bid/ask spread*) in a prescribed amount of foreign exchange (the *standard market parcel* – of NZD 5 million). *First-line liquidity* is the combination of the standard market parcel size and the number of traders in the market – that is, the amount of foreign exchange that one price-making bank can definitely trade with all other banks immediately at any one time. To

an inter-bank market participant who has a relatively short-term focus, first-line liquidity is the relevant measure of the depth of the market. The total number of inter-bank price makers in the New Zealand dollar has remained broadly stable in recent years. Although HSBC withdrew from the New Zealand market in July 2000, the Commonwealth Bank of Australia entered in March 2001.²⁰ Because banks still quote prices on an unchanged standard parcel size of NZD 5 million, the first-line liquidity of the inter-bank market has remained largely unchanged at NZD 30 million over the last few years.

The next main facet of market liquidity is the *tightness* of the market, or the width of the bid/ask spread. The academic literature tends to concentrate on *tightness* as the measure of market liquidity. The wider the bid/ask spread is, the less liquid a currency is considered to be, as transaction costs are higher. Around 1998, bid/ask spreads on the NZD/USD widened from five basis points to seven basis points on a standard parcel of NZD 5 million. This widening in the spread was an informal consensus among the wholesale trading banks – reportedly as a result of greater risk aversion and exchange rate volatility during the Asian crisis period. In October 2000, one major market participant explicitly began to quote a 10 point spread to other inter-bank participants, although the other market participants continued to quote a seven point bid/ask spread to each other. Overall, this suggests that the tightness of the New Zealand dollar has remained broadly stable since 1998, but that tightness has decreased since the mid-1990s, as quoted spreads have widened. (The widening of spreads is larger in effective terms, given that the level of the exchange rate is now lower when compared to the mid-1990s).²¹

Another aspect of liquidity is the *immediacy* of the market. This is the speed at which traders will quote prices to each other. The longer it takes to receive a quoted price, the less liquid the market is considered to be (because the longer you have to wait, the greater is the chance that the exchange

¹⁸ See Eckhold, K (1998), "Developments in the Eurokiwi bond market," *Reserve Bank of New Zealand Bulletin*, vol 61 no 2, 112-121 for a review of the development of the Eurokiwi market. The proportion of offshore currency of New Zealand government securities rose significantly over the mid-1990s – see statistical tables D6 and D7, www.rbnz.govt.nz for details.

¹⁹ The Bank acted to manage overall monetary conditions, which comprised both the exchange rate and short-term interest rates, by making statements to push conditions back to within the desired range. The relative frequency of comments resulted in some 'noise' traders or short-term traders trading more often when monetary conditions moved closer to the edge of the perceived ranges.

²⁰ CBA was not included in the BIS survey results for New Zealand as their trading base is in Sydney.

²¹ The apparent fall in depth of the market is not unique to New Zealand, and, although not discussed here at length, the tendency for bid/ask spreads to widen at the margin has also been seen in other offshore foreign exchange markets. See BIS, "Structural Aspects of Market Liquidity from a Financial Stability Perspective," June 2001 for more detail.

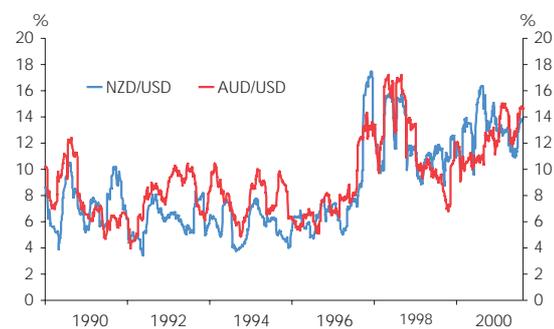
rate will change). Market immediacy is inherently difficult to measure, given the need for high frequency time series data on actual quoted prices. Typically, the evidence on the immediacy of the market comes from discussions with market participants. At times this anecdotal evidence has suggested that some inter-bank participants have become slower at quoting prices in recent years. Quoting reputedly becomes noticeably slower when there is greater uncertainty around the true 'level' of the exchange rate, for example when trading conditions are *thin* (when trading volumes are low). In addition, some market participants have commented that the move of some banks away from New Zealand may have coincided with their reduced commitment to quote prices quickly when asked. Therefore, in this sense, the substantial shift in New Zealand dollar trading to Australia may have resulted in a drop in the immediacy of the market. Since these comments are sporadic, it is difficult to draw strong conclusions. However, it is reasonable to expect that any decline in the immediacy of the market will become more apparent when markets are under stress and trading conditions are thin.

The implications of lower liquidity

One implication of lower liquidity will generally be higher exchange rate volatility. Therefore, trends in the volatility of the exchange rate help us glean some evidence on trends in the currency's liquidity. However, factors other than changes in market liquidity affect exchange rate volatility, making the relationship between volumes and volatility complex and uncertain. Research often shows that trading volumes are positively correlated with exchange rate volatility, while other work finds the opposite to be true. Exchange rates often become more volatile when trading activity picks up, because short-term mismatches between buyers and sellers of foreign exchange are more likely to occur. However, in general, trading volumes are positively correlated with exchange rate volatility. A more liquid market will be one where the rise in volatility is relatively modest as volumes increase because there is always a relatively large number of traders with opposing transactions to complete, resulting in fewer short-term mismatches. A negative relationship between exchange rate volatility and trading volumes can occur when higher exchange rate volatility actually deters market participants

from trading. In these cases, exchange rate volatility doesn't increase initially, because volumes have increased, but because of something else, such as an increase in the volatility of a related exchange rate. Box 3 looks at the relationship between trading volumes and volatility in the New Zealand dollar, drawing on some high frequency data on trading volumes and the exchange rate.

Figure 4
New Zealand and Australian annualised historical volatilities against the US dollar 1990 to 2001



* Volatility is defined as the standard deviation of the exchange rate's daily percentage change. Working days only. The series is a moving average of 60 days.

Figure 5
New Zealand dollar daily trading ranges 1992 to 2001 (60 day moving average)



There are a number of different ways to measure volatility of the exchange rate, including: the standard deviation of daily changes of the exchange rate (known as actual or historical volatility); the level of volatility implied by FX options prices (known as implied volatility); or the daily trading range of the exchange rate.

Figure 5 shows that the actual volatility of the NZ dollar has increased since 1998. It appears that there has been a distinctive shift in the average level of volatility in the NZD/USD following the Asian and Russian debt crises of 1997/1998. The actual average daily volatility has increased from

Table 9
Average annualised historical volatility¹

	Jan 1992 to Sep 1997	Oct 1997 to Aug 2001	Change
<i>Against the US dollar</i>			
New Zealand dollar	6.10	12.50	+6.4
Australian dollar	7.50	12.00	+4.5
South African rand	6.30	9.90	+3.6
Canadian dollar	4.40	5.50	+1.1
Japanese yen	10.40	13.00	+2.6
Euro ²	10.20	10.20	0.0
Swedish krona	11.00	10.60	-0.4

¹ Volatility is defined as the annualised standard deviation of the exchange rate's daily per cent change.

² Prior to 1999, the euro is proxied with the Deutschemark.

0.40 per cent (1990 to 1998) to 0.75 per cent (1998 to 2001). This distinctive rise in exchange rate volatility has occurred in many other currencies against the US dollar, such as the South African rand and the Australian dollar, although the increase in the volatility of the New Zealand and Australian dollars has been larger than most. Despite this increase, the volatility of the New Zealand dollar is now only slightly higher than the volatility of most other traded currencies. Thus, the recent rise underscores the extent to which New Zealand dollar (and to a lesser extent Australian dollar) volatility was relatively low prior to the Asian crisis period. The increased volatility of the exchange rate has also been reflected in the wider average daily trading range observed in recent years – ranges that are even wider in per cent terms given the much lower level of the exchange rate.

However, the rise in exchange rate volatility may have reflected factors other than a reduction in the liquidity of the market. The chart above shows that the volatility of the Australian and New Zealand dollars has moved in tandem over most of the last decade. Since 1998, the volatility of the New Zealand and Australian dollars has increased by around the same amount, despite the depth of the Australian dollar falling by less than the depth of the New Zealand dollar.²² These observations suggest that something apart from the depth, and hence turnover in the market, has likely driven trends in the volatility of both currencies in recent years.

In summary, by analysing the depth, tightness and immediacy

aspects of New Zealand dollar liquidity, there is some evidence to suggest that liquidity had fallen since 1998. The increased presence of large investors and hedge funds in New Zealand's main asset markets around that time may have artificially increased the apparent liquidity of the market then. The discussion above also shows that there has been a rise in the volatility of the New Zealand dollar exchange rate and a fall in the resiliency of the currency over the period. However, these trends are not unique to the New Zealand dollar. The New Zealand dollar may have become relatively less liquid, but the evidence suggests that there is still sufficient liquidity to satisfy amply the amount of capital flows in our market. To the extent that liquidity has fallen, it has not so far resulted in any significant problems for those who need to use the market.

5 Summary and conclusions

Foreign exchange markets have undergone some significant changes in recent years. Total global foreign exchange turnover has fallen, primarily due to the introduction of the euro, increased trading via electronic-based trading systems and consolidation of trading centres. Trading volumes in New Zealand have fallen. However, the movement of financial institutions' trading operations from New Zealand to Australia has meant that the Bank's survey has substantially overstated the true fall in New Zealand dollar turnover. Total Australasian turnover in the New Zealand dollar has fallen moderately over the past three years, and only slightly since 1995, and the New Zealand dollar trading volumes appear to be around what one would expect given the size of our economy.

²² Total spot and outright forward turnover in the Australian dollar has declined by around half as much as for the New Zealand dollar.

The liquidity of the New Zealand dollar has declined since the mid-1990s. But the deterioration is overstated when simple comparisons against 1998 are made. A longer run of data still suggests a decline in liquidity, but by less of an extent than in 1998. However, there are few signs of a loss of market efficiency or of particular problems resulting from the fall in liquidity. The market still seems capable of dealing with large transaction volumes without substantially increasing volatility in the exchange rate, and the economy still appears able to attract (and hedge) the foreign capital needed to sustain our high external indebtedness.

There are a range of ways to analyse the data we have presented in this article. By giving the reader a number of different data, we hope to illustrate the general trends that represent the changes in the global and New Zealand foreign exchange markets this decade. If the past is any gauge to predict the future, further changes in the nature of foreign exchange markets are likely. The increased use of electronic trading systems has had a huge impact on the structure of offshore markets. To date, their impact on the New Zealand dollar has been muted. It remains to be seen how the market will change when the next BIS survey is done in 2004.

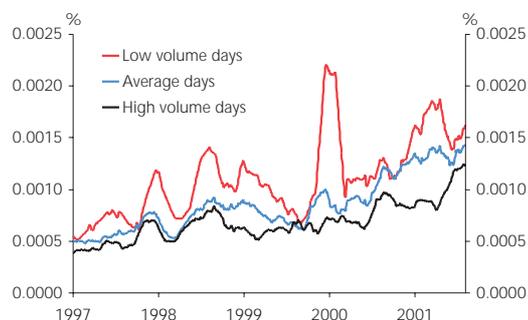
Box 3: Volume and volatility

An alternative measure of the liquidity of the market is how far the exchange rate moves per unit of foreign exchange transacted. The market can be considered relatively liquid if the exchange rate does not tend to move by very much when large volumes are transacted. However, if volatility picks up considerably, then the opposite may be true. This concept of liquidity is known as the *resiliency* of the market. In conjunction with first-line liquidity, resiliency is an important aspect of liquidity for market traders.

Figure 6 shows a measure of the resiliency of the New Zealand dollar calculated by dividing the trading range of the NZD/USD by the volume traded in the market for each day since 1997.²³ We use daily data on traded volumes from the Bank's foreign exchange turnover survey. Only a subset of the total traded volumes in the New Zealand dollar are included, as we only survey banks that are based in New Zealand. The survey has been adjusted for changes in survey participation over the years.

Interestingly, the exchange rate tends to be less volatile on days when trading volumes are high. This is consistent with the idea that the New Zealand dollar market is liquid and that trading volumes encourage stability rather than instability in the exchange rate. Market participants explain this phenomenon by noting that, on days when participants have particularly large parcels to transact, it is typical for banks to work together to find offsetting interest, from say, large customers such as the major exporters or other investors. Therefore, more often than not, the entrance of a large buyer or seller of foreign exchange will attract offsetting sellers and buyers to the market, enabling large volumes to be transacted without significantly affecting the exchange rate. On the other hand, a moderately large transaction on a quieter trading day can result in a relatively large movement in the exchange rate. This is because smaller transactions are

Figure 6
Movement in NZD/USD per NZD 1 million traded



Source: Bloomberg and RBNZ foreign exchange turnover survey.

NB: Data is a 60-day moving average.

often not large enough to attract larger participants into the market, leaving the smaller participants to absorb the flows, often resulting in more exchange rate volatility.

In general, the daily trading range of the currency has widened since late 2000, while daily traded volumes have decreased. From this we can tentatively conclude that the resiliency of the New Zealand dollar has declined. Resiliency has declined on both relatively heavily traded and lightly traded days.

²³ This analysis is similar to that of Adams, R, R Williams, and E Acar, (2001). 'Empirical measures of liquidity – a new approach', *Journal of Asset Management*, 2 (1), 75-83.

Appendix: Currency mnemonics

These symbols for national currencies are those routinely used by foreign exchange traders

AUD	Australian dollar
BRL	Brazilian real
CAD	Canadian dollar
CHF	Swiss franc
CLP	Chilean peso
CZK	Czech koruna
DKK	Danish krone
EUR	Euro
GBP	Great Britain pound
HKD	Hong Kong dollar
INR	Indian rupee
JPY	Japanese yen
KRW	Korean won
MXP	Mexican peso
MYR	Malaysian ringgit
NOK	Norwegian krone
NZD	New Zealand dollar
PLZ	Polish zloty
RUR	Russian ruble
SAR	Saudi Arabian riyal
SEK	Swedish krona
SGD	Singaporean dollar
THB	Thai baht
TWD	Taiwanese dollar
USD	United States dollar
ZAR	South African rand

Foreign exchange settlement risk survey

Andrew Rodgers, Banking System Department

The world's central banks have been working for several years to promote awareness of the risks associated with the settlement of foreign exchange transactions. In September 2000, the Reserve Bank surveyed the major participants in the New Zealand foreign exchange market to focus attention on settlement practices and the potential risks. This article summarises the findings of that survey.

1 Introduction

International trade and investment require the buying and selling of different currencies in the foreign exchange markets. The amounts involved are very large. The April 2001 Bank for International Settlements survey of foreign exchange and derivatives market activity estimated daily global foreign exchange turnover of USD1,210 billion. Turnover in the New Zealand market was estimated to be on average about USD4 billion each day.¹

Foreign exchange settlement risk is the risk that a participant in the foreign exchange market will lose the full principal amount of a foreign exchange transaction. Such a loss would typically occur when the sold currency has been irrevocably paid away, but due to the failure of the counterparty, the bought currency is not received. Foreign exchange settlement risk is of particular concern to central banks given the large values involved in settling foreign exchange transactions and the resulting potential for the failure of one institution to impact on the rest of the financial system.

The potential systemic consequences were demonstrated by events in 1974, when a small German bank, Bankhaus Herstatt, failed. At the point that the bank failed, several of its counterparties had irrevocably paid Deutschmarks to Herstatt against anticipated receipt of US dollars later the same day in New York. On the announcement of Herstatt's closure (at 10.30 am New York time), Herstatt's New York correspondent bank suspended payments from its account and the counterparties were left exposed for the value of the Deutschmarks that they had delivered. Hence, foreign

exchange settlement risk is commonly referred to as Herstatt risk.

In June 1995, the Committee on Payment and Settlement Systems (CPSS) of G10 central banks conducted a survey of the foreign exchange settlement practices of about 80 major banks, with a view to assessing the extent of the risk facing banks.² The results of the survey were published in order to draw to the banks' attention the fact that they were facing some very large exposures.³ In 1996, the CPSS adopted a strategy aimed at reducing foreign exchange settlement risk. As part of this strategy, the CPSS encouraged central banks to promote action by commercial banks to manage and reduce their foreign exchange settlement risks.

The CPSS subsequently conducted a follow-up survey to monitor progress in implementing improvements in practices. The results of that survey were published in July 1998.⁴ The CPSS also released in January 2000 a " toolkit " to assist other central banks to understand and tackle foreign exchange settlement risk.

In order to address concerns about foreign exchange settlement risk in the Asia-Pacific region, the Executives' Meeting of East Asia-Pacific Central Banks and Monetary Authorities (EMEAP) agreed in 1999 that member countries should each conduct their own survey on foreign exchange settlement risk, modelled on the G10 survey. It was intended

¹ Lauren Rosborough discusses the results of the survey in the accompanying article, "Trends in Foreign Exchange Trading".

² CPSS members monitor and analyse developments in domestic and cross-border payments and settlements systems. The Committee also co-ordinates central bank efforts to oversee payments systems. The Committee's secretariat is based at the Bank for International Settlements.

³ *Settlement Risk in Foreign Exchange Transactions*, March 1996 (the Allsopp Report).

⁴ *Reducing Foreign Exchange Settlement Risk: A Progress Report*, July 1998.

that the EMEAP survey would promote awareness of the risk in the region and encourage improvements in foreign exchange settlement practices. The EMEAP Working Group on Payment and Settlement Systems was delegated the responsibility of co-ordinating the conduct of the surveys and publishing the results. The survey form to be used was based on that developed by the CPSS and included in their toolkit. Two EMEAP members – the Reserve Bank of Australia (RBA) and the Bank of Japan – had previously conducted their own surveys.⁵

As part of the EMEAP initiative, the Reserve Bank conducted a survey of participants in the New Zealand foreign exchange market in September last year. This article describes the Bank's survey and summarises the key findings. The survey represented a continuation of our efforts to raise awareness on the credit risks that banks face as a result of the settlement of foreign exchange transactions. These efforts included the publication, in September 1997, of a Bulletin article on foreign exchange settlement risk, drawing heavily on the initial CPSS report.⁶

2 Survey methodology

Definition

The CPSS definition of foreign exchange settlement risk is:

A bank's actual exposure – the amount at risk – when settling a foreign exchange trade equals the full amount of the currency purchased and lasts from the time a payment instruction for the currency sold can no longer be cancelled unilaterally until the time the currency purchased is received with finality.

It should be noted that the definition addresses only the size and duration of the credit exposure that can arise during the foreign exchange settlement process. It says nothing about the probability of an actual loss.

The idea that the full amount of a transaction is at risk is perhaps intuitively obvious. What may be less obvious is how long that exposure might last. When a bank sells a foreign currency and uses another bank to make the payment, that correspondent bank will specify a deadline after which the selling bank can not unilaterally withdraw a payment instruction, even though actual payment is not scheduled to occur until much later. The exposure may therefore start well before funds are actually paid away. Similarly, the exposure may continue after the time that the purchased currency is scheduled to be received. Funds may not be received, for example, because of an operational or solvency problem at the counterparty to the transaction. A bank will not know whether settlement has been completed successfully until it has completed its internal reconciliation process to identify settled and failed transactions.

The prudent approach to measuring the exposure to a counterparty is to assume that the funds have not been received until it can be confirmed that they have been. The established international practice is thus to focus on measuring the maximum possible exposure duration, defined as lasting from the unilateral cancellation deadline for the sold currency until the reconciliation time for the bought currency.

Content

The survey questionnaire asked for details of:

- the currencies in which each bank settled foreign exchange transactions totalling more than USD1 million equivalent over the survey period;
- the time that payment instructions are normally sent for each currency for value on day V (the payment send time);
- the deadline for unilaterally cancelling with certainty a payment instruction for value on day V (the cancellation deadline);
- the time by which a bank's correspondent will credit funds to the bank's account with finality, assuming that the counterparty has successfully made the payment on time (due time for final receipts);

⁵ The RBA has published the results of its surveys in *Foreign Exchange Settlement Risk in Australia, 1997 and Reducing Foreign Exchange Settlement Risk in Australia: A Progress Report*, September 1999.

⁶ Harrison I, (1997) "Settlement risk in foreign exchange transactions", *Reserve Bank of New Zealand Bulletin*, vol 60 no 3.

- the time at which the bank routinely identifies final and failed payments for value on day V (the reconciliation time);
- whether cancellation deadlines and final receipt times are documented legally;
- amounts of each currency settled over the survey period;
- the use of bilateral netting to reduce exposures; and
- details of risk management practices.

Limitations

The Bank endeavoured to obtain accurate and consistent data from survey participants. However, given the complexity of the information requested, participants may have interpreted the questions differently. Consequently, the results presented in this article should be treated as indicative measures only.

Timing

The survey period was 18 – 29 September 2000, ie the last ten business days of that month. The initial review and follow-up of responses was completed in the December quarter and a more detailed analysis undertaken during the first quarter of 2001.

Coverage

The Bank sent the survey form to all New Zealand registered banks, asking the five largest participants in the New Zealand foreign exchange market to participate in the survey and giving the other (non-foreign exchange market making) banks the option to take part. Six banks, including the five largest foreign exchange market participants, participated fully.

We believe that the survey covered almost all activity in the New Zealand foreign exchange market, in spite of the small number of survey participants. There were 18 registered banks at the time of the survey. The six banks from which we received survey replies are the largest, together holding about 85 per cent of the total assets of the banking system. Another five banks told us that they did not undertake foreign exchange transactions. The remaining seven banks are all

relatively small – together they hold just over 6 per cent of total banking system assets – and are all much smaller than the smallest of the six banks in the survey.

3 Foreign exchange settlements

Total foreign exchange settlements reported by the six banks were spread over 20 currencies and averaged USD18.3 billion equivalent a day. While this total appears to be a lot larger than the total average turnover of USD 4 billion in the Bank for International Settlements survey, there are reasons why it would be expected that the two measures would be different. Foreign exchange transactions result in two amounts to be settled – the amount payable in the sold currency and the amount receivable in the bought currency. The settlement risk survey recorded both these amounts, whereas the turnover survey only records one side of transactions. The turnover survey also adjusts for the double counting that would result from inter-bank transactions in New Zealand. If both banks were to report a transaction, it would be recorded twice. However, the settlement risk survey did not make this adjustment. Each bank will still have an amount receivable in one currency and an amount payable in another currency and will, therefore, potentially be exposed to foreign exchange settlement risk.

The dominant currency was the US dollar (USD), with settlements in that currency making up 48 per cent of total settlements – see Table 1. (Because of the relative depth of

Table 1
Average daily settlements by currency

Currency	Average daily settlements (USD million equivalent)	Percentage of total
United States dollar	8,832	48.3
New Zealand dollar	5,685	31.1
Australian dollar	1,279	7.0
Euro	1,154	6.3
Japanese yen	481	2.6
British pound	420	2.3
Canadian dollar	331	1.8
Swiss franc	47	0.3
Hong Kong dollar	15	0.1
Other currencies	29	0.2
Total	18,274	100.0

the USD market, most transactions between the New Zealand dollar and other currencies occur through back-to-back transactions with the USD.) The next most important currencies were the New Zealand dollar, Euro, British pound, Australian dollar and Japanese yen, which together accounted for about 50 per cent of total settlements. Table 1 details average daily settlements by currency over the survey period.

The results of the survey are consistent with surveys conducted in other countries. USD settlements are typically the largest, followed by settlements in the domestic currency of the country concerned.

4 Foreign exchange settlement exposures

Duration of exposures

As explained previously, the maximum duration of the exposure will be determined by the unilateral cancellation deadline for the currency sold and the reconciliation time for the currency purchased. Table 2 summarises the cancellation deadlines and reconciliation times reported by the respondent banks for the six major currencies. All times are in New Zealand Standard Time and V denotes the settlement, or value, day.

The reported times suggest that settlement practices differ significantly between banks. Table 2 gives an indication of best, worst and "average" practice amongst the banks surveyed. Best practice would be to have the latest possible cancellation deadline (which according to the survey was 10.00 am on the day after the value day for USD payments) and the earliest reconciliation time (12.30 pm on the day after the value day for USD receipts). Weighted average times are calculated by weighting each bank's time by the share of that bank's settlements in total settlements.⁷

Caution should be exercised when comparing the times reported by the various banks. It appears that some banks

Table 2
Cancellation and reconciliation times – by currency

	US dollar		NZ dollar		Australian dollar	
	Cancellation	Reconciliation	Cancellation	Reconciliation	Cancellation	Reconciliation
Earliest	18:00 V-1	12:30 V+1	14:00 V-1	17:15 V	1:00 V	19:00 V
Latest	10:00 V+1	13:00 V+2	17:00 V	13:00 V+1	16:00 V	13:00 V+1
Mode	23:00 V	16:00 V+1	16:00 V	10:00 V+1	15:00 V	10:00 V+1
Median	23:00 V	16:00 V+1	16:00 V	10:00 V+1	14:00 V	10:00 V+1
Average	20:20 V	18:35 V+1	11:02 V	7:37 V+1	11:45 V	8:05 V+1
Weighted average	17:41 V	18:22 V+1	12:32 V	10:14 V+1	13:00 V	8:14 V+1
	Euro		British Pound		Japanese Yen	
	Cancellation	Reconciliation	Cancellation	Reconciliation	Cancellation	Reconciliation
Earliest	18:00 V-1	12:00 V+1	18:00 V-1	12:00 V+1	14:00 V-1	9:00 V+1
Latest	17:30 V	16:00 V+1	19:30 V	17:00 V+1	14:30 V	14:00 V+1
Mode	17:30 V	13:00 V+1	NA	NA	13:30 V	NA
Median	16:15 V	13:00 V+1	16:45 V	14:45 V+1	12:00 V	10:45 V+1
Average	12:15 V	13:25 V+1	12:55 V	14:35 V+1	8:40 V	11:15 V+1
Weighted average	22:50 V-1	12:36 V+1	12:10 V	13:23 V+1	8:20 V	10:33 V+1

⁷ In tables 2 and 3, weighted averages have been calculated using each bank's gross settlements – ie the amounts that would have been settled if there had been no netting of obligations. As discussed later in the

article, the survey found that little use was made of netting. Consequently, using net amounts to calculate the weighted averages makes very little difference to the results.

reported what typically happens while others have reported the times that minimise the duration of the exposure. For example, most cancellation deadlines for the New Zealand dollar are the time that the transaction is submitted for settlement via the Same Day Cleared Payments system, or SCP (a system used to settle high value inter-bank and customer transactions in real time). Payments can be sent at any time during the day and a bank could tell us either the time that it usually sends the payments or the latest time that still allows the bank to fulfil its obligations.

Cancellation deadlines

Cancellation deadlines will be influenced by the practices of the correspondent banks that effect settlement in other countries on behalf of New Zealand banks. It is thus to be expected that the times reported for the same currency will differ depending on the arrangements that New Zealand banks have in place with their correspondents.

Differences between the reported cancellation deadlines for the various currencies largely reflect time zone differences. The deadlines mainly fall on the morning of the value day in the country where the payment is to be made. The deadlines for Australian dollar payments are, however, a bit later in the Australian day. This outcome probably reflects the similar time zones in Australia and New Zealand (there is only two hours difference in standard time between New Zealand and Melbourne/Sydney); and the closeness of the relationship between New Zealand banks and their Australian correspondents (four of the six banks in the survey are subsidiaries or branches of Australian banks).

The cancellation deadlines for New Zealand dollar payments are mainly in the late afternoon of the value day. New Zealand banks make these payments themselves and can submit the payments at any time during the day. New Zealand dollar cancellation deadlines are the same as the payment send times for the banks concerned reflecting the fact that New Zealand dollar payments tend to be made through SCP and cannot be cancelled once submitted.

Reconciliation times

Almost all reconciliation is done on the day after the value day (V+1).

Currency pairs

By combining the cancellation deadline for the sold currency and the reconciliation time for the bought currency, it is possible to calculate the duration in hours of each bank's settlement exposure for each currency pair.

Table 3 summarises the duration of exposures by currency pair for the major currencies traded in the New Zealand foreign exchange market.

Table 3
Duration of exposure (in hours)
Industry weighted averages

Buy	September 2000				
	USD	NZD	AUD	EUR	JPY
USD		29	29	43	34
NZD	16		21	35	25
AUD	14	19		33	23
EUR	18	24	23		28
JPY	16	22	21	35	

The table highlights the impact of time zone differences on the durations of the exposures. The US time zone has the biggest difference from New Zealand (New York is 17 hours behind New Zealand standard time). Thus, the cancellation deadlines and reconciliation times for USD transactions tend to be later than those for other currencies. As a result, the duration of the exposure when the USD is the bought currency is longer than when other currencies are bought. Similarly, when the USD is the sold currency, the duration of the exposure is shorter. These results are given added significance in the New Zealand context by the relative size of USD settlements in total foreign exchange market activity.

The durations reported in table 3 are industry averages, calculated as the difference (in hours) between the weighted average cancellation deadline for the sold currency and the weighted average reconciliation time for the bought currency. The actual durations faced by individual banks will depend on those banks' own settlement practices. Not surprisingly, given the range of cancellation deadlines and reconciliation times reported, there was considerable variation in the durations for different banks for the same currency pair. The longest estimated exposure was about two days. The CPSS found similar variations between banks in G10 countries and concluded after its second survey that many banks had "ample scope for further improvement" in their settlement

practices. The longest durations reported to the CPSS exceeded three days.

Legal documentation

To measure and manage their foreign exchange settlement exposures, banks need to be certain when their unilateral cancellation deadlines are for each currency. These deadlines depend on arrangements between the bank and its overseas correspondents. The legal documentation covering these arrangements should ideally include details of cancellation cut-off times.

The survey asked banks whether the cancellation deadlines and due times for final receipts were legally documented with the correspondents and counterparties concerned. The responses to this question suggested that banks have not documented these times to any great extent.

Magnitude of exposures

The other key component of the risk exposure is the size of the exposure. The survey asked respondents to provide information on both net and gross payments and receipts, since banks can and do, to a limited degree, use bilateral netting to reduce their total foreign exchange settlement risk – see below.

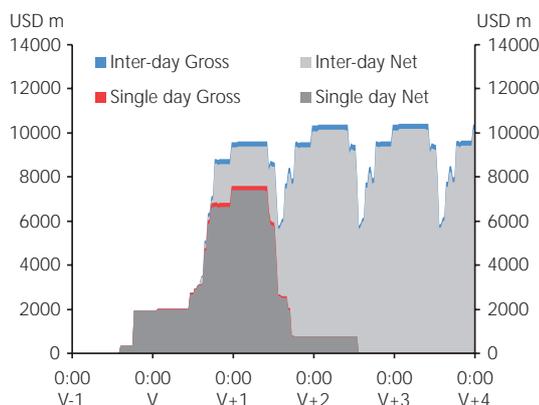
Foreign exchange settlement exposures are not necessarily an intra-day phenomenon. When receipts of purchased currencies are not confirmed until after the cancellation deadline for the next day's payments of sold currencies, there will be a period when the amount of both days' settlements will potentially be at risk. The survey results suggest that such an accumulation of exposures occurs in New Zealand. The single day profile in figure 1 shows how the total exposure builds up as the day progresses and the cancellation deadlines for different currencies are reached. Exposures should then progressively reduce as the various reconciliation times are reached. However, because the reconciliation times tend to be after the cancellation deadlines for the next day's payments, exposures continue to accumulate.

The inter-day accumulation of exposures means that the average total foreign exchange settlement exposure on an industry-wide basis lies between USD8 and 10 billion equivalent much of the time. Furthermore, the survey results

suggest that for individual banks, exposures are equal to, or in excess of, the total capital of those banks for periods of several hours each day.

Figure 1 also highlights the small role played by bilateral netting in the New Zealand foreign exchange market – see further discussion below.

Figure 1
Industry exposures
Single and inter-day profiles



5 Risk management

Given the importance of foreign exchange settlement risk, participants in the foreign exchange market should endeavour to accurately identify and manage their exposures. The CPSS has suggested that best practice with respect to managing foreign exchange settlement risk would be characterised by:

- the proper measurement of exposures;
- the application of an appropriate credit control process to exposures; and
- the reduction of excess exposures for a given level of trading.

As well as requesting quantitative information on the size and duration of foreign exchange settlement exposures, the survey asked participating banks to describe their current risk management practices with respect to settlement exposures and any plans to improve those practices.

Current practices

Some general themes emerged from the descriptions of current risk management policies and procedures:

- **Foreign exchange settlement risk recognised**

Respondents painted a picture of risk management arrangements that acknowledged the credit risk component associated with foreign exchange settlements. The reporting lines for staff responsible for managing foreign exchange settlement risk all appear to lead to senior management, in much the same way as for other forms of risk.

- **Settlement risk limits in place and monitored**

All the banks indicated that they had in place settlement risk limits that are monitored on an on-going basis. These limits were mostly part of a global system for the banking group concerned. Where breaches of limits occur, these are generally reported to the credit function. The credit function can also usually pre-approve limit breaches.

- **Limited recognition of the inter-day nature of foreign exchange settlement risk**

Most banks did not appear to explicitly recognise the inter-day nature of foreign exchange settlement exposures and indicated that they measured the exposure for only one day as the full value of transactions due to be settled on that day. Where the exposure was recorded as lasting for more than a day, system limitations meant that exposures could only be measured for full days. Thus, the full value of foreign exchange transactions on any day was assumed to be at risk on that day and on the next day. This approach is based on the conservative assumption that all sold currencies are paid out at the beginning of the value day and reconciliation of receipts is not completed until the end of the next day.

The various approaches to measuring exposures described seem to leave potential for the over or underestimation of settlement risk, depending on when cancellation deadlines are in relation to reconciliation times. For example, where reconciliation of a day's receipts does not occur until after the cancellation deadline for the next day's payments, exposures will be greater than a single day's settlements. Similarly, banks can overestimate their exposures when some receipts for a particular day are reconciled before the cancellation deadline for payments in other currencies due to be made that day.

- **Failed receipts reported to credit function and senior management**

Although all respondents confirmed that failed receipts are reported to the credit function and to senior management, not all banks appear to add the amount of a failed transaction back to the exposure recorded for the counterparty concerned.

- **Bilateral netting currently not used widely**

Netting can be a useful tool for managing foreign exchange settlement exposures. A legally binding bilateral netting agreement can reduce the magnitude of the exposure by allowing receipts due from a counterparty to be offset against payments to that counterparty. Bilateral netting appears to currently play only a small role in the way that New Zealand banks approach managing their settlement risk. Five of the six survey respondents reported making use of bilateral netting. However, the use of netting by these banks appeared to be rather limited. The banks indicated that they had netting arrangements in place with only a few of their top counterparties, and with less than two per cent of all counterparties. Total gross daily settlements for all six banks were USD18,274 million and net settlements were USD17,758 million.

The overall picture of risk management practices and procedures suggested by the survey results is similar to that obtained by the CPSS. The only major difference is the relatively low level of netting by New Zealand banks. In the second CPSS survey, 77 per cent of banks used bilateral netting to some degree, such that bilateral netting reduced overall settlement flows by 15 per cent, compared with only a 3 per cent reduction reported by New Zealand banks.

Planned improvements

Banks individually and collectively are pursuing improvements to procedures for managing foreign exchange settlement risk. Survey responses pointed to steps being taken to improve the measurement of exposures and to reduce both the duration and magnitude of exposures.

Banks' risk management processes already tend to recognise that the full amount of foreign exchange transactions could be at risk. However, there would appear to be scope for

improving the duration of exposures. One survey respondent mentioned that it was planning to link its reconciliation and treasury systems so that exposures are recorded until such time as receipt of the bought currency is confirmed.

Changing procedures to achieve later cancellation deadlines or earlier reconciliation times would reduce the duration of exposures. Three banks mentioned that they were reviewing their settlement practices with a view to shortening the duration of exposures.

One way to reduce the magnitude of exposures would be to make greater use of netting. While New Zealand banks are making limited use of bilateral netting arrangements for foreign exchange settlements, banks are keen to extend their use of netting. Several of the banks indicated that they were looking either to request that foreign exchange counterparties sign a bilateral netting agreement or to join FX Net, an international system providing foreign exchange netting services. The Bank is keen to encourage banks to develop robust netting arrangements and we would welcome moves to use netting more widely. New Zealand has had legislation in place to ensure the enforceability of written netting agreements since April 1999. We would want to ensure that netting was subject to netting agreements that conformed to the requirements of that legislation and we will continue to encourage banks to enter into such agreements with counterparties.

Continuous linked settlement

Perhaps the most significant initiative aimed at reducing foreign exchange settlement currently under way is continuous linked settlement, or CLS. CLS is being developed by more than 60 major international commercial banks. The planned CLS Bank will act as an intermediary in the settlement of foreign exchange transactions and will provide a form of payment versus payment for netted foreign exchange transactions. Seven currencies (the Australian, Canadian and US dollars, the British pound, the Euro, the Swiss franc and the Japanese yen) will be included in the first stage of the arrangements. Other currencies will be added later and the Bank is working to ensure that the New Zealand dollar is a candidate for inclusion as soon as possible. We are also actively encouraging New Zealand banks to explore the use

that they can make of CLS.⁸

There was a high level of awareness of the CLS initiative among respondents. Five banks referred to CLS Bank as a way to reduce foreign exchange settlement risk. These banks noted that they intended to join CLS, install software that was compatible with CLS, or simply stated that future involvement with CLS Bank was a possibility under consideration

6 Conclusion

The Bank's survey of foreign exchange settlement practices in New Zealand indicated that foreign exchange settlement exposures are potentially very large and can last for a considerable period. Exposures for an individual bank can exceed that bank's total capital for several hours each day. These results are consistent with previous surveys conducted in other countries. While survey respondents appeared to recognise the significance and magnitude of foreign exchange settlement risk, they did not always seem to appreciate the potential duration of the exposure.

The survey also pointed to several improvements that banks were making or had planned to identify and manage their foreign exchange settlement risk better. The Bank intends to continue to encourage banks to improve their risk management processes. For that reason, we have provided survey participants with information on the survey results. That information included a summary of the response received from the bank concerned as well as industry weighted averages for the duration of exposures and a general description of risk management practices. Each bank is therefore now able to compare its own procedures with industry-wide practices and to identify possible areas for improvement.

The Bank is also working to facilitate the entry of the New Zealand dollar into the CLS arrangements. CLS Bank promises a substantial reduction in foreign exchange settlement risk and we are keen to see participants in the New Zealand foreign exchange market able to take advantage of these arrangements at the earliest opportunity.

⁸ For more information on CLS see the CLS website (www.cls-services.com).

The current state of New Zealand monetary union research

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This article surveys recent thinking on the topic of currency unions, separating out and presenting the lessons that apply to the New Zealand context. A decision on joining a currency union is predominantly political, and would probably be accompanied by other complementary measures that also further economic integration. Nevertheless, such a decision has implications for financial markets, the economy in general and the institutional role of the Reserve Bank. For all of these reasons, the Reserve Bank will continue to monitor the literature on the subject, and occasionally contribute to it, in order to facilitate informed debate in New Zealand.

1 Introduction

The issue of a trans-Tasman currency union has in recent years occasionally been floated in public debate. Currency union issues have in general become more prominent as the world moves toward closer economic integration in trade agreements, more open capital markets and closer financial sector linkages. While the currency union issue is predominantly political, and such a union is usually but one measure among several aimed at increasing economic integration, it is also a measure that fundamentally affects the role and functions of the central bank.

This article surveys our current understanding of currency unions, with a particular view toward drawing lessons for the New Zealand context. It does not take a position for or against a trans-Tasman currency union. Rather, it formulates a range of questions and outlines a work agenda for further research, so that economic implications of a currency union can be more fully understood.

The principal consideration guiding New Zealand economic policy is to find a better path for sustainable growth. A currency union would conceivably help to achieve this through three mechanisms:

- international trade may increase, which in turn may result (directly and indirectly) in faster growth and higher welfare;
- price stability may be maintained with lower real interest rates, on average; and
- common currency arrangements might lower the susceptibility of the economy to disruptive shocks.

These benefits do not come without costs, however, and a decision to permanently abandon the national currency and monetary policy of New Zealand would have to be preceded by a careful study of the pros and cons. There have already been several research and/or policy papers written, by academics and by staff at Treasury and the RBNZ, which address bits and pieces of the issue. These are discussed below, and put into the context of our current understanding of the issue as a whole.

To gain an overview of what questions have yet to be fully addressed, we can start by using as benchmarks the comprehensive studies that were commissioned by governments of other countries recently faced with the issue of abandoning their domestic currencies. Such countries include Sweden (report of the Calmfors commission, 1996) and Finland (report of the Economic and Monetary Union expert group appointed by the Prime Minister, 1997). Comprehensive government-commissioned reports were in each case complemented by a host of more detailed, focused studies by interest groups and institutions, which covered regional development, European Union institutional mandates, social security, labour market adjustment, etc. Canada and the United Kingdom have also had public debates on the currency union issue, and systematic reports from these countries are also taken into account in this overview.

The Economic and Monetary Union (EMU) debate was largely conducted within the framework set by the theory of optimum currency areas. Subsequent developments in the world economy, in particular the Asian crisis of 1997-98, have expanded the discussion on the global financial

architecture to include new arguments in favour of fewer currencies, and of dollarisation in particular. This debate is worth some comment as well, since it has sometimes been interpreted as suggesting that small countries (perhaps including New Zealand) can no longer consider their own national currencies as viable in the long run.

Section 2 presents the economic arguments for and against monetary unions, as they have been applied in practice in recent years. Section 3 discusses lessons from the debates in Europe and Canada. Section 4 focuses on the New Zealand context, presenting the future work agenda and summarising what has already been done. Section 5 concludes the article.

2 Optimal currency area approach versus viability approach

EMU countries' research on monetary unions was initiated in the early 1990s, when the conventional wisdom on currency unions was dominated by the Optimal Currency Area (OCA) intellectual framework, as intellectually pioneered by Robert Mundell in 1961. The crux of the traditional OCA literature is that there is a trade-off between, on the one hand, increased microeconomic efficiency through more trade, and on the other hand reduced macroeconomic flexibility, to choose an inflation rate to suit the domestic economy. The use of a common currency simplifies financial transactions and expands trade, dramatically according to some research¹, with a corresponding positive net impact on both national and world welfare. At the same time, the monetary authority abandons the capability to pursue a counter-cyclical policy that responds to uniquely-national economic conditions.

A large increase in the number of small independent countries has highlighted the question whether it makes economic sense for all or even some of these countries to maintain their own currencies. Since Mundell's original article, arguments in favour of expanded optimum currency areas

have been strengthened by two factors². First, globalisation has integrated many countries more closely, thus increasing the scope for benefiting from a common currency. Secondly, conventional wisdom has gradually converged around the thinking that central banks should focus on price stability. This probably decreases the cost of abandoning national monetary policies, provided that the central bank of the currency union has good credibility in maintaining price stability.

According to the traditional OCA reasoning, in order to benefit from forming a currency union, countries should have high cross-border mobility of inputs as well as outputs. Crucially, in the context of the 1999 launching of EMU, all EU countries had already earlier in the decade agreed to a programme of liberalising further intra-Union flows of goods, services, capital and labour.

Like-mindedness about policy targets is also essential. To ensure such like-mindedness in Europe, countries were prohibited from adopting the common currency unless a harmonisation of policy frameworks and business cycles had taken place. In order to formally qualify for EMU membership, EU countries were required to adhere to the Maastricht treaty limits on inflation, budget deficit and government debt. They also committed to maintaining exchange rate stability for two years prior to adopting the euro, and adhering to the provisions of a Stability and Growth Pact after becoming members. Notably, the EU countries that did not join the EMU in its founding phase either did not satisfy the formal criteria as laid out above (Greece and Sweden), or opted out because they were concerned that they still did not belong in an optimal currency area with the countries that did join (Denmark and the UK, and to some extent Sweden as well).

The main concern about joining a currency union has generally been the likelihood that economic shocks will be asymmetric across member countries. In particular, eurosceptics have worried aloud that, in the absence of independent monetary policies, the remaining available adjustment mechanisms to offset such shocks will not be effective enough.

¹ See Rose (2000); Rose and Engel (2001); Frankel and Rose (2000). The results of this line of research has been widely questioned, however, by eg Eichengreen (2001), Smith (2001), Rodrik, and Quah (the latter two in informal comments available on the authors' respective websites).

² See Alesina and Barro (2000); Coleman (1999).

The asymmetric shocks argument, eloquently articulated by Mundell in 1961, has actually subsequently been disowned by its author. Mundell's later view (articulated in 1973) argues that the common currency itself will mitigate asymmetric shocks by allowing for better reserve pooling and portfolio diversification. A negative shock affecting only one country in a currency union would find that country running down its currency holdings and cushioning the impact of the loss, drawing on the resources of other members until the cost of adjustment has been efficiently spread over the future. The upshot of this reasoning is that in a common currency area, shocks and business cycles should preferably be asymmetric and unsynchronised, respectively. When shocks are asymmetric, there is a shock absorbing benefit to being in a currency union, which disappears when shocks are perfectly symmetric.

In other words, if all member countries in the euro area were to experience a downturn symmetrically, an individual country should experience the same exchange rate hit, whether or not they were in a currency union. By contrast, with an asymmetric shock, the exchange rate would take less of a hit under a currency union regime than if it were independently floating. This insurance benefit of a currency union is worth closer attention.

The gains from such risk sharing through portfolio diversification, made possible by the existence of a common currency, would show up as a net reduction in interest rate risk premia for the system as a whole. Coleman (1999, p28) suggests that for small countries the relatively low degree of risk diversification available leads to "quite high" welfare costs in maintaining a separate currency.

Since the introduction of the euro in 1999, financial markets have deepened and broadened³, and there has indeed been a remarkable convergence of European interest rates at lower average levels than in the past (McKinnon 2000a). Lessons from this are no doubt being carefully studied in the UK, Sweden and Denmark, and merit consideration in New Zealand as well.

³ An informative initial assessment of European financial markets after EMU is contained in Danthine *et al* (2000), as well as ECB (2001a,b,c).

Viability

In recent years, conventional wisdom on common currency areas has added another new dimension that was not present in the traditional optimal currency area thinking. Since the Asian crisis of 1997-98, fundamental questions have been raised regarding the viability of independent currencies in small countries. Might New Zealand be "too small" for an independent currency to remain viable in an increasingly globalised world with free capital movements?

Historically, small economies, both industrialised and developing, have almost never ignored exchange rate considerations in their macroeconomic policy strategies. The conventional wisdom from before the Asian crisis was that macroeconomic stability in small economies can be well served by fixing exchange rates while retaining the option to adjust the peg, or at least intervening periodically as needed to limit exchange rate movement. One reason for this was that thinness in markets for small currencies caused costly exchange rate volatility. In this view, a floating exchange rate can cause destabilising shocks rather than act as a shock absorber. Other reasons pertained to countries with weaker institutional structures; fixed (but adjustable) exchange rates forced greater fiscal discipline and were a useful way to import price stability from an anchor currency.

With the globalisation of capital markets and the liberalisation of short-term capital flows, countries with fixed (but adjustable) exchange rates may have become more susceptible to catastrophic financial crises.⁴ A fixed exchange rate reduces the incentives for hedging currency mismatches in revenues and expenditure, and balance sheet positions, and it also removes a "braking mechanism" that a floating rate offers in a capital outflow environment. A sudden loss of confidence in a currency can thus cause extensive damage to corporations, banking systems and government finances. To protect against this risk, a polarisation in exchange rate regimes might be taking place, whereby countries either adopt stronger versions of pegs (such as currency unions,

⁴ Fischer (2001) observes that soft peg systems have not proved viable over any lengthy period in countries that are well integrated into international capital markets, including European countries in the 1980s and 1992, and emerging markets 1994-98.

currency boards and outright dollarisation), or abandon fixed rates altogether in favour of floating exchange rates with inflation targeting.⁵

If the crux of the traditional OCA literature was trading away flexibility in pursuing an independent monetary policy in return for expanded benefits from trade, the crux of the dollarisation literature is trading away macroeconomic flexibility in return for greater macroeconomic credibility. This credibility improves access to external financing and lowers real interest rates, thus making possible much more investment as well as consumption on credit.

The dollarisation debate thus takes a very different approach than that of the optimum currency area literature. As Eichengreen (2001, pp 2-3) observes, the debate is

“ about financial stability and whether dollarisation is a means of enhancing it. It is about fiscal stability and whether budget balance is easier to attain after dollarisation. It is about economic reform and whether dollarisation is an effective means of encouraging it. These are issues about which the theory of optimum currency areas has little to say” .

In the New Zealand context, the dollarisation debate arguably does not have many insights to offer. This ongoing debate centres on countries that have nothing in common with New Zealand, other than being small and open. Unlike New Zealand, they tend to have shallow capital markets, fragile institutional structures and less credibility in monetary and fiscal policy soundness. Nonetheless, for the sake of completeness in illuminating the debate, some salient observations on the most recent literature are included below.

Calvo (2000) has compared the pros and cons of inflation targeting vis-a-vis dollarisation, as seen from the perspective of an economy that is moving from a soft peg to one of the extremes (ie: floating exchange rate versus rigid peg). His findings are that floating with inflation targeting has no clear advantage over dollarisation. For cases in which policy-

makers' credibility is a major issue, dollarisation is preferable because it is more transparent and effectively draws on the established credibility of US monetary policy. Information on a price index is only available after a lag, and an inflation-targeting central bank can only influence this index indirectly.

What about the experience of small countries with floating exchange rates? There may be fewer of these than it would at first appear. Over the past 15 years, many small economies with floating exchange rates exhibited less high frequency exchange rate volatility than in the case of the major world currencies. This, according to Calvo and Reinhart (2000), is evidence of what the authors call “fear of floating”, ie monetary policy has at times been run with a view to smoothing exchange rate movements. A consequence of this has been high interest rate volatility. This again illustrates the point that small open economies can seldom afford to be indifferent about movements in the exchange rate.

Monetary authorities in many emerging markets intervene in currency markets without explicitly pegging an exchange rate. For Southeast Asian crisis economies in particular, the evidence suggests an effective high frequency (day-to-day) pegging to the US dollar before the 1997-8 crisis. By 2000, this peg had in practice been resurrected in almost all of the countries, although at lower frequencies – monthly or quarterly – exchange rates drift more widely (McKinnon 2000b). Many economies appear to successfully operate managed floats with broad bands.

McKinnon shows that high frequency pegging is a reasonable policy choice under circumstances where three conditions jointly hold: (i) there is free mobility of capital across well-integrated markets; (ii) the domestic currency cannot be used to borrow abroad; (iii) the government does not want to impose (or cannot enforce) draconian rules on institutions against assuming any open foreign exchange position⁶. Typically, short-term foreign currency loans are used to finance long-term investment by domestic firms, implying a mismatch in both currencies and maturities. This is not due to a lack of foresight; in many emerging markets, there are no markets for medium or longer-term domestic bonds bearing fixed rates of interest. Given high interest rate differentials

⁵ The number of exchange rate “floaters” has been exaggerated, according to Calvo and Reinhart (2000) and McKinnon (2000), who contend that many supposed “floaters” during the Asian and Russian crises have in practice returned to pegged exchange rate practices. Fischer (2001) acknowledges this. Nevertheless, the point remains that many countries have also seen fit to abandon their national currencies altogether.

⁶ It is in any case notoriously difficult to regulate effectively corporate sector financing.

between domestic and foreign currencies, the cost of forward cover, if available at all, is unacceptably high. Under such conditions, keeping the exchange rate steady over the day-to-day or week-to-week time frame over which foreign currency debts are incurred and repaid provides an informal hedge and makes possible many transactions that would not otherwise take place. Unfortunately, it also perpetuates a loan maturities mismatch, as such a policy subsidises large-scale short-term borrowing in foreign currency, constantly rolled over.

In this view, a first-best policy would invoke regulations that prohibit net foreign exchange exposure by financial institutions with short-term assets or liabilities. The corollary to this, however, is that the government would be forced to take an active role in facilitating the foreign exchange market on a day-to-day basis. In this case, the authorities might as well keep the rate stable. The step from this to moving to long-term official exchange rate parity (fixing the exchange rate) is not large, and the latter measure provides a valuable incentive for domestic and foreign finance to lengthen the term structure. While not strictly necessary, adoption of a common currency or dollarisation would achieve the same result, as has been observed by eg Hausmann (1999). Nevertheless, there is currently widespread scepticism regarding the performance of pegged regimes in the event of large exchange rate shocks, including the potential for unhedged entities to sustain large currency losses.

In summary, arguments exist for abandoning independent national currencies and monetary policies on (i) "traditional" OCA grounds, which emphasise welfare gains from expanded trade; (ii) "new" OCA grounds, which emphasise removal of currency risk premia in interest rates, better portfolio allocation due to development of capital markets and elimination of home bias; and (iii) crisis avoidance grounds, which emphasise a reduction in financial fragility and an increase in institutional robustness. In the case of New Zealand, at least the first two sets of arguments are relevant and deserve to be carefully examined.

3 Lessons from Europe and Canada for the New Zealand case

The reports of European countries considering EMU participation can serve as a useful benchmark. A comprehensive body of research on currency unions in the New Zealand context should consider the full range of microeconomic, macroeconomic and political effects of a currency union that were considered by countries contemplating EMU.

Microeconomic effects pertain to transaction costs, foreign trade, investment and growth, and competitiveness.

Macroeconomic effects include those relating to interest rates, inflation and maintenance of macroeconomic stability, ie the possibilities should be examined of counteracting shocks to output and employment under circumstances of no independent monetary policy.

Political effects considered in the European studies included consequences of the decision on wider European economic co-operation, the public accountability of the common central bank and monetary policy, and the political voice of the national constituency in the context of a larger union. While these political aspects fall largely outside the competence of central banks, they have proven to be a central component of the ultimate decision on currency arrangements both in Europe and in Canada⁷, and the same would in all probability be true in the New Zealand context as well.

In every other country, the currency union debate has dealt with a package of measures designed to further integration, including redesigned governance structures, rather than just the exchange rate component. Nevertheless, consistent with the institutional role of the central bank, this article will bypass the political element of the discussion and concentrate on clarifying the economic arguments.

Conclusions of other countries' research

Notably, there were essentially no scientifically-uncontestable conclusions that emerged from this research; all final positions were based at least in part on subjective assessments and

⁷ See eg Laidler (1999), Buiter (2000) and Issing (2001).

on-balance judgement calls. It was apparent that there are both pros and cons associated with abandonment of the domestic currency. The main issues are listed below.

Exchange rate risk

The extent to which economies would be able to benefit from new exchange rate arrangements was thought to depend largely on how households, businesses, interest groups, etc adjust their activities to take advantage of new opportunities. This was very hard to predict in Europe, and remains a grand experiment. Abolition of exchange rate risk for a large portion of trade implies an obvious cost saving, and the reduction in uncertainty should make businesses more interested in larger and longer-term investments across markets.

The reduction in exchange rate risk was expected to affect small and medium size enterprises the most. Smaller enterprises are less able to hedge exchange rate risk effectively, and thus often limit exposure to cross-border production, export and financing. As a consequence, a common currency was expected to result in better cross-border networking and many new subcontracting arrangements. This in turn would result in greater competitiveness and efficiency in production.

Importing credibility

Although most EMU countries had well-established and credible independent monetary policies, several countries (such as Italy, Spain or Finland) seemed to have real interest rates that embodied a significant country risk premium, possibly associated with depreciation risk. The adoption of the euro was expected to reduce this premium by importing monetary policy credibility from the German Bundesbank. This effect was in fact realised, and real interest rates fell to historical lows. This in turn has fuelled a boom in consumption and investment. Lest this be interpreted as unambiguous evidence that bigger is always better, research in Switzerland⁸ suggested that the Swiss economy would

dilute credibility by linking to the euro, and thus suffer higher interest rates than if Swiss monetary independence were maintained.

Asymmetric shocks

The biggest challenge posed by currency union arrangements is traditionally seen to be how to handle the divergence of national developments from those of the currency union on average, when national monetary policy was no longer available as a tool. Most European research has portrayed asymmetric shocks as unambiguously undesirable, on the grounds that they raise the costs of membership in a currency union.

The European case studies have focused on assessing the likelihood of large asymmetric shocks, by examining differences in economies' sectoral compositions, and the likely flexibility of labour markets under the new circumstances of a currency union. Understanding the status quo is a non-trivial empirical matter; even more serious difficulties arise when predicting future shock patterns. Frankel and Rose (1996) find that, over time, economies in a currency union will increase interdependence and trade exposure, their business cycles will harmonise and they will become an optimum currency area endogenously⁹. On the other side, Krugman and others have suggested that to benefit fully from the greater opportunities for trade which are supposed to result from a currency union, countries will need to specialise further in production structures. Such increased specialisation will invariably increase the asymmetry of shocks.

Lessons on the importance of asymmetric shocks are still in the process of being drawn from the EMU. At present, the debate centres on divergence of inflation and growth rates, with the attention-getting outlier being Ireland. Sceptics predict an eventual crisis for the system, while supporters (see eg Blanchard 2001) claim that Ireland's faster growth is, to a large extent, justified by a higher potential growth than the rest of Europe. This higher potential growth results from labour inflow (migration) and higher productivity growth. The inflation differential is also partly justified by "catching-

⁸ See UBS Group, 2000. It should be noted that financial sector firms in Switzerland are bound to be biased against Swiss accession to EMU, since it would reduce business that derives from the Swiss franc's reserve currency status and the country's traditional position as a "safe haven".

⁹ Masson and Pattillo (2001) point out that the track record of some monetary unions in Africa does not support this conclusion.

up” arguments, whereby countries with relatively low per capita incomes experience faster growth and higher inflation until the differences in incomes and price levels have been eliminated.¹⁰

Outcomes of debates in other countries

Sweden ultimately decided against joining the EMU. The main economic justification for this was fears that Sweden was not prepared to risk potential asymmetric shocks until more work had been done on improving the flexibility of labour markets. Until Sweden had developed new instruments of stabilisation policy to replace the role of an independent monetary policy, and the Swedish business cycle had been brought into phase with the large EMU countries, Sweden was not prepared to relinquish the exchange rate shock absorber.¹¹

Finland did decide to join the EMU. In this case, the risk of asymmetric shocks was downplayed, with the government observing that historically, major shocks have been due largely to political factors, and would have been mitigated had Finland been in an EMU-type of arrangement at the time. Early evidence for increased stability under the EMU was provided shortly after the Finnish decision to participate. During the August 1998 financial crisis in Russia, the Finnish markka remained stable against major currencies, whereas the Swedish krona depreciated suddenly and substantially.

In the Canadian debate on a so-called North American Monetary Union (NAMU), the expected benefits of a currency union have so far been seen to be outweighed by two costs, one economic and one political. The economic argument is two-pronged. First, Canadian production remains heavily commodity-based, whereas US production is not, so that asymmetric shocks would be frequent and sometimes large. Second, labour market flexibility in Canada is poor, and inter-country labour mobility within NAMU would remain restricted. Under the circumstances, the expected economic benefits of NAMU have so far been outweighed by sizeable

expected costs.

The political argument against NAMU, from the Canadian perspective, is the questionable accountability of a common monetary authority to a Canadian electorate. A union-wide payments system underpinned by a common regulatory framework would also most likely reflect non-Canadian political priorities disproportionately. A Canadian electorate would hesitate to delegate key decisions to the United States without gaining greater effective representation there. For New Zealand, similar considerations would no doubt apply.

4 The New Zealand context: desirability and timing of dollarisation

The Finnish and Swedish comprehensive pre-EMU studies provide a useful benchmark for New Zealand in approaching currency union issues. Nevertheless, the debate has progressed considerably since the mid-1990s, with lessons available from the European experience as well as new thinking on global financial flows. Moreover, the New Zealand context differs in important ways from that of the Europeans.

One major difference between the terms of reference of the comprehensive studies mentioned above, and what applies to New Zealand, is the fact that in Europe the status quo was not an option. A currency union was emerging, with major implications for the economic environment, and the decision was whether or not to take part in it. Thus, the reports assessed the general consequences of the emergence of the EMU, the effects of the EMU on the national economy in the event of participation/non-participation, appropriate national economic policy under each alternative, and currency exchange arrangements between the EMU insiders and outsiders.

For New Zealand, the choice is between the status quo and adopting the currency of a much larger country or bloc of countries, probably with little effective representation in the setting of any supposedly common monetary policy. The primary questions to consider would thus be the desirability and timing of an effective dollarisation.

¹⁰ These effects were observed and explained in the early 1960s by Balassa and Samuelson, and are known as Balassa-Samuelson effects.

¹¹ In practice, the decision may have been based more on political arguments. Calmfors (2000) has suggested that domestic political factors of the ruling party were the deciding factor, and the Calmfors report simply provided an expedient economic justification.

The literature on dollarisation

As mentioned above, the arguments favouring dollarisation have been directed primarily towards developing countries. No other countries that are starting from a situation of successful management of inflation with a floating exchange rate have seriously considered dollarisation. Buiter (2000, p23), writing on the case of Iceland, forcefully argues that this is only to be expected:

“Unilateral ‘euroisation’, where a ‘peripheral’ country simply adopts the currency of another (‘centre’) nation, without a fair share of the common seignorage, without access to the discount window and other lender of last resort facilities, and without a voice in the decision making processes of the centre’s central bank should be of interest only to a chronically mismanaged economic basket case, whose only hope of achieving monetary stability is to unilaterally surrender monetary sovereignty.”

Nevertheless, a diversity of exchange rate regimes still exists among the developed economies. Fischer (2001, table 1) shows that, of 22 developed countries (not including Greece or Luxembourg), ten have opted to join the euro area, nine float their currencies independently and the remaining three are special cases: Singapore with a managed float, Hong Kong with a currency board, and Denmark, which pegs to the euro in a horizontal band.

Because of the established success and credibility of New Zealand’s inflation targeting monetary policy, the benefits to New Zealand of dollarisation are probably limited to those that derive from standard optimal currency area arguments, ie expanded trade and economic integration. The questions to ask, therefore, are the same as those that European countries asked themselves prior to deciding on participation in EMU.¹²

In addition to the issues that the EMU countries have discussed, it is important to add a discussion of the timing of any decision to abandon the domestic currency. In effect,

the timing consideration was one of Sweden’s justifications for staying out, and remains a central issue to the UK: whether there is sufficient convergence in business cycles at the moment of currency unification. Because the status quo remains an option for New Zealand, there is more or less complete flexibility in choosing when to abandon the national currency, if at all.

Eichengreen (2000) has suggested that timing should be part and parcel of a currency union decision. Similarly, Calmfors (2000) has pointed out the long lasting negative effects in Europe of even short run macroeconomic disturbances, namely high and persistent unemployment and/or inflation at various periods in recent economic history. Both economists come out strongly in favour of synchronising business cycles before joining a monetary union. Given greater product and labour market flexibility, these issues are probably less concerning for New Zealand than Europe, although no-one would presumably advocate that New Zealand should adopt the currency of a booming economy at the same time as it is heading into a downturn.

The characteristics of migration have recently been studied in some detail by eg Bushnell and Choy (2001), and Glass and Choy (2001). These studies suggest that more attention should be paid to the role of migration as an economic stabiliser. In this respect, New Zealand shares more characteristics with Ireland than with most of the other European economies. Recall that in Mundell’s original framework, this type of factor mobility largely defines an optimal currency area.

Recent New Zealand research

During the past three years the Reserve Bank has published six substantive papers on various aspects relevant to currency union membership. These are, in order,

- “Issues relating to optimal currency areas: theory and implications for New Zealand,” by David Hargreaves and John McDermott, *Reserve Bank of New Zealand Bulletin* vol 62, no 3. This paper provides a broad overview of the costs and benefits associated with currency unions, with an emphasis on comprehensiveness rather than on depth.

¹² This does not imply that country risk reduction is not a factor. Hawkesby, Smith and Tether (2000) have found a non-negligible effect, but it is unlikely to be larger than was the case for several European countries that joined EMU.¹³ This problem has also been identified in Feldstein (2001).

- “Can hedging insulate firms from exchange rate risk?” by Andy Brookes, David Hargreaves, Carrick Lucas and Bruce White, *Reserve Bank of New Zealand Bulletin* vol 63, no 1. This paper examines available options for hedging against exchange rate risks, with a view to implications for trade. A main finding is that longer-term hedging is expensive and may create risks as well as alleviate them.
- “How New Zealand adjusts to macroeconomic shocks: implications for joining a currency area,” by Sharon McCaw and John McDermott, *Reserve Bank of New Zealand Bulletin* vol 63, no 1. This paper considers how the New Zealand economy might adjust to shocks in the absence of an independent monetary policy. Mechanisms discussed include factor mobility, relative price and wage flexibility and fiscal transfers. It is taken as self-evident that the more symmetrically that shocks affect the countries in a currency union, the better.
- “New Zealand’s currency risk premium,” by Christian Hawkesby, Christie Smith and Christine Tether, *Reserve Bank of New Zealand Bulletin* vol 63, no 3. This work establishes that there exists a material interest rate differential between New Zealand and the USA, corresponding to country risk.
- “Would adopting the Australian dollar provide superior monetary policy in New Zealand?” by Aaron Drew, Viv Hall, John McDermott and Robert St Clair, *Reserve Bank of New Zealand Discussion Paper* 2001/03. This paper discusses counterfactual experiments with the Reserve Bank’s macroeconomic model to assess macroeconomic costs and benefits that New Zealand would have faced had its currency been credibly fixed to the Australian dollar during the 1990s. In this framework, which does not allow for consequential structural adaptation, an exacerbated business cycle results from removal of an independent monetary policy as a stabilising tool¹³.
- “Exchange rate volatility and Currency Union: Some theory and New Zealand evidence,” by Dean Scrimgeour, *Reserve Bank of New Zealand Discussion Paper* 2001/04. This paper considers the effect of currency

union on exchange rate volatility, presenting evidence that cyclical variability in the New Zealand exchange rate has been greater over the last sixteen years than it would have been in a currency union with either Australia or the United States.

Christie Smith (2001) has also assessed New Zealand’s trade profile with the help of gravity models, drawing on recent work by Andy Rose.¹⁴ This may be extended to look at how a currency union might serve to increase New Zealand’s exposure to international trade. It should be noted, however, that in the gravity models literature, New Zealand, along with Australia, Singapore and Taiwan, seems to be a significant outlier, with relative per capita income levels correlating negatively with distance to trading partners.

Other New Zealand research on currency unions includes microeconomic work by Arthur Grimes (2000) and Grimes, Holmes and Bowden (2000). This body of work points out that a common currency should be viewed as a measure to remove a material non-tariff barrier to trade. The authors proceed to report the results of a survey of 400 businesses regarding attitudes to a hypothetical ANZAC dollar.

Useful “think pieces” on currency unions include two papers by Andrew Coleman. Coleman (1999) provides a useful literature survey on currency unions. Without examining costs and benefits for New Zealand of joining a common currency, this paper argues that advances in economic thinking mean that such an examination would show lower costs and greater benefits today than would have been the case in earlier decades. Coleman (2001) complements this analysis by drawing parallels between New Zealand and the Australian state of Queensland, and between currency markets and commodity futures markets.

The matrix below illustrates some of the remaining gaps in New Zealand research on currency unions (right column). Economic issues are listed in the left-hand column, completed or ongoing work in the middle column.

¹³ This problem has also been identified in Feldstein (2001).

¹⁴ See Rose (2000); Rose and Engel (2001); Frankel and Rose (2000). Gravity models explain trade volumes as a function of economies’ absolute sizes and the distance separating them.

Economic issues to be studied	Work completed	Remaining gaps
<p>Need for independent monetary policy</p> <p>Importance of the exchange rate as a shock absorber</p> <p>Effectiveness of price and wage adjustment</p> <p>Capital and labour mobility</p>	<p>Study of harmonisation of business cycles Drew et al (described above), Hall <i>et al</i>, Haug McCaw and McDermott (described above) McCaw and McDermott (described above)</p>	<p>Study likelihood of large asymmetric shocks, worst case scenario</p> <p>Migration issues should be elaborated upon</p>
<p>How much would adopting a common currency affect trade?</p> <p>Exchange rate risk, hedging</p> <p>Exchange rate risk, liquidity premium</p> <p>Currency volatility</p>	<p>Brookes, Hargreaves, Lucas and White (described above)</p> <p>Hawkesby, Smith and Tether (described above) Scrimgeour (described above)</p>	<p>Short-term risk exposure of financial institutions, implications of regulation</p> <p>Is independent currency destabilising?</p>
<p>Similarity of New Zealand with Australia or USA</p>	<p>McCaw and McDermott (described above)</p>	<p>Drawing implications from a portfolio diversification point of view</p>
<p>Microeconomic growth issues</p> <p>Investment</p> <p>Competitiveness</p> <p>Likely microeconomic response of production</p>	<p>Grimes, Holmes and Bowden</p>	<p>How would investment increase with a currency union?</p> <p>How would competitiveness increase with a currency union?</p> <p>Location of economic activity hasn't been examined. Also, GHB survey results could be compared with empirical results from EMU</p>

Broadly speaking, remaining gaps seem to fall primarily in the areas of microeconomic benefits of a currency union, as well as the impact of a currency union on financial markets. In addition, some gaps remain on the effectiveness of migration as a shock absorber and a pragmatic assessment of capacity to respond to a worst-case scenario.

The Reserve Bank will continue to advance its currency union research in the coming years, both because this important issue may well re-emerge in the public debate in the foreseeable future, and because it affects the Bank's institutional role. An obvious starting point is to examine structural and financial sector developments in Europe, and to see what parallels can reasonably be drawn in the New Zealand context.

5 Concluding remarks

Currency union is ultimately a political decision. It needs to be considered as part of an overall package that is intended to further political and economic integration, and the debate is bound to be driven by more than just economic arguments. In the New Zealand case, the question is not being pressed by macroeconomic circumstances, because the existing exchange rate system is viable and successful. Nevertheless, at the microeconomic level, research into the issue is still important as part of an ongoing effort to better understand the strategic options for improved long-term growth.

A complete body of research on currency union issues in the New Zealand context should cover not only all of the main issues identified by European countries prior to their votes on EMU, but also explicitly consider other factors such as

issues of timing and issues of reducing susceptibility to regional crises. Lessons can also be drawn from the experience of Europe since 1999 and from debates on financial crises in emerging markets over 1994-2001.

To date, several essential pieces of the puzzle have been put into place by the staff at the Bank and others. Nevertheless, important dimensions remain largely unexplored, including the impact on financial markets of a currency union. The exchange rate is, after all, a financial variable, and so it would be surprising not to find a link between dollarisation, for example, and the development of financial markets. The relevant mechanism would be a deepening of bond markets, a reduction in the importance of bank financing and a reduction in "home bias", each of which has been observed in Europe since the introduction of EMU.

Likewise, microeconomic effects of a currency union remain largely unexplored. These include the impact on small and medium size enterprises, firm location issues and changes in sectoral composition and competitiveness.

References

- Alesina, Alberto and Robert J Barro, (2000), "Dollarization," mimeo, December.
- Blanchard, Olivier, (2001), "Country adjustments within Euroland: lessons after two years," mimeo, January.
- Brookes, Andy, David Hargreaves, Carrick Lucas and Bruce White, (2000), "Can hedging insulate firms from exchange rate risk?" *Reserve Bank of New Zealand Bulletin* vol 63, no 1.
- Buiter, Willem, (2000), "Is Iceland an optimal currency area?" Mimeo.
- Bushnell, Peter and Wai Kin Choy, (2001), "Go West, young man, go West," *New Zealand Treasury working paper* 01/7.
- Calmfors, Lars et al, (1996), *Statens Offentliga Utredningar* 158, Stockholm.
- Calvo, Guillermo, (2000), "The case for hard pegs in the brave new world of global finance," mimeo.
- Calvo, Guillermo and Carmen Reinhart, (2000), "Fear of floating," *NBER Working Paper* no 7993.
- Coleman, Andrew, (1999), "Economic integration and monetary union," *New Zealand Treasury working paper* 99/6.
- Coleman, Andrew, (2001), "Three perspectives on an Australasian monetary union," mimeo, August.
- Danthine, Jean-Pierre, Francesco Giavazzi and Ernst-Ludwig von Thadden, (2000), "European financial markets after EMU: a first assessment," *NBER Working Paper* no 8044.
- Drew, Aaron, Viv Hall, John McDermott and Robert St Clair, 2001, "Would adopting the Australian dollar provide superior monetary policy in New Zealand?" *Reserve Bank of New Zealand Discussion Paper* 2001/03.
- ECB, 2001a, "The Euro money market," *European Central Bank report*, July.
- ECB, 2001b, "The Euro bond market," *European Central Bank report*, July.
- ECB, 2001c, "The Euro equity markets," *European Central Bank report*, August.
- Eichengreen, Barry, (2000), "When to dollarise," *Journal of Money, Credit and Banking*, forthcoming.
- Eichengreen, Barry, (2001), "What problems can dollarisation solve?" Mimeo, January.
- Feldstein, Martin, (2001), "Economic problems of Ireland in Europe," *NBER Working Paper* 8264, May.
- Fischer, Stanley, (2001), "Exchange rate regimes: is the bipolar view correct?" IMF mimeo.
- Frankel, Jeffrey and Andrew Rose, (1996), "The endogeneity of the optimum currency area criteria," *NBER Working Paper* W5700, August.
- Frankel, Jeffrey and Andrew Rose, (2000), "Estimating the effect of currency unions on trade and output," *NBER Working Paper* W7857, August.
- Glass, Hayden and Wai Kin Choy, (2001), "Brain drain or brain exchange?" *New Zealand Treasury working paper* 01/22.
- Grimes, Arthur, (2000), "Case for a world currency: is an ANZAC dollar a logical step?" *Victoria Economic Commentaries*, October.

-
- Grimes, Arthur, Frank Holmes and Roger Bowden, (2000), "An ANZAC dollar? Currency union and business development," Institute of Policy Studies, Wellington.
- Hall, Viv B, Kunjong Kim and Robert A Buckle, (1998), "Pacific Rim business cycle analysis: synchronisation and volatility," *New Zealand Economic Papers* 32(2), pp 129-159.
- Hargreaves, David and John McDermott, (1999), "Issues relating to optimal currency areas: theory and implications for New Zealand," *Reserve Bank of New Zealand Bulletin*, vol 62, no 3.
- Haug, Alfred A, (2001), "Co-movement towards a currency or monetary union? An empirical study for New Zealand," *Australian Economic Papers* 40(3) pp 307-17.
- Hausman, Ricardo, (1999), "Should there be five currencies or one hundred and five?" Foreign Policy, Fall.
- Hawkesby, Christian, Christie Smith and Christine Tether, (2000), "New Zealand's currency risk premium," *Reserve Bank of New Zealand Bulletin* vol 63 no 3.
- Issing, Otmar, (2001), "Economic and monetary union in Europe: political priority versus economic integration?" Mimeo, February.
- Lafrance, Robert and Pierre St-Amant, (1999), "Optimal currency areas: a review of the recent literature," *Bank of Canada working paper* 99-116.
- Laidler, David, (1999), "The exchange rate regime and Canada's monetary order," *Bank of Canada working paper* 99-7.
- Masson, Paul and Catherine Pattillo, (2001), "Monetary union in West Africa (ECOWAS): is it desirable and how could it be achieved?" *IMF Occasional Paper* 204, Washington DC.
- McCaw, Sharon and John McDermott, (2000), "How New Zealand adjusts to macroeconomic shocks: implications for joining a currency area," *Reserve Bank of New Zealand Bulletin* vol 63, no 1.
- McKinnon, Ronald I, (2000a), "Mundell, the Euro, and optimum currency areas," Stanford University mimeo, May.
- McKinnon, Ronald I, (2000b), "After the crisis, the East Asian dollar standard resurrected: an interpretation of high frequency exchange-rate pegging." Stanford University mimeo, August.
- Mundell, Robert, (1961), "A theory of optimum currency areas," *American Economic Review*, September, pp 657-65.
- Mundell, Robert, (1973), "Uncommon arguments for common currencies," in H G Johnson and A K Swoboda, *The Economics of Common Currencies*, Allen and Unwin, pp 114-32.
- Murray, John, (1999), "Why Canada needs a flexible exchange rate," *Bank of Canada working paper*, pp 99-112.
- Rose, Andrew, (2000), "One money, one market: estimating the effect of common currency on trade," *Economic Policy*, April, pp 7-46.
- Rose, Andrew and Charles Engel, (2001), "Currency unions and international integration," revised version of *NBER Working Paper W7872*, mimeo, April.
- Scrimgeour, Dean, (2001), "Exchange rate volatility and currency union: Some theory and New Zealand evidence," *Reserve Bank of New Zealand Discussion Paper* 2001/04.
- Smith, Christie, (2001), "Distance, antipodean trade, gravity models and currency unions," mimeo, June.
- UBS Group Economic Research Studies, (2000), "The future of the Swiss franc: independence or clinging to the euro boat?" October.

Policy lessons on promoting financial stability

This article sets out a slightly amended version of a paper issued in November 2001 under the auspices of the APEC Finance Ministers' process. The article contains a summary of policy lessons that emerged from a Policy Dialogue on Banking Supervision, held in Mexico in June 2001, as part of an ongoing programme of capacity-building seminars and workshops held in the APEC Finance Ministers' process. The Policy Dialogue was co-chaired by the Reserve Bank of New Zealand and the National Banking and Securities Commission of Mexico.

1 Introduction and background

In September 2000, APEC Finance Ministers endorsed a report produced by central bank and finance ministry officials from APEC economies under Part 1 of the Voluntary Action Plan for promoting freer and more stable capital flows (the VAP). That report set out a relatively comprehensive assessment of the policies needed to facilitate progressive capital account liberalisation and to promote more open and robust economies.

Finance Ministers also approved a programme of annual policy dialogues under Part 2 of the VAP. The purpose of this programme is to provide opportunities for APEC economies to exchange views and experiences on policy issues relevant to the issues covered in Part 1 of the VAP. In particular, it is seen as a framework for assisting economies in the implementation of international standards and codes relevant to promoting financial stability.

The first of the VAP policy dialogues focused on banking supervision, given the importance of banking system stability. The Policy Dialogue on Banking Supervision was held in Acapulco, Mexico in June 2001, and was co-chaired by the Reserve Bank of New Zealand and the National Banking and Securities Commission of Mexico.

The Policy Dialogue focused on a number of policy issues relating to the implementation of the Core Principles for Effective Banking Supervision and the proposed changes to the Basel Capital Accord, promulgated by the Basel Committee on Banking Supervision. In particular, the Policy Dialogue covered issues relating to:

- an overview of the policies needed to promote financial stability;

- the supervision of banks' capital;
- the mechanisms available for promoting the prudent management of risks within the banking system, drawing on the relevant principles from the Core Principles; and
- the mechanisms available for supervising banks' exposures to related parties.

This article is a slightly amended version of the Policy Lessons paper issued by central bank and finance ministry officials in the APEC economies in November 2001 and summarises the issues discussed in the Policy Dialogue. The article is structured as follows:

- Section 1 - Setting the context – the policies needed to promote financial stability.
- Section 2 - Overview of the attributes for effective banking supervision.
- Section 3 - Supervision of banks' capital.
- Section 4 - Promoting the prudent management of risks within the banking system.
- Section 5 - Supervision of banks' exposures to related parties.
- Section 6 - Assessing financial sector vulnerabilities and external surveillance of financial sector policies.

Section 1 - Setting the context – the policies needed to promote financial stability

Financial stability requires a broad range of policies, including policies to promote non-inflationary sustainable economic growth and to minimise the risk of structural imbalances in the economy, to foster effective risk management within the financial system, to keep investors well informed about an economy's and financial system's condition and risk profile, and to minimise the potential for financial contagion. Financial stability also requires a capacity for the authorities to detect and respond effectively to incipient financial distress before it threatens the stability of the financial system.

In addition to the need for effective banking supervision arrangements, the main policies needed for promoting financial stability, as discussed in the Policy Dialogue, are as follows:

- the creation of the conditions for financial stability through sound, sustainable and credible macroeconomic policies, particularly monetary policy and exchange rate policy;
- ensuring that financial sector and capital account liberalisation are preceded or accompanied by appropriate economic and financial reforms, particularly reforms that strengthen the capacity to manage risks in an environment of more volatile cross-border capital flows;
- the importance of microeconomic reform in fostering efficient and productive resource allocation and in reducing the potential for poor asset quality in the financial system;
- encouraging better risk management by banks, including through enhanced disclosure and stronger corporate governance;
- encouraging a contestable and more competitive financial system, by allowing the entry of foreign banks of appropriate quality and by reducing barriers to competition within the financial sector;
- strengthening market disciplines on banks, including through the ownership structure of banks, enhanced

financial disclosure and reduced government underwriting of banks' liabilities;

- detecting incipient financial distress and maintaining a capacity to stress test the financial system;
- developing techniques for responding to financial system distress – in ways that minimise dislocation to the financial system, restore confidence in the financial system and sharpen market disciplines on banks;
- building structures to promote a robust payment system so as to reduce the risk of inter-bank contagion and disruption to commercial transactions resulting from a bank failure;
- recognising the importance of effective insolvency arrangements in the banking and corporate sectors; and
- recognising the need for effective coordination of financial sector monitoring and regulation.

This section of the paper elaborates on these policy issues.

Sound monetary policy

Given that systemic instability is often associated with large swings in asset prices, unproductive resource allocation and periods of high real interest rates, one of the important ingredients in promoting a stable financial system is the adoption and maintenance of a credible and effective monetary policy. Monetary policy aimed at achieving and maintaining general price stability can play a helpful role in promoting financial stability, by reducing volatility in asset prices, reducing the level of nominal and real interest rates over the longer term, creating a more stable environment for investment decision-making, and providing a basis for greater overseas and domestic confidence in the economy. Low and stable inflation also reduces the risk of distortions to resource allocation and structural imbalances in the economy. However, for these benefits to be achievable, monetary policy should not be burdened with conflicting economic objectives; the objectives for monetary policy should be clear, achievable and transparent. Desirably, the authority responsible for monetary policy should have sufficient independence to be able to pursue monetary policy objectives effectively and credibly. Monetary policy needs to be supported by complementary economic policies,

particularly a compatible exchange rate policy, prudent and sustainable fiscal policy and financial sector policies designed to promote and maintain a robust and efficient financial system.

Exchange rate policy

In the Policy Dialogue, it was agreed that the nature of a country's exchange rate arrangements has important implications for financial stability. In particular, it was noted that an exchange rate regime that is sustainable and credible is an important aspect of promoting financial stability. Most participants agreed that pegged exchange rates (particularly exchange rate regimes that are seen as "soft" pegs) can pose risks for financial stability. These include a reduction in the incentive for banks and their clients to hedge against currency risk. If the peg collapses, unhedged currency exposures can result in large losses for the banking system, potentially undermining the solvency of the system. Moreover, an exchange rate peg that is viewed by the market as unsustainable can trigger or exacerbate capital outflows and can foster the conditions for destabilising currency speculation.

Policies to reduce vulnerability to short-term capital flows

Cross-border capital flows have played a major role in recent economic and financial crises. It is therefore important that steps be taken to reduce the vulnerability of economies to the volatility of short-term capital flows. The policies required for sustainable capital account liberalisation include the issues covered in this paper, such as the need for sound and credible economic policies, a strong degree of policy transparency, policies to promote effective risk management within the banking system, and structures to keep investors well informed of economic developments and of the risk profile of the financial system.

The importance of microeconomic reform

To a large extent, a financial system will only be as healthy as the real economy of which it is part. A real economy prone to slow growth or recession, and to structural imbalances, is unlikely to provide an environment conducive

to financial stability. Therefore, it follows that one of the important ingredients for promoting a sound financial system in the longer term is to implement policies conducive to efficient resource allocation and sustainable growth in the real economy. This will involve a combination of policies, which will vary from country to country depending on its stage of development and structural features. But some common elements noted in the Policy Dialogue include the following:

- Measures to promote the competitiveness of sectors within the economy, such as the progressive elimination of industry subsidies, the progressive removal of barriers to entry, and the promotion of a competitively neutral regulatory framework.
- A framework to discourage poorly designed and inadequately targeted regulation – such as a system requiring new regulations to be screened to ensure that the rationale for regulation is fully justified, that the regulation is well targeted to the objectives it is seeking to meet and goes no further, that compliance costs are identified and minimised, and that the regulations are carefully vetted for possible unintended regulatory distortions.
- Measures to free up the mobility of capital, labour and other factor resources from sector to sector within the economy, to enable resources to move with minimum regulatory friction to those parts of the economy where they can add greatest value.
- Measures to free-up relative price signals, so that resources can be allocated efficiently on the basis of maximising the risk adjusted rate of return on resource inputs.
- Measures progressively to expose the economy to greater international competition, so that input costs can be reduced and resources allocated to those sectors with a comparative advantage.
- A framework to promote a tax system that minimises unintended distortions to resource allocation and investment decision-making, that is competitively neutral in its impact on business, and that minimises compliance costs for the business community.

Corporate governance

A sound corporate governance structure is an essential prerequisite for the promotion of financial stability. This is necessary not only for financial institutions, but also for the broader corporate community. The OECD Principles on Corporate Governance set out a useful framework for thinking about the key aspects of corporate governance. In addition, various APEC reports have dealt with issues relating to corporate governance.

The key points emerging from the Policy Dialogue included a recognition of the need for:

- clearly defined duties for directors, including the need for directors to act in the best interests of the company and to not incur obligations if they believe that the company will be unable to meet those obligations;
- an appropriate set of penalties for breaches of director duties and other corporate governance requirements, and a regulatory, judicial and legal system capable of enforcing these penalties. The authorities responsible for the enforcement of corporate governance requirements should be subject to appropriate transparency and accountability arrangements;
- structures to promote a strong degree of accountability of directors to shareholders and creditors of the company, and of management to directors;
- a requirement that the board of directors have transparent rules governing conflicts of interest and related party lending, and that board decisions in these areas be disclosed to shareholders;
- robust financial disclosure and external auditing arrangements. The CEO and senior management team should be held accountable for the veracity of their company's financial disclosures. Directors also bear responsibility for satisfying themselves that their bank's disclosures are complete, accurate and not misleading;
- a structure that requires directors to be satisfied with the adequacy of their company's systems for identifying, monitoring and managing risks. This could involve requiring bank directors to attest to the adequacy of their bank's risk management systems on a regular basis; and

- the need for at least some of the directors on the board to be non-executive and independent of any related parties.

It was agreed that corporate governance in the financial sector can be fostered in a number of ways, including through:

- well-designed and enforced legislative requirements;
- the development of a corporate governance culture (including through director training programmes, encouragement of implementation of the OECD and other relevant corporate governance standards, and the development and promotion of corporate governance principles);
- leading by example, whereby government-owned enterprises and government departments and agencies are subject to rigorous corporate governance, disclosure and accountability arrangements; and
- promoting strong market disciplines in the financial and corporate sectors.

Financial disclosure and accounting standards

A critical ingredient in the promotion of financial stability is the implementation of robust financial disclosure and accounting standards. Financial disclosure is essential as a means of strengthening the accountability of bank directors and senior management and enhancing the incentives for risk management. It is also essential if market participants and observers – particularly the larger creditors of banks, financial news media, financial analysts and rating agencies – are to monitor the performance and soundness of financial institutions effectively and exercise appropriate disciplines on those institutions which do not perform well or fail to meet acceptable prudential standards. Financial disclosure is also essential if smaller creditors, including depositors, are to have the opportunity to protect their own interests, particularly in the absence of deposit insurance.

Although the structure of financial disclosure and accounting standards will vary from country to country, depending on institutional and legal arrangements, some broad principles can be identified, as follows:

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- An effective set of disclosure requirements will need to be underpinned by robust accounting standards. These standards should desirably meet or exceed international accounting standards, although national modifications may well be appropriate. In particular, it is essential for accounting standards to set out meaningful frameworks for measuring credit exposures, for the recognition of income and losses, for determining loan loss reserves and provisioning, for the recognition and classification of off-balance sheet exposures, and for the classification of assets and liabilities. In general, accounting standards should require the disclosure of financial information on the basis of economic substance, rather than on the basis of accounting or legal contrivances.
 - There needs to be an effective means of enforcing compliance with accounting standards, including an appropriate legal framework and a body responsible for monitoring compliance and taking action where companies appear not to be complying with relevant accounting standards. Such a body needs to be well resourced, with a clear mandate and powers, and subject to robust transparency and accountability arrangements.
 - Financial disclosures should be subject to rigorous external auditing requirements, based on a set of auditing standards promulgated by an appropriately qualified body. The auditing standards should desirably be consistent with best international practice. External audit should be conducted by a fully independent auditor, whose business connections with its client should not be such as to compromise the auditor's objectivity and independence.
 - As a general rule, disclosures of financial information are more useful and reliable if they are made with a reasonable degree of frequency – at least six monthly and desirably quarterly.
 - Disclosure of financial and risk-related information should be in respect of the parent bank and consolidated group. In some cases, holding company disclosures may also be appropriate.
 - In the case of banks and other financial institutions, disclosures should generally be made both on a solo and consolidated group basis, where consolidation rules comply with international accounting standards or an acceptable alternative.
 - The types of information required to be publicly disclosed will vary depending on the type of entity making the disclosures, and the particular needs of the jurisdiction. Disclosures might include:
 - capital, disaggregated by type of capital, and the percentage of capital relative to credit exposures, probably using the Basel Capital Accord as the measurement framework;
 - comprehensive and detailed information on the balance sheet, income statement and off-balance sheet obligations;
 - exposure concentration, in terms of exposures to individual counterparties or groups of associated counterparties where such exposures are above a specified percent of the bank's or banking group's capital;
 - exposures to particular economic sectors or industries;
 - detailed information on asset quality, including the amount and nature of non-performing and restructured assets and the level of specific provisioning in relation to such loans;
 - information on market risk (ie interest rate risk, exchange rate risk and equity risk), desirably using the Basel market risk methodology or a credible alternative;
 - information on exposures to related parties, desirably disaggregated into type of exposure (maturity, nature of security, etc) and the identity of the related parties;
 - information on the nature of a bank's funds management, securitisation and other fiduciary business, including details of funding provided by the bank to these business activities and the structures in place to limit contagion between the funds management activities and the core business of the bank; and
 - information on the bank's systems for managing its business risks, including information on the nature

of its internal control systems, internal audit arrangements and any other arrangements it has for an external review of the adequacy of its risk management systems and internal controls.

- An important element of a disclosure regime is the accountability it can bring to a bank's board of directors. This recognises the vital role which bank directors play in overseeing, and taking ultimate responsibility for, the prudent management of all of their bank's business risks. In order to sharpen the accountability of a bank's directors, banks and other financial institutions could usefully be required to disclose publicly:
 - directors' qualifications and experience;
 - the board's rules for handling directors' conflicts of interests; and
 - attestations signed by each director as to whether they are satisfied (on the basis of the advice they have received, but having made due enquiry) that the bank's/financial institution's risks are being soundly identified, monitored and controlled at all times.
- For any disclosure regime to be effective, it must be enforced and there must be an appropriate set of penalties for breach of the disclosure requirements. Hence, it is essential that penalties for non-compliance are clearly specified, that these apply not only to the financial institution itself, but also to its directors and other key officers, and that there is a competent authority to enforce the disclosure rules. The enforcement agency should be subject to appropriate transparency and accountability arrangements to reinforce their incentives to discharge their obligations in a professional manner.
- In introducing a disclosure regime, it is also important to ensure that relevant audiences are well educated about the objectives of financial disclosure and the nature of the information disclosed, so that they can make the most effective use of financial disclosures. This might suggest providing explanatory material to financial journalists and analysts, and encouraging the financial news media to take a keen interest in the disclosures issued by banks and other financial institutions. And it might suggest the need for explanatory material to be

provided to depositors to assist them to interpret a bank's disclosures.

Increasing the presence of overseas banks

Opening up the financial sector to foreign banks can assist in promoting a more competitive, innovative and mature financial sector and can enhance the development of risk management skills in the financial sector. And having some large foreign banks operating within the financial sector can reduce the risk profile of the financial system, given that these banks are generally sufficiently large, with diversified loan portfolios and a substantial capital base, as to withstand the kind of shocks to the domestic economy that can cause less diversified, domestically-owned banks to fail. However, it is important to ensure that foreign banks meet appropriate quality standards before being allowed into the financial system (such as balance sheet quality, strength of capital, quality of parentage where relevant, quality of public financial disclosures in the home jurisdiction, quality of management and market reputation). It is also important to ensure that the entry of new banks does not occur in the absence of measures to strengthen the capacity of the existing banks to manage their risks prudently in a more competitive banking environment.

Strengthening market disciplines in the financial sector

It was agreed in the Policy Dialogue that an important aspect of promoting financial stability is the strengthening of market disciplines on the financial system. Effective market disciplines can encourage prudent risk management by banks and other financial institutions by rewarding those with strong balance sheets and high quality risk management, and penalising those with balance sheet weaknesses and poor risk management.

It was noted that market disciplines can be impeded by various forms of government intervention. In particular, government interventions that insulate creditors and investors from risks can weaken the effectiveness of market disciplines. In addition, the government ownership of financial institutions, regulatory impediments to the development of

capital markets, and regulatory distortions to interest rates and other market prices can dilute the ability of markets to exert appropriate discipline over financial market participants. Excessive regulatory impediments to the entry of new participants into financial markets and the adoption of competitively non-neutral regulatory frameworks also tend to dull the effectiveness of market disciplines.

This suggests the need for governments to adopt measures to strengthen the ability of the market to exert appropriate disciplines on financial market participants and encourage prudent risk management within banks and by those providing funding to financial institutions. Possible policy options can include:

- Promoting competitive and contestable financial markets by avoiding excessive regulatory barriers to entry and by maintaining a level playing field among different categories of financial institution.
- Designing deposit insurance arrangements in ways that do not completely insulate depositors from losses, and that assist in maintaining market disciplines on banks and in reducing moral hazard risks. Options might include:
 - Setting relatively low caps on deposit insurance, so that only small deposits are protected, thereby retaining incentives for larger depositors to exercise appropriate scrutiny over their banks.
 - Creating some form of effective market discipline, possibly including co-insurance – ie whereby insured depositors remain exposed to the possibility of loss on a proportion of their deposit.
 - Ensuring, where possible, that deposit insurance is priced to take into account the risk profile of the bank in question.
 - Ensuring that the directors of banks are responsible (subject to their ability to rely on professional advice, but having made due enquiry) for the management of risks within their bank, and that they are held accountable, within the limits of their legal duties, in the event that their bank fails.
- Responding to bank failures and other financial system distress events in ways that do not insulate creditors from

losses – eg by minimising government bail-outs of failed banks.

- Removing where possible any regulatory or statutory impediments to the efficient functioning of financial markets – including regulatory distortions to interest rates and tax structures that impede the development and functioning of capital markets.
- Ensuring that government-owned banks are subject to rigorous governance arrangements. Where feasible, there may be merit in privatising government-owned banks in order to strengthen market disciplines on them (and the banking system as a whole) and to reduce the fiscal and moral hazard risks associated with government ownership of banks. However, any privatisation needs to be carefully timed and managed, including the need for effective governance and disclosure arrangements and other risk management structures to be in place prior to privatisation.

Detecting incipient financial distress

It was agreed that an important element in promoting financial stability is the detection of incipient financial system distress and taking action early enough, where feasible, to reduce the risk of distress becoming a threat to financial stability. This suggests the need for central banks and other relevant authorities to maintain effective monitoring of a range of macro-prudential indicators and other barometers of potential financial system distress. These might include such factors as:

- The level, maturity, currency composition and source of private sector foreign currency debt.
- The extent of currency risk hedging in relation to private sector foreign currency debt.
- Interest rate spreads in various categories of debt.
- Indicators of financial system soundness, both in the aggregate and broken down into relevant categories of financial institution, including measures of capital adequacy, asset quality, non-performing and restructured loans, market risk positions, exposure concentration, specific and general provisions, profitability, and liquidity.

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- Extent and composition of foreign reserves relative to external debt (particularly short-term debt).
 - Composition of cross-border capital flows and developing a sound understanding of the considerations that influence capital flows.
 - Trends in asset prices and other potential leading indicators of asset quality in the banking system.

Stress testing

It was also recognised that stress testing can be a useful way of understanding the nature and dynamics of risks within the financial system and the possible impact of them on financial system stability. Stress testing has the potential to provide important insights into the capacity of a financial system as a whole, and individual institutions within it, to withstand various types of shocks, including shocks arising from major shifts in interest rates, exchange rates, asset prices and economic activity.

Stress testing can be applied both at the aggregate system-wide level and to individual financial institutions. It can be conducted using models developed by the central bank or supervisory authority, or by the IMF and other international bodies. Equally, banks and other financial institutions can be encouraged to conduct their own stress testing, either using models provided by the supervisory authority or their own models. In the latter case, comparability across different banks and institutions could be assisted, at least to some extent, by providing banks and other financial institutions with basic parameters for stress testing models and with suggested assumptions for the stress scenarios. Requiring or encouraging banks to apply stress tests to their own balance sheets and off-balance sheet positions can be a useful way of engaging bank management and directors in the process of better understanding risks and the possible impact of particular risk events on their bank's financial condition. In this way, stress testing can assist bank senior management and directors to assess the adequacy of their bank's capital buffer and other shock absorption capacity, and the adequacy of their systems for managing risks.

Responding to financial system distress

The development of a framework for effectively and expeditiously responding to financial distress is an important element in promoting financial stability. In particular, it is essential that the authorities maintain a capacity to detect incipient signs of financial distress and to respond promptly to those signs before financial distress grows into a threat to the stability of the financial system. It is equally essential that the authorities maintain a capacity to respond to bank failures in ways that minimise inter-bank contagion and disruption to the payment system and that assist in restoring confidence in the banking system. It is strongly desirable that the strategies for responding to financial system distress are designed to minimise moral hazard risks. One way of doing this is to respond to bank failure or other distress events in ways that do not fully insulate depositors and other creditors from losses, while ensuring that the failure or distress event is resolved quickly and in ways that minimise disruption to the financial system. In the longer term, one of the most effective ways of promoting a robust financial system is to ensure that bank creditors are not fully protected by the taxpayer from losses arising from a bank failure. This will encourage stronger market disciplines on survivor banks and foster more prudent risk management in the banking system.

The importance of robust payments systems

Another important element in the promotion of a sound financial system is the implementation of robust payments system arrangements. This is because very large inter-bank exposures can occur in payments systems, as banks seek to settle obligations with other banks. The failure of one bank can therefore expose other banks to large losses, potentially triggering multiple bank failure. In addition, systemic disruption can occur where there is a failure in one of the payments clearing houses or "switches" - perhaps due to a fault in the switch itself or in the interface between a bank and one of the switches. Sustained disruption to the payments system can cause severe difficulties for the broader economy, by preventing businesses from meeting obligations to counterparties, suspending the payment of wages and salaries and causing interruptions to foreign exchange trading.

For these reasons, it is important that payments systems be as robust as possible. The payment system principles issued by the BIS Committee on Payment and Settlement Systems provide useful guidance in this respect, setting out broad principles on desirable design features of payment and settlement systems. Drawing on these and other principles, some of the key points emerging from the Policy Dialogue was agreement on the need for:

- A payment system and a legal infrastructure within which the legal status of payment transactions is clear and certain from the point of initiation to the point of final settlement.
- The development of robust settlement and failure-to-settle arrangements. The nature of these arrangements will depend on the structure of the payments system and other institutional and legal factors. However, it is generally acknowledged that, for large value transactions, real time gross settlement provides an effective option for eliminating an important source of inter-bank risk. Similarly, robust netting arrangements, coupled with failure-to-settle rules, such as loss-sharing agreements, can also provide an effective means of reducing inter-bank exposures and reducing disruption to the financial system.
- Payments clearing houses to be subject to appropriate corporate governance and transparency arrangements, to encourage the sound identification, monitoring and management of risks.
- In some cases there may also be a need for an appropriate set of supervisory arrangements to ensure that the risks within each payment switch or clearing house have been clearly identified and are being managed effectively, and that banks and other participants are complying with any prudential and technical requirements specified by the payments switch operators.

The need for effective insolvency arrangements

Inadequacies in insolvency law can lead to unnecessarily high losses by lenders and to disorderly market conditions, by impeding efficient debt restructuring in insolvent companies and by obstructing orderly debt workout or liquidation

processes. Inadequate insolvency law can also impede the efficient disposal of corporate assets, including the enforcement of security arrangements by banks and other lenders. Introducing robust insolvency arrangements is therefore an important ingredient in promoting a sound financial system. Although insolvency rules will vary depending on policy objectives and legal and institutional arrangements, some broad principles can be distilled, including:

- The need for insolvency law to be clear and for the rules to be known *ex ante* by all relevant parties, so that they can contract efficiently in the knowledge of the effects that insolvency law can have on their contractual positions.
- The need for bankruptcy or other insolvency procedures to be implemented speedily in an insolvency situation, so as to minimise creditor losses and enable appropriate restructuring or liquidation procedures to be invoked.
- It is generally desirable for the law to provide scope for a company or group of companies experiencing severe financial difficulties to be restructured, with the approval of the companies' creditors and shareholders. This offers the potential to minimise losses for creditors and economic disruption by facilitating various forms of corporate re-organisation, including the possibility of a re-capitalisation by way of a debt/equity swap.
- The creation of legal structures and processes to enable secured creditors to enforce their security arrangements efficiently.
- The creation of a legal framework to facilitate alternative debt workout arrangements (in addition to liquidation and wind-up), subject to creditor agreement.
- The need for well resourced judicial and regulatory authorities to facilitate the efficient implementation of insolvency law, and structures to ensure accountability for those responsible for insolvency/bankruptcy processes.

Effective coordination of financial sector regulation

One of the themes to emerge from the Policy Dialogue was the importance of effective coordination of financial sector regulation across the full breadth of the financial system. It was noted that a fragmented system of supervision, where different agencies have responsibilities for different aspects of the financial system, can create difficulties, including the possibility of unlevel playing fields, gaps in the regulatory framework, regulatory arbitrage, duplication of regulation, and excessive regulatory compliance costs (particularly for entities that are supervised by more than one supervisory authority). In the case of some APEC economies, these difficulties have been addressed to some extent by consolidating the regulatory processes into just one or two regulation agencies. An example of this is where one agency takes responsibility for the prudential regulation and supervision of all categories of financial institution, while another agency takes responsibility for the supervision of financial markets. In other cases, different regulatory agencies remain in place but coordinate their actions and share information with other regulatory agencies.

It was agreed that there is no one "right" model for financial sector regulation, but that, whichever model is adopted, it is important that structures are put in place so as to ensure that:

- there is effective coordination of regulation and supervision across the financial sector, to minimise duplication, to avoid regulatory arbitrage, to close regulatory gaps and to promote a level playing field where feasible;
- the objectives and functions of each regulatory agency are clearly specified and understood, and that the boundaries of their jurisdiction are clear;
- the regulatory agencies cooperate with one another, particularly in terms of exchanging information (subject to ensuring protection of confidentiality) and sharing their respective thinking on policy issues; and
- there is effective oversight of the financial system as a whole, and not just of the various components within it.

Section 2 - Overview of the attributes for effective banking supervision

It was agreed that an effective set of prudential regulations and supervisory arrangements is clearly essential for the promotion of systemic stability. However, the form they take will necessarily vary from country to country, depending on such factors as the legal and institutional infrastructure, stage of development, the adequacy or otherwise of corporate governance and transparency arrangements, and the broader economic policy environment. In general, prudential regulation and supervision will need to be more comprehensive and intensive where there are substantial inadequacies in the other factors required to promote systemic stability.

The Basel Core Principles for Effective Banking Supervision and associated methodology documentation set out a comprehensive framework to assist authorities to review and develop their banking supervision arrangements.

The main general points on banking supervision to emerge from the Policy Dialogue are as follows:

- The objectives of banking supervision should be clearly stated, achievable and transparent.
- Banking supervision powers should be clearly specified, preferably in statute or regulation, and be sufficient to enable the banking supervisors to perform their functions effectively. These functions will usually include the power to: assess applications for bank licensing; license banks; impose prudential regulations; obtain information from supervised institutions; examine financial institutions; require financial institutions to issue public disclosures and have them externally audited; investigate an institution or require it to undergo audit or review by an appointed person; impose sanctions on financial institutions for breach of supervisory requirements; give directions to a supervised institution in specified circumstances; and de-license a bank in specified circumstances.
- The banking supervision authority needs to be sufficiently resourced to perform its functions effectively, with an appropriate degree of political independence. This includes the need for the supervisory authority to have

staff with relevant skills, knowledge and experience to perform their supervisory duties, including a sound understanding of banking risks and the structures needed to manage those risks effectively.

- It is also essential for supervisory agencies to maintain well designed training programmes for staff. In this context, one of the ideas to emerge in the Policy Dialogue was the potential benefit of seconding banking supervision staff to other supervisory agencies and to commercial banks, as part of a programme to broaden and deepen the skills and knowledge of staff.
- The banking supervision authority should be subject to appropriate transparency and accountability arrangements, to encourage high quality, efficient and impartial decision-making by the banking supervisors.
- Supervisors need to have a sound understanding of the environment within which banks operate, and the various transmission channels through which risks can pass to banks. This suggests a need for supervisors to think laterally, including as to the linkages between the broader economy and financial stability, the importance of corporate governance and financial transparency, and the nature of the leading indicators that can point to incipient financial distress.
- Supervisors need to have a sound understanding of the nature of each of their bank's business risks and the adequacy of the management of those risks. However, a balance needs to be struck between the banking supervisor satisfying itself that banks are managing their risks appropriately, while not going so far as to take responsibility for the management of those risks. In developing and transition economies, it may be necessary for supervisors to play a more active role in overseeing the management of risks within particular banks until suitable transparency, corporate governance and market discipline arrangements can be put in place. In the longer term it is desirable for supervisors to encourage the adoption of structures that will eventually minimise the need for supervisors to play an intensive day-to-day role in this area.
- A number of the participants in the Policy Dialogue represented economies in which many of the banks are

foreign-owned and operate in the economies in question either as branches or subsidiaries of a parent bank. It was agreed that a significant presence of foreign-owned banks in a banking system requires the host supervisor to closely monitor the parent banks and the banking systems of the parent banks, particularly if the banks in question have substantial market share in the host economy's financial system. This recognises the contagion risk that can arise for the host economy where the parent banks or the parent banking system gets into financial difficulties. It was also agreed that the presence of foreign-owned banks in the banking system might suggest the need for limits on exposures from the subsidiary bank to the parent bank, so as to minimise contagion risks. In some cases, there may also be a need to require foreign-owned banks to operate in the host economy as subsidiaries rather than branches, so as to strengthen the capacity of the host supervisor to adequately supervise risks in the host banking system.

- It was further agreed that the increasing internationalisation of the banking system suggests the need for an increasing degree of cooperation between national supervisory authorities, including through memoranda of understanding and similar agreements. In particular, it was recognised that there will be a need for supervisory authorities increasingly to cooperate on the sharing of bank-specific and banking system information and to develop mechanisms for effectively coordinating the response to financial crises involving international banks. There are also considerable benefits in sharing views and experiences on policy issues and approaches to particular banking sector issues, in order to reduce "re-inventing wheels" and to enhance understanding. And it was agreed that, in some cases, an increasing internationalisation of the banking system might point to the need for greater harmonisation of regulatory arrangements.
- Supervisors need to be aware of the risks associated with excessive or poorly designed prudential regulation and supervision of banks. These risks can include the imposition of excessive compliance costs on banks, unintended regulatory distortions to economic behaviour by supervised institutions, the risk of regulations creating

an unlevel playing field and impeding competition in the financial sector, and the creation of incentives for disintermediation of financial activity into unregulated parts of the financial sector. There is also a risk that excessive prudential regulation and supervision can create or exacerbate moral hazard risks and weaken market disciplines. For all these reasons, it is important that authorities give careful thought to the design and implementation of banking supervision and regulation.

Section 3 - Supervision of banks' capital

An adequate level of capital relative to a bank's risks is an essential requirement for a stable financial system. Capital provides a buffer to absorb losses arising from a range of risks, including credit risk, exchange rate risk, interest rate risk, equity risk and operational risk. The capital buffer not only provides protection to depositors and other creditors of a bank, but also reduces the risk of a bank becoming insolvent and "closing its doors" in the event of a severe loss. In this way, capital assists in the promotion of systemic stability, by reducing the probability of disruption to the financial system and contagion effects that can result from the failure of a bank.

A number of issues emerged in the discussion of capital:

Level of minimum capital ratio

The appropriate level of the capital ratio will vary depending not only on the risk profile of the bank in question and its capacity to manage its risks, but also the risk features of the banking system and the wider economy in which the bank operates or has its principal business. For example, the 8 per cent international standard is likely to be far too low for banks that operate in countries with a proneness to financial and economic instability, or where a country's frameworks for promoting financial stability are under-developed (eg such as the quality of economic policy, corporate governance, disclosure requirements, banking supervision frameworks, etc). Therefore, regulatory authorities need to be attentive to these considerations when setting the minimum capital ratio for banks operating in their jurisdiction. In some cases, capital ratios of well in excess of 8 per cent may be justified.

Quality of capital

There was a discussion of the quality of a bank's capital, particularly the balance to be struck between tier one and tier two capital. It was acknowledged that tier one capital, particularly core equity, is generally superior quality than tier two capital, given that it is more difficult to withdraw and is more likely to "keep a bank's doors open" in the face of losses. In contrast, tier two capital is generally not effective in keeping a bank's doors open in the face of economic shocks, given that it generally does not count for the purposes of determining a bank's solvency. However, tier two capital can be useful in sheltering depositors and other bank creditors from losses.

Stress testing of capital

It was noted that there are various stress testing techniques than can be used to test the sufficiency of a bank's capital to absorb the impact of shocks. For example, stress tests can be devised (and have been developed by the IMF and others) for exchange rate shocks, interest rate shocks, liquidity shocks and asset price shocks.

However, although stress tests are a potentially very useful tool for assessing a bank's and a banking system's vulnerability to particular shocks, participants noted that there are many practical difficulties in testing for shocks and that the models used rely on various assumptions that might not always hold true. Therefore, it is important that stress tests are not applied in a rigid manner and that the users of stress testing models have realistic expectations as to the limitations of the results of stress testing.

Uniform or bank-specific capital ratios

There was a discussion of whether capital ratios should be applied uniformly across all banks or whether the supervisor should apply different minimum capital ratios to particular banks, having regard to their risk features. A uniform capital ratio approach has the merit of relative simplicity and avoids the complexities associated with determining bank-specific capital ratios (and therefore assessing the different risk profiles and risk management structures of each bank). It also arguably reduces the risk that the banking supervisor might be seen as the ultimate manager of each bank – a risk that

could be heightened where the supervisor makes specific judgements about the appropriate minimum capital level for each bank. In this way, a uniform minimum capital ratio requirement could be seen to reinforce the need for bank directors and management to satisfy themselves as to the appropriate level of capital for their bank, having regard to its particular risks. However, a uniform approach to setting the capital ratio can increase the risk of some banks being under-capitalised unless other measures are taken to encourage banks to ensure that they do hold sufficient capital to absorb shocks (eg such as maintaining strong corporate governance and disclosure requirements and ensuring that the financial system is subject to robust market disciplines). Where a uniform minimum capital ratio requirement is used, bank supervisors must have the power and authority to require higher capital standards for higher risk institutions.

Solo and group capital requirements

Capital requirements can be imposed either on a solo or consolidated group basis, or both. The approach depends in part on the objectives of banking supervision – such as whether capital is intended to protect depositors of the bank itself or to protect creditors of the banking group as a whole, or to meet broader system stability objectives. The most prudent approach is generally to apply minimum capital ratio requirements on both a solo and consolidated group basis. Applying minimum capital ratio requirements on a consolidated group basis ensures that the group as a whole has an adequate level of capital in relation to its risks and reduces the scope for banks to move risks off-balance sheet. In the case of consolidated capital, it is especially important that the boundaries for group consolidation are well defined and that they provide for the consolidation of all entities within the group that are owned or substantially controlled by the parent entity. Particular care is needed to assess whether associated parties, special purpose vehicles (eg securitisation vehicles) and other similar entities that are not subsidiaries in an explicit sense, but may be under the substantive control of the parent bank, should be consolidated into the group.

Reliability of capital ratio calculations

The capital ratio for a bank is only as reliable as the underlying

exposure data on which it is calculated. This suggests the need for care to be taken in ensuring that banks have the systems in place, and are applying the systems reliably, to recognise all material credit and market risk exposures and to value them appropriately. It also points to the need for sound accounting standards and practices, particularly in respect of loss recognition and the valuation of assets and off-balance sheet exposures. In particular, there is a need for accounting conventions, and if necessary, supplemental prudential requirements, to ensure that banks prudently identify and classify non-performing, sub-performing and restructured credit exposures and value them at realistic economic values. It recognises the importance of effective external audit arrangements.

Encouraging bank director responsibility for capital adequacy

Although supervisors have an important role to play in ensuring that banks are adequately capitalised relative to their risks, it is essential that bank directors and senior managers take ultimate responsibility for their banks' capital adequacy. This suggests the need for structures to strengthen the incentives for bank directors and managers to ensure that their banks are well capitalised, including robust corporate governance arrangements, disclosure requirements and strong market disciplines. It is also important that banking supervisors remind directors of their responsibilities in these areas, including by ensuring that newly appointed directors are apprised of their statutory duties and any additional duties imposed on them by the supervisors. And there is merit in requiring directors to sign regular public attestations as to whether (upon due enquiry and on the basis of placing reasonable reliance on professional advice) they are satisfied with the adequacy of their banks' capitalisation, and the basis on which they have reached that view. Moreover, in some cases there may be merit in providing training to bank directors on the nature of their duties and on issues relating to banking risks.

Capital alone is not sufficient

Although capital is an important buffer for absorbing the impact of shocks, it is not sufficient in itself to safeguard the banking system. Of primary importance is to ensure that

banks have the capacity to identify, monitor and manage all of their business risks. The next part of this article summarises the lessons relating to the supervision of banks' capacity to manage their risks.

Section 4 - Promoting the prudent management of risks within the banking system

Much of the Policy Dialogue focused on the options available for enhancing banks' ability to identify, monitor and manage their risks. This recognises that risk management lies at the heart of promoting systemic stability. In that context, a number of policy lessons were identified:

There is a wide range of risks in the banking system

Banks need to have systems in place to identify, monitor and manage a wide range of risks. These include: credit risk, exposure concentration risk, interest rate risk, basis risk, exchange rate risk, equity risk, legal documentation risk, settlement risk, payment system interface risk, liquidity risk, operational risk, IT risk, fraud and defalcation, reputation risk, business continuity risk and related party exposure risk. It was generally agreed that of these risks, the ones that warrant particular attention by bank management and directors and supervisory authorities are credit risk, market risk, related party risk and operational risk, given that these tend to be the main sources of bank distress and failure.

Methods available to promote effective risk management

There are a number of ways in which risk management within the banking system can be strengthened. At a broad level, the main channels for promoting improved risk management in the banking system is through a combination of supervisory discipline, bank self discipline and market discipline.

The options available (in various combinations) include: requiring banks to make regular prudential disclosures of their risk positions to the supervisors; requiring banks to publicly disclose their risk positions and financial condition; on-site examination of banks' risk management systems and

loan portfolio by supervisors; setting prudential limits on banks' risk positions; requiring banks to maintain well-resourced internal audit and risk management functionality; requiring banks' internal auditors to provide regular reports to the supervisor on their assessment of the bank's risk management systems; requiring banks to undergo periodic external assessments in respect of their risk management systems; and requiring bank directors to sign regular public attestations as to their assessment of their bank's risk management systems.

Specifying prudential limits

As noted above, one option for promoting effective risk management is for supervisors to impose limits on banks' risk positions. For example, limits (in dollar terms and in relation to bank capital) can be imposed on banks' exposures to individual counterparties or groups of related counterparties; on exposures to related parties; on open foreign exchange positions; on interest rate positions; on equity exposures; on inter-bank exposures; on exposures to particular industry sectors; maturity mismatches between assets and liabilities; and in relation to particular types of collateral (eg commercial property or equities). And minimum requirements can be imposed in respect of such matters as capital, liquid assets, and holdings of "hard" currency (where appropriate, having regard to exchange rate arrangements).

Compliance with exposure limits and minimum requirements needs to be monitored by the supervisor on a regular basis, desirably both in respect of end-of-period positions and peak intra-period positions. In addition, there is value in requiring banks publicly to disclose their exposure positions relative to limits on a regular basis (eg six monthly or quarterly).

Although specifying limits for risk positions can be a desirable feature of a supervision framework, there is a need for supervisors to be cognisant of the risks associated with placing excessive reliance on prudential limits. In particular, it is important that prudential limits are not viewed as a substitute for ensuring that banks have robust risk management systems in place. And it is important that the need for banks to ensure they comply with regulatory limits does not distract bank directors and senior managers from satisfying themselves that all of the bank's risks are being adequately managed. It also important to recognise that

prudential limits can impose unintended regulatory distortions to a bank's economic behaviour, sometimes to the detriment of a bank's overall financial condition. And prudential limits, if taken too far, can excessively constrain a bank's and the banking system's ability to meet the needs of the economy. Therefore, it is important for supervisors to give careful attention to the design of any regulatory limits to be imposed on banks. It is generally recognised that, ultimately, the most effective means of encouraging sound banking practices is by ensuring that bank directors and management face strong incentives for prudent risk management, rather than placing too much reliance on prudential regulation.

Off-site and on-site monitoring by the supervisor

It was agreed that supervisors have an important role to play in monitoring and assessing the adequacy of a bank's capacity to identify, monitor and control its risks. In particular, there is a need for supervisors to:

- monitor compliance with prudential requirements;
- satisfy themselves that banks have structures in place to manage risks effectively (ie risk management systems, internal controls, internal and external audit arrangements, effective systems for non-executive director scrutiny of their bank's risks, etc);
- be well placed to identify any emerging signs of distress in a bank, including in respect of deteriorating asset quality or a vulnerability to particular shocks; and
- be well placed to react quickly and effectively to minimise the consequences of an emerging distress situation.

This suggests the need for the supervisor to monitor banks regularly on the basis of prudential information provided to them by banks. This information could be based on publicly disclosed information (where banks are subject to comprehensive public disclosure requirements covering a wide range of prudential matters) or private prudential information, or both. The information would generally relate to: a bank's and banking group's capital adequacy (assessed using the Basel methodology); large credit exposures; related party exposures; market risk positions (both in respect of

the trading book and bank balance sheet/off-balance sheet as a whole); profitability; liquidity; inter-bank exposures; asset quality; provisioning; lending growth; and a range of leading indicators of potential distress. In order to increase the reliability of the information provided to the supervisor, there may be a need for the supervisor to require bank directors or senior executives to sign attestations as to the completeness and accuracy of the information (and to impose legal sanctions for breaches of this requirement). And there may be a need for the supervisor to require prudential information to be externally audited.

In addition to off-site monitoring, there may be a need in some cases for the supervisor to conduct some form of on-site assessment of banks, particularly where other risk management structures (such as disclosure, corporate governance and market disciplines) cannot be fully relied on to ensure adequate management of risks. The nature of on-site examinations will vary depending on policy preferences, the nature of the banking system, the extent of off-site monitoring, and the reliance that can be placed on corporate governance and market disciplines. Depending on these factors, on-site examinations can:

- be conducted by the supervisory authority itself or by an appointed external auditor or other suitably qualified external agency;
- be conducted by resident examiners (who are based in a particular bank for a lengthy period of time) or by examiners who are based outside the bank being examined;
- be undertaken on a regular basis (eg annually or throughout the year) or on an ad hoc basis;
- be in respect of the entirety of a bank's business (eg risk management systems, governance arrangements, asset quality, provisioning, etc) or in respect of only particular aspects of a bank's business;
- be conducted as a routine part of the supervision process or only when particular concerns arise (eg where a bank's financial condition may be of particular concern to the supervisor); or
- take the form of higher level discussions with a bank's

directors or senior management team on the bank's strategic direction.

On-site assessments can be beneficial in a number of ways. If well structured and managed, on-site assessments can considerably deepen the supervisor's understanding of a bank's financial condition and risk management capacity. They can also better equip the supervisor to detect incipient financial distress and to take pre-emptive action where necessary. For on-site examinations to extract maximum value, they require well defined objectives, carefully thought through methodologies and well trained staff with a depth of experience and a maturity of judgement.

But there are some important considerations associated with on-site assessments. In particular, depending on how on-site examinations are structured, supervisors need to be mindful of the dangers of their examiners becoming so closely involved in the details of a bank's operations that the examiners lose sight of the bigger picture or compromise their objectivity. In some cases, there may be a risk that the supervisor is so closely involved in making judgements about a bank's business that it diminishes the incentives for the bank's board of directors and senior management to take ultimate responsibility for the management of the bank's risks. Supervisors also need to be aware of the compliance costs associated with on-site examinations and the diversion of banks' management from their primary duties.

Encouraging bank directors and senior managers to focus on risk management

In addition to the use of prudential limits and supervisor monitoring to enhance the management of risks, it is important for the authorities to take other steps to reinforce the incentives for bank directors and managers to ensure that their bank's risks are being appropriately controlled. There are many ways of doing this, including to:

- require banks to make regular (eg quarterly or six monthly) public disclosures of their risk positions and financial condition;
- require public attestations from a bank's directors and/or senior management team on the adequacy of the bank's risk management systems;

- ensure that banks are subject to effective corporate governance arrangements, with particular emphasis on the duties of directors with respect to risk management and on the need for the board of directors to have a strong involvement in overseeing the internal and external audit arrangements in their bank; and
- require banks to have a minimum number of non-executive and fully independent directors.

Section 5 - Supervision of banks' exposures to related parties

Many banking system distress episodes have been triggered or exacerbated by banks' exposures to related parties, particularly where the loans were not subject to the usual processes of credit approval and review. In recognition of the importance of effectively supervising banks' related party exposures, a number of policy lessons emerged, as follows:

Placing a limit on related party exposures

An important mechanism for avoiding excessive related party exposures is to impose a limit on a bank's ability to incur credit exposures (of any form) to related parties. The limit can take a number of forms, including a limit on aggregate related party exposures (relative to the bank's or banking group's capital); sub-limits on exposures to particular categories of related party (such as bank directors or related parties in a position of effective control over the bank or banking group); varying the nature of the limit depending on the type of exposure and the maturity of exposure; making allowance for collateral (subject to who controls the collateral); and making allowance for enforceable netting arrangements between related parties.

At the Policy Dialogue, it was agreed that the supervisor needs to monitor compliance with related party exposure limits closely. This might suggest relatively frequent reporting by banks of their exposure positions, including reporting exposures on a peak end-of-day basis where feasible. It might also suggest the need for regular external audit of related party exposures, including in respect of the measurement of the exposures and compliance with the details of the rules relating to the limit.

Lending to directors

Some participants in the Policy Dialogue considered that a bank should be prohibited from lending to directors of the bank or of a company within the banking group. Others saw scope for allowing loans to bank directors within specified limits, provided that specific controls are established to ensure that any such loans are on strictly commercial terms and are subject to standard credit scrutiny, and that structures are in place to verify compliance with those controls.

Independent directors

Independent directors can play an important role in managing the risks associated with related party lending, particularly in respect of lending to controlling shareholders or shareholders in a position of significant influence. One option is to require a bank to have a majority or substantial minority of non-executive, fully independent directors and to require the directors to sign regular statements attesting that they have examined the bank's exposures to related parties, are satisfied that the exposures are within any limits specified by the supervisor, are on strictly commercial terms, have been subject to standard credit scrutiny and are not in conflict with the best interests of the bank and the banking group.

Scrutiny of risk management systems for related party exposures

Another option for promoting improved management of related party risks is to require a bank's systems for identifying, monitoring and managing exposures to related parties to be subject to external scrutiny. This could involve periodic assessment by the supervisors and/or review by other external parties, such as the bank's external auditors or possibly another firm of auditors. Factors to assess might include: whether a bank has systems in place to ensure that all related party exposures are subject to standard (or even more stringent) credit approval and review processes; whether the bank's independent directors (if any) have particular responsibilities to scrutinise related party exposures; whether the bank has systems to require all related party exposures to be reviewed at specified frequency; and whether the bank requires external auditors to undertake particular review of related party exposures and associated control systems as part of the annual audit process.

Directors' and managers' conflicts of interest

It is also important that the supervisor ensures that a bank has effective systems in place for requiring the bank's directors and senior managers to declare any potential conflicts of interest and to have these appropriately recorded and managed.

Section 6 - Assessing financial sector vulnerabilities and external surveillance of financial sector policies

At the Policy Dialogue, there was a discussion on the role of the IMF and World Bank in assessing countries' compliance with international standards and codes and in evaluating the vulnerability of economies to financial distress via the FSAP and ROSC processes. The main points to emerge from this part of the Policy Dialogue were as follows:

- The FSAP and ROSC processes provide very useful vehicles for externally assessing economies' compliance with relevant international standards and codes and for assessing the overall quality of financial sector policies. Participants in the Policy Dialogue noted the value of these surveillance processes, but noted the need for a flexible approach to the assessment of compliance with standards and codes. In particular, participants made the point that there is little sense in applying standards and codes as rigid templates, and that there needs to be a recognition that the nature of a country's financial sector policies will necessarily vary depending on its stage of development, the nature of the risks in the economy, and the structure of the financial system. Therefore, it was agreed that FSAP and ROSC assessments should not be conducted in a "ticks and crosses" manner and that there needs to be an explicit recognition by the assessors that there are many alternative viable policy options to meet or exceed international standards and to achieve financial stability objectives.
- Participants indicated that it would be helpful if the IMF and World Bank could ensure that the authorities of a country scheduled to participate in an FSAP or ROSC

assessment are given comprehensive briefings on the FSAP and ROSC assessment procedures well in advance of the assessment commencing. It was also agreed that the authorities should be well briefed on the use of stress testing techniques and the nature of the stress testing models to be used by the IMF/World Bank in conducting FSAP assessments.

- Self-assessments are an important part of the FSAP and ROSC processes. Countries participating in FSAP and ROSC assessments are expected to complete comprehensive self-assessments of compliance with specified international standards and codes, using templates provided by the IMF/World Bank for the purpose. The self-assessments not only assist the IMF/World Bank in assessing a country's compliance with standards and codes, but also enable the authorities in the country to assess for themselves the extent of

compliance, the adequacy of their policy frameworks and the points of possible vulnerability. If prepared with a high degree of objectivity and in a comprehensive manner, self-assessments can provide a very useful mechanism for authorities to assess the adequacy of their financial sector regulation and to prepare for the FSAP/ROSC in a way that makes it more productive for all parties concerned.

There is a need for follow-up after the completion of FSAP/ROSC assessments, so that issues raised in the assessments are appropriately addressed by the authorities. In some cases, it may be necessary for the IMF/World Bank, in conjunction with the ADB/IADB, to provide well targeted technical assistance to the authorities in developing and emerging economies to assist them to design, formulate and implement reforms to address issues raised in the FSAP/ROSC evaluations.

Monetary policy in interesting times

An address by Donald T Brash, Governor of the Reserve Bank of New Zealand, to the managers of small- and medium-sized businesses in Whangarei on 21 November 2001

Ladies and Gentlemen

About seven or eight years ago, I was visited by a share-broker who told me what a great job the Reserve Bank had done in explaining its actions to the banks and the big corporates. I felt good, until he said "But frankly, you have done a lousy job communicating with the small and middle-sized businesses in New Zealand." True, I protested, but I can't even get a good mailing list to cover the tens of thousands of smaller businesses. "Fair enough", he replied, "but every small business has a bank account. Put it on the banks to invite their small business clients to meetings which you host, and to which you speak."

And from that conversation grew the idea of this meeting. We had meetings of this kind for the first time in 1995. We repeated the idea again in 1998. And now we are doing it for the third time this year.

In part, we want to use this meeting to tell you how we see the world. And in part, we want to learn, from your questions and comments when I have finished, how you see the world. We are acutely aware that the health and vitality of the New Zealand economy depends to a huge degree on the health and vitality of the small and middle-sized businesses represented in this room.

We live in "interesting times"

You will recall the ancient Chinese curse "May you live in interesting times". Sadly, these are "interesting times" and we all know why. Just one week after the terrible events of 11 September, the Reserve Bank made an unscheduled and largely unexpected interest rate cut, from 5.75 per cent to 5.25 per cent. Within the Reserve Bank, we briefly debated whether I should hold a press conference to explain what we had done. We decided not to, in large part because there would have been very little I could usefully have said. Essentially, what I could have said at that time was "We don't know yet what the economic consequences of these

events will be, and we certainly don't know what they mean for inflation in New Zealand. All we can say is that confidence has taken a huge knock; this is more likely to reduce prices than to increase them; and under these circumstances there is scope for lower interest rates." That would not have made for a very productive press conference.

Time has moved on, and there is more we can say now. Last week, we issued our latest assessment of the outlook for the economy and for inflation, and reduced the Official Cash Rate by a further 50 basis points to 4.75 per cent.

Why did we do that? Interestingly, when we looked over our shoulder at the historical data available to us, it was hard to see a justification for any cut in interest rates. The latest comprehensive information we had on economic growth showed that, in the first half of this year, the economy grew by 2.3 per cent, equivalent to an annual growth rate of more than 4 per cent. The latest information we had also showed that unemployment was at its lowest level in 13 years. Job advertisements, as surveyed by the ANZ Bank, were running at a high level. Many businesses were reporting that they had little unused capacity to meet increased demand. In some parts of the country, there were reports of great difficulty finding skilled and even unskilled staff. The world prices for many of our commodity exports, while lower than a few months earlier, were holding up surprisingly well. And to top it all off the exchange rate was not far above its all-time record low, which meant that, in New Zealand dollar terms, our exporters and tourist operators were being substantially insulated from the slow-down in the world economy.

To some extent, this was the same picture that we had painted in our August *Monetary Policy Statement*. There we had suggested that there might have been a case for an early *increase* in the Official Cash Rate were it not for the threatening clouds in the international economy. And that was weeks before we knew just how strongly the economy had grown during the first half of the year.

But three months on, and notwithstanding the relatively robust *historical* data, we have cut the Official Cash Rate by a total of 1 per cent. We have done that because, despite the relatively strong position that the New Zealand economy is now in, we see the real prospect of the economy slowing down quite significantly over the next year or so. And if that slow-down occurs, interest rates can be lower than previously without jeopardising the price stability objective which the Reserve Bank is required to achieve.

The basic cause of this rather abrupt change in the outlook for our own economy relates to a fairly substantial change in the outlook for the world economy. Back in early August, as our previous *Statement* went to press, the *Consensus* forecasts for the 14 countries which dominate our export trading suggested relatively slow growth this year but quite a marked pick-up in growth next year (figure 1). As we went to press with last week's assessment, the general expectation was for growth to be significantly slower this year than previously expected, and growth next year to be even more markedly lower than previously expected (figure 2). And this deterioration in the world outlook seems to get somewhat worse with every passing week.

Moreover, the deterioration is not confined to a single country. Most economists are now expecting a recession in the United States. Almost all economists are expecting a recession in Japan. Several of our biggest trading partners in Asia are clearly in recession already. Europe continues to slow down. Only Australia, among our main trading partners, seems to be enjoying reasonably robust growth for the moment. (Figure 3)

And this slowdown in the world economy is bound to have an impact on the New Zealand economy, in particular by reducing the demand for our exports and reducing the prices of those exports. We are beginning to see that already, and as it occurs we expect to see both some reduction in growth in New Zealand and some downwards pressure on prices – including some reversal of the very strong increase in the price of things like meat and dairy products, which in recent months has done so much to push up the price of the average food-basket. So it seems reasonable to believe that inflation will be much less of a problem as we look forward 12 months than it has been over the last 12 months.

Having explained our decision to reduce the Official Cash Rate last week, let me use this situation to make four points.

Price stability means neither inflation nor deflation

The first point I want to make is that the Reserve Bank is just as serious about keeping inflation above zero as it is about keeping it below 3 per cent. Dropping interest rates now is about preventing inflation falling too low. And if inflation threatened to go negative, you can be sure we would be very active indeed in stimulating the economy.

It's been said that any fool can keep inflation down, and that's true, but our task is much more demanding than that. I know our rhetoric is mostly about the economic and social costs of inflation, rather than about the economic and social costs of deflation. That's because, at least in New Zealand, inflation has been much the more common problem, certainly for the last 60 years. Also, because New Zealand went through a period of quite high inflation in the seventies and eighties, we have had to work hard to persuade people that we are serious about keeping inflation down, in order to bring down inflationary expectations.

But make no mistake. Inflation going below zero would be just as much a breach of the Reserve Bank's inflation target as having it go above 3 per cent. Deflation causes its own set of economic problems and distortions, doing social and economic damage. And our policy deliberations are always, without exception, mindful of both risks. We are always trying to find the policy setting – the interest rate – which will deliver an inflation outcome which is neither too hot nor too cold.

Preventing deflation is also part of the law under which I operate. The Reserve Bank Act 1989 makes it clear that monetary policy must deliver "stability in the general level of prices". And the Policy Targets Agreement which I have with the Minister of Finance, a requirement of the Reserve Bank Act, defines "stability in the general level of prices" as inflation measured by the Consumers Price Index of between zero and 3 per cent. Deflation is not "stability in the general level of prices", any more than inflation is.

This means that, once price stability has been achieved, and as a very rough rule of thumb, the Reserve Bank's monetary policy will be seeking to restrain *inflationary* pressures by *raising* interest rates roughly half the time, and will be seeking to restrain *disinflationary* pressures by *lowering* interest rates roughly half the time – as we did in the second half of 1998 and as we have been doing through most of this year.

New Zealand goes into this world slowdown in a strong position

Secondly, although New Zealand will be affected by the world slowdown, we are not completely hostage to external events. It is important that we don't talk ourselves into a gloomy frame of mind just because the slowdown in the world economy could be substantial, and could last well into next year. When the world slowdown began, many sectors of the New Zealand economy were in rude good health economically, as I have mentioned – and I haven't even mentioned such other advantages as a strongly capitalised banking system and a government running fiscal surpluses. In other words, we *start* into the slowdown from a good position.

Yes, export prices look likely to fall, and indeed have already done so in a number of cases, but in US dollar terms they have, on average, been at relatively high levels for much of the last year or so (figure 4), and in New Zealand dollar terms they have been pushed up even further by the low level of the kiwi dollar (figures 5 and 6). This low exchange rate provides very useful insulation from the downturn in the world economy, by propping up returns to New Zealand exporters (and indeed returns to those competing with imports) despite weaker prices abroad.

There has been a sharp decline in net confidence in the business sector in recent months, as measured by both the National Bank Business Outlook survey and by the quarterly survey undertaken by the Institute of Economic Research (figure 7). And businesses have become less confident not only about the economy in general, but also about the outlook for their own businesses.

But at least as of late last month, more businesses continued to expect an improvement in their own business over the

year ahead than expected a deterioration. As you can see from the graph (figure 8), the National Bank survey for September, taken prior to the tragic events of 11 September, showed that only 6 per cent of businesses expected that their own business would deteriorate over the year ahead. By the October survey, that had increased to 16 per cent expecting a deterioration. In both surveys, roughly half of all respondents expected no change in their business over the period ahead. And despite the increased gloom, roughly twice as many businesses were expecting their business to improve as were expecting a deterioration, even in October.

Interestingly, surveys conducted in September by both the Employers and Manufacturers Association in Auckland, and the Canterbury Manufacturers Association in Christchurch, showed a remarkably upbeat mood in both cities. And both surveys were conducted after the events of 11 September. A survey conducted by Bancorp in late October found respondents (134 in all) more optimistic about general business conditions, and more confident about increasing investment expenditure, than a similar survey four months earlier. A more limited survey of the top 20 listed companies undertaken by the *New Zealand Business Times*, also in late October, found that, with only a single exception, corporates had not changed budget allocations or staff hiring intentions since 11 September – and the exception was “a company that is subject to a particular restructuring in its business.”¹

Moreover, if the slowdown in the global economy affects us more adversely than we currently expect, there is scope to stimulate additional demand without causing inflation to accelerate. Typically, monetary policy is these days the policy instrument of choice for providing temporary stimulus to the economy. We have now eased monetary policy by reducing the Official Cash Rate from 6.5 per cent early this year to 4.75 per cent currently. There is little doubt that that reduction will help to cushion the effects of the international slowdown. But if we need to reduce the Official Cash Rate further, there is clearly plenty of room to do so, and in that respect we are in a very much easier position than the one in which the Japanese central bank finds itself, with official interest rates already at zero, and with no further reductions possible.

¹ *New Zealand Business Times*, 2 November 2001.

So there is good reason for businesses in New Zealand to be more optimistic about the future than is the case in many of our trading partners: New Zealand starts from a situation of relatively strong growth, and there is ample scope for monetary policy to stimulate the economy if that should be needed, without jeopardising price stability.

But unfortunately policy is unable to provide complete protection

But thirdly, having said that, it is unfortunately quite impossible for policy-makers, whether in the government or in the Reserve Bank, to protect your business from all the effects of the global slowdown.

In part that is because policy – whether government fiscal policy or Reserve Bank monetary policy – works with what in the trade we call a long lag, or delay. In other words, the time between when the Reserve Bank changes the Official Cash Rate and when that change impacts your business will almost certainly be many weeks and probably many months. I have heard that some businesses believe that a change in the Official Cash Rate can have an almost instantaneous impact in the market, because of the effect which such a change can have on confidence. But that is surely the exception rather than the rule. In most situations, the lag or delay between a change in monetary policy and the impact of that change on the economy is typically more than a year.

To make life even more complicated, the lags are not only quite long but are also variable – they vary somewhat from situation to situation.

This means that, if we had to offset the effect of, say, a world economic slowdown on the New Zealand economy by easing monetary policy, we would need perfect ability to see the future for more than a year ahead, perfect understanding of precisely where the economy is now, and perfect understanding of how the economy works.

Well, we do our best, and I am fortunate to have some of the brightest economists in New Zealand on my staff, trying to discern the future. We study 6,000 data series. We look for relationships which look realistic in recent history. We

talk to businesses up and down the country – about 50 or 60 before each quarterly *Monetary Policy Statement*. We use some sophisticated economic models, but stir in very large amounts of judgement. We are constantly looking to update our assessment of the real economy outside the Reserve Bank's doors. We get a steady flow of data relevant to New Zealand from overseas economies. We believe we are as well-informed about the economy as any other organisation in New Zealand, and better informed than most.

But we can still get it wrong. Let me illustrate. One of the most reliable relationships in recent economic history is that the world prices of the commodities New Zealand exports tend to rise when the economies of our trading partners are buoyant, and tend to fall when the economies of our trading partners are subdued. That sounds pretty much what one might expect on the basis of common sense, and that is consistent with the data (figure 9).

So since at least the December 2000 *Monetary Policy Statement*, we have been expecting the prices of our commodity exports to decline (figure 10). And we projected the same thing to happen in March this year, even though in the intervening period prices had risen some more, despite a steady weakening in the world economy. And we projected prices to fall in our May *Statement*, even though they had risen some more, despite still more weakening in the world economy. And in our August *Statement*, we again projected world prices to fall, even though by August they had risen still further and the world economy was looking quite seedy! And in the *Statement* we issued last week, we still projected that the slowdown in the world economy would produce a fall in our export prices! Indeed, had we not expected our export prices to fall, the case for reducing the Official Cash Rate last week would have been non-existent. Should we have changed our expectation about export prices because over most of the last year the traditional relationship between export prices and the growth of our trading partners has broken down? Obviously we don't think so, but the example is a good illustration of the difficulty of forecasting the economy even in "normal" times.

And of course these are anything but normal times. No economic model, and no economic forecaster, could have foreseen the events of 11 September. By definition therefore, given the long and variable lags between a change in

monetary policy and the impact of that change on the real economy, and the inability of even the most experienced central bankers to foresee the future, we will sometimes fail to adjust policy sufficiently quickly to protect your business from a sharp downswing – or for that matter, from a sharp upswing (though that may well cause fewer complaints!).

There is another reason why monetary policy can not protect your business from all the adverse effects of world events. Even if we had super-human ability to see into the future, the reality is that world events have quite different effects on different industries and different regions. Monetary policy, with its single interest rate instrument, can only react to the balance of inflationary pressures in the economy as a whole, not to the pressures in individual industries. In other words, we can't have a high interest rate to restrain the very buoyant conditions in the dairy industry but a low interest rate to support the software export sector, which has been adversely affected by the sharp deceleration of spending on information technology in the United States. We can only have an interest rate which seems appropriate to the economy as a whole – and must accept that that interest rate will seem far too high for some parts of the economy and will be arguably too low for other parts.

We saw that situation rather clearly in the mid-nineties, when the building sector was experiencing quite strong *inflationary* pressures, but many export industries were experiencing quite strong *disinflationary* pressures. It would have been great to have been able to have a high interest rate applicable to the building sector but a low one applicable to export industries. But as long as we have a common currency throughout New Zealand, that is not an option.

So the Reserve Bank can help your business by trying hard to anticipate developments in the New Zealand economy, and can adjust monetary policy quickly if it looks likely that inflationary or deflationary pressures will emerge. But we can't provide complete protection, either for the economy as a whole or, even more clearly, for each industry and region.

Monetary policy doesn't determine the economy's long-run growth rate

Finally, it is important to be aware of what monetary policy can and can not do for the economy's long-run growth rate.

There is now virtually unanimous opinion among economists and policy-makers around the world that central banks can't engender faster economic growth by being more tolerant of inflation. On the contrary, there is a virtually unanimous view that the best thing that monetary policy can do for economic growth is to keep inflation low and stable.

It is a myth, though one clearly believed by some New Zealanders, that the United States economy has grown faster than the New Zealand economy over the last decade because the US central bank has a mandate to encourage growth and maintain price stability, whereas the New Zealand central bank has only a mandate to maintain price stability. The reality is that in both countries it is now fully recognised that the best thing which monetary policy can do to encourage growth is to keep inflation under control. In that respect, the Federal Reserve and the Reserve Bank of New Zealand think and operate in the same way.

This is not the place for a comprehensive discussion on the determinants of trend growth in output. Essentially, economic growth depends on growth in inputs of labour and capital, and advances in the productivity with which that labour and capital are employed. And most of the things which impact on those factors are quite unrelated to monetary policy. Some studies have suggested that high levels of taxation discourage growth through their effect on incentives to work, save and innovate. Others have pointed to the importance of protecting private property rights if growth is to be dynamic. Still others note the importance of human capital, and highlight the role of education as a determinant of economic growth. And of course there are many other relevant factors, such as the rules and regulations which may make undertaking new investments a slow and cumbersome process. Getting policies in all of these areas right is crucial if trend growth is to be increased, and none of them are policies susceptible to central bank influence.

Conclusion

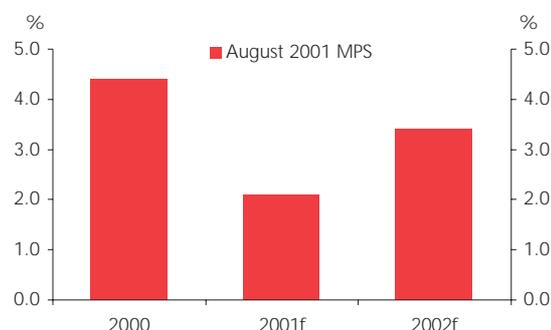
So in conclusion, in these "interesting times" –

- First, the Reserve Bank is as committed to avoiding deflation as to avoiding inflation, and that means that we will always be leaning against the wind to the best of our ability, tending to tighten policy if inflation looks likely to rise in the future, and tending to ease policy if inflation looks likely to fall below the bottom of our target.
- Second, the New Zealand economy is well-placed to weather the international slowdown, with moderate growth, low unemployment, an exchange rate which is providing useful support for export and import-competing industries, and ample scope for further easing of monetary policy if that should prove necessary.
- Third, even with the best will in the world, the best economists in the world, the most regular contact with companies up and down the land, monetary policy can never provide you with complete protection against the vagaries of life, whether these vagaries come in the form of international crises or in the form of some dramatic domestic development.
- And fourth, monetary policy doesn't determine the economy's long-term growth rate – that is determined by a whole range of factors which have nothing directly to do with the Reserve Bank.

Sometimes the Reserve Bank will need to leave monetary policy unchanged for months on end. Sometimes we will need to adjust interest rates in small incremental steps, as earlier in the year. And sometimes we will need to adjust rates more aggressively, as over the last couple of months. Different circumstances will require different responses.

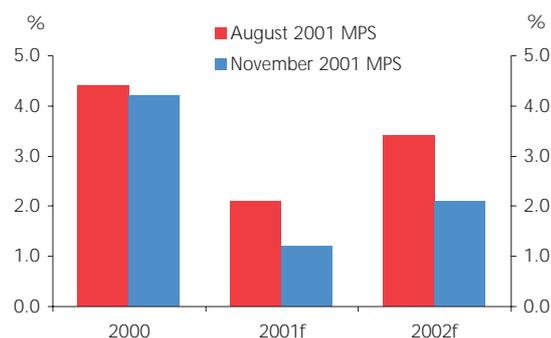
But what I can say is that, in "interesting times" as in normal times, the role of monetary policy is to help and not to hinder, and that is what we are committed to doing.

Figure 1
Export partner GDP growth - August 2001
Monetary Policy Statement
(annual average percentage change)



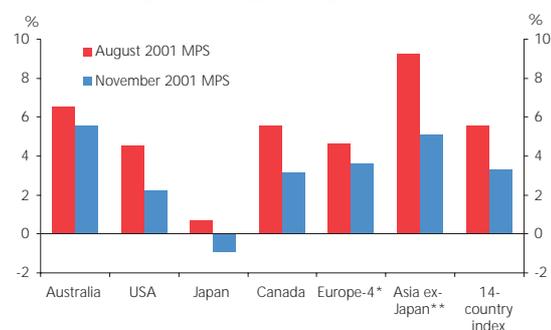
Source: RBNZ, Consensus.

Figure 2
Export partner GDP growth - November 2001
Monetary Policy Statement
(annual average percentage change)



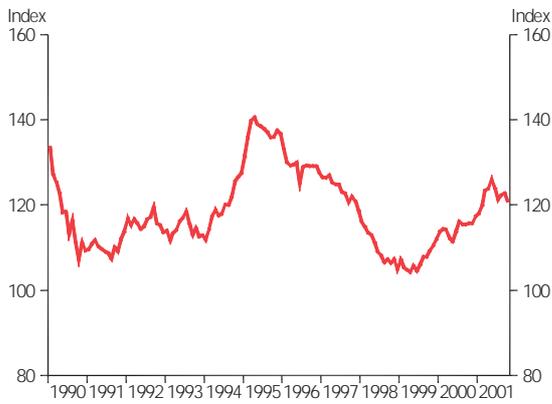
Source: RBNZ, Consensus.

Figure 3
Sum of 2001 and 2002 export partner GDP growth
(annual average percentage change)



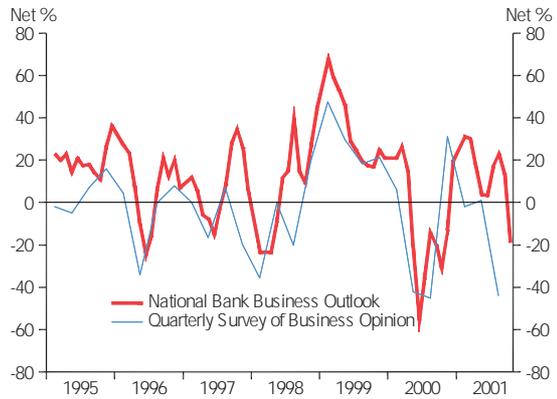
Source: RBNZ, Consensus.

Figure 4
Prices of New Zealand's export commodities
(denominated in US dollars)



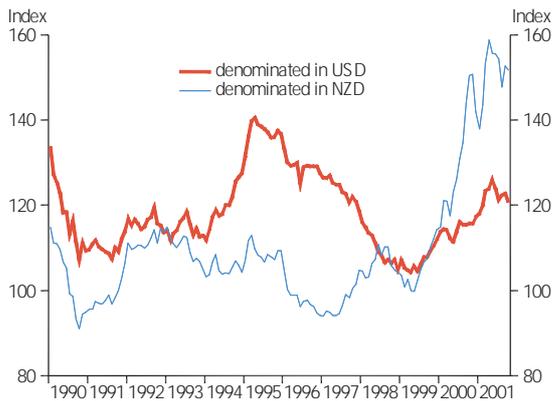
Source: ANZ.

Figure 7
New Zealand business confidence



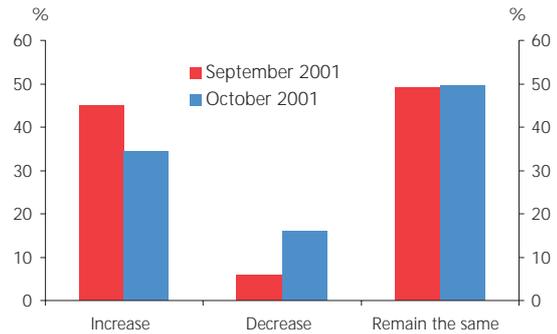
Sources: National Bank of NZ, NZ Institute of Economic Research.

Figure 5
Prices of New Zealand's export commodities
(denominated in US and NZ dollars)



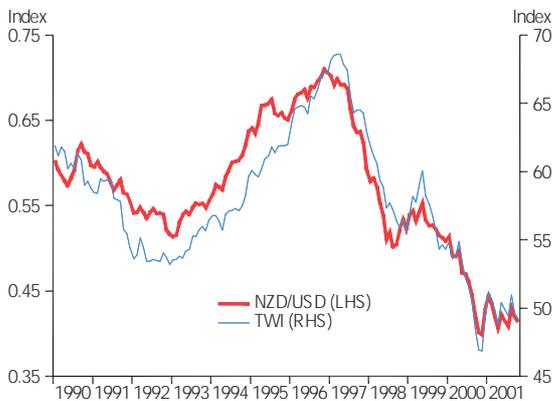
Source: ANZ.

Figure 8
Expected business activity
(September and October 2001 surveys)



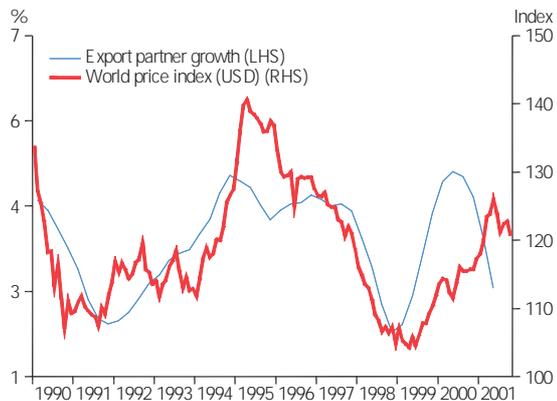
Source: National Bank Business Outlook.

Figure 6
NZD/USD exchange rate and the TWI



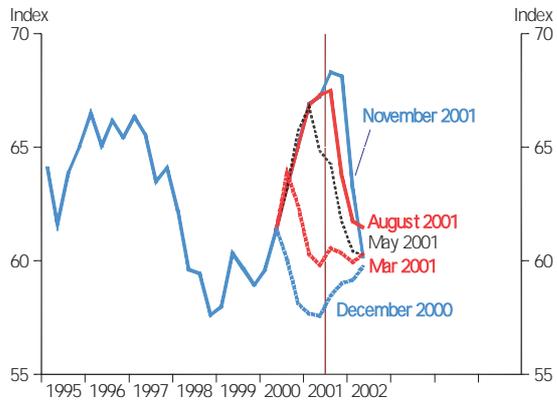
Source: RBNZ.

Figure 9
NZ's export partner growth and world commodity prices



Sources: RBNZ, Consensus, ANZ.

Figure 10
World export price index projections
(previous Monetary Policy Statements)



Source: RBNZ. November 2001 is central projection.

For the record: recent press releases

RBNZ reminder re economic sanctions

25 September 2001

The Reserve Bank has written to banks and financial institutions reminding them of their obligations in regard to United Nations sanctions that apply in New Zealand.

This step has been taken as a consequence of the terror attacks in the United States.

On 16 March 2001 regulations came into force in regard to Afghanistan, terror suspect Osama bin Laden and the organisation known as al Qaeda, which forbid any financial transactions with them.

Thus today's letter is not taking any additional steps but reminds banks and other financial institutions of what is required of them, given New Zealand's international commitments.

United Nations Sanctions Regulations

25 September 2001

1. It is the responsibility of the Reserve Bank of New Zealand to administer the financial aspects of the United Nations Sanctions regulations in New Zealand.
2. As you will be aware, the Government has made regulations that prohibit economic contacts with particular states in order to uphold resolutions of the United Nations Security Council. Attached to this letter is an updated table to inform you of the current status of financial aspects of New Zealand's United Nations sanctions regulations. We remind you of the need for vigilance and caution in relation to any transactions that may potentially be subject to the prohibitions in the regulations.
3. In light of recent world events, I draw your attention to the financial regulations involving Afghanistan, which came into force on 16 March 2001. The effect of these regulations is included in the attached table.
4. Moreover, while we do not expect that there will be any

known assets of terrorists held within New Zealand financial institutions, please ensure you notify the Reserve Bank if your institution becomes aware of any such assets.

5. Further, your vigilance may trigger you to suspect that a transaction is relevant to the investigation or prosecution of any person for money laundering or to the enforcement of the Proceeds of Crime Act 1991. I remind you that, in those circumstances, you must report your suspicion to the Financial Intelligence Unit within the New Zealand Police. In addition, in case you are not already aware, the Financial Action Task Force (FATF) has published a list of jurisdictions whose regulatory frameworks have been assessed as potentially facilitating money laundering. The FATF pronouncements on these "Non-Cooperative Countries and Territories" is available at www.oecd.org/fatf. The FATF recommends that financial institutions give special attention to business relations and transactions with persons from the non-cooperative countries and territories it lists, taking into account the particular weaknesses identified in the relevant FATF report. Giving special attention to transactions to or from such jurisdictions may also help your organisation to minimise any risk of it breaching, inadvertently, the United Nations sanctions regulations.
6. We expect to include the updated table on the Reserve Bank website in the near future. If you have any questions regarding the contents of, or your organisation's obligations under, the regulations, please do not hesitate to contact Susan Ivory, Legal Analyst on (04) 471 3713.

Yours sincerely
Stephen Dawe
Legal Adviser
Reserve Bank of New Zealand

UNITED NATIONS SANCTIONS REGULATIONS

Prohibitions Relating to Money, Securities and Assets¹

The following prohibitions will not apply where the relevant Minister grants consent to any transaction or has granted a general consent to exceptions to the financial prohibitions.

a Prohibits the transfer of money or securities by any person in New Zealand, or a New Zealand citizen to, or for the benefit of:

- i that country's Government; or
- ii any commercial, industrial or public utility undertaking in that country; or
- iii any person in that country, or business carried on in that country.
- iv In the case of Afghanistan, the Taliban or any Taliban entity (including Usama bin Ladin, the Al-Qaida and Ariana Afghan Airlines).

b Prohibits dealing in assets, money, or securities held in New Zealand by:

- i that Government, or by any agencies or bodies controlled by that government; or
- ii that Government, any public authority or undertaking of that country; or
- iii any person in, or resident in, or any entity including any commercial, industrial or public utility undertaking in, those areas of the Republic of Bosnia and Herzegovina that are under the control of the Bosnia Serb forces, or any entity incorporated in or constituted under the law of those areas in the Republic of Bosnia and Herzegovina that are under the control of Bosnian Serb forces.
- iv UNITA (a militarised political grouping in control of large areas of Angola), its senior officials and their adult family members.
- v The Taliban or any Taliban entity (including Usama bin Ladin, the Al-Qaida and Ariana Afghan Airlines).

Bosnia and Herzegovina	Iraq	Libya	Yugoslavia (Serbia and Montenegro)	Afghani	Angola
1994/281	1991/092	1993/377	24/12/1992 ⁴	2001/26	1998/395
09/12/1994 ⁵	07/06/1991	03/12/1993	Comm Date	Date	Comm
				16/03/2001	9/10/1998

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c Prohibits payments of money comprising income from shares, interest bonds, sale of assets. ^{2/5}

d Prohibits involvement in any economic activities in New Zealand. ^{2/5}

¹ In addition, the following regulations do not contain any prohibitions relating to money, securities and assets:

- . Liberia (1992/381, comm date 24/12/1992)
- . Sierra Leone (1997/281, comm date 07/11/1997)
- . Yugoslavia (1991/237, comm date 08/11/1993)
- . Rwanda (1994/114, comm date 08/11/1993)
- . Somalia (1992/042, comm date 20/03/1992)

² These regulations apply to, or are for the benefit of the list in biii.

³ This regulation does not apply to money or securities derived from the sale or supply of petroleum, natural gas products, agricultural products, or commodities exported or originating in Libya after 3 December 1993, provided that the money or securities are paid into a separate bank account, or bank accounts, exclusively for those funds.

⁴ These sanctions have been suspended since December 1995 in cases where it is clear that the assets, money and securities are not subject to any claim or interest on the part of the successor states, of the former socialist Federal Republic of Yugoslavia other than Serbia and Montenegro. Accordingly, the Minister has granted a general consent to exceptions to these financial prohibitions.

⁵ These sanctions have been suspended since March 1996. Accordingly, the Minister has granted a general consent to exceptions to these financial prohibitions.

OCR unchanged at 5.25 per cent

3 October 2001

The Reserve Bank today left the Official Cash Rate (OCR) unchanged at 5.25 per cent.

Reserve Bank Governor Don Brash said "The outlook for the world economy, and the likely impact on New Zealand's economy and inflation, remain highly uncertain. It is clear that the global economic outlook has deteriorated since the awful events of 11 September. We will inevitably feel some backwash from that, although our own economy appears to have been at least as robust before the attacks as we had previously expected.

"Our decision to cut the OCR by 50 basis points two weeks ago was a precautionary move that recognised the inevitable adverse effect and the likely impact on confidence. But how large those effects will be, and how long they will last, remains unclear. At this stage, it appears best to leave the OCR unchanged. We will have an opportunity for a fuller review of the outlook for economic activity and inflation, and the risks around that outlook, in our next *Monetary Policy Statement*, which will be released on 14 November," Dr Brash concluded.

Foreign exchange and derivatives turnover survey

10 October 2001

New Zealand's foreign exchange market handled an average of US\$4.2 billion per day in April 2001 (relative to US\$6.9 billion in 1998), according to a Reserve Bank survey released today.

Commenting on the survey, Michael Reddell, Head of Financial Markets said, "These results are part of a triennial survey of 48 countries co-ordinated by the Bank for International Settlements (BIS), and capture the activity of five major banks participating in the local wholesale financial markets.

"Since 1998 foreign exchange turnover in New Zealand has dropped by 46 per cent. International data show an 18 per cent fall in global foreign exchange turnover. An increasing

share of the foreign exchange business once conducted here is now being done in Australia, and this accounts for much of the difference between the fall in New Zealand's turnover and that seen internationally.

"Of the US\$4.2 billion of foreign exchange turnover in New Zealand each day, two-thirds involves the NZ dollar against the US dollar. Just over a quarter of the turnover did not involve the NZ dollar at all - for example, around US\$500 million of the Australian dollar against the US dollar was traded in New Zealand each day," concluded Mr Reddell.

The survey also covers interest rate derivative products such as forward rate agreements (FRAs) and interest rate swaps. Average daily New Zealand turnover in these products was around NZ\$1 billion - up 22 per cent since 1998.

The BIS preliminary global report can be found at <http://www.bis.org/publ/rpfx01.htm>

NB: This news release is embargoed until 4.00am 10 October 2001 NZT, so as to coincide with similar releases from other central banks at 1500 GMT 9 October 2001.

Official Cash Rate cut to 4.75 per cent

14 November 2001

The Reserve Bank today cut the Official Cash Rate by half a per cent from 5.25 per cent to 4.75 per cent.

Reserve Bank Governor Don Brash commented "A good deal has changed since our last assessment in August. Even before the tragic events of 11 September, the world economy was slowing quite rapidly. The events of 11 September exacerbated that slowdown by dealing a blow to business and consumer confidence around the world, and led us to cut interest rates by half a per cent on 19 September.

"The slowdown in the international economy is already affecting the New Zealand economy and will continue to do so. Export prices are now falling across a wide front, while nervousness about air travel is having an adverse impact on the growth of tourism. Business confidence has declined markedly, and we are expecting investment spending to slow. The economy has already slowed quite sharply and is likely to continue growing rather slowly in the immediate future.

This will exert downwards pressure on inflation.

“ New Zealand enters this period of slow international growth in a relatively strong position with demand pressures on productive resources still evident in some areas. However, the slowdown in growth expected over the coming year should see these pressures abate, with inflation expected to fall back to around the middle of the target band.

“ Monetary policy is now set to accommodate quite a bit of additional weakening in the global environment. That reflects our judgement about the risks that lie ahead. But the uncertainty in the present situation is very considerable, and it is not inconceivable that the current slowdown will prove to be short-lived.

“ We will be monitoring all of the information as it becomes available, and will be constantly vigilant as to the outlook for inflation,” Dr Brash concluded.

The Reserve Bank is next scheduled to review the Official Cash Rate on 23 January 2002.

RBNZ determined to avoid deflation as well as inflation

21 November 2001

Reserve Bank Governor Don Brash says “ The Reserve Bank is just as serious about keeping inflation above zero as it is about keeping it below 3 per cent.”

That’s from a speech to a small-business audience in Whangarei in which Dr Brash reviewed the deterioration in global prospects since the 11 September terror attacks and the Bank’s subsequent decisions to cut interest rates by a full 1 per cent.

Dr Brash said mostly the Reserve Bank’s public statements emphasised keeping inflation down, but in reality the Bank’s task was just as much to keep inflation above zero.

“ The Reserve Bank is as committed to avoiding deflation as to avoiding inflation, and that means that we will always be leaning against the wind to the best of our ability, tending to tighten policy if inflation looks likely to rise in the future,

and tending to ease policy if inflation looks likely to fall below the bottom of our target.

“ Inflation going below zero would be just as much a breach of the Reserve Bank’s inflation target as having it go above 3 per cent. Deflation causes its own set of economic problems and distortions, doing social and economic damage. And our policy deliberations are always, without exception, mindful of both risks. We are always trying to find the policy setting†– the interest rate†– which will deliver an inflation outcome which is neither too hot nor too cold.

“ This means that, once price stability has been achieved, and as a very rough rule of thumb, the Reserve Bank’s monetary policy will be seeking to restrain *inflationary* pressures by *raising* interest rates roughly half the time, and will be seeking to restrain *disinflationary* pressures by *lowering* interest rates roughly half the time†– as we did in the second half of 1998 and as we have been doing through most of this year,” Dr Brash concluded.

Dr Brash’s speech came at the launch of a nation-wide Roadshow that will see Dr Brash talking at 24 meetings of small- and medium-business operators throughout New Zealand.

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