The Reserve Bank of New Zealand

Policy Reforms and Institutional Structure

Tyler Cowen

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The Author

Tyler Cowen is currently associate professor of economics at George Mason University in Fairfax, Virginia, and taught previously at the University of California. He earned his Ph.D in economics from Harvard University in 1987. He is editor of the book *The Theory of Market Failure: A Critical Examination* and has published widely in academic journals, including the *American Economic Review, Journal of Political Economy* and *Journal of Money, Credit, and Banking*. With co-author Randall Kroszner, Cowen is working on a book on monetary theory, *Explorations in the New Monetary Economics*, for Basil Blackwell Press.

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EXECUTIVE SUMMARY

Fighting inflation is and should be a primary goal of the Reserve Bank. Inflation decreases the incentive to save, misallocates resources, interacts with the tax system in pernicious ways, distorts the information conveyed by market prices, increases uncertainty, and redistributes income arbitrarily. Inflation damages both employment and output in the long run.

A purely discretionary monetary policy leads to pressures upon central banks to inflate the money supply. The Reserve Bank Act of 1989 and the accompanying "Policy Targets Agreement" with the Reserve Bank Governor provide useful constraints upon this tendency. In contrast to previous New Zealand history, today's Reserve Bank should do little to disrupt price stability, if it adheres to its legislative mandate.

Policymakers know very little about the true structure of the macroeconomy, including key prices such as interest and exchange rates. Policy should be simple and transparent and provide a rules-based, predictable macroeconomic environment.

Central banks can be constrained by price rules, money supply rules, or both. This study analyses the advantages and disadvantages of each. Given that the current regime has already attached its credibility to the maintenance of a price rule, a price rule should be maintained. The price rule can be strengthened by a supplementary monetary base rule. When the Reserve Bank cannot meet its price target because of external forces (e.g., oil price shocks), the ability of the Reserve Bank to increase the money supply should be constrained.

Movement towards price targets and adherence to monetary constraints should not be overriden by desires to smooth nominal interest rates or intervene in foreign exchange markets. Both of these policies conflict with monetary stability and are counter-productive in the long run. The government should not borrow for the reserves management fund of the Bank.

Monetary reforms could be combined usefully with reforms in the areas of fiscal policy, wage and price flexibility, and tax structures. Credible monetary policy rests ultimately upon a free economy and a responsible fiscal authority.

Current incentive structures in the Reserve Bank are an admirable feature of the current policy environment. A single individual, the Governor, is accountable for the

explicit task of achieving price stability. Furthermore, the Bank's budget is fixed in nominal terms over a five-year cycle; to the extent the Bank behaves as a budget-maximising bureaucracy, the incentive is to minimise inflation. These institutions should be continued and strengthened.

The Bank's role in prudential supervision is a serious weakness of the current regime. The Reserve Bank does not have the resources or ability to detect and preempt banking failures. Furthermore, the supervisory role of the Reserve Bank will ultimately translate into Reserve Bank responsibility for insolvent financial institutions. Current safeguards in this area are not sufficient. The Bank should forsake its lender of last resort function to encourage private sector sources of system stability and to minimise moral hazard problems.

Current supervision policies are based upon the international Basle standards, which are flawed and inappropriate for New Zealand. The Basle standards provide an illusory appearance of safety, direct the allocation of capital, distort bank loan portfolios, and damage the prospects for economic growth. The Reserve Bank should retreat from the arena of prudential supervision and allow a greater role for market incentives.

Gold and commodity standards are not feasible alternatives for a small country such as New Zealand. Financial innovation, however, may move New Zealand further in the direction of deregulated banking and away from government fiat money. A future scenario is considered in which dollars are no longer used for interbank settlement and the Reserve Bank has monetary leverage through currency alone. In preparation for forthcoming policy re-evaluations, policymakers should study the properties of such a world.

I. Introduction

The Labour Government reforms of the mid-1980s transformed the banking and financial climate of New Zealand. Of all the countries in the world, New Zealand experienced perhaps the greatest amount of financial deregulation in the last decade (see section III for details). The 1980s also saw a reassessment of the role of monetary policy in New Zealand. The Reserve Bank of New Zealand has officially announced price stability as its primary goal, following government legislation.

Despite these far-reaching changes, the Reserve Bank and New Zealand monetary and financial policies have encountered little systematic study from outside New Zealand policy and academic circles.

This study focuses upon the current policies and structure of the Reserve Bank. I attempt to present an outsider's view of the developments in New Zealand, how current policies might be made more effective, and where the New Zealand financial system may be headed in the future.

Monetary and financial policy is of critical importance for the New Zealand economy, which stands at an economic turning point. After years of sub-standard growth, New Zealand has seen a wave of deregulation and economic restructuring. Good monetary policy is critical if this restructuring is to succeed. Macroeconomic stability raises investment and growth potential and leads to job creation.

Rather than focusing upon the mechanics of monetary policy, I attempt to view the New Zealand system in light of broader issues. What is the proper role of a central bank in a developed economy? When is price stability an appropriate goal? Which targets and policy instruments should a central bank use? How much discretion should a central bank have? How should a central bank be structured? How should central bank policy differ in small countries? How far should we allow deregulation to go? These are among the questions which motivate my inquiry.

I do not pretend to offer final or definite answers for any one of these questions, much less the entire list. Instead, my focus is upon the questions we should ask when setting policy. I am less intent on offering policy recommendations than presenting a general framework for analysis of the relevant issues. Through this general framework, I hope we can obtain insight for future policy changes.

Overall, there is much in the Reserve Bank's current charter to admire. Achievements in the areas of deregulation and monetary policy have been substantial. In recent times the Reserve Bank has arguably done more to lay the foundations for long-term economic growth in New Zealand than any other central bank has done for its home country. Throughout the study I will not hesitate to offer criticism where appropriate, but my critical remarks should be viewed in light of this broader perspective and evaluation.

The policies of the Reserve Bank are motivated by two primary goals: achieving price stability and allowing the banking system and other financial intermediaries to effectively channel capital from lenders to borrowers and facilitate efficient payments. These two goals are mutually consistent and reinforcing.

I examine the extent to which current policies are structured properly to meet these goals. The earlier sections of this study concentrate upon monetary policy and price stability, whereas sections VII and VIII examine banks as financial intermediaries.

Finally, this study will examine not only short-term policy options, but also where the New Zealand financial system is headed in the years ahead. Policymakers must be concerned both with the available menu of alternatives for the present and with the future. Specifically, I will consider how the menu of policy options will change as financial innovation proceeds. Current techniques of monetary and regulatory control may someday prove ineffective. With this point in mind, I will consider whether New Zealand might wish to move further in the direction of deregulation and how the future structure of banking and monetary policy might look.

II. The Economics of Inflation

1. The costs of inflation

The primary goal of monetary policy is to prevent periods of high and volatile inflation or deflation. Throughout the world and in New Zealand, inflation has been a more persistent problem than deflation. This study focuses upon avoiding a resurgence of the inflationary environment which has plagued New Zealand.

Until the recent reforms, the rate of inflation in New Zealand was significantly higher than in other OECD countries. The average annual rate of price inflation in New Zealand in the five years preceding March 1984 was 13.1 percent, while the annual OECD average over the period ending December 1983 was 9.2 percent. The New Zealand average for this period rises to 15.6 percent if we exclude the period of wage and price controls. Over this same period, the New Zealand GDP growth rate was 1.4 percent, compared to the OECD annual average of 2.1 percent.

The cumulative effect of inflation upon the price level has been significant. Between 1967 and 1984, the price level in New Zealand increased 520 percent.

The New Zealand economy has not always been plagued by serious inflationary problems. In fact, New Zealand experienced mild deflation for many years during its early history. Between 1860 and 1910, prices fell slightly rather than rose in both the United Kingdom and New Zealand. This period exhibited remarkable economic progress for both countries. Even throughout much of the post-war period, New Zealand managed to keep its inflation rate well within single digit range (see Appendices A and B).

Sustained inflation creates serious economic and political problems. The costs of high inflation and the costs of variable inflation are two sides of the same coin. The same discretionary monetary regimes which produce high rates of inflation will also give rise to varying and unpredictable rates of inflation. Central banks which are not vigilant in controlling inflation are also likely to have an unpredictable monetary policy because they do not adhere to a monetary or price anchor. Monetary policy is then the result of political pressures, the whim of central bankers, or simply of mistakes in monetary management. We do not hear, for instance, of discretionary monetary regimes 'targeting' a rate of price inflation at twenty percent. The volatility occasioned by inflation would make such targeting impossible, even if the political will was present.

Inflation decreases the incentive to save and destroys the value of accumulated savings. The taxation of nominal interest payments, rather than the real value of interest, exacerbates this problem. Inflation not only lowers the return on savings, but increases the uncertainty of this return. Even when savers receive a higher nominal interest rate because of inflationary expectations, they cannot be sure that the value of their capital will be maintained intact when inflation is high and variable. Knowing this, persons are encouraged to consume now rather than save for

the future and provide a base for capital formation. Inflation also influences the composition of savings, by encouraging the purchase of assets perceived as inflation hedges, such as housing.

These costs of inflation were especially high in New Zealand, where interest rates were regulated for many years in the midst of an inflationary environment. The inverse relation between inflation rates and real after-tax returns on deposit accounts is portrayed in Appendix B.

In addition to the tax on nominal interest income, inflation interacts with the tax system in other harmful ways. The deductibility of nominal interest payments, rather than real interest payments, encourages borrowing and indebtedness. Higher rates of inflation also make accounting systems less efficient by distorting the real value of measured historical depreciation and measures of changes in the value of inventories held.

Other costs of inflation stem from money's role as a unit of account. Inflation increases the volatility of relative prices and hampers market participants from distinguishing changes in relative prices from changes in absolute prices. If a wage or commodity price goes up, persons may be confused whether this price increase is nominal and due to inflation, or represents a real change in the terms of trade. As inflation becomes high and variable, inferring information from observed price changes increases in difficulty. Since prices are the primary means of conveying information about the value of resources in a market economy, resource allocation is less efficient under an inflationary regime.

Inflation also increases the costs of long-term contracts and makes business and investment planning more difficult. Entrepreneurs can no longer rely upon the information contained in nominal prices when making plans. Instead, entrepreneurs must try to estimate how much future dollars will be worth each year in real terms.

Arbitrary and capricious redistributions of income are another consequence of inflation. Inflation redistributes wealth from creditors to debtors, and more generally, redistributes wealth to those who are adept at forecasting the nature and extent of future inflation. Successful market economies require a link between productivity and reward and inflation weakens this link.

Wealth transfers occasioned by inflation are not only unjust but also prove socially divisive. The New Zealand inflationary experience gave rise to a costly annual "wage round" in which workers expected to receive substantial increases in wages regardless of productivity growth. Wage policy became tied to the game of macroeconomic policy making and removed from merit and productivity considerations.

Inflation does not increase economic output or employment in the long run. Surprise bursts of inflation may provide temporary economic stimulus, but increasing the rate of growth of the money supply does not increase economic growth

permanently. Creation of a long-term inflationary environment damages international competitiveness and the prospects for future economic growth.

In testimony before the U.S. Congress on February 6, 1990, E. Gerald Corrigan, President of the Federal Reserve Bank of New York, summarised the data succinctly:

"Virtually every observable facet of economic history - here in the United States and around the world - tells us that high and/or rising rates of inflation are simply incompatible with sustained economic prosperity."

Critics of monetary stability have charged that fighting inflation leads to a considerable loss of output and employment and exacerbates financial market volatility. Moving from an inflationary regime to a policy of monetary stability does involve significant short-term costs. The economy is hooked into the inflationary stimulus and removing the inflation results in liquidity crises, misallocated resources, prices and wages out of line, and other economic problems. These problems have been illustrated to varying degrees by experience from the United Kingdom, the United States, and New Zealand.

Fortunately, New Zealand has already decided to move to a stable monetary environment and incur these transition costs. Before the monetary and financial market reforms of the mid-1980s, New Zealand was teetering on the brink of economic disaster. Now that New Zealand has swallowed the bitter anti-inflationary pill, the question is which set of monetary institutions will provide the best prospects for long-term economic growth.

2. Inflation from the money side and from the goods side

Analyses of inflation require the important distinction between price pressures from the goods side and price pressures from the money side. Upward pressure on prices can come from increases in money supply, decreases in money demand (these influences are called the "money side"), or from decreases in productivity in the real sector of the economy (the goods side).

Inflation from either the money or the goods side imposes costs upon the economy, but the central bank should not attempt to neutralise upward pressures on prices from the goods side. Instead, the central bank should be concerned primarily with eliminating sources of inflation from the money side.

Economic adjustment requires that inflationary pressures from the goods side be allowed to translate into a higher level of prices; these price pressures can prove economically harmful but should not be offset by the central bank. Stabilising prices in this context would increase resource misallocations.

The undesirability of stabilising the price level in response to real shocks can be illustrated by example. Assume, for instance, that an oil price shock were to hit the world economy. A higher price of oil would decrease the quantity of oil purchased, which would in turn decrease the output of many goods and services. Upward pressures on the price level would result, as goods which are produced with oil would rise in price.

Maintaining a stable price level would require the Reserve Bank to place compensating downward pressure on prices by deflating. The New Zealand economy would then be hit with two contractionary shocks at once - the oil price shock and the deflation. The likely outcome would be a contraction of output and employment.

We should distinguish carefully between two different concepts: price level stability as a symptom of a healthy economy, and the stabilisation of prices in response to negative real economic shocks. Stable prices are a desirable sign that the economy is not experiencing significant destabilising shocks. But if destabilising real shocks do occur, it is better to allow prices to adjust than to attempt to stifle the results of the shocks.

Consider an analogy to the temperature of the human body. A temperature of 37 degrees Celsius (or 98.6 degrees Fahrenheit) is a symptom that a person is healthy; we consider this temperature desirable. When a patient runs a fever, however, the doctor should not attempt a cure by placing the patient in ice water and lowering his or her temperature. At most, the doctor should try to prevent those circumstances which created the fever. Like the doctor, a central bank should try to remove only the initial conditions which give rise to higher prices ("fevers"), and not try to stifle higher prices once upward pressures on prices are present.

The New Zealand economy will be vulnerable to negative destabilising shocks throughout the foreseeable future. These potential shocks include oil price shocks, terms of trade shocks, changes in taxes on goods and services, and earthquakes and other natural disasters. In many of these instances, even the wisest policymaker or best economic system cannot avoid the possibility of a shock. If these shocks do arrive, stabilisation of the price level is not the appropriate response.

Allowing the price level to adjust upward in response to real shocks does not create the danger of runaway inflationary pressures. Inflationary pressures from the goods side cannot produce sustained inflation. Once the economy absorbs the negative real shock the new price level represents an equilibrium; no further or ongoing increases in prices are required. Since real shocks produce only one-time changes in the price level, the potential inflationary damage from real shocks is limited.

For these reasons, a monetary regime should attempt to prevent shocks to prices from the money side while allowing prices to adjust from shocks from the goods side. Subsequent policy options will be judged according to this standard.

3. The dangers of pure discretion

We are unlikely to achieve desirable results from a regime of pure monetary discretion for several reasons. First, monetary authorities are subject to political pressures which interfere with their mandate to encourage long-run economic health and growth. Even a central bank with nominal independence under the law is subject to these forces. A central bank which completely disregarded the wishes of the legislative chamber, for instance, would find its independence under scrutiny.

Economists have studied in detail what is called the "political business cycle" model. Both theory and evidence suggest that central banks with discretionary power will apply expansionary pressure and attempt to stimulate the economy before elections. This inflation may create a temporary election year boom, but will eventually result in a greater bust and damage long-term economic prospects and growth. In the United States, for instance, the money supply tends to increase at disproportionate rates before presidential elections. An earlier study of political business cycles found comparable results for New Zealand.

Central banks are subject to other political pressures which do not centre around elections. The central bank, for instance, may come under pressure to monetise all or part of the national debt. If the government's fiscal authority "moves first" and spends at deficit levels, the options of the central bank are limited. Refusal to accede to debt monetisation may not only threaten the bank's independence, but monetisation may actually be the preferred outcome once the debts have been incurred.

Furthermore, if some of the government bond holders are foreign investors, the temptation to inflate away the value of the debt will be strong. Central banks with strong discretionary powers cannot be relied upon to keep an implicit contract with government creditors. Knowing this in advance, government creditors will demand higher rates of interest; as higher rates of interest are paid on the debt, the temptation to inflate will increase. The central bank may even feel obliged to produce its "fair share" of inflation for the given rate of interest paid on debt issues.

Other political pressures may be placed on the lender of last resort function of central banks. Central banks may feel obliged to bail out unwisely managed institutions in order not to alienate creditors and depositholders of that institution. These pressures exist even when failure of a single institution would not create a contagion effect or threaten the stability of the financial system.

Political pressures and incentives are not the only reason for not vesting too much discretionary power in a central bank. Central banks also have very limited information about the true structure of the economy they are trying to regulate. No economist or policymaker has succeeded in producing a detailed and accurate model of how macroeconomic variables interact. In line with this limited knowledge, macroeconomic forecasts are notorious for their inaccuracy. In most cases, simple extrapolation outperforms even the most sophisticated macroeconomic models for

predictive accuracy. Despite the use of sophisticated computers and mathematics, we are still unable to predict the turning points in business cycles, for instance. These problems are compounded by the relative paucity of reliable information available to the Reserve Bank.

Given our state of ignorance about the detailed workings of the economy, we should base macroeconomic policy upon widely understood general truths. Although we cannot accurately forecast particular macroeconomic variables, we do know that high and variable inflation, sustained deficit spending, and political uncertainty are bad for economic growth and international competitiveness.

The method of this study attempts to use this general information to analyse different institutional structures. The logic behind this method rejects the premise that ongoing monetary fine-tuning is desirable. Instead, the government should attempt to provide a stable monetary environment in which economic growth can proceed with minimum hindrance.

Clearly, if the monetary authority were omniscient and immune from political pressure, discretionary policy would be the best possible policy regime. For this reason, policy discretion sounds desirable. But in practice discretionary monetary policy rarely lives up to the ideal.

III. Recent Monetary Policy and Institutions

Current monetary policy in New Zealand is based upon a "checklist" approach. The monetary authorities monitor several variables, including price indices, exchange rates, the level and term structure of interest rates, and monetary and credit aggregates. The Reserve Bank also considers inflation expectations, wage agreements, and real economic activity. Based upon this information, the Reserve Bank sets policy to achieve its macroeconomic goals. In a variety of forms, the checklist approach is used in most OECD countries.

Unlike in other countries, however, price stability is designated explicitly as the primary goal of monetary policy. Section eight of the Reserve Bank Act of 1989 reads as follows:

"8. Primary function of bank - The primary function of the Bank is to formulate and implement monetary policy directed to the economic objective of achieving and maintaining stability in the general level of prices."

More specifically, the Reserve Bank has been given an explicit mandate to achieve a prespecified rate of inflation. The government, through the Minister of Finance, has negotiated an agreement with the Reserve Bank Governor which calls for a 0-2 percent rate of price inflation by December 1993. With the underlying rate of inflation currently around 2.5 percent and inflationary expectations at 4.1 percent,

achievement of these targets appears increasingly likely. Interest rates have returned to single-digit levels for the first time since the mid-to-late seventies.

While the disinflation process has been sometimes slow and erratic, the New Zealand experience does not compare unfavourably with other countries. The move towards zero inflation has been especially hard because of accompanying significant real shocks, including the wage round of 18 percent in 1985/86, the introduction of a 10 percent GST in October 1986, and an increase in the GST to 12.5 percent in 1989.

The effectiveness of disinflation has been due partly to the incentives built into the New Zealand system. There is a strong presumption that the Reserve Bank Governor, currently Donald T. Brash, will lose his or her job if he or she is not convincingly pursuing the inflation targets. The government can choose not to reappoint Reserve Bank governors or can relieve them of their duties in the middle of their term for not meeting the targets. Although the Policy Targets Agreement has been in place only since the first quarter of 1990, this agreement, and its prior anticipation, has been important in demonstrating the government's commitment to renouncing inflation as a policy instrument.

Under the Reserve Bank Act, the Bank is required every six months to issue a policy statement explaining how monetary policy will be implemented in the future and accounting for the Bank's performance over the last six months. The Bank has been given an additional degree of political independence, but is also held accountable for its actions. This combination of independence and accountability is designed to create Reserve Bank incentives to hold a strong line against inflation.

The changes in New Zealand financial policy in the 1980s are a success story as well. Before comprehensive financial deregulation which began in 1984, New Zealand had an inefficient system of financial regulation. Only four trading banks were allowed to operate, and one of these, the Bank of New Zealand, was owned by the government. The state also owned the Development Finance Corporation, the Housing Corporation, the Rural Bank, and the Post Office Savings Bank, which once held eighty percent of the savings market.

The legal and regulatory framework also created a variety of arbitrary distinctions among different institutions which served banking-related functions. Trading banks, savings banks, private savings banks, trustee banks, finance companies, super and life funds, and building societies were among the financial intermediaries subject to different kinds of controls.

There were also periods when the government attempted to control monetary aggregates directly by telling banks how much credit creation they should engage in. Before 1984, monetary policy was conducted through reserve asset ratio policy - where reserves comprised low-yielding government paper. Government securities were available on demand at predetermined interest rates. Issues of index-linked bonds on the retail markets proved popular in the late 70s and early 80s, and were used to mop-up large quantities of excess liquidity from the financial system.

Foreign transactions were also subject to regulatory controls. Capital controls on both inward and outward flows were in place and various schemes of exchange rate intervention had been attempted until the exchange rate was allowed to float freely in March 1985. Regulations extended to the deposit side of banking as well. The rate of interest which banks could pay on various kinds of deposits was periodically capped at below-market levels in an inflationary environment.

Today, New Zealand financial institutions are among the freest in the world. Interest rates and exchange rates have been deregulated, entry into banking is conditional upon reputational and capital requirements only, banks can engage in commercial and financial activities (there is no Glass-Steagall act or its equivalent), no reserve requirements or compulsory asset ratios are present, and there is no deposit insurance.

The government decided also that state ownership of banks was an unwise idea. The Post Office Savings Bank and the Rural Bank were privatised by 1989, and the Bank of New Zealand has been privatised partially (further privatisation may eventually follow). The government-owned corporate and investment institution DFC was sold in 1988, although it ended up in statutory management the next year. There are now no restrictions upon whether new banks should be domestic or foreign owned, or even whether they are locally incorporated or not; there are now 22 registered banks, rather than four. The possibility of further improvement remains, but the direction of change since the mid-eighties has been far-reaching and based upon sound economic principles.

Despite the degree of deregulation which has taken place, governmental control still shapes the money and banking environment in New Zealand considerably. The Reserve Bank, for instance, engages in several distinct functions, as specified in the Reserve Bank Act of 1989.

Most importantly, the Bank is responsible for the conduct of monetary policy, directed towards the goal of price stability. The Act also specifies the following functions for the Bank:

- registering and undertaking prudential supervision of banks (Part V);

- implementing government exchange rate policy (sections 17 through 22);

- providing exchange rate policy advice (section 23);

- managing New Zealand's foreign reserves (section 24);

- issuing currency (sections 25-30);

- acting as lender of last resort for the financial system (section 31);

- operating as settlement bank for the financial system (section 32);

- providing financial sector policy advice (section 33);

- providing government banking services (section 34); and

- operating a commercial registry (section 35).

Although recent New Zealand governments have had a strong record with respect to monetary and financial policy, complacency would be both unjustified and dangerous. First, the recent policy improvements stand continually in danger of being reversed. Both the resumption of sustained inflation and the reregulation of financial institutions will remain distinct possibilities for the foreseeable future. Under a government less sympathetic to price stability and deregulation than the present one, for instance, current policies could be altered significantly in a short period of time.

Inflation is always tempting for a government because of the seigniorage which is reaped. The monetary authority can create new money at negligible marginal cost and use these funds to command real goods and services. Furthermore, the government may choose to inflate away the real value of its debt.

A consistent anti-inflationary policy is difficult to maintain for other reasons as well. The benefits of surprise inflation become greater the longer an anti-inflationary regime is in place. If market participants expect zero or low inflation, a burst of surprise inflation will temporarily stimulate the economy. As a central bank's anti-inflation credibility grows stronger, so does the temptation to cash in on some of the built up capital. For this reason, the soundness and robustness of safeguards against inflation remain valuable over time; the Policy Targets Agreement is important for precisely this reason. As recent experience in the United Kingdom illustrates, many countries have achieved control over inflation temporarily, only to slip back to monetary instability.

Monetary and financial reform is of import also because further improvements upon the status quo may be possible. Further institutional reforms, for instance, may strengthen the independence and accountability of the Reserve Bank. Similarly, we may wish to increase the strength and robustness of the current agreement with the Reserve Bank. In the areas of prudential supervision and incidental functions of the Reserve Bank the possibility for further improvements may be considerable. But first I will consider the current options for monetary policy.

IV. Monetary Policy Options: Price Rules and Money Rules

1. Introduction

Price rules and monetary growth rules are two obvious candidates for a long-term, anti-inflationary policy. Price and money rules differ in their emphasis and offer

different instructions to the Reserve Bank. Nonetheless, price rules and money rules are not mutually exclusive alternatives; the Reserve Bank may attempt to meet a price rule by targeting the monetary base, for instance.

1.0 Price rules

In its simplest form, a price rule mandates that the Reserve Bank must meet a well-defined price target within a prespecified period of time. The time period and price index for targeting should be defined clearly and publicly in the interests of credibility.

Price rules may target either a particular level for prices, a growth rate for prices (which may be zero), or both a level and a growth rate. The current regime specifies that the Reserve Bank must achieve a 0-2 percent rate of inflation by December of 1993. Because the Reserve Bank must satisfy the target in the near future, it makes little difference whether an absolute level or rate of change for prices, or both, is specified.

Current policy discussion in New Zealand focuses upon a 0-2 percent rate of price inflation as the appropriate price goal. This goal is not set at zero strictly because price indices measure inflation imperfectly. When prices are changing, for instance, persons can save money by purchasing fewer of the more expensive goods and more of the cheaper goods. Inflation is less burdensome than statistical measures would indicate. In addition, sampling methods for the CPI use a fixed sample of stores and do not capture the growth of discount houses and lower price stores. Finally, price indices such as the CPI do not measure adequately changes in the quality of goods. For these reasons, price targets should specify a range rather than an exact outcome or target.

In principle, we may wish to use more than one price index because not all price indices move together. But in practice, allowing for a multiplicity of price targets would decrease transparency and accountability. The Bank is well-advised to define its targets as sharply and clearly as possible.

1.1 Money supply rules

Monetary rules must specify both a monetary aggregate and an appropriate rate of growth for this aggregate. For New Zealand the available monetary aggregates include the monetary base, M1, M3, and combined measures of money and credit. I will focus upon rules which target the monetary base, which consists of currency plus government monetary liabilities held at the Reserve Bank.

The base is the only monetary aggregate which the Reserve Bank can be assured of controlling accurately. The broader monetary aggregates all contain magnitudes which are determined by private sector credit or deposit creation. M1, for instance, contains checkable and sweep accounts deposits, while M3 adds savings and term deposits (less inter-institutional deposits). While the Reserve Bank can influence

these broader aggregates, exact control is not possible without systematic controls on banking and private financial intermediation, an infeasible option.

Countries which adopt controls on credit pay a high price in terms of efficiency. As a decision-maker for the allocation of capital, the government is a very poor substitute for market mechanisms. The government does not have the information to properly control the supply of capital, and the politicisation of capital allocation decisions results in bad investment policy. In the long run, credit controls may not even be practicable, as intermediation shifts into less regulated parts of the financial sector.

In contrast, controlling the monetary base does not require significant government intervention into the private economy. The Reserve Bank need only set a single target and can leave the private sector free to allocate capital and credit. The sum of currency and reserves is under direct Reserve Bank control and does not require a large regulatory apparatus. Nor must the Reserve Bank make daily decisions about how much to influence market prices.

Other considerations also suggest the use of the monetary base as the fundamental monetary policy instrument. First, the monetary base can be defined without ambiguity. Unlike with the broader monetary aggregates, there is no controversy as to which magnitudes should enter the monetary base - currency and deposit liabilities of the Reserve Bank. Second, the monetary base is supported by legal tender laws and forms the fundamental underpinning of the other monetary aggregates.

I examine two possible growth rates for the monetary base which the Reserve Bank may choose: a fixed three percent per annum rate of growth and a zero rate of growth which freezes the monetary base (the latter is considered in section VIII). Chosen rates of growth can be defined over time periods of different length; I assume that these growth rates are defined over some time period ranging between one quarter and one year.

2. Comparison of price and money rules

Overall, I shall offer a mixed verdict on money rules versus price rules (a summary of the basic results is offered in an outline on the next page). Current policy in New Zealand should consider how the current price rule might be strengthened by additional attention to monetary aggregates.

Before proceeding with an analysis of money and price rules, a summary of their relative costs and benefits is presented below in table form:

MONEY RULES

Advantages

a. provide superior response to real shocks

b. do not require renegotiation when real shocks occur

c. avoid problems of price indices and measuring inflation

d. limit the number of policy instruments available to the Reserve Bank

Disadvantages

a. demand for monetary aggregates is frequently unstable

b. broader monetary and credit aggregates cannot be controlled

c. monetary targets can be rendered obsolete by financial innovation

d. limit the number of policy instruments available to the Reserve Bank

PRICE RULES

Advantages

a. promise greater price stability

b. allow Reserve Bank discretion in how to achieve price target

c. can insulate the price level from changes in money demand

Disadvantages

a. offer inferior performance or require renegotiation in light of negative

real shocks

b. require effective Reserve Bank reaction to changes in money demand

c. allow discretionary use of many different policy instruments

d. involve the Reserve Bank in political decisions involving prices and taxes

2.0 Real shocks

The most serious disadvantage of targeting prices rigidly arises when the economy is subject to a negative real shock, such as an oil price shock or a sharp terms of trade shock. Upward pressures upon prices result from the real side and a very rigid price rule would require a deflationary contraction. Section II discussed the potential costs of such a contraction.

Monetary rules do not have this same problem with negative real shocks. A central bank which targets the monetary base, for instance, need not (and should not)

contract the money supply in response to a negative real shock. The bank continues to meet its monetary target and does not attempt to stifle the effect of the real shock on prices. Although price inflation results, this outcome is superior to the forced deflationary contraction required by price rules.

Price rules may attempt to deal with the problem of real shocks in several ways, none of which are completely satisfactory. First, the price rule may be defined firmly and require the Reserve Bank to contract in response to real shocks. The benefits of a credible anti-inflation policy may still offset the resource misallocations which result from real shocks. While such a price rule may be preferable to no anti-inflation policy at all, this is surely not the best of all possible worlds. Even in a relatively unregulated economy, forced disinflation involves economic costs.

Secondly, we can suspend the price rule when real shocks hit the economy. Either the targeted inflation rate, the targeted price level, or the time period for meeting the targets can be redefined through consultation between the Reserve Bank and the government. The current regime allows for such suspensions when approved by the government and the Reserve Bank.

While making exceptions for contingencies offers certain advantages, allowing discretionary redefinition of price targets without additional constraints is also not the best of all possible worlds. The desirability of renegotiation in the face of real shocks shows that the current agreement with the Reserve Bank is not sufficiently robust. Frequent renegotiation is not only costly and time-consuming, but also damages the credibility of the basic agreement and increases marketplace uncertainty. Instead, we should prefer an agreement that specifies the price target in such a way as to avoid the necessity of discretionary renegotiation. Further below, I examine how such an agreement might be structured.

The difficulty of responding to real shocks under a price rule may also create pressures for the Reserve Bank to limit some kinds of real shocks by political involvement. During the recent controversy over the proposed Electricorp price increases, for instance, it has been suggested that the Reserve Bank sought to embarrass Electricorp by leaking confidential correspondence concerning desired rates of return. Presumably, the hope was that this embarrassment would cause Electricorp to withdraw its plans for a price increase and help the Reserve Bank meet its targets. Increasing the politicisation of price-setting in this fashion is a very dangerous precedent for a central bank. When the Bank is judged by a money rule, rather than a price rule, this incentive does not arise.

2.1. **Policy instruments**

Unlike monetary rules, price rules do not restrict the central bank to a single instrument for fighting inflation. Under a price rule, the central bank manipulates interest rate policy, exchange rate policy, and different monetary aggregates to achieve the price target. Monetary rules place a much tighter straitjacket upon central bank operations.

This point indicates both a potential advantage and disadvantage of price rules. If we believe that the monetary authorities are not competent at managing different policy instruments, we may wish to tie their hands and restrict anti-inflation policy to a single tool, monetary aggregates. Conversely, we might believe that the management of different policy instruments is necessary to achieve a low rate of price inflation. In this case a price rule will prove superior to a monetary rule.

Achievement of price stability may not be reducible to a simple formula based upon the manipulation of a single policy instrument or a small number of policy instruments. Control of the monetary base alone, for instance, may not suffice to reduce inflation if other monetary and credit aggregates are growing. Although the monetary base may remain fixed or controlled, broader components of the money supply also influence prices and more generally serve as substitutes for the monetary base.

The comparison between price and money rules can be portrayed in terms of differing views on the skills and capabilities of the Reserve Bank. Price rules assume that once the goal of the Reserve Bank is specified (price stability), the Reserve Bank itself is most capable of discovering how to achieve that goal. Monetary targets, in contrast, take a more paternalistic approach to the Reserve Bank. The case for money rules assumes that the Reserve Bank cannot be relied upon to use its discretionary power to fight price inflation effectively. For this reason, the monetary rule attempts to give the Reserve Bank explicit instructions about how to achieve price stability.

The choice between price targets and monetary targets depends upon why we believe that central banks sometimes fail in fighting inflation. One school of thought on this matter suggests that central banks are capable of controlling inflation but do not possess the necessary institutional will to do so. To the extent this view is correct, we might be inclined to favour a price rule. The business of exactly how to control price inflation can be left to the central bank; the monetary regime needs only to give the central bank the proper incentives and general instructions.

A second school of thought argues that central bank failures to control inflation are due to the inability of central banks to achieve targets. This inability may result from lack of competence, the limited range of policy instruments available to central banks, or simply the very difficult nature of the problem at hand. Under this hypothesis, price rules are unlikely to be effective simply because the central bank is unable to achieve the specified target with sufficient accuracy.

Monetary rules would be preferable to price targets under these circumstances. Although the monetary rule would not ensure the elimination of price inflation, the rule would at least constrain the central bank from being an independent source of inflation through expansion of the monetary base. If the central bank is in any case unable to perform accurately, we should tie its hands to prevent too many mistakes rather than instructing it to achieve a particular end.

2.2 Money demand

The choice between money and price targets depends also upon our views concerning the stability of money demand. An unstable demand for money, however, does not create a clear presumption in favour of either a money or price rule.

Money demand refers to the number of times that a given quantity of funds is spent or "turned over" each year. An unstable demand for money implies that control of the monetary base (or any monetary aggregates) does not produce a predictable or stable rate of price inflation. The rate at which a given money supply is turned over (velocity) will change through time and create variable pressures on prices. Even with a fixed monetary base, increases in velocity may create upward pressures on prices. For this reason, an unstable demand for money will limit the effectiveness of monetary rules.

Price rules do possess some advantages in the presence of an unstable money demand. Price rules, but not money rules, give the central bank discretion to offset changes in money demand with changes in money supply. Financial innovations which increase monetary velocity, for instance, can be met with a money supply contraction under a price rule.

An unstable demand for money function, however, does not necessarily favour a price rule; price rules also have serious problems in light of money demand instability. If money demand is unstable, it is unlikely that the Reserve Bank will be able to predict or forecast this instability. Achieving price level targets will become more difficult, as the Reserve Bank will not know how a given increase in the monetary aggregates will act upon prices. The Reserve Bank may contract when it should be expanding, and vice versa.

Discretionary attempts to offset the instability of money demand are likely to fail and exacerbate the problems of monetary control. Current statistical analysis, for instance, is unable to determine when shifts in money demand are permanent or when they are transitory and likely to be reversed. Even if the Reserve Bank can observe a shift in money demand immediately and unambiguously, there is no guide on how to react appropriately. Should the shift in money demand be accommodated or ignored and allowed to reverse itself? An examination of the relevant academic literature shows that we do not have the answers to these questions.

The available evidence is insufficient to indicate whether the demand for money function is stable in New Zealand. Experience with the new policy regime has lasted only several years and even during this time dramatic economic changes have continued to occur in both the real and financial sectors of the economy.

In other countries and in other time periods, however, the search for a stable money demand function has resembled the search for the Holy Grail. In various countries and time periods, money demand functions have been found which possessed apparent stability. Over time, however, these functions later turned out to be

unstable. Economic science has proved of little use in predicting when such stable functions turn unstable. A close look at the literature reveals puzzling and contradictory results for studies of money demand.

Also relevant here is Goodhart's Law, which notes that attempts to base policy upon an observed stable relationship will itself make that relationship unstable. We may find in the data, for instance, that some monetary aggregate exhibits a stable relationship with national income. This data is drawn from a particular policy regime, say the checklist approach. Moving to another policy regime, such as monetary targeting, will itself change the structure of the underlying statistical relationships and alter the previously measured findings.

Because we understand so little about money demand, we should not base policy upon any particular assumptions about the relationship between national income and various monetary aggregates. Any particular assumptions or quantitative estimates we adopt are likely to prove wrong in the long run. The best we can hope to do is prevent sustained government inflation as a source of systematic upward pressure on prices. Both monetary and prices rules should be evaluated with this point in mind.

A recognition of the potential instability of money demand also distinguishes the analysis of this study from the doctrine frequently labeled "monetarism." Monetarism suggests that the demand for money is fundamentally stable. With stable money demand, increasing the money supply at a rate equivalent to the growth of goods and services in the economy will produce price stability. The money supply is defined as the monetary aggregate which moves most closely with national income.

My perspective departs from traditional monetarism in several respects. The stability of money demand is not stressed heavily, the focus is on the monetary base rather than a broader and supposedly more stable aggregate, and legislation of a money growth rule is not seen as the key to monetary policy. One need not be a monetarist, however, to believe that central banks should be constrained in their ability to increase the monetary base.

2.2.0 The Swiss experience with monetary targeting

The Swiss experience illustrates both some pros and cons of targeting the monetary base. Switzerland is the country which has pursued monetary targets most consistently. From 1975 to 1978 the Swiss central bank targeted M1 and since 1980 the target has been set in terms of the monetary base. Since the advent of monetary targeting in 1974, price inflation in Switzerland has been on a downward trend and is well below the average for OECD countries. During this same time, Switzerland has retained its place as one of the wealthiest and most stable economies in the world. Nonetheless, the Swiss central bank has moved away from monetary base targeting in recent times because there is no longer a stable relationship between the base and the rate of price inflation.

In the early nineteen seventies, inflation in Switzerland approached a level of fourteen percent. Following the advent of monetary targeting (combined with a float of the exchange rate), inflation in Switzerland fell rapidly to less than one percent, has not exceeded seven percent, and has been running at an average of three percent until recently. These inflation rates must also be placed in the context of the monetary targets chosen. The Swiss targets have ranged from six to three percent; a lower rate of growth for the monetary base would have decreased inflationary pressures even further.

Throughout this period Switzerland has experienced considerable financial innovation and has seen increasing globalisation of its economy and financial sector; these factors did not prevent monetary base targeting from achieving considerable price stability.

In recent times, however, the Swiss have modified their stance on monetary base targeting. The Swiss National Bank decided against fixing an annual growth rate for the monetary base in 1991 because of volatile conditions in foreign exchange markets, oil markets, and interest rates. Adherence to a two percent rate of growth for the monetary base is no longer seen as sufficient to prevent price inflation. For 1991, the Swiss National Bank will continue to use the monetary base as its primary target but will not fix an annual growth rate. Instead, the Bank is likely to aim (more loosely) at a one percent rate of growth for the monetary base.

Swiss experience indicates that monetary targeting may not suffice to control inflation, but that monetary targeting is still a desirable constraint. Although the Swiss have moved away from rigid targeting, they are still keeping a very tight rein on the monetary base.

3. Concluding remarks on money and price targets

Neither economic theory nor empirical evidence decisively settles the question of whether money or price rules are superior. There is likely no single best rule for preventing inflation. Without considering the current institutional situation in New Zealand we would be at an impasse.

The recent history of New Zealand and the necessity of producing credibility are critical for arriving at a short-term policy recommendation. The current monetary regime is built upon a price rule which the Reserve Bank is instructed to follow. Given that a price rule is already in place, the costs of switching to a monetary rule would be high.

Replacing the price rule with a money rule would confuse market participants, create uncertainty about the intentions of the Reserve Bank, and introduce unnecessary volatility into macroeconomic policymaking. Once the price rule has been put into place, maintenance and enforcement of the rule is the preferred policy. Were we starting from scratch with a clean slate in a low-inflation environment, the

case for a price rule would be less clear cut. Under current conditions, however, the existing price rule should be maintained.

3.0 Combining price and money rules

Given that Reserve Bank adherence to price rules is likely the best short-term policy, the question arises whether the current price rule can be made more effective. We should consider supplementing the existing price rule with a monetary base rule. In addition to being held responsible for achieving a price target, the Bank can also be restrained from increasing the monetary base beyond a prespecified range, say three percent a year.

Having two rules rather than one would not decrease accountability or transparency. Adding a monetary base rule simply limits the operating instruments which the Bank can use in the context of the Policy Targets Agreement. Increases of the monetary base above a predetermined percentage are the outcomes which are limited.

Combining the price rule with a monetary base rule provides additional checks upon the danger of inflation and irresponsible monetary policy. A central bank which decided to inflate would then be violating two different mandates rather than one. Furthermore, combining a monetary base rule with the current price rule would increase Reserve Bank credibility and lower expectations of inflation. Nor are the powers of the Reserve Bank restricted in any disadvantageous fashion. A Reserve Bank serious about fighting inflation should not be interested in increasing the monetary base more than three percent a year.

Combining a price rule with a money rule would prove particularly useful when negative real shocks occur. If an oil price shock hits the economy, for instance, it is desirable (and probably inevitable) that the price rule will be relaxed to some degree. When a money rule is present, the price rule can be relaxed without removing all constraints upon the behaviour of the Reserve Bank.

Relaxation of the price rule would imply that the Reserve Bank should not tighten to prevent the oil price shock from translating into a higher price level. At the same time, continued maintenance of the monetary rule would imply that the Bank's discretionary latitude could not be used as a pretence or excuse for increasing the money supply. If the negative real shock does occur, the Bank might be subject to governmental pressures to inflate and stimulate the economy. An institutionalised monetary base rule would increase the Bank's ability to resist such pressures.

The latter constraint is particularly important because the Policy Targets Agreements mechanism has not yet been seriously tested. Price movements have followed a downward trend since the Reserve Bank Act was passed, and the oil price shock from the Gulf crisis was short-lived. If pressures to stimulate the economy were to increase, the additional constraint of a monetary base rule would contribute to macroeconomic stability.

Supplementing the price rule with a money rule would also prove useful because the size and scope of real shocks cannot always be identified clearly. A money rule would prevent the Bank from inflating and claiming that real shocks were responsible for the resulting increase in prices.

The presence of a price rule with a money rule avoids some of the weaknesses of monetary growth rules, taken alone. The instability of money demand and the broader monetary aggregates implies that a money growth rule alone is not always sufficient to control price inflation. The presence and priority of the price rule implies that the Bank can increase the monetary base at rates of growth below the specified maximum, if necessary to prevent inflation. At the same time, monetary policy does not lose its transparency or simplicity. The maximum specified rate of monetary growth retains its bite even if it does not always serve as a binding constraint.

Properly specified price rules and money rules run the danger of conflicting only when the economy is so productive as to produce deflationary pressures. Assume, for instance, that the outpouring of additional goods and services was so great in New Zealand that prices threatened to fall below the specified 0-2 rate of inflation. The avoidance of deflation and achievement of the price target might require increasing the monetary base by more than the money growth rule would allow.

While this situation of increasing productivity is enviable, the Reserve Bank would nonetheless face a tough choice of whether to give priority to the money rule or the price rule. Resolution of this question awaits further study, but I am inclined to recommend priority for the money rule. Deflations which result from increasing productivity are unlikely to produce permanent or large-scale unemployment. The decline in prices resulting from increasing productivity does not create the same kind or degree of instabilities as a shock deflation brought about by a monetary contraction.

In contrast, increasing the rate of monetary growth to prevent deflation may have negative consequences in this context. Monetary policy operates with long and variable lags. Attempting to quell a deflation in one period may give rise to an undesirable inflation in a later period. Furthermore, an increase in the money supply now must be offset eventually with monetary tightening. The tightening which follows later may involve a deflationary shock, decrease financial market liquidity and create unnecessary policy-induced volatility.

Combining money and price targets does not ensure that the danger of inflation disappears. If the Reserve Bank refuses or fails to meet its price target, the existence of an additional monetary target may also prove ineffective in fighting inflation. Laws and regulations are only as effective as the underlying will to enforce them. For this reason, combining a price rule with a money rule will not itself make the difference in the fight against inflation. Adding a monetary base rule should be considered an additional safeguard against inflation rather than a decisive policy action.

3.1 Financial market indicators

A more speculative idea involves supplementing the current price rule with information taken from financial markets. An ideal price level rule should be aimed not only at this year's inflation rate but also at forthcoming inflation rates throughout future years. A healthy economic climate involves both a low rate of inflation in the present and the expected continuation of low rates of inflation in the future.

A price level rule aimed at future rates of inflation also minimises the problems involved with real shocks. As discussed in section II, real shocks have their primary influence on inflation in the short run and are unlikely to influence the long-run rate of inflation significantly.

We might wish to modify the current price rule by extending the target to account for long-run rates of inflation. We could compare indexed and non-indexed bonds across a fairly long horizon (e.g., ten years). An anti-inflation rule could use the information contained in the spread between the yields on comparable indexed and non-indexed bonds as a policy indicator. A high spread would indicate a serious danger of future inflation and a low spread would indicate a low risk of inflation.

The information contained in the yields on indexed bonds can be used in several different ways. First, we might allow the Reserve Bank to deviate from the yearly price rule only insofar as the yield differential on indexed and non-indexed bonds did not grow beyond a certain range. In this case the Reserve Bank need not tighten in response to all real shocks; a one-time real shock will not likely affect the yield differential very much.

Secondly, we might instruct the Reserve Bank to target the yield differential directly. Rather than attempting to stabilise prices in any given year, we might require the Reserve Bank to stabilise price expectations as measured by the yield differential. Similarly, the Reserve Bank could attempt to achieve some weighted average of the two targets. To achieve these ends, of course, the Reserve Bank must still aim for price stability in the present. The Reserve Bank, however, would have some latitude for dealing with temporary shocks without requiring renegotiation of its mandate.

New Zealand currently has indexed bonds, issued during the Muldoon years, which do not expire until early next century. Trading in these bonds, however, is illiquid and thin. The current yield differential is influenced significantly by liquidity premia and does not mirror accurately inflation expectations.

If indexed bonds are to be feasible as a monetary policy indicator, the Treasury would have to resume issuance of these bonds and promote their trading in organised markets. This policy deserves serious consideration, not only as an indicator for monetary policy, but also because of seigniorage incentives. With indexed bonds, the incentive for inflation decreases because the real value of government indebtedness cannot be inflated away.

The issuance of indexed bonds has other advantages as well. Those who desire an inflationary hedge (e.g., pension funds) could hold these bonds. Similarly, those who benefit from inflation (e.g., debtors) could hedge against the possibility of low inflation by taking appropriate positions on the interest rate spread.

While the issuance of indexed bonds can be recommended, the use of the yield differential as a supplement to the current price rule is more problematic. Use of the yield spread to constrain monetary policy may be theoretically desirable but would present credibility and public relations problems. The Reserve Bank could not easily explain its actions to members of the public who do not understand the yield differential on indexed versus non-indexed bonds. The new multiplicity of policy targets may weaken the Bank's credibility for this reason.

Other problems may result if the demand for indexed bonds remains weak. If the Reserve Bank's price rule is successful, investors may not have a strong demand for indexed bonds. These securities do not offer obvious offsetting advantages in a non-inflationary environment. The market for indexed bonds may remain thin and illiquid, and the information in the yield spread would contain much noise.

Rather than issuing indexed bonds, we might attempt to use other financial market prices to indicate the future course of inflation. These prices could include the spread between long- and short-term interest rates, spot and forward exchange rates, interest rate futures, and commodity prices. In this case, however, the price target rule does not differ substantially from the checklist approach to monetary policy. When the Reserve Bank is instructed to examine several different and sometimes conflicting targets the enforcement of accountability becomes more difficult. For this reason, we should not use financial market indicators insofar as a weakening of the Policy Targets Agreement would result.

V. Policies Accompanying Monetary Stability

Adherence to monetary stability implies other policy decisions for the economy. This section first examines Reserve Bank policies with respect to interest rates and exchange rates. In both cases monetary stability implies a non-interventionist attitude towards market prices. I later consider whether monetary stability has implications for the current system of liquidity management. Finally, broader policies, such as fiscal reform, which might increase the effectiveness of monetary stability are considered.

1. Interest rates

Interest rate volatility is a critical issue for both money and price rules. Critics of anti-inflation policies have alleged that such rules create excessive short-term interest rate volatility. Such critics often recommend that the Reserve Bank partially forgo anti-inflationary policies and smooth nominal interest rates when necessary.

The Reserve Bank has paid increasingly greater attention to interest rates over the last several years. Market participants perceive current Reserve Bank policies as directed towards targeting ranges for interest rates, and to a lesser degree, exchange rates. Despite Reserve Bank claims to the contrary, the level of interest rates relative to the target range is perceived as a good predictor of whether the Bank will loosen or tighten monetary conditions. Furthermore, the Bank's advisory role on debt management and imposition of a minimum interest rate on float tenders further belie a concern with interest rates.

Interest rates can be used usefully as an indicator of economic conditions, but should not become a monetary target. If the Reserve Bank can adhere to a price or monetary target with less interest rate volatility rather than more, the Bank should not create volatility unnecessarily. Nonetheless, avoiding or dampening interest rate volatility should not be an independent goal of monetary policy.

The deliberate smoothing of nominal interest rates is not consistent with anti-inflationary policies. When targeting nominal interest rates, the Reserve bank can no longer maintain control over the money supply. An increase in money demand, for instance, will place upward pressure on interest rates in the absence of a Reserve Bank response. The increase in interest rates can be avoided only if the Bank injects additional funds into the system; control over the money supply must then be subordinated to the interest rate objective.

Targeting of nominal interest rates is self-defeating in the long run. Once a central bank relaxes money and price targets, inflationary pressures will result and induce high nominal rates of interest in the long run because of expectations of inflation.

Targeting of monetary aggregates or pursuance of a price level objective, if conducted properly, need not create unacceptably high levels of short-term interest rate volatility. The Swiss have implemented money stock targets since 1974 and have simultaneously created a very favourable climate for banking and financial intermediation. Swiss banks are induced to hold substantial excess reserves when the central bank tightens. These excess reserves diminish the probability that banks will be required to pay especially high borrowing rates; markets can develop mechanisms for coping with and reducing interest rate volatility.

Furthermore, short-term interest rate volatility is not bad per se. Interest rates are volatile to the extent that rapidly changing pressures impinge upon capital markets. Deflecting these pressures away from interest rates and towards other prices and quantities is not preferable.

In the case of interest rate smoothing, pressures upon interest rates are directed towards the price level instead. This redirection of pressures does not represent a net improvement. Short-term money markets are generally the most efficient markets in an economy and the most able to react smoothly and quickly to increased volatility. In contrast, goods and labour markets have greater difficulty adjusting prices and quantities.

Volatility of short-term interest rates should also be kept in proper perspective. First, volatility of short-term interest rates does not imply a corresponding volatility of long-term interest rates. Short-term rates can fluctuate considerably without affecting long-term rates much or at all.

Secondly, the effects of interest rate volatility in the short-term funds market are the result of preferred financial policies of the banks. Banks and other money market participants themselves collectively determine the amount of short-term interest volatility when making their reserve decisions. Rather than saying that short-term interest rate volatility imposes costs upon banks, it is more accurate to say that the preferred portfolio decisions of banks determine short-term interest rate volatility.

Short-term interest rates become volatile when banks are short of settlement cash and must increase their borrowing or discount Reserve Bank Bills to fulfill their short-term obligations. Because discounting is expensive, banks bid up short-term rates when they are short of funds. The volatility of short-term rates therefore depends upon the reserve ratios which banks hold. To the extent that reserve ratios are high, banks will not be caught short of funds and required to borrow and place upward pressure on interest rates.

Banks will sometimes be caught short of cash and forced to borrow at high rates. But these same banks have also been earning profit by lending out a relatively high proportion of their reserves. Rather than viewing fluctuating short-term rates as a problem, we can view fluctuating short-term rates as a symptom of bank willingness to lend out reserves and take their chances in the marketplace for funds. Money market participants can insulate themselves against interest rate volatility simply by increasing reserve ratios.

Consider an analogy from another sector of the economy. Persons who wish to rent a car must pay a higher price per day than those who own their own cars. But this price is part of the trade-off persons make when deciding whether or not to buy a car or periodically rent. In the short run, car renters might complain about the relatively high price of a car rental. But in the long run, those who rent are also economising upon the costs of automobile ownership. In this example, holding excess reserves is analogous to owning an automobile (both are not always in use). One avoids having to borrow at especially high rates but one also incurs a holding cost.

In addition to increasing reserve ratios, banks and other funds traders can protect themselves against interest rate volatility by hedging in futures markets. New Zealand now has an active interest rate futures contract and the thickness and efficiency of this market can be expected to increase over time, as in other countries with similar contracts.

Finally, much of the short-term interest rate volatility observed in many countries is created by unwise central bank policies. Short-term interest rates become volatile when banks are short of reserves and must borrow to fulfill their obligations. One reason why banks economise upon reserves, however, is because central banks do

not pay interest on reserves held at the central bank or pay interest at low rates only. Banks keep their reserves as low as possible to increase their earnings. This produces periodic liquidity squeezes when banks incorrectly forecast their short-term obligations.

The New Zealand Reserve Bank policy of paying interest on reserves at sixty-five percent of seven-day market rates is superior to the policies of most countries. Bank incentives to economise upon reserves are lower in New Zealand than in other countries. Through reserve policies, the Reserve Bank has lowered the short-term interest rate volatility resulting from a given amount of monetary stability.

Bankers, money market participants, and retail borrowers are among those who complain about the volatility of short-term rates. Similarly, farmers complain about the volatility of commodity prices, workers complain about the volatility of earnings, businesses complain about the volatility of profits and share prices, etc. Dislike of the volatility of short-term interest rates is not different in principle from these other complaints. By smoothing interest rates, the Reserve Bank is giving in to pressure from special interest constituencies.

Trading in a market economy invariably implies being subject to volatile changes in supply and demand; participants in many economic sectors would prefer that the government intervene and moderate these pressures. The government, however, cannot reduce overall volatility by monetary intervention but can only shift volatile pressures from one direction to another.

The Bank should also cease intervening to break up so-called "cash plays." Cash plays arise when some banks "hoard" cash shortly before settlement time and squeeze other banks short. The Reserve Bank sometimes intervenes and supplies liquidity to lower interest rates and decrease the profitability of the cash hoarder.

Intervention to break up cash plays is undesirable. Cash plays are not in principle distinguishable from normal market trading and speculative activity. The banks which incur losses are simply those which forecast incorrectly the future course of interest rates; this should not be a source of concern to the Reserve Bank. If the Bank periodically protects those who make incorrect market judgments, the incentive to develop private sector safeguards against temporary liquidity squeezes diminishes. The Bank should attempt to maintain a neutral market stance, rather than taking positions which deliberately favor some banks at the expense of others. In addition, intervention implies that the Bank must concern itself with additional discretionary policy actions; the simpler and more transparent the Bank's mandate the better.

In summary, short-term interest rate volatility is not a reason to reject monetary or price level targeting. The Reserve Bank should consistently pursue a long-term anti-inflationary policy and should not let itself be distracted from this goal by short-term fluctuations in interest rates.

1.0 Interest rate volatility in other countries

Other countries have experienced problems with short-term interest rate volatility in their attempts to fight inflation. Consider the example of the United States. On October 6, 1979, the Federal Reserve System stopped setting explicit targets for the federal funds rate and announced its intention to target monetary aggregates directly (non-borrowed reserves, in this case). Stated policy later changed in October 1982 when Paul Volcker announced that the Fed would "temporarily" place less emphasis on the money stock in its decisions.

Fed policy was successful at significantly reducing the rate of inflation but also induced considerable short-term interest rate volatility. Between 1979 and 1982, the federal funds rate for overnight interbank loans exhibited considerable volatility and rose as high as twenty percent. The problems experienced in 1979-82, however, do not reflect unfavourably upon monetary targeting per se, only upon the particular form of monetary targeting chosen by the American Fed.

A recent study by Timothy Cook at the Federal Reserve Bank of Richmond has corrected a number of misperceptions concerning the Volcker monetary experiment. Cook's analysis indicates that the volatile interest rates in the 1979-82 period were not primarily the result of monetary targeting. Two-thirds of the movements in the federal funds rate during this period were in fact due to Fed discretionary policy; only one-third of the experienced volatility in interest rates resulted from monetary targeting.

At the same time that the Fed was targeting nonborrowed reserves according to a monetary rule, Fed policy with borrowed reserves was highly discretionary. Changes in the discount rate, changes in the spread between discount rates and the federal funds rate, and Fed treatment of discount window borrowings all contributed significantly to interest rate volatility.

The problems with the 1979-1982 Volcker experiment do not apply to current New Zealand monetary policy for other reasons as well. The 1979 change in U.S. Fed policy came in an environment of high and variable inflation; the rate of inflation in 1978-79 was well into the double-digit range. Moving from a very high rate of inflation to a much lower rate of inflation inevitably induces volatility. New Zealand experienced these problems initially as well, but is now at a much lower base inflation rate with only moderate inflation expectations.

The U.S. monetary experiment also created volatility because policy was not implemented as a credible rule. Although the Fed announced its intention to target nonborrowed reserves, market participants knew that this decision was subject to change at a moment's notice. Much of the volatility in interest rates was the result of trying to guess the Fed's next move. Would the Fed now tighten more, loosen, choose a new target, etc.? A large "Fed-watching" industry developed devoted to predicting the future course of monetary policy. When an anti-inflation policy is implemented as a credible rule, this source of volatility is not present.

2. Exchange rates

Monetary stability implies not only market determination of interest rates, but also market determination of the rate of foreign exchange. Monetary base or price level targets require a floating exchange rate whose value is determined by world markets. If the Reserve Bank successfully targets the quantity of money, the price of this money in terms of other currencies will be determined by supply and demand. No central bank can pursue simultaneously an exchange rate and money supply target.

The role of exchange rates in Reserve Bank monetary control has been the subject of much debate. The Reserve Bank has not intervened in the foreign exchange market since the onset of deregulation. Nonetheless, in recent times the Bank has hinted that the New Zealand dollar should depreciate. Market participants perceive the Bank as indecisive; the Bank is seemingly afraid to intervene directly or jawbone the exchange rate down for fear of failure. The perception is that the Bank would like to influence the exchange rate but is afraid to try seriously.

Current policies increase market uncertainty about future economic conditions and the Reserve Bank's philosophy of monetary control. Attempting to influence the exchange rate even by subtle jawboning is a dangerous step. The Reserve Bank may eventually be forced to retreat and suffer embarrassment or take further steps down the road of intervention. Current policies should be reconsidered before the political and reputational costs of retreat become much larger.

Complete non-intervention is the preferred Bank policy towards the exchange rate. Like interest rates, exchange rates can be useful indicators of economic conditions, but a desire to affect the exchange rate should not influence Reserve Bank policy. Market-determined flexible exchange rates are preferred to fixed exchange rates or manipulated exchange rates for New Zealand. I first consider exchange rate pegs and then examine exchange rate manipulation.

Under a fixed exchange rate, the New Zealand money supply would be determined by the monetary policy of the currency that the New Zealand dollar is pegged to. The money supply is not removed from political control altogether but remains subject to the political control of a different government. Rather than hitching the fate of the New Zealand dollar to other currencies, New Zealand should attempt to improve upon the policies of other countries.

Other considerations militate against fixed exchange rates as well. Pegging one currency to another will disrupt macroeconomic stability when the two economies are not structurally similar.

If New Zealand were to peg its currency to the U.S. dollar, Japanese yen, or ECU, the value of the Kiwi dollar would be tied to the economic fortunes of these other nations. Consider the case of a peg to the Japanese yen. An increase in the Japanese ability to export automobiles could steeply appreciate the Kiwi dollar against all other currencies, hardly a desirable result. Similarly, New Zealand would be forced to accept inflation or deflation whenever these policies were judged appropriate for

the Japanese economy. Pegging to a weighted average of different currencies would not eliminate this basic problem. The monetary policies and exchange rates which are desirable for other countries are not necessarily desirable for New Zealand. In the two decades up to 1985, New Zealand experienced these difficulties with nominally fixed (but in practice adjustable) and crawling peg exchange rate regimes.

The country with the closest structural similarity to New Zealand is likely to be Australia. Even the relative terms of trade for Australia and New Zealand, however, are not especially stable. Pegging to the Australian dollar involves other problems as well. Australia has experienced high and variable rates of inflation and the New Zealand monetary authorities can improve upon Australian policies. Other than Australia, no other economy is an obvious candidate for structural similarity to New Zealand.

If an Australasian or world free trade zone and currency area strongly committed to an anti-inflationary policy were to be formed, New Zealand should consider joining such an agreement. The trade and efficiency benefits of joining might outweigh the costs of pegging to other currencies. But such an agreement is not on the horizon. The Australasian economies are extremely diverse and heterogeneous in their interests and do not appear to be converging upon an Asian equivalent of the EC. Furthermore, few countries in the region are committed to a credible policy of fighting inflation. A floating exchange rate is likely the best option for New Zealand for the foreseeable future.

New Zealand is better off not to join a currency union committed only weakly to fighting inflation. Currency unions can further inflation by allowing different central banks to collude and agree upon a common rate of inflation. New Zealand should insist that any currency union it joins be equally committed to fighting inflation as the current New Zealand institutions for monetary policy.

2.0 Intervention and exchange rate manipulation

Most of the countries in today's floating exchange rate system do not rely upon a pure market-based float but resort to central bank or Treasury intervention with varying frequencies. Similarly, the Reserve Bank Act gives the Reserve Bank the power to deal in foreign exchange (section 15).

Exchange rate objectives are at variance with a Reserve Bank commitment to monetary targets and price stability. The Reserve Bank cannot attempt to influence the exchange rate without affecting the monetary base. Encouraging depreciation of the exchange rate, for instance, will create inflationary pressure on domestic prices. Not only will the monetary base increase, but the lower exchange rate will imply higher prices for imports.

Monetary policy must either target the exchange rate directly (peg a particular rate) and allow market forces to determine the supply of money within a particular country, or target the money supply and allow market forces to determine the

exchange rate. Attempting to use policy to influence both the money supply and the exchange rate will likely achieve the worst of both worlds. Exchange rate volatility will remain or increase and inflationary pressures will not be vanquished. Furthermore, central bank interventions give rise to speculative pressures and risks to taxpayers as traders try to outguess the central bank.

The Reserve Bank's role as monopoly supplier of money does not imply a corresponding obligation to peg the exchange rate or intervene in currency markets. Controlling the supply of money is inconsistent with either of these practices, as explained above. Furthermore, the fact that base money is supplied by governments, rather than competitively, is a further reason for allowing market forces to determine its price. The absence of market-determined supply makes the role of market prices for money especially important in allowing for equilibrating adjustments in response to shocks.

Experience with central bank intervention in foreign exchange markets has been less than impressive. A study by economist Dean Taylor concludes that central bank interventions have been unproductive in influencing the exchange rate beyond very short time horizons. In fact, Taylor concludes that speculators can earn systematic profits simply by betting against the positions taken by the central bank in the market. Although the central bank can exert influence in the short run, in the long run the exchange rate is likely to resist this pressure and move as market conditions dictate. Total daily volume in foreign exchange markets ranges between $150 and $300 billion dollars and central banks have only limited influence when volume is so large.

Central banks are generally unwilling to publish statements of their transactions in foreign exchange or of their profits and losses. Most observers attribute this reluctance to the large losses which most central banks suffer when trading in foreign exchange markets. When central bank trading is secret, no mechanism of accountability exists. We should not be surprised that central banks exercise their foreign exchange powers irresponsibly.

Central bank attempts to manipulate exchange rates may also destabilise exchange rates. Currency traders attempt to guess what the central bank will do next rather than attempt to estimate the fundamental value of the currency. Traders become more concerned with reacting to political events and to this extent they cease to guide the allocation of resources along market lines.

Examples of destabilising exchange rate movements caused by central bank and Treasury intervention are common. When the Plaza exchange rate accord was announced in the fall of 1987 (this was an agreement to let the value of the U.S. dollar fall), the U.S. dollar fell seventeen pfennigs against the German mark in a single day, an all-time record. Similarly, central bank intervention to prop up the U.S. dollar (and the lack of international cooperation in response) was one factor contributing to the October 1987 crash in stock prices. Political events are frequently

volatile, and to the extent that we allow politics to influence currency values, exchange rates will be volatile also.

Intermediate exchange rate regimes such as "crawling pegs" achieve perhaps the worst of all possible worlds. At any point in time, the exchange rate is fixed, which implies a non-optimal currency area and lack of control over one's money supply. At the same time, the peg is adjusted over time, usually at the discretion of the government or central bank. Unlike under a strictly fixed rate regime, all the criticisms of discretionary policy apply as well.

It can be argued with some plausibility that markets do not always price exchange rates (or other asset prices) efficiently. But central banks are unlikely to do better, even if they can succeed in moving the market. There is no formula which allows outsiders to know the "true" or "equilibrium" value of the exchange rate. If there was such a formula or guide, market mispricing would not be a problem to begin with. Central banks do not have access to unique insights or information about exchange rates and cannot price or value the exchange rate more accurately than markets can.

Models of exchange rate overshooting are also a poor guide to exchange rate policy. First, if the government can observe exchange rate overshooting, so can market participants. Overshooting need not lead to a misallocation of resources. Secondly, exchange rate overshooting models are not confirmed by the data. Overshooting models imply that most of the volatility in exchange rates should be predictable from forward rates, which is not the case; in fact, no more than five percent of exchange rate volatility is predicted by forward rates.

Even if central bank policy is effective, downward pressure on the exchange rate is a poor recipe for restoring international competitiveness. Nominal changes in the exchange rate are unlikely to translate into long run changes in the real exchange rate. That is, prices will eventually rise and exports will prove no cheaper in real terms. Exchange rate depreciation is at best a short-run stimulus and will not affect long run competitiveness or terms of trade. Instead, the depreciation becomes a quick fix which substitutes for addressing the more important underlying structural problems.

Inflation and large-scale devaluation have proved ineffective throughout New Zealand history. Between 1967 and 1984, for instance, the exchange rate fell 53 percent, but the New Zealand economy remained fundamentally uncompetitive and grew only slowly.

Latin American economies provide other and more numerous examples of devaluations which have not spurred exports or economic growth. Rather than being a spur to competitive activity, devaluations and depreciations are more likely a sign that economic competitiveness is waning. Those countries with generally strong currencies in the post-war period (e.g., Germany, Switzerland, Japan) have maintained and even strengthened their competitiveness.

2.1 Reserves management

The Reserve Bank is aware of the problems of exchange rate intervention and has eschewed direct intervention, despite the hints at jawboning discussed above. It would be desirable, however, to ensure exchange rate non-intervention by amending the Reserve Bank Act. An amendment to the Act could restrict the Bank's powers to intervene in foreign exchange markets, unless the Bank receives a direct Order in Council through the government.

Accompanying this change in policy, the reserves management function of the Bank (managing funds to support exchange market intervention) is not needed. The government obtains funds for potential Reserve Bank intervention by borrowing overseas; this Bank function thus contributes to government indebtedness at a time when fiscal savings are urgently needed. Eliminating foreign reserves management would decrease government indebtedness and allow for lower taxes in the future.

As of 31 March 1990, foreign currency assets of the Bank's fund stood at NZ $4.2 billion. There is no reason in principle why the government's optimal portfolio position should not contain foreign currencies; furthermore, the government must hold foreign currencies to meet overseas payments obligations. But there is no reason why there should be a fund earmarked for exchange rate intervention.

The economic arguments in favor of maintaining the fund are not strong. It is difficult to imagine emergency circumstances in which the fund might come in handy. If there are strong downward pressures on the New Zealand dollar, use of the fund will not suffice to reverse long-term market trends. Since Reserve Bank foreign exchange market intervention is unwise in any case, it is better not to borrow money for this purpose.

Eliminating the reserves management fund might provoke a negative reaction from credit rating agencies. If the government does feel the need to hold reserves because of pressure from credit rating agencies, negotiation of open lines of credit from foreign banks is a preferable alternative.

More importantly, however, the government should ignore pressure from credit rating agencies in this context. Exchange rate intervention is an unwise policy and better forsaken. Holding reserves for the purpose of creating a favourable appearance for outside observers is an unwise means of increasing government credibility. Either the fund will be used eventually, or the credibility of the government will actually decrease.

Furthermore, we should not be upset if eliminating the fund lowers the government's credit rating. The fund supports a higher credit rating only to the extent that the government is prepared to take losses on the foreign exchange market by propping up the New Zealand dollar. In short, the New Zealand taxpayer must stand ready to pick up some of the exchange rate risk of foreign investors. Increasing New Zealand's credit rating by socialising losses across the taxpayers may serve the

interests of the investment community, but is not desirable for the New Zealand citizenry as a whole.

3. Monetary targeting and liquidity management

Institution of rules for monetary targeting, either as a supplement to or a replacement for a price rule, may alter the mechanics of liquidity management.

Under the current regime, the Reserve Bank targets the average level of "Primary Liquidity" (henceforth PL) and attempts to hold this magnitude constant on a weekly basis. PL consists of settlement cash and Reserve Bank Bills; unlike the defined monetary base, PL excludes banks' till cash and non-bank currency holdings. Reserve Bank Bills are interest-bearing assets issued with a three-month maturity; these bills become part of PL when they reach 28 days to maturity. Banks settle with cash or Reserve Bank Bills through their Reserve Bank accounts.

The Reserve Bank accepts Reserve Bank Bills on demand at discount or penalty rates based upon a fixed discount margin (currently 0.9 percent above market rates). The Reserve Bank implements monetary policy through targeting fixed levels of settlement cash and Reserve Bank Bills, and through altering the margin between the discount rate and market rates (called the discount margin). Liquidity management is based upon a combination of open market operations and changes in the cost of discounting. To control liquidity, the Reserve Bank can influence either the amount of cash in the system (through open market operations and sellbacks) or can change the expected cost of discounting.

Supplementing a price rule with a monetary rule would likely involve institutional changes in liquidity management. The concept of PL would be rendered obsolete if the Reserve Bank pays direct attention to the monetary base. Under monetary base targeting or a monetary base rule, the continued existence of Reserve Bank Bills decreases policy transparency. Even with a fixed monetary base, the Reserve Bank could still increase system liquidity by decreasing the cost of discounting.

For this reason, the Reserve Bank may find it more straightforward to require all debts to be settled with cash, or may prefer to extend overdraft privileges to banks. If the Reserve Bank does not wish to accept overnight credit risk from banks, the Reserve Bank may demand that all overdrafts be secured by low-risk government securities.

The passing of the concept of PL would involve both costs and benefits. On the negative side, some critics have charged that PL is an awkward concept to use for monetary control. During 1989/90, the targeted settlement balances at the Reserve Bank stood at $30 million. This figure is a very small sum relative to bank balance sheets and is potentially an unreliable lever or base for monetary control. PL does not serve as a transactions-related variable which varies in proportion to the size of economic activity.

More generally, the concept of PL does not correspond to an aggregate with intuitive economic content. The absolute magnitudes of PL targets are not an accurate guide for comparing monetary policy settings over time. Monetary conditions have to be assessed by examining yield gaps and exchange rates; the Reserve Bank must compare the market exchange rate and yield gap with its own view of the appropriate level for these prices. The Reserve Bank is likely to develop implicit bands for exchange rates and interest rates. The PL-based system creates incentives for ongoing Reserve Bank intervention. This gives rise to a monetary policy game in which market participants attempt to discern how the Reserve Bank interprets indicators of monetary conditions.

The PL-based system creates other incentives for intervention. To the extent monetary policy is implemented through changes in the expected cost of discounting, the system relies upon large unpredictable cash flows for which the Reserve Bank can penalise the banking system for forecasting mistakes made by the Reserve Bank. The stability of the system then depends upon banking system perceptions of Reserve Bank forecasting performance and the stability of interbank rivalry during the settlement process. Furthermore, keeping Crown accounts at the Reserve Bank becomes necessary to maintain penalisable cash flows.

The current PL-based system, however, does offer advantages. Most importantly, Reserve Bank Bills create another tier in the interbank settlement market. Banks trade and lend Reserve Bank Bills to each other on a private basis, outside the confines of the normal Reserve Bank settlement process. The ability to deal in Reserve Bank Bills not only makes bank portfolio management more efficient, but also sets an important precedent. In embryonic form, interbank use of Reserve Bank Bills illustrates the feasibility of basing interbank settlement upon privately traded financial securities.

Replacing PL and increasing the emphasis on the monetary base would also raise issues of liquidity management. First, measured magnitudes for the monetary base contain statistical volatility from the unpredictability of government accounts. The flow of outlays and revenues in budget sector accounts cannot be forecast with complete accuracy; the proceeds of government stock and Treasury bill tenders, as well as the government's commercial transactions, account for much of the volatility in payment flows.

Government-induced volatility in monetary base measures can be remedied by greater forecasting ability and by tendering procedures which keep these funds in the private banking system. The government may even wish to place the Crown banking accounts in the private sector altogether.

Secondly, use of the monetary base concept implies a greater concern with currency (notes and coins) than under the current regime. To the extent that the demand for currency is not stable, the liquidity management section of the Bank must deal with an additional source of statistical volatility. As with the monetary base, the amount of real economic volatility does not increase by discarding the concept of PL;

nonetheless, the Bank must learn to deal with the increased importance of certain kinds of statistical volatility.

It is not the purpose of this study to give the Bank advice on the particulars of liquidity management. Liquidity management is primarily a process of learning by doing, rather than a set of well-defined instructions which can be spelt out in advance. Once the proper set of monetary institutions are in place, the Bank should be allowed to work out its own programme of liquidity management.

In fact, liquidity management has evolved substantially since the advent of deregulation and is likely to continue evolving. The Reserve Bank originally emphasised full funding of the fiscal deficit, implemented through government stock tenders, as the main means of medium-term monetary control. Open market operations were to be used primarily for smoothing liquidity. Emphasis then shifted to fixed cash and PL targets as means of monetary control. In addition, the definition of PL was changed several times over the last few years to reduce volatility. Each change represented an improvement over previous institutions.

In general, the details of liquidity management should be subordinated to the more general goals of monetary policy, and not vice versa. If monetary base rules have desirable macroeconomic consequences, the Reserve Bank should be encouraged to work out a correspondingly effective programme of liquidity management with this tool. The use of Reserve Bank Bills and discounting offers advantages, but the current use of PL is not a necessary concept for liquidity management, as illustrated by the experience of central banks around the world.

4. Other policy issues

Effective monetary policy is only one part of a broader recipe for economic growth and international competitiveness. An effective anti-inflation regime should be combined with other economic policies.

4.0 Fiscal policy

Successful monetary policy requires credible fiscal reform. Attempts to rein in growth of the money supply do not succeed when governments pursue irresponsible fiscal policies. When governments continue large scale deficit spending, short-run monetary policy is unlikely to purge inflation expectations from the system. Market participants will continue to assume that the government will eventually resume sustained increases in the money supply. When inflationary expectations continue to survive, a program of disinflation, even if feasible, becomes extremely costly. The economy is still hooked into the expectation of temporary inflationary stimulus.

Evidence indicates that the turning point in attempts to combat major inflations has come when governments combined monetary with fiscal reforms. Monetary reform

alone does not suffice because a central bank cannot commit successfully to an anti-inflation policy if the rest of the government is consistently uncooperative.

This study does not examine the fiscal policy of the New Zealand government in detail. Nonetheless, New Zealand currently has an extremely high per capita debt ratio. As at June 1990, gross public debt exceeded $42 billion, or more than 63 percent of GDP. The international investment community correctly perceives progress with fiscal stabilisation as critical to the long-term performance of the New Zealand economy. Without improved fiscal discipline, monetary restraint is not credible in the long run.

4.1 Wage and price policies

Anti-inflation policies work best when prices and wages are free to adjust to market-clearing levels. Monetary stability allows prices to communicate information accurately about the value of economic resources. These benefits are not achieved to the extent that price and wage adjustments are hampered by legal regulations and restrictions.

Furthermore, monetary stability will require some wages and prices to fall, both as part of the original transition to a stable regime and as part of the ongoing changes in market supplies and demands. To the extent that prices are free to adjust, these price changes can be achieved at minimal cost. Monetary reform should therefore be combined with more general economic reforms to increase competitiveness. Flexible prices and monetary stability complement each others' effectiveness.

Any remaining stickiness of wages and prices, however, does not provide a justification for inflation. Inflationary monetary policy increases the pressures on sticky prices and exacerbates resource misallocations. Trying to lower wages by depreciating the currency does not address the underlying structural causes of unemployment and only postpones the necessary real adjustments.

4.2 Tax reform

Many of the most significant costs of inflation arise from the interaction between inflation and the tax system (see section II). Making the tax system neutral with respect to inflation would not itself contribute to lowering inflation but would lower the costs of whatever inflation (or deflation) remains.

Several proposals have been offered for neutralising the effect of inflation on the tax system; these proposals range from indexing taxes on capital gains and interest to moving to a broad-based consumption tax. In the first case, persons would pay tax not on their nominal interest or capital gain returns, but only upon the real returns they have received over time. Similarly, real and not nominal interest payments would be deductible. The fiscal authority would use an appropriate price index to measure the effects of inflation. A similar procedure would be used to adjust the deductibility of interest payments.

A more radical approach to tax reform would replace the taxation of income (personal and corporate) and interest income with a broad-based consumption tax or value-added tax (along the lines of the New Zealand Goods and Services Tax), most likely at a single flat rate; funds would be taxed only at the time they were spent. The taxation system would be neutral with respect to the intertemporal allocation of economic resources, as taxes would not distort the saving/spending decision. Saved funds would be taxed once these funds were used for consumption. Problems arising from the taxation of or deductibility of nominal interest income would not arise because interest income would not be taxed at all.

None of the above reforms is necessary for an anti-inflationary policy to succeed or to be desirable. But each of these reforms or any combination thereof would decrease the costs of inflation and monetary instability.

VI. The Structure and Incentives of the Reserve Bank

1. Introduction

The discussion above has focused upon preferred monetary policy for the Reserve Bank, but has not considered Bank incentives to institute such policies. Written laws, constitutions and charters are only effective to the extent that persons possess the will and incentive to implement and enforce the specified outcomes and procedures.

Mandating through legislation that a certain goal or target be achieved does not suffice to ensure the attainment of that goal. The U.S. Congress has encountered this problem with the Gramm-Rudman "balanced budget" and automatic spending cut procedures. Rather than mandating a truly balanced budget, the Gramm-Rudman act has led to a vast increase in the kinds of government spending which are labeled "off-budget."

Similar procedures can be used to circumvent money or price rules. A legislated money rule, for instance, could be altered by redefinitions of the monetary aggregate. Similarly, a price rule can be rendered ineffective by redefining the price index to be stabilised. Legislation cannot give the Reserve Bank sufficiently specific instructions to rule out all possible escape clauses. Even if we legally define the appropriate measure of the money supply or prices, further escape hatches will always exist. We might use the same consumer price index, for instance, but change the measuring or sampling technique.

In New Zealand, two of the most common price indices are the consumer price index (CPI) and the Housing-Adjusted Price Index (HAPI), which differs from the CPI in its treatment of housing costs.

These indices do not always move together; the annual HAPI rate has been as much as 2.6 percent above and 1.5 percent below the CPI inflation rate. The danger of

redefining the price index is indicated by a comment in a Post-Election Briefing Paper issued by the Reserve Bank. After discussing the difference between the CPI and HAPI, the Bank notes that: "In cases where a material divergence reoccurs between the two rates, the targets (which are set in CPI terms) may require renegotiation." Later on in the briefing paper, the Reserve Bank notes: "...there is nothing sacrosanct about the current definition of price stability as 0-2 per cent annual CPI increases." If the CPI comes in higher than the HAPI, the Reserve Bank could claim that the HAPI, and not the CPI, is the appropriate measure of prices. The ambiguity of price indices gives further reasons why we might wish to strengthen the current price rule.

Since legislation alone cannot solve the problems of monetary policy (even assuming we know exactly what should be done), we must look for institutional arrangements and rules which will give government and Reserve Bank officials the incentive to take proper courses of action.

In the discussion that follows, I examine rule enforcement, appointment procedures, salary compensation, and Reserve Bank funding, budgeting and staffing as factors influencing monetary and financial policy. In general, the current institutional structure of the Reserve Bank is extremely praiseworthy; this area should count as one of the greatest policy successes of the New Zealand government and the Reserve Bank.

2. Enforcement of rules

Under the status quo, the Reserve Bank Act of 1989 does the following:

- monetary policy is explicitly recognised as the primary function of the Reserve Bank;

- monetary policy must be targeted at the objective of maintaining a stable price level;

- the government's specific inflation objectives are to be set out in a published policy targets agreement between the Governor of the Bank and the Minister of Finance;

- the Bank must publish its intentions with regard to the implementation of monetary policy in regular six-monthly statements;

- the Governor of the Reserve Bank is held accountable for the outcome of monetary policy.

Because status quo safeguards are imperfect, however, we might consider making the current price rule (or some modified version thereof) tighter or more binding. The government might pass legislation, for instance, which mandates the achievement of a price target with no room for exceptions or conditionality.

Similarly, we might mandate that the Reserve Bank Governor be dismissed automatically if he or she does not meet specified inflation targets.

While such reforms are tempting, tightening price targets in this fashion would not necessarily represent an improvement. First, there are some circumstances (e.g., negative real shocks) when it is better to suspend or weaken commitment to the price target.

Perhaps more importantly, attempts to precommit which are very strict can be less effective than more flexible rules. By its very nature, a government cannot tie its hands irrevocably; this point is especially true in New Zealand, which has no formal constitution and only limited separation of government powers. The government is the ultimate source of authority in society and the ultimate law maker. If the government wants to change policy on the price rule or Reserve Bank independence it will do so, regardless of which safeguards are built into the system. Laws and even constitutions which are not widely supported or perceived as legitimate will be modified, repealed or simply ignored.

A wisely chosen monetary policy creates a commitment to fighting inflation which does not disappear even when the government decides to break the rules or deviate from its initial plan. Rather than try to keep the government strictly precommitted under all circumstances (which is impossible in any case), we should structure institutions to prevent rule-breaking exceptions from destroying the entire rules-based machinery.

Herein lies the advantage of a six-month review over a strictly mandated target. The Reserve Bank Act calls for the Bank to issue a statement of goals and performance every six months; these statements are subject to the scrutiny of the Minister of Finance, the Cabinet, and Parliament and are publicly disclosed. The Bank is allowed to deviate from the 0-2 percent price inflation target only if the Bank can provide a suitable rationale for the deviation.

If the Bank does not meet its price mandate, the review machinery and accompanying accountability is still in place for the next review in six months. Successive failures to meet the price targets must be justified in further reviews. In contrast, legislation which mandated price stability could simply be repealed or ignored. Come the next period, there would be no effective machinery or incentives in place to constrain inflation once the legislation had been repealed.

It may appear that the government's commitment to price stability is rather weak under the six-month review process. The government and the Bank can simply agree jointly to disregard deviations from the price targets on an ongoing basis. But it is difficult to design a system which creates stronger safeguards in the long run. The six-month review process institutionalises the accountability of the Bank and provides a regular mechanism for giving the Bank incentives to fight inflation.

The ultimate mechanism for enforcing the price rule is not legislation or the charter of the Reserve Bank, or even the cooperation of the government, but rather the success of the rule itself. Successful rules stand a good chance of being institutionalised and accepted as part of the status quo. Central banks such as the Bundesbank or the Swiss National Bank are effective and credible because they have a relatively long track record of success in fighting inflation and promoting economic growth. The independence of these institutions rests primarily upon their ability to deliver desirable political and economic ends. New Zealand should aim at the same long run success for its Reserve Bank.

The greater the success of central bank policy and independence, the harder for governments to change that policy. Central bank responsibility and independence has become an established tradition in countries such as Germany and Switzerland. Governmental attempts to take away or modify this independence would likely disrupt financial markets and spark an economic crisis.

Furthermore, the prestige of the Governor or Chairman is very high in a successful central bank. The importance of prestige benefits relative to salary benefits increases with the track record of the central bank; the head of a successful central bank has much on the line. Central bank desire to fight hard to protect its independence is an important constraining factor upon the government's ability to push for inflationary policies. Unsuccessful central banks (e.g., most of Latin America), in contrast, have no reputation of considerable value to defend.

Although the current system has many admirable features, the Reserve Bank Act could be tightened effectively in at least one way. In the current Act, section 12 enables the government, by Order in Council, to direct the Reserve Bank to implement monetary policy towards an objective other than price stability. This Order may last for a period of up to twelve months, at which point subsequent Orders must be made if the Bank is to continue to disregard the price stability target.

Section 12 of the Reserve Bank Act should be modified to allow such Orders to be issued only in wartime. In cases of dire emergency, wartime seigniorage, rather than price stability, is a valid goal for monetary policy. Outside of such extreme cases, however, the Bank should not have goals other than monetary and price stability. Nor should the government have the power to order such goals.

3. Reappointment versus compensation schemes

In the status quo the governor's reappointment is tied to success in attaining the price stability objective; the Governor's job is at stake in an all-or-nothing fashion. Under another set of proposed reforms, incentives to fight inflation can be enforced by tying the compensation of Reserve Bank officials, especially the Governor, to the Bank's monetary policy performance.

Under one proposal, lower inflation would translate into a higher salary for the Governor and higher inflation would imply a lower salary. The salary of the

Governor could either be fixed in nominal terms (and thus vary in real terms) or could be indexed inversely in nominal terms to the measured rate of inflation or monetary growth. Such a plan attempts to mimic the "stock option" compensation schemes of many private businesses, which reward top executives according to their ability to increase the company's share price.

Indexing the Governor's salary to the rate of inflation deserves serious consideration. Nonetheless, I am inclined to favour reappointment incentives over the use of direct pecuniary incentives.

The relative effectiveness of reappointment incentives versus pecuniary incentives depends upon why Reserve Bank Governors accept the job. To the extent that Governors accept the job to earn a higher monetary income, pecuniary incentives will affect their policy decisions. Casual empiricism indicates, however, that desire to maximise salary is not the primary motive of central bank heads. The salary of the Reserve Bank Governor is not public information, but an ex-Governor would likely command more lucrative remuneration in the private sector. If salary is not a primary motivation of the Governor, then indexation of his or her salary will not contribute much to controlling inflation.

More likely hypotheses suggest that Reserve Bank Governors accept the job out of a desire to help the nation or out of a desire for status and prestige. In either of these two cases, reappointment incentives will prove more effective than salary incentives. What the Governor values is the job, either for altruistic reasons (to help the country) or for selfish reasons (the prestige of being Reserve Bank Governor). The threat of job removal is likely to prove more effective than the threat of a cut in salary.

Linking the Governor's salary to the conduct of monetary policy may even increase the difficulty of building up Reserve Bank credibility. In matters of central banking, reputation is a factor of extreme importance. Both the domestic and international community must perceive the Reserve Bank Governor as committed to a sound monetary policy. Institution of direct pecuniary incentives such as salary linkage might send the signal that the Reserve Bank has no independent motives for fighting inflation. The implied signal is that the political and ideological commitment to fighting inflation is absent or insufficient. To the extent the credibility of the Reserve Bank is damaged in this fashion, the task of fighting inflation becomes harder.

In spite of these caveats about pecuniary incentives, the Reserve Bank can implement real salary indexation effectively in limited fashion. The salary of the Governor should be frozen in nominal terms at the inception of the appointed term. Increases in the rate of inflation will decrease the Governor's real income, but without creating the impression that the Governor needs to be placed on a pecuniary leash.

Although the salary of the Governor should be frozen in nominal terms, it should be frozen at a high level. The nominal freeze is not intended to punish the Governor, but simply to alter incentives at the margin. Such pecuniary incentives are likely to be less effective than the reappointment incentive, but they do ensure that the

Governor will have a direct appreciation of the economics of living on a fixed income, albeit a relatively high fixed income.

A more radical approach to Reserve Bank decision-making rejects both reappointment and pecuniary incentives. In this view, the Governor should be appointed for a very long term or in perpetuity, in a manner resembling the judiciary in many countries. The Governor would then possess more political independence and could fight inflation without political constraint. The government could not, for instance, threaten to withhold reappointment as a means of inducing an easier monetary policy.

While this alternative deserves serious consideration, the associated risk is likely too great. Financial markets would probably react positively if a good Governor were appointed Governor for life. But the costs of being stuck with a very bad Governor for many years are too high to chance. What if a pro-inflation Governor had been chosen in the 1960s or 1970s and were still with us? Unlike judicial bodies, which consist of several individuals, a single bad Governor, appointed for life, would have too much power.

4. The structure of Bank decision-making

Decision-making authority in a central bank can be based either in a single individual (a Governor, in the case of New Zealand) or in a committee, such as the Reserve Bank Board. Other systems, such as in the United States, divide power between the chairman and a board, although in this case the chairman has more effective power.

The New Zealand system concentrates most of the power and responsibility for the Reserve Bank in the Governor. It is the Governor who must report to the Minister of Finance concerning the six-month targets and the Reserve Bank agreement.

The exact responsibilities and duties of the Reserve Bank Board under the current regime have not yet been clarified fully. The Board's nominal responsibilities include reviewing the Bank's performance and reviewing the Governor's performance, as well as advising the Governor. In principle, the Board may recommend the dismissal of the Governor.

The Board's mandate is open to wide interpretation, but system observers and participants agree that the primary responsibility rests with the Governor. The Board oversees the Governor's plans and budget and may express disapproval, but the Governor takes the lead on important matters of policy.

Observers have questioned whether the current governor-based system is wise. Because the Board has little effective power, the Governor is monitored primarily by the Minister of Finance and Parliament. These institutions do not necessarily have the detailed expertise in matters of banking and monetary policy required to monitor all aspects of the Governor's performance.

An alternative institutional structure would involve a more active Board comprised of a small number of persons chosen for their monetary policy expertise. This Board could possess an independent Chair (the Governor is currently Chair of the Board) responsible for monitoring the performance of the Governor. This organisational structure of the Bank would more closely mirror the organisational form of most shareholder corporations.

The case for increasing the power of the Board is not compelling. The Governor has assumed prime responsibility for attaining the targets spelled out in the agreement. A significant shift in accountability might decrease the anti-inflation credibility which the current Governor has built up. If the Governor were strictly accountable to a Board, the Board must also share in the accountability and responsibility of meeting the price targets.

A single individual is more accountable than a committee or board. If something goes wrong when collective decision-making is present, each person on the committee can attribute the blame to fellow committee members. Furthermore, with a single individual markets will not be confused by conflicting statements or tendencies of different Board members. With a single powerful Governor, the Bank finds it easier to speak with a single consistent voice.

Boards are useful when the appearance of consensus is necessary to build broad public support for difficult decisions. But in the case of New Zealand, there is already legislative agreement on the price stability objective. With respect to implementation and accountability, a single Governor is more effective than a Board. Furthermore, the difficulty of recruiting talented members to fill Board seats in a small country such as New Zealand may be substantial; nearly all of those persons qualified to serve on the Board also have a well-defined stake in the system. The Securities Amendment Act 1988, with its far-reaching provisions on inside information, would appear to keep many qualified individuals off the Board.

It would probably be unwise to abolish the current Board, however. Although the Board should not bear responsibility for monetary policy, the Board can serve as a political pressure group which fights for the general principle of Reserve Bank independence. The presence of respected and influential members increases the political costs of any attempt to apply political pressure to the Bank. A government unhappy with Reserve Bank performance and independence, for instance, would find it harder to paint the Governor as an irresponsible "lone wolf." Board members should thus be chosen not necessarily for their monetary policy expertise, but rather for their influence and their willingness to protect the principle of Reserve Bank independence.

4.0 Other issues of bank organisation

Beneath the Governorship and the Board, the Bank is divided into seven departments - the Economic Department, the Financial Markets Department, the Banking Supervision Department, the Currency Department, the Registry

Department, the Corporate Services Department, and the Accounting Department. Managers of each department report to the Governors.

The Bank's functions should be pared down to an absolute minimum to increase accountability and transparency for monetary policy. The Bank maintains a number of miscellaneous powers which are inessential to the operation of a central bank. These functions include the registry of treasury securities, offering the Treasury advice on debt management, serving as the Treasury's agent for bond issuance, and maintaining the discretionary right to intervene in foreign exchange markets.

Privatisation or abolition of these powers is likely in the best interest of both the Bank and financial markets. There is no reason, for instance, why the private sector cannot manage the service of registering Treasury securities. The short-term efficiency gains to be reaped from privatisation are not likely to be enormous, but the long-term gains from focusing the Bank's attention upon the matters of greatest importance may be considerable.

Similarly, fiscal policy is best left to the Crown. The Bank need take no interest in debt management or dealing with the Treasury on bond issuance. Outside observers agree that the Bank's influence over the Treasury in these areas can be quite strong. The preferred structure for the Bank focuses the Bank's attention on monetary policy and monetary policy alone. For similar reasons, we should not attenuate the Treasury's responsibility for debt management.

5. **Reserve Bank budgeting**

The current system of budgeting for the Reserve Bank contains admirable incentives; this system should be supported and extended. Under the current regime, the Bank receives a budget which is fixed in nominal terms for a period of five years.

Fixed nominal budgeting offers several advantages. First, the funding of the Reserve Bank is independent of the fiscal authority, at least in the short to medium run. In the short run the legislature cannot threaten easily to cut back upon the Bank's appropriations if the legislature does not approve of Bank policy. Since the Bank's funding cycle of five years is longer than the Parliamentary term of three years, the legislature also cannot threaten credibly long run funding penalties. Current members may no longer be in office by the time the Bank's budget is renewed.

Secondly, the budget of the Bank in real terms is inversely related to the rate of inflation. A Bank with a fixed nominal budget decreases its purchasing power to the extent that prices rise. Many theories of bureaucratic behaviour emphasise the desire of bureaucratic agents to maximise the budget of their institutions. Higher budgets mean more staff, higher prestige, nicer offices, greater perks, etc. To the extent that these incentives operate in the Reserve Bank, the incentive is for Bank officials to prefer low rates of inflation.

As with the salary of the Governor, the fixed nominal allocation for the Bank is not intended as a punishment. It is desirable to fix the Bank's allocation at a level which enables the Bank to perform its proper functions effectively. Fixity of nominal spending, however, provides the proper marginal incentives to fight inflation.

The fixed nominal budget for the Bank also implies a limited set of checks and balances within the Bank itself. Any funds spent on one of the Bank's functions represent funds drawn away from another Bank activity. Different pressure groups may operate within the Bank to prevent any single constituency from spending too much. Each bank division may face opposition or at least critical scrutiny from other divisions when asking for funding allocations.

The current funding structure for the Reserve Bank creates desirable incentives that should be written into the Reserve Bank Act directly. Currently, this funding structure could be changed by Treasury/government discretion alone. The independent, five-year funding cycle with fixed nominal allocations should be adopted as an amendment to the Reserve Bank Act in an attempt to further institutionalise the status quo.

5.0 Other budgetary issues

In addition to Crown funds, the Bank receives revenue from the fees charged to private banks for prudential supervision functions.

As long as the Bank is held to a fixed nominal budget, profits from seigniorage are not a source of Bank net income. If the Bank attempts to increase its income through inflating and creating additional seigniorage, other funds channeled to the Bank will be cut back accordingly and the Bank will not gain. Only if fixed nominal budgeting for the Bank is dropped would there be a need to reform current procedures for the division of seigniorage. In this case, we might wish to ensure that the Bank reaped no return from inflating and distribute all seigniorage income to the Treasury.

Profits from seigniorage are now divided between the Bank and the Treasury by negotiation. The current regime is a considerable improvement over previous arrangements, which granted the Bank the entirety of the profits of seigniorage under a regime which did not have fixed nominal budgeting.

VII. Banking Supervision

The Reserve Bank of New Zealand is responsible for prudential supervision of the banking system and serves as a lender of last resort. In its role as prudential supervisor, the Bank has the power to set and enforce capital requirements and other standards intended to ensure that banks remain solvent. In extreme cases, the Bank can place insolvent or negligently managed banks under statutory management. The lender of last resort role gives the bank the option of supporting troubled institutions with funds.

The Bank's role as prudential supervisor is intended as a first line of defence against bank failure and crisis; prudential supervision attempts to prevent the necessity of applying the lender of last resort function. This section first examines the Bank's role as prudential supervisor and considers whether the Bank should step in as lender of last resort. In both cases, a strong case can be made that the Reserve Bank, and the New Zealand government in general, should have no role here.

1. Prudential supervision

Reserve Bank regulations for prudential supervision are based upon the Basle standards developed through the Bank of International Settlements. These regulations involve capital requirements, limits on exposure to a single borrower, and limits on particular kinds of risk exposures (e.g., overnight foreign exchange positions). Branches of foreign banks (such as Citibank NZ), are exempt from these regulations under the assumption that the parent institution is satisfying its regulatory obligations abroad.

As of 1 January 1993, total capital of a banking group as a minimum percentage of the banking group's risk-weighted exposure must stand at eight percent or more. The value of different exposures is determined by a risk-weighting scheme, ranging from 0 to 100 per cent. Claims on governments, quasi-governmental organisations, and OECD banks are weighted at either 0 or 20 percent, while other claims are weighted at 100 per cent. The primary exception is housing loans, which are weighted at 50 per cent.

New Zealand banks have already positioned themselves to meet this standard. Restrictions upon exposure prevent a bank from lending more than 35 percent of capital to a single borrower. The standards also define when a closely related or financially interdependent group of borrowers should be treated as a single borrower for this purpose.

The Reserve Bank Act of 1989 gives the Reserve Bank of New Zealand the power to enforce these standards (and others) upon private registered banks. Registered banks pay fees which account for 75 percent of the costs of Reserve Bank prudential supervision; the Bank's final published budget for the 1990/91 financial year anticipates a total expenditure of $4,152,000 for supervision. While these funds suffice to cover the Bank's day-to-day supervision activities, additional infusions from the Treasury would be required if the Bank were to deal with a large banking failure.

For a period beginning in 1985, the Bank favoured a more non-interventionist approach to supervision. The aim was to transfer bank-specific prudential responsibility to private sector monitors and to concentrate Reserve Bank efforts on the possibility of system-wide crises and contagion effects.

International pressure, however, has been largely responsible for the shift in policy. The Basle standards are primarily an attempt to cartelise regulation and to prevent

international competition from thwarting the desires of particular national regulators. These standards are directed towards a broader international agenda and are not necessarily appropriate for New Zealand. Larger, more established financial powers do not want smaller countries like New Zealand to have the opportunity to offer more favorable regulatory climates.

Failure to accept the Basle standards might expose New Zealand to considerable international pressure and perhaps even some degree of unfavourable treatment. Small countries, however, should not allow larger countries or the international community to impose undesirable policies upon them. New Zealand has set a precedent in this regard with its nuclear-free policy; recent governments have withstood international pressure and upheld what they felt to be the best policy for New Zealand. The Reserve Bank should continue this precedent in the area of prudential supervision. Once accession to external pressure begins, the process has no end.

2. Weaknesses of the current regime

Prudential management is perhaps the area where the current regime involves the greatest danger. The Basle-based regulations offer too much regulation in some areas and too little in others, impose inefficient restrictions on banks, and require ongoing government intervention in the banking industry.

Criticism of the current regime, however, does not imply opposition to the concept of prudential supervision. Both prudence and supervision are certainly desirable. The issue is not whether one favours or opposes prudence, but whether markets or government regulation are a better source of prudential management. Policymakers should consider whether New Zealand has allowed too little scope for prudential supervision through markets and relied too much upon prudential supervision through the government. The use of market mechanisms for prudential supervision would require only a single role for the government - the enforcement of private contracts.

The Basle standards alone offer little guarantee against a banking crisis. Bank crises can arise when the value of the assets on bank books changes in sudden and unexpected fashion. By the time a bank is revealed as undercapitalised, it is already too late for regulatory action to assist the bank substantially.

Market participants also express a very strong concern that Reserve Bank staff do not have sufficient expertise to discern the riskiness of banks. No criticism of Reserve Bank staff is intended here. The staff are competent when asked to perform their proper duties, but they do not have the training and expertise necessary to provide up-to-date evaluations of bank safety. Only experienced bank managers with detailed on-the-spot knowledge of a bank's asset portfolio are competent to make these judgments. The Reserve Bank does collect great masses of information on bank

assets, but the proper digestion and interpretation of this information by an outsider is a nearly impossible task.

Banks exist as specialized lending institutions precisely because outsiders do not have the information necessary to evaluate and monitor loans. For the same reasons that a nationalized banking system would be disastrous, governments are not able to evaluate bank portfolios effectively.

The Basle capital standards are not sufficiently high to prevent crises altogether, nor is monitoring frequent and interventionist enough to spot incipient difficulties on short notice. Current regulations create an illusion of safety and government sanction of bank solvency at times when real danger may exist.

Since the Basle safeguards are illusory, it may be preferable to remove the aura of Reserve Bank sanction. In the future, sanction through Reserve Bank regulations may even be taken as an indication of Reserve Bank responsibility for banking failures or crises. The Reserve Bank would likely take the blame for either the failure of banks which met the regulations or for banks which were lax in meeting the standards. We should not hold the Reserve Bank accountable for events it cannot prevent or spot in advance.

2.0 Exposure limits

Other components of the Basle safeguards will increase the riskiness of New Zealand banks. Limits upon bank exposure to a single borrower, for instance, are particularly inappropriate for New Zealand. New Zealand has only several large banks and several large companies; it is inevitable that these banks will accept a large exposure to these companies. Consider Fletcher Challenge Limited, New Zealand's largest company. The total indebtedness of Fletcher Challenge now stands at $7.6 billion, which is more than 160 percent of the total capitalisation of New Zealand banks. Clearly, New Zealand banks cannot satisfy the bulk of Fletcher Challenge's borrowing needs under the Basle standards.

Requiring New Zealand banks to cut back their exposure to Fletcher Challenge and other creditworthy large corporations will create negative consequences. First, large and successful corporations such as Fletcher Challenge will be penalised; the cost of capital for large companies will go up. Fletcher Challenge will be required to borrow outside of New Zealand, even when it would prefer to borrow closer to home. Secondly, total bank lending may decrease for New Zealand banks. After the required cutbacks in lending to Fletcher Challenge, New Zealand banks may have trouble finding other desirable borrowers. Thirdly, the overall riskiness of New Zealand banks may increase. The new borrowers which replace Fletcher Challenge may involve greater net risks to the bank, even though the bank is more diversified.

2.1 Asset controls

Adoption of the Basle standards is more interventionist than it may at first appear; these standards actually reimpose asset controls on New Zealand banks, albeit in modified form. Different types of bank assets, such as housing loans, corporate loans, and loans to governments are classified into risk categories. Each type of loan or risk category requires a different amount of corresponding shareholder capital.

Because of differential capital requirements for different types of loans, regulations effectively alter the net price of making each kind of loan. Some kinds of loans are subsidised and others are penalised. Not surprisingly, governments have decided to subsidise loans to public agencies.

In addition, housing loans have also been given favourable treatment. Banks are now especially eager to make housing loans, because such loans lower their real, post-regulation cost of capital. In effect, the regulatory environment is influencing how the banking industry allocates loan capital.

Regulatory attempts to forecast which types of loans are "safe" are likely to backfire; regulators have no means of ascertaining the true riskiness of different asset classes. In fact, regulations which artificially encourage certain classes of loans decrease the safety of these loan classes. Subsidisation of housing loans, for instance, can lead to overcapacity in the housing sector and falling home prices. In a non-inflationary environment, housing can be a relatively risky investment.

Government attempts to influence the composition of bank assets have had a disastrous history in New Zealand. The older "asset ratio" system was one of the first and most important targets of deregulation in the 1980s. Under a different and more subtle guise, the Basle standards are reintroducing this system into New Zealand.

2.2 Laxity of regulation

In other respects Reserve Bank regulations imply too little supervision. The Basle accords take a one-dimensional view of bank monitoring. Government standards of banking supervision are usually applied in all-or-nothing fashion. Banks are either in violation of the regulations or they are not. So long as banks satisfy the regulations, disciplinary or corrective measures will not be taken.

Government, by its very nature, does not wish to intervene continually in the banking industry with auditing and supervision. Reserve Bank officials recognise properly that such ongoing "snooping" would overly politicise and restrict the banking industry. For this reason, replacing private monitoring with government monitoring creates the danger that banking institutions will not be monitored closely enough.

The Basle accord gives banks the option of treating government regulations as satisfactory standards of achievement, rather than as minimum acceptable standards of safety. The Basle standards were written to create the contrary impression; it is mentioned throughout that these regulations are intended as minimum standards

only, and not as measures of satisfactory achievement. But regulation cannot prevent minimum standards from becoming an excuse for laxity in implementing further safeguards.

The Reserve Bank may also have bureaucratic incentives for postponing public recognition of troubles in the banking system. When regulators know that their term or watch is expiring, the incentive is to postpone recognition of problems or mistakes until the new regime has taken over. This tendency may be strengthened further by the desires of the political party in office. In the case of the United States, the now-defunct Federal Savings and Loan Insurance Commission (FSLIC) denied recognition of a savings and loan crisis for several years, although insiders at the agency (and in the banking industry) knew better.

Regulators also have an incentive to collect more and more information on banks, in a futile attempt to ensure that they are not caught off guard. Increasing mounds of information which is difficult to interpret, however, will not increase the real foresight of Reserve Bank monitors. The primary result will be an increase in the quantity of private sector paperwork, a diversion of management time, and greater regulatory costs.

3. Private sector bank monitors

Market monitoring of banks comes through bank shareholders, large wholesale depositors, other bank creditors, and the market for corporate control. These parties have the incentive and financial expertise to enforce prudential lending and capital standards upon banks.

Private sector bank monitors can be assisted by a variety of market institutions, including credit rating agencies, accounting and auditing firms, and potentially, private deposit insurance funds. Market-based prudential supervision does not rely upon the monitoring abilities of thousands of small, potentially ill-informed depositors. Small depositors, however, may also exercise a disciplining function simply by deciding where to put their money. Small depositors can draw upon bank credit ratings or the presence of private deposit insurance as sources of information about bank health.

3.0 The role of foreign banks

Foreign banks which own branches or subsidiaries in New Zealand are a particularly important source of monitoring. These banks wish to protect their global reputation and are thus committed to ensuring that their New Zealand branches do not violate their contracts with creditors and depositors.

Many of the registered banks in New Zealand are foreign-owned to a complete or significant degree. Fourteen are owned overseas completely and another two have majority overseas ownership. Banks with majority foreign ownership hold 64.3 percent of the total assets of the banking system.

Prudential supervision is intended to ensure that no bank failures occur which place the New Zealand financial system in jeopardy. Yet three of the four large clearing banks are foreign-owned with one exception. Westpac and ANZ fall under Australian ownership, and National Bank is a subsidiary of Lloyd's of London. Only the Bank of New Zealand remains as a large domestic-owned bank; complete privatisation of this institution, however, would likely result in a considerable degree of foreign ownership. With respect to the smaller domestically-owned banks, a non-interventionist policy from the Reserve Bank would encourage a greater degree of foreign ownership and support.

As New Zealand bank liabilities are relatively small compared to the capital of the world banking community, foreign banks have the means to ensure that their New Zealand branches remain sound. Unlike in larger banking communities (e.g., United States, Japan), it is difficult to argue that the New Zealand government is the only party large enough to prevent a banking collapse.

The current regulatory regime already recognises that foreign banks are sound monitors of their New Zealand branches. Branches of foreign banks or subsidiaries of foreign banks with pledged credit protection are exempt from local application of the Basle standards. Yet no one argues that this exemption damages the stability or reputation of the New Zealand banking market. The exemption creates no problems because other safeguards (namely, capital from the parent company) ensure safety. Under a market-based supervision regime, these other safeguards would be strengthened.

3.1 Advantages of private sector monitors

Private sector bank monitors possess several advantages over Reserve Bank regulators. First, private sector monitoring and supervision institutions can undertake a more activist, day-to-day role in assessing bank health. Private monitors can do more than demand that certain minimum standards be met; these monitors can also audit and monitor bank behaviour along the ranges above the minimum standards. Continual political interference is not an issue and market supervision avoids the inflexibility and slowness of bureaucratic decision-making.

Secondly, unlike the Reserve Bank, these institutions lose money and business if they fail in their task of monitoring and supervision. The incentive for correct supervision is stronger with market mechanisms. The market for corporate control, for instance, provides profit incentives to dismiss incompetent managers and purchase the equity of shareholders who are poor monitors.

Thirdly, we do not know a priori how much prudential supervision is preferable. In some respects the Basle standards likely offer too little supervision and in other respects too much supervision. Standards are best discovered not through centralised fiat but rather through competitive discovery. Numerous private institutions, each doing their best to evaluate bank performance and soundness, will likely produce better standards than the Basle regulators.

Consider an analogy with accounting standards for non-bank private businesses. Although accounting standards are now much influenced by governmental regulation and disclosure requirements, accounting methods arose primarily through market evolution. It is unlikely that we would have superior accounting standards today had such standards been subject originally to government fiat and control.

The current system of regulation does not prevent market supervision of banks, but it does enforce a single legal standard for bank policy. This legal standard, combined with the Bank's lender of last resort role, tends to preempt private contractual arrangements to develop other means of supervision and control.

One argument for governmental prudential supervision claims that the reputation of New Zealand's banks among the international financial community is at stake. If the New Zealand Reserve Bank did not require registered banks to adhere to the Basle agreements, New Zealand might be perceived as having a second- or third-rate financial community.

This point represents a valid concern, but does not supply a sufficient rationale for government involvement in prudential management. New Zealand banks and their private monitors would still be free to adhere to the Basle standards, if doing so was either desirable for its own sake or necessary to attract international business. New Zealand banks may even choose to adhere to stricter standards; New Zealand could then acquire an international banking reputation stronger than those countries which adhere only to the Basle standards.

4. Lender of last resort function

Like most central banks, the Reserve Bank of New Zealand has accepted a role as the lender of last resort for the banking system. Under the current regime, banks can discount at any time by settling with Reserve Bank Bills at penalty rates. In this sense, the Reserve Bank stands willing to inject funds into banks on a general basis. Under special circumstances, the Bank may also extend credits to troubled banks under more generous terms. This latter form of intervention corresponds more closely to the traditional lender of last resort function.

Although the lender of last resort function is used only occasionally by most major central banks, the influence of this function upon the banking system is profound. Banks know that the helping hand of the central bank will be available during emergency situations. This implicit support has significant effects upon bank liquidity policies, bank relations with creditors, and bank lending policies. Banks take more chances and are less inclined to develop their own mechanisms for dealing with emergencies. The resulting increase in bank risk is known as the moral hazard problem.

The moral hazard problem has already struck with devastating effect in the United States. Through the mechanism of deposit insurance, the government guaranteed the

deposit liabilities of the savings and loan industry. Savings and loan institutions undertook excessively hazardous investments in light of this guarantee. Current estimates of the government's financial liability exceed $(NZ) 830 billion.

New Zealand regulators have wisely decided not to implement governmental deposit insurance. For the same reasons that deposit insurance is harmful, however, we should also reexamine the Bank's lender of last resort role. The lender of last resort function does not necessarily exercise a stabilising influence on the banking system, on net. The implicit presence of a lender of last resort substitutes for private safeguards against the danger of a banking collapse or interbank credit risk. It is the presence of a lender of last resort that can give rise to the conditions under which the lender appears necessary.

The strongest argument for a governmental lender of last resort arises when an economy's banking system is very large relative to the pool of capital available for insurance and support purposes. As discussed above, this is not the case for the New Zealand banking system. Private sector institutions, drawing upon foreign capital, are large enough to insure the New Zealand banking system, for example, through mutual support and standby credit arrangements. Given this fact, it is not clear why the burden of implicit insurer should fall upon the New Zealand taxpayer.

4.0 Contagion effects

The arguments for the Reserve Bank's lender of last resort function require that there be something special about the banking industry which does not characterise other economic sectors. Advocates of the lender of last resort function generally cite "contagion effects" as an argument for intervention in the banking sector. Failure or trouble in a single institution may spread to other institutions, either because of depositor panic or because of interlocking credit risks.

Contagion effects do not represent a decisive argument for the Bank's lender of last resort role. First, private banks are capable of developing their own protection against contagion effects. We can imagine New Zealand banks purchasing insurance policies or open credit lines from overseas banks. In the case of a failure of one New Zealand bank, other affected New Zealand banks would receive injections of funds or guarantees from their insurers or lenders. In the case of foreign-owned banks, such protection could be obtained directly from the parent firm. In Switzerland, banks privately insure each others' deposits.

With market insurance, New Zealand banks would no longer be receiving implicit protection against risk from New Zealand taxpayers. Instead, this protection would be purchased in open markets at a competitive price. Different insurers would compete with respect to standards of price, quality, and supervision. These private insurers and guarantors would also require New Zealand banks to meet prudential standards of safety and sound lending.

Private bank insurance policies may prove inadequate in the case of a world-wide banking catastrophe in which some of the world's major banks go under. But in this unlikely event, the resources of the Reserve Bank and Crown would also be insufficient to stave off a system-wide crisis.

The Reserve Bank's lender of last resort function does increase New Zealand's reputation in the financial community through the implicit taxpayer subsidy. If the Reserve Bank were to step in to bail out a particular bank, foreign creditors might take lower losses than otherwise. Knowing this, foreigners will be more likely to invest in New Zealand as a result of lender of last resort commitments.

Increasing foreign investment through taxpayer subsidies, however, is not a proper role of the Reserve Bank. Foreigners who invest in New Zealand should be required to perform their own credit analysis and take their chances with bad investments. Subsidising mistaken investment of foreigners with taxpayer dollars may be good for the New Zealand banking community, but is not desirable for the New Zealand citizenry as a whole.

The Reserve Bank should not be in the business of propping up or subsidising insolvent banks. The policy of forbearance for insolvent banks has been adopted during America's savings and loan crisis with disastrous results. The lending central bank takes on an open-ended commitment which is costly for the taxpayers and requires ongoing central bank involvement in the day-to-day management of private banks.

The Reserve Bank, like most other central banks, claims that its lender of last resort function does not place taxpayer funds at risk. The current regime has not yet been put to the test in this regard. But in practice, the lender of last resort function does not remain restricted to solvent but illiquid banks in need of temporary assistance. In America, for instance, it has recently come to light that the Federal Reserve System has abused its lender of last resort function by widespread lending to insolvent banks.

Nor does the lender of last resort function remain restricted to lending based upon secure collateral. To the extent that banks have adequate collateral, they can borrow without going to the discount window. Central bank intervention is necessary precisely only when credit risk is present and other banks will not lend.

The incentives and operation of lender of last resort intervention provide further reason why central bank lending will not remain restricted in the manner that central banks claim. Once lender of last resort facilities are in place, central banks cannot easily say no to insolvent banks during a crisis. In an emergency situation, the central bank may be unsure of a bank's solvency. Political pressures will dictate staving off the immediate crisis rather than rigidly adhering to the rule of no risky lending.

4.1 Payments system reform and open market operations

The most important source of contagion effects is not addressed by either prudential supervision or current lender of last resort policies. Serious contagion effects, if they do arise, are most likely to come through the presence of unsecured daylight overdrafts through the payments system. Under the current regime, interbank transactions are settled only once a day, which can give rise to domino effects if a single bank fails. Those banks which were counting upon payments from the troubled bank may themselves experience difficulties.

Central bank assumption of the lender of last resort role discourages banks from taking their own measures to remedy daylight overdraft problems. Possible reforms include a requirement that daylight overdrafts be collateralised or a real-time payments system, which settles in ongoing fashion (as found in Switzerland). Such reforms would greatly decrease the likelihood of contagion effects; these reforms could be implemented either by Reserve Bank direction, or by the banks themselves, once the Reserve Bank retreats from its lender of last resort role.

The Reserve Bank can discourage contagion effects through other means without lending directly to troubled banks. Open market operations can be used to supply liquidity to the system as a whole rather than injecting funds into particular banks on a discretionary basis. Markets, rather than the Reserve Bank, would make the decision of how much to lend to ailing financial institutions. The additional liquidity increases the funds available for short-term interbank lending and allows troubled banks to seek emergency assistance at relatively favourable terms.

The supply of liquidity through open market operations may not alone suffice to control contagion effects. However, when combined with payments system reform, the ability of banks to diversify, purchase crisis insurance, maintain high capital ratios, and affiliate with overseas capital, the New Zealand system can assure financial soundness without the necessity of taxpayer guarantees.

In extreme cases, troubled banks may find their credit lines shut off, even if the system as a whole is liquid. In this case, the troubled bank should be allowed to fail. We should not expect New Zealand taxpayers to take on credit risks which the better-informed banking community finds unacceptable.

Conducting a lender of last resort policy through lending to particular banks politicises central bank decision-making. The Reserve Bank must decide how much money to lend, the interest rates charged, collateral required, the terms of the loan, and the scrutiny and monitoring which the borrowing bank must endure. The lending central bank will invariably end up treating borrowing banks differently on a discretionary basis.

The interbank lending market places a market discipline upon borrowing banks which a central bank cannot. The market can be used to decide the conditions and terms of loans to ailing banks. The interbank market can perform credit analysis better than a central bank can. Privately owned banks are motivated by profit

incentives and are less subject to political pressures for favouritism and special treatment.

Restricting the Bank's lender of last resort function is consistent with an increased emphasis on monetary targeting. Providing access to the discount window allows bank borrowing demands, exercised partially at bank discretion, to influence money supply figures. When troubled banks borrow from the central bank, the monetary base will increase with the rise in bank reserves.

When borrowing through the window is at bank discretion, an undesirable amount of central bank monetary discretion is introduced. Under these conditions, the Reserve Bank could implement a discretionary monetary policy by changing the discount rate or by changing the terms under which banks are allowed to borrow. Central bank use of the discount window is limited by unofficial pressures and sanctions placed by the central bank. By their very nature, these pressures are difficult to measure or control from outside. Central banks could circumvent the operation of the monetary rule by easing on these pressures and lowering the real cost of discount window borrowing.

When the lender of last resort function is operated on a discretionary basis, changes in monetary policy can occur through changes in borrowed reserves. In the United States, the Fed (from October 1982 onwards) has used changes in the level of borrowed reserves to target nominal interest rates under a regime which ostensibly pays closer attention to monetary targets.

5. Concluding remarks

As discussed above, the current regime of prudential supervision relies too much upon governmental mechanisms. The flawed Basle standards should be replaced with market-based incentives for prudential supervision.

We should also consider legislation which would restrict the Reserve Bank's lender of last resort function. Under one possible alternative, the Bank should be prohibited from lending or granting funds to troubled banks, even in times of crisis. Private sector mechanisms of insurance and bank capitalisation would replace the current system of implicit government subsidies for the banking community.

Restricting the Bank's lender of last resort function, however, is not without serious problems. Legislation to this effect might never succeed or be enforced strictly. In the time of a financial crisis, the government may manage to find a means of intervening to support troubled institutions in any case.

It remains in doubt whether a government can precommit effectively to not intervening in times of crisis. Intervention through lending and subsidies remains possible as long as the government has access to a relatively large pool of liquid funds. This will clearly remain the case for the foreseeable future. Even if the Reserve

Bank had no authority to intervene, the Treasury could always give or lend funds on its own behalf.

The complete absence of a lender of last resort should be considered an ideal which real world institutions can attempt to approximate, but will likely never meet. Policy should therefore place as many obstacles in the way of lender of last resort intervention as possible.

We should consider modifying the Reserve Bank Act to restrict the lender of last resort function. Emergency legislation from Parliament could be required if the Reserve Bank (or Crown) were to intervene with funds. Private institutions could no longer rely upon the lender of last resort function as a substitute for their own safety efforts.

The government should also undertake an educational campaign to convince the New Zealand citizenry that they should evaluate banks with respect to private safeguards and insurance, rather than assuming a government guarantee. New Zealand citizens are accustomed to purchasing life insurance to protect their families in case of death; there is no reason why the New Zealand public could not recognize a comparable need to seek protection by dealing with banks offering private deposit insurance contracts.

VIII. Future Financial Evolution in New Zealand

The underlying premises of this study have treated Reserve Bank monetary policy as a potentially destabilising force to be constrained, rather than a positive force which can be harnessed for achieving particular economic ends. Given this perspective on the Reserve Bank, the question arises whether there should be any Reserve Bank at all or any governmental intervention in monetary affairs.

Monetary institutions without a central bank are clearly possible. In New Zealand there was no Reserve Bank at all until 1934. Even today, Hong Kong has no central bank and conducts monetary policy by pegging its currency to the U.S. dollar. The nineteenth century affords other examples, such as Scotland and Canada (and New Zealand for a brief time), which successfully allowed private provision of currency and banknotes.

Although conducting monetary institutions without a Reserve Bank is a viable possibility, eliminating the Reserve Bank and governmental control over monetary institutions is not a short-term policy option. I will argue there is no single proposal which is obviously superior to the status quo.

Furthermore, it is difficult to construct feasible transition paths that would take us from current institutions to a laissez-faire alternative. The current monetary order uses government fiat dollars as both the medium of exchange and unit of account. Displacing government dollars from these roles, even if possible, would involve significant one-time shocks to prices and exchange rates. In the current political

climate in New Zealand, such reforms would likely never be seen to completion. Regardless of whether the move to fiat money was wise in the first place, a move away from fiat money would prove difficult in the near future.

1. Gold and commodity standards

The most obvious alternative to fiat money is a gold or commodity standard. From 1816 to the first World War, gold served as the prevailing monetary standard for international trade and as the unit of account in many countries. Although debate continues over how well the classical gold standard performed, the economic successes of the gold standard period are evident. Unlike some of the other alternatives discussed below, the gold standard is a tried and known alternative.

One question is whether a gold standard, adopted world-wide, would provide superior price stability or macroeconomic performance. During the gold standard era, major economies such as the United States and the United Kingdom experienced long-run price stability. Short-run price fluctuations, however, were no less than under present institutions. Within a given year, prices frequently moved upwards or downwards in volatile fashion. Furthermore, despite incomplete data, it does appear that output and employment were more volatile under the gold standard.

A laissez-faire gold standard does remove control of the price level from the discretion of a central monetary authority. Under a gold standard, however, the price level is determined by the cost of producing gold and the non-monetary demand for gold. These two factors, operating together, determine the monetary supply of gold and thus the price level. Like central banking policy, these magnitudes can also fluctuate in arbitrary fashion. Throughout history, new gold discoveries or changes in the cost of producing gold have occasioned considerable price volatility.

Although a gold standard does not appear superior to a well-managed central bank in the short run, proponents of the gold standard have argued that central banks inevitably abuse their money-issuing power and become irresponsible in the long run. This criticism carries much weight - the long run record of central banks in controlling inflation is not very strong.

This advantage, however, is not enough to provide a convincing case for the gold standard. At least three factors militate against adopting a gold standard or other commodity standard for New Zealand.

First, a small country which adopted gold or some other commodity as the monetary unit would accept an excessive amount of exchange rate volatility. A gold standard may prove a viable policy option if adopted by the entire world. But a small country such as New Zealand would incur serious costs by going alone on to a commodity standard.

Changes in the international demand for gold would require comparable changes in the New Zealand exchange rate. Gold prices have demonstrated considerable volatility since the breakdown of the Bretton Woods agreement. Over the last twenty years, gold has traded within the range of U.S. $35 an ounce to U.S. $800 an ounce. Had New Zealand been on a gold standard at this time, the Kiwi dollar would have appreciated disastrously, hurting the international competitive position of New Zealand industry.

Proponents of the gold standard argue that volatility in the value of gold would not be present if gold were money. Under a world-wide gold standard, gold would no longer be required as an inflation hedge; the monetary demand for gold might stabilise gold value. But the potential truth of this claim is not relevant for New Zealand policy decisions. The rest of the world is not likely to adopt a gold standard anytime soon and the international value of gold will remain unstable.

Secondly, moving to a gold standard would involve serious problems of transition. Even assuming that the New Zealand government could raise a sufficient stock of gold to back its currency, the choice of a gold-dollar conversion rate would likely produce large one-time adjustment costs. If the initial parity chosen were not an equilibrium, sudden and wrenching movements in prices and exchange rates would result. Backing the New Zealand dollar with too much gold, for instance, would require an appreciation of the exchange rate and a fall of domestic prices. Similarly, backing the Kiwi dollar with too little gold would depreciate the exchange rate and produce inflation. The New Zealand economy can ill afford such economic volatility at a time when monetary and financial stability is just beginning to arise.

We have no means of knowing the true equilibrium value of the New Zealand dollar under a gold standard. Simply matching the current New Zealand exchange rate to the current world price of gold would not produce an equilibrium rate of conversion. The current value of the New Zealand dollar is based upon the premise that New Zealand is not on a gold standard. Using the current value of the New Zealand currency to estimate the currency value under a gold standard would disequilibrate markets.

Finally, a gold standard does not provide automatic guarantees against government intervention into the monetary arena. Under the classical gold standard, governments intervened frequently into the gold market to move gold flows in the desired direction. Furthermore, the gold standard was suspended whenever governments felt the need to inflate; indeed, the gold standard began its period of decline in 1914 for this reason. If we do not trust the long-run responsibility of a central bank, neither can we trust the long-run inclination of a government to maintain a market-based gold standard.

2. Commodity bundle systems

An intriguing proposal for monetary reform is the commodity bundle or "BFH" system advocated by Leland B. Yeager and Robert Greenfield. The initials "BFH"

stand for the names of Fischer Black, Eugene Fama, and Robert Hall, three economists who developed the ideas behind this system. An earlier version of the BFH reforms can be found in Irving Fisher's "compensated dollar" plan.

The BFH system uses a broadly defined commodity bundle as the economy's unit of account. Rather than defining the New Zealand dollar in terms of a specified weight of gold, the government would define the New Zealand dollar in terms of a commodity bundle similar to the components of the consumer price index.

The New Zealand dollar, however, would not be redeemable directly for the components of the index; this would prove cumbersome and impracticable. Instead, the dollar would be redeemable in terms of a varying quantity of some intermediate asset (say gold). At any point in time, the dollar would be worth however many ounces of gold are required to purchase the defined commodity bundle. In essence, the government is pegging the nominal value of the price level by continually adjusting the quantity of gold ounces behind the dollar.

We can imagine not only a governmental implementation of the BFH system but also laissez-faire versions, in which private banks contractually commit to redeem their liabilities to maintain constant purchasing power for their notes.

Unlike under a gold standard, the value of the unit of account is not linked to a single commodity; instead, the unit of account is defined in terms of a broad bundle and is thus more likely to be stable in value. This diversification represents a primary advantage of BFH systems. The value of the unit of account is insulated from shocks to the supply and demand for any single commodity.

The BFH system deserves serious consideration as a policy alternative. In a longer paper, however, I have argued that we would be ill-advised to adopt the BFH reforms.

Like all proposals which stabilise the price of a commodity bundle, the BFH system increases the vulnerability of an economy to negative real shocks (see section II). If a real terms of trade shock were to place upward pressure on the price level, for instance, the rules of the BFH system require that the gold content of the dollar be increased to induce a monetary contraction. This contraction would require deflation of many prices and wages and would have negative effects on output and employment. The price stabilisation feature of the BFH system does avoid inflationary shocks from the money side, but only by increasing the cost of real shocks to higher levels.

In addition, the adoption of a BFH system would open up potentially profitable arbitrage and speculation opportunities for market participants. Bank attempts to maintain proper parities among commodity prices, the unit of account bundle, and the medium of redemption (e.g., gold) can be exploited by market participants. To offset the resulting speculative pressures, BFH banks must undertake discretionary

monetary management. Use of policy discretion, however, offsets one of the primary advantages of the BFH system and of commodity standards in general.

For these reasons, the BFH system is unlikely to be a viable policy alternative in the short term. And unlike the gold standard, the BFH system would prove difficult to explain to members of the general public and even to sophisticated members of the financial community.

3. Financial asset media of exchange and settlement

Both gold and commodity bundle standards attempt to legislate an end to government monetary control by redefining the unit of account. As argued above, however, neither of these proposals is a truly convincing alternative to current institutions.

Alternative scenarios may involve long-term erosion of monetary control and the gradual evolution of laissez-faire, as market participants eventually bypass current regulations and settlement procedures. I examine one scenario through which the effectiveness of current Reserve Bank control weakens over time and gradually disappears. A regime of deregulated or "free" banking may therefore come about through evolution, rather than through deliberate implementation.

Before examining this scenario, however, I first consider the factors behind the current effectiveness of monetary policy. Which institutional features account for monetary control, which are inessential for monetary control, and which should we consider modifying? Answers to these questions are necessary for translating our judgment of laissez-faire, either positive or negative, into concrete policy proposals.

3.0 Demand for Reserve Bank liabilities

Under the status quo, several different regulations support the demand for Reserve Bank liabilities. These factors include legal tender laws, the requirement that taxes be paid with New Zealand dollars, and Crown insistence that transactions with the government be settled with New Zealand dollars. The demand for Reserve Bank liabilities is supported also by practices of the private sector, including the use of currency for transactions, the use of cash for settlement of interbank liabilities, and the use of the dollar as a unit of account. These features all contribute to the ability of the Reserve Bank to control the money supply and the level of prices.

The question arises which of these features are central to the ability of the Reserve Bank to exercise monetary control and which are of secondary importance. I shall first examine the relatively inessential factors which increase the demand for dollars.

Legal tender laws, taken alone, are not essential for monetary control. Although legal tender laws specify that creditors and sellers must accept government dollars for settlement of obligations, these laws do not guarantee real value for the government currency. First, market participants may still agree mutually to contract

in terms of another medium. Secondly, the demand for government dollars may still be very low. Merchants might price their wares in terms of dollars at a very high level, as in a hyperinflationary environment. Monetary control is unlikely to be effective under such conditions.

In addition, legal tender laws are not binding legal constraints in most instances. As long as private banks and the Crown use dollars as a means of settlement as a matter of convention, a strong demand to hold dollars will exist, regardless of whether this convention has legal support. If legal tender laws were repealed tomorrow, the likelihood is that no one would notice.

The demand for currency is also a relatively weak factor contributing to monetary control. Currency is a relatively small portion of the total supply of money; currency comprises only 11.9 percent of M1 and 1.9 percent of M3. Use of currency for small transactions, while ensuring a positive demand for government dollars, does not offer a central bank an effective fulcrum over the price level. Monetary control would weaken significantly if currency were the sole source of demand for government dollars (more on this below).

The requirement that taxes be paid with government dollars, while not irrelevant, is a frequently overrated factor in creating a demand for Reserve Bank liabilities. If market participants do not otherwise wish to hold government dollars, tax requirements alone create only a weak and irregular demand for Reserve Bank liabilities.

First, taxes are generally levied as a percentage of incomes or prices, rather than for a lump-sum amount of dollars. Proportional taxation alone does not induce any particular real demand for dollars. Proportional tax payments can be satisfied at any particular value of dollars.

Secondly, tax-induced demands would be held idly in hoards if there were no other use for dollars. Imagine a world in which some private sector agents (e.g., banks) would specialise in holding government dollars year round. At the time when tax payments are due, those with tax liabilities would go to these banks and offer other assets in exchange for these dollars. These dollars would then be delivered to the government, and presumably, later recycled to the banks in return for other assets. Since government dollars are not a preferred asset (by assumption), banks will compete by minimising their inventories of dollars; the price charged for the sale of dollars would reflect the costs of managing these inventories.

The demand for dollars is clearly positive in this scenario, as banks hold dollars the entire year round. Monetary control is problematic, however, because government dollars do not have an effective velocity in the private sector. Under one scenario, increases in the supply of dollars would simply be held in bank hoards until tax time, at which point they would be returned to the government.

We can think about the tax-created demand for government dollars with the aid of the following analogy. New Zealand tourists, when they travel to Indonesia, are required to hold and use the Indonesian Rupiah. For this reason, New Zealand banks hold inventories of Rupiah, although these banks also attempt to keep their inventories to a minimum, as Rupiah have no other use in New Zealand. New Zealand tourists periodically buy these Rupiah from the banks, spend the Rupiah in Indonesia, and the Rupiah eventually return to the New Zealand banks. Although there is a steady and reasonably predictable demand for Rupiah in New Zealand, the central bank of Indonesia cannot exercise effective monetary control over the New Zealand economy. Even if many New Zealand tourists went to Indonesia and created a very large demand for Rupiah in New Zealand, traditional techniques of monetary control would still not apply.

Monetary control today is predicated primarily upon three factors: use of dollars as an interbank settlement medium, use of dollars for transactions with the Crown on a regular or daily basis, and use of the dollar as a unit of account.

Use of the dollar as a unit of account is a necessary, but not sufficient, institutional feature for price level control. If the dollar is not the unit of account, changes in the supply and demand of dollars will not affect the price level in traditional fashion. Prices would be posted not in terms of New Zealand dollars, but in terms of some other assets, say "units." An increase in the supply of dollars, for instance, would affect the dollar/units exchange rate, but would not have direct inflationary effects upon the price level.

An analogy can be drawn with the current situation between Australia and New Zealand. Persons or corporations in New Zealand sometimes hold Australian dollars, but the unit of account in New Zealand is the New Zealand dollar. Changes in the supply of Australian dollars have their primary effects upon the exchange rate, rather than the level of prices in New Zealand.

For the quantity of money to have systematic affects upon the price level, this medium of exchange must serve as the unit of account. Use of the New Zealand dollar as a unit of account is not likely to change in the near future. Market participants are inclined to switch units of account only when rates of inflation reach intolerably high levels, approaching the triple digit range. Under normal circumstances, unit of account switches involve serious public goods difficulty. No person wishes to start using the new unit unless he is sure that other persons will do the same; because no person wishes to move first, the switch does not occur.

Use of the dollar as a unit of account is not a sufficient feature for monetary control, however. The demand for dollars must still be sufficiently strong and regular for changes in the supply of dollars to have reasonably predictable impacts upon the price level. The unit of account use of dollars does not alone ensure such a strong and steady demand. At the relevant margin, then, the use of New Zealand dollars as a medium of settlement is the critical factor for monetary control.

New Zealand dollars are used as a medium of settlement for two primary reasons: Treasury and Reserve Bank requirements that transactions with the Crown and Reserve Bank be settled with dollars, and the interbank convention of settling with dollars. These features create a strong and regular demand for dollars at the wholesale level. Through their use as settlement media, dollars form the base upon which the liquidity of the entire financial system depends. Increases in the supply of dollars, for instance, increase liquidity on a system-wide basis, which induces additional spending and upward pressure upon prices.

Treasury requirements for the use of dollars are a matter of policy, whereas interbank settlement practices are a matter of financial evolution. I first examine how and whether private financial institutions might evolve away from the use of dollars, and then consider whether the government should hinder this evolution by continuing to enforce a strong demand for Reserve Bank liabilities.

3.1 Interest on reserves and settlement media

Private banks have profit-maximising incentives to bypass government dollars and the Reserve Bank clearinghouse and set up their own system. Under a private clearinghouse system, banks would be able to earn a higher rate of return on their reserves. Moving to a private clearinghouse system might also allow banks to institute preferred payments technologies or procedures for settlement.

Under the current institutional structure, the Reserve Bank accepts settlement in terms of cash only. Although the Reserve Bank pays interest on reserves at 65 percent of going market rates, private banks would prefer even higher returns.

Paying interest at full market rates, however, is not a feasible policy option for the Reserve Bank. A market rate of interest paid on cash, the most liquid asset, cannot coexist with the presence of other investment assets; a stable equilibrium will not generally obtain. When the market rate of interest is paid on cash, cash earns a net rate of return superior to that of the instrument from which the market rate of return is measured. Cash yields not only an equivalent pecuniary return but also a superior liquidity return. The other investment asset (say Treasury securities) will no longer be held.

Once the market in Treasury securities breaks down, the Reserve Bank is no longer paying interest on reserves at market rates. The new market rate of interest is now the next rate higher than the old rate on now-defunct Treasury securities. But if the Reserve Bank pays interest on cash at this rate, this credit market will collapse as well, and so on. A stable equilibrium does not exist when interest is paid on cash at market rates.

Since paying market interest on settlement cash is not a policy option, settlement cash is inherently an inferior asset in pecuniary terms. Private banks would in principle prefer to settle with an asset which does pay market returns. Holding cash may offer offsetting non-pecuniary or "liquidity" returns, but holding and settling

with Treasury securities offers pecuniary superiority. For this reason, market participants have a long-run incentive to increase the marketability of Treasury securities and other interest-bearing assets and use these assets as an alternative to cash.

If banks can settle with Treasury securities, the demand for settlement cash will disappear. Treasury securities would be equally liquid as cash at the wholesale level and would offer superior pecuniary returns. We would be faced with a regime in which the Reserve Bank could rely upon only the demand for currency to influence the price level.

Immediately below, I consider the operation of a world in which the demand for currency is the only leverage for monetary policy. Our evaluation of such a world provides an entry into an analysis of concrete policy issues. If this world is desirable, we should consider dropping the Crown requirement that settlement be made with Reserve Bank liabilities. If this world is undesirable, we have a rationale for continuing to enforce the current privileged position of settlement cash.

3.2 Price level stabilisation through currency alone

The Bank and Crown could allow settlement with assets other than cash, such as short-term government securities or highly-rated short-term private securities, such as commercial paper. Rather than delivering cash to the Reserve Bank, market participants could deliver securities, evaluated at the current bid prices prevailing in the market. In effect, the Bank would be discounting these securities, but no longer at a penalty rate.

If the Reserve Bank or a private clearinghouse allowed the use of interest-bearing assets for settlement purposes, open market operations would lose their effectiveness. Cash and interest-bearing securities would become nearly equivalent assets. An exchange of one asset for the other would not increase the liquidity of the banking system and would not prove either expansionary or contractionary.

The Reserve Bank could influence the price level through the issuance of currency alone; changes in the supply of currency would be the only monetary policy tool at the Bank's disposal.

3.2.0 Alternative views on price determination

Economists have expounded two different views on the relationship between money and prices in a world where the central bank has leverage over the supply of currency alone. First, Eugene Fama has argued that the price level would be proportional to the supply of currency alone. A doubling of the supply of currency, for instance, would double the absolute level of prices in the long run.

In Fama's view, the use of financial assets for settlement purposes would be separate from the forces determining the price level. Exchanges and deliveries of interest-bearing assets for settlement purposes have portfolio implications only and do not serve meaningfully as "money" or "media of exchange." The level of prices is independent of the supply of deliverable financial assets; increasing the supply of deliverable financial assets, for instance, does not produce upward pressures on the price level. Financial securities are real assets which are bartered against other real assets; barter itself does not influence the general level of prices.

An alternative view on the relation between money and prices has been expounded by the author. If deliverable financial assets serve as media of settlement, these assets will also offer liquidity premia and acquire monetary characteristics. The price level will be proportional not to the supply of currency alone, but to the total supply of liquid settlement assets. Currency will supply only a small portion of this total. Central banks would have some residual monetary influence through their control of currency, but central banks would become increasingly irrelevant as financial evolution proceeds and the role of currency narrows.

The feasibility of a world in which the central bank influences the supply of currency only depends upon which of these two views is correct. If the price level is proportional to currency alone (the Fama view), such an innovated economy may not possess price level stability. As financial innovation proceeds, the demand for currency may not remain stable. Currency has many close substitutes and can be economised easily.

A price level proportional to currency alone would imply that the nominal determinacy of the system would be built upon a very small base. We may still hold currency for buying newspapers in the street, paying for cab rides, and transactions in the underground economy. It may be unwise, however, to allow the price level to depend upon such a small base. Swings in the demand for currency would produce corresponding swings in prices.

In the view of Cowen and Kroszner, price level instability need not follow from financial evolution. The demand for currency may well be unstable, but the price level is proportional to the entire supply of media of exchange and settlement. There is no particular reason to believe that the demand for this aggregate magnitude will be unstable, or at least less stable than the demand for exchange media today.

Stability would be enhanced further by the determinants of exchange media supply. Swings in exchange media demand would be offset by changes in exchange media supply; the supply of financial assets is endogenous and responds to changes in demand. If the demand to hold financial assets increases (for investment, transactions, or settlement purposes), for instance, financial intermediaries will respond by increasing the supply of such assets. The supply of exchange media will be self-regulating and will move in synchronisation with exchange media demand. Any instabilities of exchange media demand will be offset automatically by market forces through supply responses.

Autonomous inflation from the supply side is impossible under a regime of financial asset media of settlement. Interest-bearing assets cannot be issued in excess of demand. Increases in supply occur only insofar as market participants are willing to purchase financial assets by giving up other forms of wealth in exchange.

3.3 Development of banking and currency

We can imagine futuristic scenarios in which the demand for currency disappears altogether. Perhaps all transactions are made by the transfer of accounting units through electronic funds transfer systems. In this case the entire supply of exchange media would consist of financial assets and the central bank would no longer possess any monetary control. If exchange media supply responds automatically to exchange media demand, however, monetary policy may no longer be necessary or desirable.

To the extent that safe and liquid financial assets exist, we may also observe modifications of traditional banking structures. Accountholders may decide to bypass bank shareholders and hold financial assets directly in checkable accounts. These accounts would resemble the checkable money market mutual funds currently used in the United States. With these accounts, checks can be written against treasury bills, commercial paper, or a variety of other assets.

Checkable mutual funds offer advantages over traditional bank accounts. Claimholders earn superior pecuniary returns because they do not deal with bank shareholders. Furthermore, accountholders can achieve their preferred risk-return structure by choosing an account with the preferred degree of safety.

Money market funds are also invulnerable to run and solvency problems. Rather than rewarding depositors on a first-come, first-served basis, changes in asset values translate directly into changes in the value of depositor claims. Such funds are marked to market each day. Large-scale withdrawals of funds do not create systematic problems because the assets held are liquid. Lender of last resort guarantees from central banks, however, have subsidised banks in their competition against money market funds and hampered evolution in this direction.

In today's world, bank shareholders offer services of deposit capitalisation and liquidity transformation. These services will decline in importance as asset liquidity and safety increases. While checkable mutual funds do not offer the guarantee of fixed nominal value for depositors, portfolios of safe securities and hedged positions expose claimholders to little nominal risk and perhaps less risk in real terms than with current bank accounts.

Checkable mutual funds also would allow for competition among different media of exchange. Partisans of the gold standard, for instance, could hold checkable funds

backed by gold claims. If gold or some other real asset is the preferred money, it would have a chance to reveal its superiority through a competitive process.

3.4 Problems with financial asset media of settlement

In a longer book-length manuscript, Randall Kroszner and I argue that the use of financial assets for transactions and settlement purposes is a feasible possibility for future financial institutions. The use of financial asset media of exchange and settlement, however, does involve several unsolved problems.

First, Treasury securities are likely to be a medium of settlement under such a regime. Government control over the supply of liquidity would not disappear but would be shifted from the Reserve Bank to the Treasury. Government influence over liquidity would decrease, however, as the Treasury would be forced to compete against other private sector issuers of financial securities. Treasury securities would form only a portion of available settlement media. Furthermore, the market for settlement media would likely be contestable. Many large international corporations have credit ratings superior to those of the Crown.

A second problem arises when the government itself accepts delivery of funds. We do not mind that the government holds stocks of cash, but we may not wish the government to hold private sector debt and equity claims. Having a government which serves as debtholder or shareholder may be inconsistent with our broader desire for an impartial government and a level economic playing field. The government might restrict its acceptance to Treasury securities alone, but to this extent the market for settlement media is less contestable.

Thirdly and most generally, use of financial assets as media of settlement does not represent a policy option in the short- or medium-run. The supply of high-quality, safe financial assets denominated in terms of New Zealand dollars is not currently large enough for such assets to displace settlement cash. Furthermore, the financial innovations required to replace current cash-based settlement procedures are costly to implement.

For these reasons, moving to a regime with financial asset media of settlement cannot be offered as a policy recommendation for the present. Despite these problems, a regime based upon financial assets may become a viable policy option sometime in the next century. Many financial innovations which only recently appeared remote or too costly are now becoming commonplace throughout the world. The costs of using alternative settlement assets and procedures will decline over time. Market participants have an incentive to innovate in this direction because alternative settlement and exchange media do offer the promise of superior pecuniary returns.

The Reserve Bank should study the properties of a regime based upon the use of financial assets for settlement procedures. When the time comes, we need to be well-informed about whether monetary control can be maintained, whether monetary

control should be maintained, and the alternatives to monetary control. Rather than playing catch-up to the rest of the world, New Zealand may someday be in the position to be in the vanguard of change in this area.

3.5 Potential reforms

If we do decide that financial asset media of settlement, combined with an evolution towards laissez-faire, is a preferred outcome, the New Zealand government should take several steps. First, the Government would repeal legal tender laws and accept Treasury securities and perhaps foreign currencies for payment of taxes. Secondly, the Crown would move its accounts to the private sector and allow a private sector banking consortium to determine which assets are acceptable media of settlement.

A freeze of the monetary base would be the appropriate accompanying monetary policy for a move towards laissez-faire. A monetary freeze requires no discretionary day-to-day management from the Reserve Bank. In contrast, other money growth rules (such as a three percent rule) require continuous fine-tuning for the Bank to meet its target; the Bank must engage regularly in open market or other monetary policy operations. With a freeze of the monetary base, the Bank can forsake a large degree of control over its policy instruments; the Bank can even shut down its open market and discount window operations, if it so chooses.

Freezing the monetary base is least likely to generate price inflation of all money growth rules (except for negative money growth rules). Increases in velocity or the broader monetary aggregates may still produce upward pressure on prices. The frozen monetary base, however, provides the strictest limits possible without deflating the money supply.

Robert Clower aptly characterises the effects of a monetary base freeze upon prices:

"[Freezing the monetary base] would not impose any definite upper limit to prices in a developed economy. Substantial short-run increases in the price level could still occur because of increases in new orders financed initially by expanded trade credit. Neither would it impose any definite upper bound to the trend level of prices. Financial innovations that tend to increase the income velocity of interbank and interbusiness clearing balances are a normal feature of modern financial systems and there is no reason to suppose that the pace of such innovations will slacken in the foreseeable future. What the procedure would do, however, is impose a "slow anchor" on upward movements in the general price level. That is just what is needed."

If the monetary base is frozen, the stock of government liabilities will eventually become small relative to the size of the economy and the means of payment as a whole. The influence of the Reserve Bank will decrease and markets will evolve towards financial asset media of settlement, as discussed above.

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Appendix C

List of the Registered Banks of New Zealand

ANZ Banking Group (New Zealand) Limited

ASB Bank Limited (and its subsidiary, Westland Bank)

Bank of New Zealand

BNZ Finance Limited

Banque Indosuez

Bankers Trust New Zealand Limited

Barclays Bank PLC

Citibank N.A.

Countrywide Banking Corporation Limited

The Hongkong and Shanghai Banking Corporation

National Australia Bank (NZ) Limited

The National Bank of New Zealand Limited

NZI Bank

Post Office Bank Limited

Primary Industry Bank of Australia Limited

The Rural Bank Limited

State Bank of South Australia

TSB Bank Limited

Members of the Trust Bank Group

United Bank Limited

Westpac Banking Corporation