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Editor's Note

With banks increasingly operating across geographical borders, a major issue for banking supervisors around the globe is how those banks should be supervised by their 'home' and 'host' country regulators. In the first article of this issue, Professor Ed Kane from Boston College provides a thought-provoking piece on the issues involved in establishing a fair and harmonised system of banking regulation, with particular reference to banks operating across both Australia and New Zealand. The article was prepared by Professor Kane for a public lecture while he was the Professorial Fellow of Monetary and Financial Economics at Victoria University and the Reserve Bank in 2005.

Economic models play an important role in most central banks for both forecasting and policy simulation work. In New Zealand, the Reserve Bank's first model was built in 1971. Over the years, significant developments in macroeconomic theory (not to mention computing technology) have seen a major evolution in the nature of models used at the Bank. In our second article, Grant Spencer and Ozer Karagedikli of the Economics Department briefly review the evolution of models at the Bank from the 1970s to today. The authors note that the Lucas critique – the proposition that model predictions may be undermined unless a model properly captures the way individuals respond to a change in policy – has had a significant bearing on the way researchers build models.

In the third article, Mark Smith of the Economics Department and Governor Alan Bollard consider three major global developments that are having a profound effect on the New Zealand economy. These include the rapid industrialisation of China and other developing economies, the housing boom experienced across many countries; and the increased premium on security arising from the need for increased biosecurity, global warming; and various geopolitical events. The article notes that these events pose significant policy issues as well as challenges for businesses and households that need to adjust to them. This article was the basis for the Governor's speech to the Canterbury Employers' Chamber of Commerce in January of this year.

In April, the Reserve Bank and The Treasury released a joint report on possible additional instruments to supplement the role of interest rates in managing demand pressures and inflation. The report considered a range of possible additional instruments and concluded that there are no simple, or readily implemented, options that would provide large payoffs in the near term, without significant complications and costs, but noted some areas for which further work may be appropriate. A summary of the report is included in this issue and the full document may be accessed at <http://www.rbnz.govt.nz/monpol/about>.

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Confronting divergent interests in cross-country regulatory arrangements

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This article was prepared by Professor Kane for a public lecture while he was the Professorial Fellow of Monetary and Financial Economics at Victoria University in 2005. Prudential regulation seeks to assure the safety and soundness of the financial sector. The article considers the regulation of banks operating in both Australia and New Zealand. It discusses differences in the regulatory cultures of the two countries, and identifies preconditions for arriving at a fair and harmonised system of regulation. A harmonised regulatory regime is one that maximises the welfare of the citizens across countries, rather than simply blending together two national regulatory regimes. The article stresses the importance of proper processes for the resolution of incentive conflicts between countries that may arise in regulation and crisis situations.

1 Introduction

As financial institutions and markets more and more effectively transcend geographic borders, limitations of national systems of regulation become more consequential. Beginning with the five-page Basel Concordat of 1975, banking regulatory agencies in major countries have agreed that multinational banking organisations should be supervised in a cooperative manner by both their 'home' and 'host' countries. The Concordat assigns home-country supervisors responsibility for consolidated oversight of global conglomerate banking organisations, while it leaves host-country regulators responsible both for supervising the local operations of foreign and domestic banks, and for sharing relevant information about local operations with home-country regulators. The Concordat's conflicting goals were to assure adequate cross-border supervision of multinational banks, while reducing the total regulatory burden generated across the jurisdictions in which the bank might operate, and respecting a host country's right to set its own domestic standards for individual-bank safety, system stability, and the accumulation of market power.

Under the aegis of the Basel Committee on Banking Supervision (the Basel Committee), the Concordat spurred a search for minimum prudential standards that evolved by 1997 into a 44-page statement of *Core Principles for Effective Banking Supervision*. These fluid principles are gradually congealing into amplifying criteria that teams of outside experts can use to make country-by-country assessments of regulatory effectiveness (Basel Committee, 2001). In turn, these criteria are helping to shape a new and more complicated system of risk-based capital requirements known as 'Basel II' (Basel Committee 2003). Basel II focuses the conflict between home and host regulators on how to verify and share information across countries and how to use whatever data they share to allocate a conglomerate institution's capital and diversification benefits between local and home-country exposures to insolvency risk. As in ordinary human affairs, the need to mitigate or overcome bankers' and foreign regulators' incentives to hide embarrassing information is a central feature of conscientious bank supervision.

Although nation-based systems of financial regulation obviously constitute a second-best approach to global welfare maximisation, treacherous accountability problems must be acknowledged and resolved before regulatory cooperation can deal fairly and efficiently with cross-border issues. To track and control insolvency risk within and across any set of countries, officials must construct a partnership that allows regulators in every participating country to monitor and to influence counterpart regulators in all partnering nations. Using efforts to partner the Australian and New Zealand

¹ Professor Kane holds the James F. Cleary Chair in Finance at Boston College and was the Professorial Fellow of Monetary and Financial Economics at Victoria University between January and March 2005. This article was the basis for a public lecture delivered under that fellowship. It is a summary of the article, "Confronting divergent interests in cross-country regulatory arrangements", by Ed Kane, in *Cross-Border Banking: Regulatory Challenges* by Douglas Evanoff and George Kaufman (eds.), published by World Scientific Publishing, 2006 (pp. 255-75). Views expressed are those of the author and do not necessarily reflect those of the Reserve Bank of New Zealand.

regulatory systems as an example, this paper identifies characteristics by which regulatory systems differ, and underscores particular features that make harmonisation difficult to achieve.

2 Trans-Tasman regulatory harmonisation as an illustrative case

Troubled banks routinely conceal unfavourable information about their performance or condition from outsiders. Bank customers and counterparties acting on their own cannot easily uncover this information. Partly to overcome this coordination problem, government chartering and supervision of banks and payments systems are near-universal phenomena. Regulatory activities may be described as efforts by a trusted third party that affect the shaping, pricing, and delivery of banking products in one of three ways: by rule-making (eg, capital requirements); by monitoring and enforcement; or by detecting and resolving insolvencies (ie, shortages in bank-contributed net worth).

To the extent that the beneficiaries and the regulated are different parties, banking regulation is ‘other-regarding’ and ‘other-directing.’ A principal goal is to protect society from the consequences of excessive risk-taking, capital shortages, and loss concealment at individual banks. To maximize global welfare, contracts under which officials are appointed would have to make them or their agencies explicitly accountable to potential loss-bearers in all partner countries for all costs incurred in preventing, detecting and resolving bank insolvencies.

The Basel Concordat and its later elaborations call for contact and cooperation between host and parent supervisory authorities. In the absence of harmonizing contact and cooperation, contractual arrangements focus banking regulators in each country on domestic interests. They would be expected to design and operate regulatory enterprises nationalistically, ie, with an eye toward maximizing primarily the welfare of their own citizens.

It is important to recognise that policy coordination cannot eliminate cross-country and within-country incentive

conflicts in banking regulation. At best, it may establish a contractable partnership that supplements – without substituting for – policies of sound regulatory discipline in individual countries.

Mishan (1969) emphasises that economic policy performance should be assessed in two dimensions. Optimal strategies produce outcomes that are simultaneously Pareto-efficient and ‘distributionally preferred’ (ie, they help the representative citizen and avoid anti-egalitarian effects on the distribution of income).² The Mishan criterion reminds us that cross-country arrangements to detect, prevent, and resolve bank insolvencies must not result in increased loss exposures that disadvantage the citizens of any partner country.

As stewards of taxpayer resources, the Mishan criterion implies that in each country financial supervisors and regulators owe four duties to the representative citizen:

- vision (maintaining a capacity to recognise risk-taking and capital shortages in a timely fashion);
- prompt corrective action (being committed to control the value of implicit and explicit government guarantees);
- least-cost resolution (efficiently curing insolvencies that corrective action fails to avert); and
- truth-telling (keeping voters and taxpayers informed about the true opportunity costs of regulatory strategies).

Gaps in vision and reporting obligations engender incentive breakdowns. They reduce society’s ability to hold regulators responsible for uncovering the truth about bank losses and acting on it. This weakness in communicating societal disapproval undermines a regulator’s incentive to prevent insolvencies and to resolve them efficiently. Being able to hide lapses in performance intensifies incentive conflict. It

² In the words of Andrew Jackson [quoted in Todd (2002)]: “In the full enjoyment of . . . the fruits of superior industry, economy, and virtue, every man is equally entitled to protection by law; but when the laws undertake to add to these natural and just advantages artificial distinctions to grant titles, gratuities, and exclusive privileges to make the rich richer and the potent more powerful, the humble members of society – the farmers, mechanics, and labourers – who have neither the time nor the means of securing like favours to themselves, have a right to complain of the injustice of government (1832).”

makes it easier in tough times to pursue short-run political and career rewards that top officials can capture by not closely enforcing economic insolvency.

Sincere efforts to integrate the private banking markets of any two countries – in particular, those of Australia (A) and New Zealand (Z) – must also plan to integrate their private and governmental systems of information disclosure and banking regulation. Regulatory integration is complicated because, even if regulatory strategies and control structures (RA, RZ) did not differ greatly between the countries, individual-country regulators are responsible to different sets of taxpayers (TA, TZ) and social norms and applicable legislation make private and governmental regulatory officials accountable to their citizens in disparate contractual ways (CA, CZ). To maximise the joint welfare of citizens of both countries, it is not enough to blend the countries' strategies and control structures. To harmonise regulatory incentives, regulatory performance measures and reporting responsibilities must be refocused as well.

A country's regulatory system co-evolves with popular perceptions of what regulatory problems cry out to be solved. When citizens believe their country's incentive-control system is working adequately, it is hard to build a coalition strong enough to win marked changes in regulatory strategies and tactics. This is why substantial regulatory reforms usually occur only in the wake of large-scale crises. In non-crisis times, lobbying activity can seldom achieve more than a marginal adjustment either in the objectives that officials pursue or in the tradeoffs officials make within the limits of their regulatory culture. How particular policy strategies actually work in practice is co-determined by the rules officials adopt, and by regulatees' ability to find and exploit circumventive loopholes in the enforcement of these rules. One reason that the issue of cross-border regulatory cooperation is on the table around the world is that exploiting loopholes often entails moving activities that one country might tax more heavily or regulate more effectively into the jurisdiction of another.

With large Australian-owned institutions holding over 85 per cent of the New Zealand banking market, harmonisation is a hot-button issue in both countries. Although the two countries agreed in early 2005 to establish

a joint Trans-Tasman Council on Banking Supervision, the initial hopes and fears of officials in A and Z seemed to differ sharply. Australian Treasurer Peter Costello portrayed harmonisation as a process of negotiation in which a single system of "seamless" regulation would be the most desirable endpoint, while New Zealand Finance Minister Michael Cullen took care to label a single regulatory system as merely a "possible endpoint" (Joint Press Conference 2005).

New Zealand citizens could draw little comfort from a follow-up interview that Treasurer Costello offered in the February 19th *Weekend Herald*. He described his vision for the two countries as one in which "goods and services will move as seamlessly across the Tasman in much the same way they now move seamlessly across the Victorian and New South Wales border." To the extent that states' rights in Australia fall short of absolute sovereignty, this vision comes perilously close to expressing an intention to reduce New Zealand financially to Australia's seventh state or third territory.

The overriding task of financial regulation is to resolve diverse incentive conflicts in financial transactions at minimum net cost to society. Treasurer Costello's position assumes that dual supervision generates only "duplication and unnecessary cost". An alternative view is that, especially where bank risk exposures and capital positions are hard to detect and easy to shuffle across jurisdictions, two heads are likely to prove better than one. This view is buttressed by the undeniable value to New Zealand citizens of ensuring that officials in any post-harmonisation regulatory enterprise remain democratically accountable for identifying and protecting Kiwi interests, and especially for preventing and managing the dangers and costs of future banking crises. It is not for nothing that the New Testament warns of the impossibility of faithfully serving two masters.

Any system of government generates different costs and benefits for differently situated citizens and corporations. It is natural for large Australian banks to ask their government to help them reduce their total taxes and regulatory compliance costs. It is just as natural for New Zealand citizens to worry about how well their interests would be represented in an evolving global banking system if their concerns had to be filtered through the economic interests of Australian banks and the political interests of Australian regulators.

The Trans-Tasman Council's central contracting problem is to recognise and ameliorate conflicts between societal and private interests that exist in Tasman-area markets for banking services. Woolford and Orr (2005, p. 46) define the Council's main goal as promoting "maximum coordination, cooperation, and harmonisation of trans-Tasman bank regulation where sensible". To me, this means integrating one country's regulatory system with that of the other country without eroding the advantages and democratic responsibilities of either. To accomplish this task, conferees must develop transparent measures of bank and regulatory performance, and incorporate these measures into a self-enforcing contractual structure that empowers citizens of both countries to hold officials accountable for the tradeoffs they make between joint and national interests (Schüler 2003).

3 Primacy of controlling incentive conflict

In banking, depositors and other outside stakeholders may be exposed to loss from fraud, leverage, or earnings volatility without being adequately informed or compensated for the risks entailed. To reduce their exposure to these three types of risk shifting, a bank's counterparties deploy three remedies: (1) they require the bank to bond itself in various ways to behave honestly and fairly; (2) they negotiate a deterrent right to punish opportunistic behaviour; and (3) they monitor information on the bank's ongoing performance and condition.

Bonding, policing, and monitoring are not costless. The costs vary inversely with the transparency (T) provided by the accounting and disclosure regime under which the bank operates. The more transparent the disclosure regime, the more easily and more accurately outsiders—depositors, investors, and supervisors—can estimate the true value of a bank's assets and liabilities. But policing costs are also a function of outside stakeholders' ability to appreciate the implications of the information they receive (ie, their financial expertise), and their ability to coordinate deterrent and punitive responses with others (ie, their disciplinary power).

In the absence of credible third-party guarantees, financially sophisticated counterparties act as keynoters whose actions put strong pressure on banks known to be experiencing opportunity-cost losses to adjust their affairs promptly. The market forces keynoters unleash require troubled banks to do one or all of three things: shrink their footings, raise more capital, or pay higher interest rates on their deposits and other debt.

In monitoring, disciplining, and resolving banks, the incentives of government officials to act promptly differ from the duties and incentives of private creditors in important ways. Because official interventions are unusual and generate a great deal of publicity, officials cannot focus only on the economic costs and benefits of the intervention. Given that disadvantaged parties would be all too ready to accuse them of creating or escalating problem situations, regulators must worry about the political and career ramifications of even the most dutiful interventions. Even small interventions can damage their professional reputations and careers if their policies distress powerful parties.

Although many commonalities of interest exist, governmental systems for setting and enforcing financial rules are infested with incentive conflict. Even within a country, major conflicts exist between and among:

- regulators and the firms they regulate;
- particular regulators and other societal watchdogs;
- regulators and the politicians to whom they must report; and
- taxpayers and the politicians and regulatory personnel they put in office.

How a country traditionally approaches and resolves these conflicts is in part hard-wired into its political and institutional structure. To different extents, societies impose bonds of community on individual citizens. Ideally, these bonds restrain corporate and governmental decision making in socially beneficial ways. Communal bonds generate an internally and externally enforced sense of reciprocity, that inserts into individual preference functions a concern for one another's welfare that deters at least some forms of opportunistic behaviour. To reinforce these implicit controls,

a country also works out ways for watchdogs to fill gaps in the bonding, deterrent rights ('deterrence'), and transparency inherent in its private contracting environment. Over time, efforts to close gaps in private and government contracting generate a country-specific regulatory culture.

4 Difficulty of resolving divergences in regulatory culture

When private corporations merge, the goal of the transaction is to create value by enhancing the capabilities and performance of partner firms. To be successful, managers of the combined enterprise must identify synergies and mitigate conflicts of interest among various stakeholders. Especially in cross-border combinations, empirical evidence indicates that marked differences in either the corporate cultures or strategic orientations of partnering firms reduce the chance that they can be merged successfully (Weston, Siu and Johnson 2001, p. 639), Altunbas and Ibáñez 2004).

This section begins by defining a regulatory analogue to the concept of corporate culture. This concept provides a systematic way to compare and contrast the specific regulatory strategies and tactics employed in Australia and New Zealand. Despite a number of fundamental similarities, important differences in culture can be identified. From an evolutionary perspective, the very persistence of these differences indicates that, within each country, idiosyncratic features manage to resolve incentive conflicts with reasonable efficiency. The Trans-Tasman Council cannot hope to build a system that stitches together in compromise fashion an equal number of pieces from the different regulatory systems without losing the threads of economic logic that underlie them. If these threads are not rewoven carefully enough, the citizens of one or both partner countries will suffer substantial welfare losses.

The concept of regulatory culture.

A culture may be defined as customs, ideas, and attitudes that members of a group share and transmit from generation to generation by systems of subtle and unobvious

rewards and punishments. A regulatory culture is more than a system of rules and enforcement. It incorporates higher-order norms about how officials should comport themselves; these norms limit the ways in which uncooperative or even unscrupulous individual bankers can be monitored and disciplined. It includes a matrix of attitudes and beliefs that define what it means for a regulator to use its investigative and disciplinary authority honourably. These attitudes and beliefs set standards for the fair use of government power. Checks and balances that bound each agency's jurisdiction express a distrust of government power that often traces back to abuses observed in a distant past when the country was occupied, colonised, or run by a one-party government. Underlying every formal regulatory structure is a set of higher-order social norms that penetrate and shape the policy-making process and the political and legal environments within which inter-sectoral bargaining takes place. These underlying standards, taboos, and traditions are normative in two senses. They simultaneously define what behaviours are 'normal' and what behaviours regulators should mimic to avoid criticism or shame.

Prudential regulation imposes on regulators a duty to stop excessive risk-taking, and to find and resolve hidden individual-bank insolvencies in timely fashion. Within any country, the regulatory culture within which this duty is discharged is spanned by six specific components:

- legal authority and reporting obligations;
- formulation and promulgation of specific rules;
- technology of monitoring for violations and compliance;
- penalties for material violations;
- the regulator's duties of consultation: To guarantee fairness, regulated parties have a right to participation and due process, which imposes substantial burdens of proof on the regulator; and
- Regulatees' rights to judicial review: Intervened parties have an access to appeals procedures that bond the fairness guarantee.

Similarities in Australian and New Zealand regulatory cultures

In Australia and New Zealand, the last three dimensions of regulatory culture are fundamentally the same. Both countries accept social norms that subject official decisions to intra-governmental checks and balances, and require them as well to treat violators as innocent until formally proven guilty, and to assure that punishments meted out do not exceed the social importance of the violations at issue. The presumption of innocence protects fraudsters and bumlbers from prompt regulatory discipline; the other two norms make it impossible to make penalties draconian enough to eliminate risk-shifting incentives completely.

By increasing the difficulty of proving a bank to be insolvent, tests of regulatory authority, fairness, and reasonableness prolong the process of detecting and resolving insolvencies. Even a deeply insolvent institution can delay and ameliorate disciplinary actions in two-ways:

- by delaying write-downs of impaired assets; and
- by accumulating political clout and using it to generate outside (and not always proper) interference on its behalf.

Differences in the allocation and implementation of legal authority

Despite sharing almost identical legal norms, the regulatory systems of the two countries differ importantly in each of the first three dimensions. The Reserve Bank of New Zealand combines specialized prudential supervision of the New Zealand banking system with the tasks of conceiving and executing monetary-policy actions. Conduct-of-business regulation and supervision of financial firms in non-bank sectors is conducted by other agencies. In Australia, the relatively new Australian Prudential Regulatory Authority (APRA) follows the British model of leaving monetary policy to the central bank (The Reserve Bank of Australia (RBA)), and exercises supervisory authority in an integrated manner over insurance companies, depository institutions, and some types of securities firms.

These different structures of prudential regulation allocate responsibility for preserving financial stability in very different ways. Unlike APRA, the Reserve Bank at present has no formal responsibilities for supervising non-bank institutions (Mortlock, 2003). Unlike the Reserve Bank, APRA leaves policy decisions that affect interest rate and exchange rate volatility to the RBA, even though monetary-policy decisions can work potentially devastating effects on an individual bank's solvency and risk profile. Several other ways of allocating legal authority for promoting financial stability are used by other countries. For example, the US central bank combines monetary policy authority with supervisory responsibilities, but competes for and shares supervisory jurisdiction over banks with many other regulators. Several European countries task their central bank with supervising securities firms and banks in tandem.

The great diversity we observe in how supervisory authority is allocated supports this paper's central hypothesis: that different ways of dividing supervisory and monetary policy responsibility have particular advantages and disadvantages, with the balance of costs and benefits varying with the character of a country's financial and political contracting environment. Common sense and Samuelson's principle of revealed preference tell us that each country's current structure is better suited to its own particular financial environment than any other country's would be.

Interaction of differences in monitoring methods, rules, and enforcement

The goal of all systems for supervising banks is the same: to assure a safe and sound financial environment by protecting depositors and the economic health of the nation as a whole from hidden and disruptive bank risk taking. Ideally, rules and the ways they are enforced are designed to detect losses and imprudent risk exposures, and to resolve capital shortages at banks before they can become deep enough to cause widespread disruption. As explained earlier, authorities' vision is constrained by leeway in accounting standards and by the larger disclosure regime in which their banks operate. The rules and enforcement methods by which authorities pursue financial stability must be tailored to overcome weaknesses

not only in their own vision, but also in the vision of partner regulators and in the bonding, deterrence, and transparency in their private contracting environments.

Disclosure regimes place a web of formal and informal obligations on bank managers, accountants, and directors. These obligations determine what asset and liability items bank accountants must report values for what changes in value must be reported (either on the balance sheet or in footnotes); and when and how authorities are to be informed about emerging losses. In all countries, independent external accountants assume a responsibility for reporting accurate information to directors, creditors, stockholders, regulators, and other outsiders, even if the managers that hire them would prefer to 'cook the books' in misleading ways. Similarly, bank directors have a duty to review and test audit reports for accuracy, and to assure themselves and regulators that the bank is being managed well.

An effective regulatory partnership must impose sensible and enforceable regulator-to-regulator disclosure obligations all around. When top regulators receive strong evidence that crippling losses may be emerging at an individual bank, duty must also require them to dispatch a team of forensic analysts to measure the extent of these losses. When the special exam is completed, regulators are expected to share the findings with the bank's directors. At this point, directors could request a brief window of time to give them a chance to cure the bank's capital shortages. If sufficient new capital is not subscribed, the bank would be closed, offered to a new owner, or placed in statutory management. The task of statutory managers would be to decide afresh whether and when to liquidate the bank or offer it for sale.

In both Australia and New Zealand, auditors are required to report to the supervisory authority any evidence they uncover of actual or potential insolvency, and to alert authorities about possible violations of prudential standards. Accountants must attest that nothing that "has come to their attention" in preparing or reviewing financial statements would cause them to believe that the bank's financial statements and supplementary disclosures do not present a "true and fair view" of the matters to which they relate. Section 96 of the Reserve Bank of New Zealand Act requires auditors to disclose directly to the RBNZ any information that

is "likely to assist, or be relevant to the exercise by the bank of its powers under this part of this act" (ie, the Reserve Bank's supervisory powers). The same section obliges a bank's auditors to alert the Reserve Bank if they believe the bank is either "insolvent or is likely to become insolvent or is in serious financial difficulties". Section 97 requires auditors to "take reasonable steps to inform the registered bank" of their intention before expressing their concern to the Reserve Bank, and Section 98 protects auditors that make good-faith disclosures from civil and criminal liability or professional sanctions. The legal force of these provisions is to assure that inserting exculpatory clauses into their articles of engagement cannot relieve auditors of legal liability for not reporting evidence of a developing bank insolvency. The social force of these provisions comes from an individual's desire to enjoy the esteem of his or her fellow citizens and to avoid disgrace. Experience suggests that most auditors are considerably more concerned about potential lawsuits than their social standing.

The most important difference in the supervisory regimes of Australia and New Zealand is the strength of the obligations that they place on bank directors to uncover and transmit unfavourable information to top regulators (Brash 1996). In Australia (indeed in most countries other than New Zealand), bank managers, auditors, and directors may (if they are careful about it) use loopholes in accounting rules to delay the transmission of adverse information to regulators. Table 1 lists the alternative ways that news of crippling losses may first come to light. It also lists the ways that managers, directors, and lower-level regulatory staff members may sugar-coat bad news or temporarily blockade the various paths through which bad news can reach top regulators.

For directors of registered banks, New Zealand's disclosure regime imposes self-reporting obligations that all but eliminate impunity for director-supported misrepresentation. All directors must sign quarterly statements indicating whether "after due enquiry" they believe: (1) that the General Disclosure Statement (Tripe (2001) describes the content of this document) contains all information required and is neither false nor misleading; (2) that the bank has complied with various regulations (including rules on lending to connected persons); and (3) that the bank has

Table 1
Paths by which bad news may reach top regulators

Ways in which crippling news surfaces	Initial source of corrective pressure	Ways in which bank management can challenge or stifle bad news	Ways in which regulators can lessen the call to action generated by the bad news
1. Government-initiated path	Government examiners discover irregularities in loan underwriting, documentation, or loss reserves during an ordinary bank examination	Exercise rights to appeal examiner write-downs	Higher-ups may modify examiner's 'pencil report'
2. Bank-initiated Paths	A conscientious internal whistleblower provides evidence to either: a) the bank's external auditor b) the bank's board of directors c) regulatory staff members	a) Auditors may be persuaded to ignore or marginalise the evidence b) Board members may be persuaded to ignore the evidence c) Managers may succeed in demonising the whistleblower	a) Not applicable b) Not applicable c) Regulators may treat the whistleblower as a mean-spirited troublemaker
3. Auditor-Initiated Path	Auditor finds irregularities and either quits, is fired, or issues a qualified report	Managers concoct a persuasive cover story for the impasse	Regulators may ignore the audit impasse
4. Creditor-driven path	News about auditor issues, leaks, or autonomous rumours undermine depositor confidence or the confidence of suppliers of interbank loans	Managers may collateralise and/or pay very high interest on large deposits or interbank loans	Central bank may replace private funding with discount-window loans

in place and is properly applying systems that adequately monitor and control material risks, a great many of which are named explicitly. Finally, to do business in New Zealand, large Australian banks must be locally incorporated. While no explicit residential requirement yet exists, it has been understood that the chief executive should reside in New Zealand so that he or she could be prosecuted for false disclosures without extradition proceedings.

So far, directorial self-reporting has served New Zealand well. The threat of legal and reputational penalties for false attestations have surfaced relevant supervisory

issues, both as a result of changes occurring at individual banks and as a result of changes made in the wording of Reserve Bank attestation requirements. Cautious directors of particular banks have on several occasions scheduled meetings with Reserve Bank senior staff to inform them promptly of concerns that interfere with their signing the required statements. Similarly, when the Reserve Bank has encountered inconsistencies in attestations and reports, Reserve Bank staff have initiated the same sort of meetings.

This special channel of verification focuses rule-making on what positions or facts should be disclosed to the Reserve Bank and how the accuracy of disclosures should be certified. Except for a web of specific restrictions on insurance activities and loans to connected firms and persons, the Reserve Bank eschews formal limits on the size of particular bank positions. It presumes that directorial disclosure obligations will identify losses and imprudent loss exposures in a more relevant and more timely manner than a rigid programme of position caps and periodic inspections for breaches by government examiners could.

In contrast, position caps and confidential government inspections play starring roles in Australia's supervision of banks. Of course, the effectiveness of either regulatory regime is routinely undermined by regulation-induced innovation. Still, government supervisors are never going to know enough about the motives for financial innovation to design ratios that can serve as an effective first line of defence against risk shifting by troubled banks. The presumption that particular portfolio positions are either prohibitively risky in themselves or signify failure-producing risk taking ignores both the value that any risky position may have in diversifying other risks, and the rich and growing menu of techniques that banks use to hedge or intensify broad categories of risk taking today.

The pace of innovation in techniques of risk taking and risk management virtually guarantees that, with every passing day, balance-sheet ratios that predicted failure in the past become less and less reliable measures of a modern bank's proneness to failure. Both in rule making and in monitoring, the continuing expansion and growing complication of structured and index derivatives keep government supervisors' risk assessment capabilities lagging behind those of the banks they regulate. However, impairments to regulatory vision and verification are less daunting in that many of them can be contracted away.

Summary

In Australia and indeed in most other countries, inspection-based supervision is a game of hide the cheese. The cheese, of course, is adverse information about a bank's true

condition or periodic performance. Loopholes in the rules of the game incentivise bank directors to help managers to mislead supervisors and other outsiders.

They can do this with impunity as long as the firm makes skilful and legitimate use of an evolving set of professionally certified accounting loopholes. Like night club illusionists, managers and accountants may even expect ethically challenged directors to admire their proficiency in using smoke and mirrors to make losses and loss exposures invisible to the naked eye.

The distinctive feature of New Zealand's post-1996 regulatory culture is that self-reporting obligations imposed on directors simplify the supervisory burden of uncovering and proving fraud and insolvency. It makes it illegal and disreputable for individual bank directors to assist others in perpetrating an illusion. Directors are required by law to bring to the attention of the supervisor important adverse information they happen to come across. This duty is enforced by substantial criminal and civil penalties, and intensified by the reputational harm that timely public exposure of formally illicit behaviour inevitably brings.

Even with substantial prior notice, replacing either country's regulatory system by the other would be extremely disruptive for the country whose supervisory traditions would be pushed aside. It seems more sensible to focus on finding ways to network the two systems in a cooperative way and to explore experimentally which particular strategies and tactics can provide enough vision to control economic and financial stress within and across the partner countries.

5 The role of regulatory culture in the insolvency detection and bank failure process

Economists define economic net worth (NE) as the full-information value of a firm's tangible and intangible assets and liabilities. In statistical terms, accounting or book-value net worth (NBV) becomes a poorer and poorer estimator of NE. As the latent variable NE declines, the estimator NBV becomes increasingly more biased and inefficient.

In effect, regulatory vision falters when it is most needed. This makes accounting insolvency a dangerously unreliable threshold for winding up the affairs of a troubled bank. Opportunities to defer the accounting realisation of economic losses render accounting net worth a lagging indicator of the extent of a troubled bank's capital shortage. When a financial institution's survival is threatened, adverse information becomes harder and harder to detect in accounting reports. The threshold at which authorities can force stockholders to either recapitalise a troubled bank or surrender their franchise must be set high enough to compensate for this predictable decline in acuity.

Historical experience shows that, with a zero NBV threshold, financial institutions' ability to conceal risky transactions and impairments in asset values from outside eyes can allow economic insolvencies to reach costly depths before authorities can address them (Honohan and Klingebiel 2003). Weaknesses in loss detection and regulatory intervention rights can spawn a systemic crisis by enabling insolvent institutions to adopt aggressive risk-taking strategies that – by destroying profit margins – spread insolvency to competing institutions.

Crisis-driven reforms in New Zealand and the United States

According to Honohan and Klingebiel (2003), New Zealand's banking system was in crisis between 1989 and 1992 (see also Ledingham 1995). Several foreign-owned banks had to be recapitalised by their parents, but a number of financial firms failed, one of which was a major institution: the Development Finance Corporation (in 1989). Although DFC was not a commercial bank, it was the seventh-largest financial institution in New Zealand. As the first important financial insolvency to occur in many years, the need to resolve its affairs was a systemic event that disrupted credit flows and put the viability of a few other institutions into question. Winding up its affairs took many years and absorbed a great deal of supervisory resources.

According to Brash (2000), the country's largest bank (the Bank of New Zealand) would almost certainly have failed as well if the Government (as the majority shareholder

at the time) had not been willing on two occasions to provide a 'capital injection'. The size of the second (1990) injection was disclosed to be NZD 620 million. Honohan and Klingebiel estimate that the total fiscal cost of the crisis was 1.0 per cent of GDP.

Although this cost is comparatively low, in dollar terms it is substantial. The policy lessons revealed by this turbulent episode prompted authorities to redesign the Reserve Bank's early warning system to emphasise self-reporting by directors. Australia experienced a crisis of similar magnitude. Although it also did not offer explicit deposit insurance, its winding-up regime gave depositors preference over other creditors (a feature enacted in 1959). Authorities made minor changes in the substance of its disclosure, intervention, and detection regimes. Without triggering a whistle-blowing obligation, directors of a distressed Australian bank can still stand by while managers search out and exploit loopholes that can conceal losses. Governmental intervention rights continue to depend primarily on examiners' ability to uncover and verify hidden problems. However, the Australian Stock Exchange (ASX) imposes disclosure and whistle-blowing obligations on listed banks. These obligations fall on the banking 'entity' rather than specific officeholders, and shift the burden of further disclosure onto the ASX.³ This leaves the forensic accounting burden that supervisory officials must meet before they can intervene somewhat higher in Australia than in New Zealand and more subjective than in the U.S.

Although the US operates an insolvency detection regime similar to Australia's, taxpayer losses in the savings-and-loan debacle led Congress to beef up and mechanise regulators' intervention and winding-up rights. Along a specified ladder of positive net worth thresholds, US banking law now authorizes an escalating series of interventions and requires regulators to intervene ever more strongly as a bank's accounting net worth declines. The Federal Deposit Insurance Corporation Improvement Act of 1991 instructs bank regulators to demand that banks take particularly strong corrective actions whenever their book-value net worth falls

³ ASX Listing Rule 3.1 states: "Once an entity is or becomes aware of any information concerning it that any reasonable person would expect to have a material effect on the price or value of an entity's securities, the entity must immediately tell ASX that information."

below 4 per cent of assets. If these remedies fail to stop the slide in a bank's accounting net worth, regulators must order a stockholder recapitalisation. If the recapitalisation does not materialise or proves insufficient, authorities must – after due notice – put the bank into a receivership or conservatorship (in most circumstances) once its book-value net worth falls below 2 percent of assets. Putting stockholders on notice lets them avoid closure by injecting new capital or finding a merger partner. They should exercise one of these options if they believe that NE is still positive. The alternatives that these options offer prevent the 2 per cent threshold from being characterized under common law as an “unjust taking” of private assets by the government.

APRA employs triggers for intervention as well. The process is called PAIRS/SOARS.⁴ Experts evaluate the financial health of a bank and its systemic significance. This evaluation feeds into a four-way classification scheme for calibrating the need for regulatory attention and discipline: normal; oversight; mandated improvement; restructuring. Quantitative elements in these assessments influence but do not formally dictate APRA's response.

Potential conflict between the Australian and New Zealand strategies for insolvency-

Detection

The success of any partnership depends on how much the partners disagree and how well they can handle disagreement. Potential conflict between host-country and home-country supervisors intensifies as a bank weakens. Divergences in disclosure and detection regimes allow home and host regulators to compile and react to evidence of bank weakness in different ways.

Mayes (2005) distinguishes four regimes of market and supervisory response to individual-bank accounting reports. In the first regime, market participants and supervisors are satisfied with the bank's condition and performance, and impose no penalties. In the second regime, the bank manages to meet all supervisory tests, but market participants begin

to impose risk premiums. In the third case, supervisors begin to be concerned and should be acting to strengthen the bank. In the fourth case, the bank is economically insolvent and authorities need to take over the bank and relicense it.

Within Mayes' third regime, home and host supervisors may not be equally concerned. Even when both sets of regulators enjoy the same acuity of vision, nationalistic norms and reputational concern might tempt home-country officials to delay insolvency resolution (Kane 1989). Home-country delays give managers of a failing institution an opportunity to shift bad assets to the host jurisdiction. When banking problems surface during a top official's watch, his or her reputation is at risk. In some cases, agency leaders may even be grateful that accounting trickery can temporarily hide evidence of weakness from the market. Similarly, in the host country, effective action may also be delayed by the threat of career and reputational penalties that politically important foreign banks may be able to exert on particular ministers, both directly and through the press.

As the home-country regulator, it is APRA's job to assess the strength of each cross-country conglomerate institution. Although rumours can speed up the process, Australia maintains a traditional zero-value accounting threshold for failing a bank or banking conglomerate. It is easy to imagine circumstances in which information transmitted by resident directors would lead the Reserve Bank to recognize the insolvency of an Australian bank's New Zealand subsidiary long before periodic reports and APRA's examination-based verification methods could ascertain whether the economic net worth of the Australian parent was truly strong enough to cover New Zealand losses on a consolidated basis.

These are precisely the circumstances in which preserving RBNZ intervention rights would protect New Zealand taxpayers from potential weaknesses or mistakes in Australian supervision. In cases where the conglomerate organisation was in fact weak, home-country managers would not want the Reserve Bank to force APRA to examine their accounts more closely. Given the Reserve Bank policy of local incorporation, a supervisorily compliant but economically insolvent Australian parent would recognise the value of making sure that, at each quarterly reporting date, it had shuffled enough good assets to its New Zealand subsidiary

⁴ PAIRS is an acronym that stands for the 'Probability and Impact Rating System' of regulated financial entities, and SOARS is an acronym that stands for the 'Supervisory Oversight and Response System' for such entities.

to keep local accountants and directors from blowing any whistles. Backed up by local directors' obligation to inform the RBNZ of any transaction that weakens a New Zealand institution, this incentive protects New Zealand taxpayers from being saddled with losses incurred in Australia. However, this protection would unravel either if Australian banks were allowed to operate in New Zealand through branch offices or if the Australian scheme for insolvency detection were simply to displace the New Zealand one.

6 Summary

Prudential regulation seeks to assure the safety and soundness of the financial sector. As institutions and markets evolve, so must processes for resolving incentive conflicts in financial transactions.

The inherited regulatory cultures of Australia and New Zealand show differences in the structure of legal authority, in their reliance on position limits and other rules, and in the technology used to monitor bank risk taking and net worth. Lasting differences in regulatory culture evolve experimentally, as tentative solutions to recognised societal problems that prove themselves able to meet the test of time.

The persistence of substantial differences implies that authorities in the two countries have had to respond to fundamental differences in operative political, cultural, and risk-taking environments. Replacing New Zealand's financial regulatory system with that of Australia would simultaneously deny New Zealand citizens the hard-won benefits of this evolutionary process, and make it hard for them to hold regulatory officials in Australia accountable politically for costs their policy decisions might impose on the Kiwi economy.

The Mishan welfare criterion tells us that trans-Tasman regulatory arrangements cannot be fairly harmonised unless and until political mechanisms can be established that enable regulators and citizens of both countries to observe and adequately discipline the tradeoffs that responsible officials make between their own and partner-country interests when

these interests diverge. Only by crafting the equivalent of a strong and fair prenuptial agreement can efforts to marry the regulation of individual-country banking markets be expected to succeed. At a minimum, each prenuptial agreement must impose bilateral obligations to intervene well in advance of book-value insolvency, and to disclose emerging concerns to partner regulators promptly. To back up these obligations, the agreement should authorise partner regulators to sue in a neutral court to recover damages from countries whose officials appear to have violated this right.

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Modelling for monetary policy: the New Zealand experience

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This article is an edited version of a paper written for the Centre of Central Banking Studies' Chief Economists Workshop in London in May 2006. The article reviews the evolution of modelling at the Reserve Bank of New Zealand from the 1970s to today, focusing on the changing role of inflation expectations. It discusses the impact of theoretical developments on the evolving approach to monetary policy and the models that have been built to support policy. The article highlights the important impact that the Lucas critique has had on both monetary policy, and the Bank's approach to modelling.

1 Introduction

The concept of 'rational expectations' (RE) and its relevance for macroeconomics gathered momentum in the mid-1970s with the contributions of Robert E. Lucas Jr. In particular, Lucas' critique of macro-econometric modelling and its use in discretionary demand management (Lucas 1976) had a gradual but pervasive influence on monetary policy and modelling worldwide. New Zealand was no exception. The Lucas critique argued that the parameters of the large macroeconomic models of the 1960s and 1970s depended implicitly on the expectations of economic agents regarding future policy. If agents were assumed to be rational, then the parameters of these models were likely to change as policymakers changed their behaviour. This critique effectively undermined the use of macroeconomic models for policy simulation work, and indeed for forecasting in situations where the approach to policy – the reaction function – was changing through times.

The insight of Lucas had a major impact on how policymakers thought about policy, and on how researchers built their models. This was reflected in the rules versus discretion debate in monetary policy, (Kydland and Prescott 1977), in the development of rational expectations econometrics (eg Sargent 1973, Barro 1977, McCallum 1983) and in the construction of models with forward looking agents.

This article reviews the development of modelling for monetary policy in New Zealand from the pre-RE period of the early 1970s through to today. It looks at the impact

of broad theoretical developments through this period on both the evolving approach to policy and the models used to support that policy. The discussion is structured around four periods:

- i) Seeking control: pre-1985
- ii) The search for anchors: 1985 —1990
- iii) Inflation targeting: 1990 — 2002
- iv) Flexible inflation targeting: 2002 — 2006

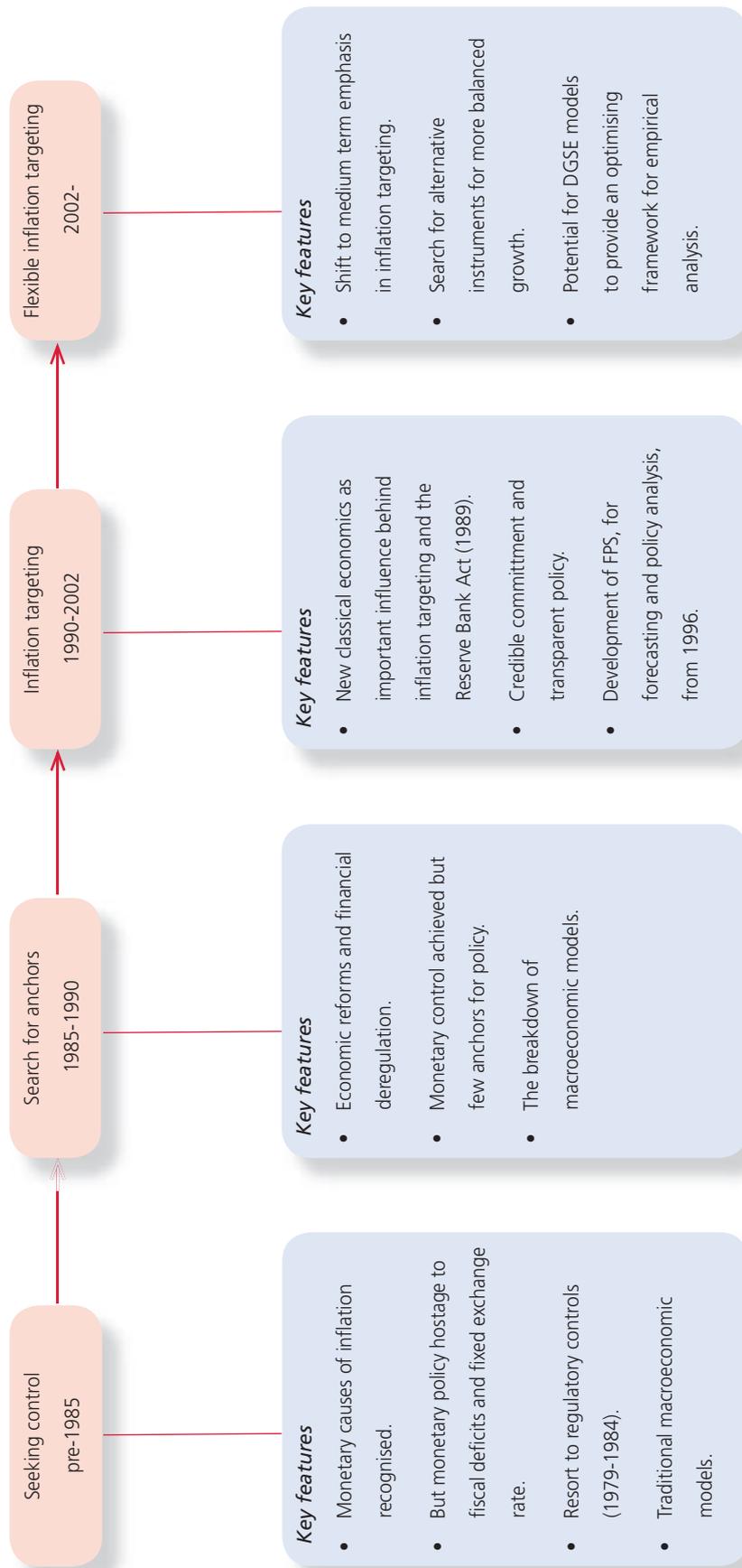
2 Seeking control: pre 1985

In the 1960s and the early 1970s, the Phillips Curve (Phillips, 1958) was at the centre of the Keynesian macroeconomic consensus among policy-makers. This seemingly stable relationship between wage inflation and unemployment suggested that government policymakers could permanently lower the unemployment rate through expansionary monetary and fiscal policies, provided they were willing to accept an increase in nominal wage inflation. A widespread attempt to exploit this relationship in the 1960s contributed to the global inflation of the late 1960s and early 1970s.

By the late 1960s, the emphasis in theoretical macroeconomics was shifting from Keynesian principles to monetarism. Monetarists asserted that emerging inflation problems were a result of excessive rates of growth in the money and credit supply. Phelps (1967) and Friedman (1968) brought into question the policy trade-off that had been inferred from the empirically observed Phillips curve. They argued that monetary and fiscal expansions could not affect real variables in a sustained way and, in particular, could not bring about

¹ We would like to thank our colleagues Aaron Drew, Bernard Hodgetts, Kirdan Lees, Michael Reddell, Christie Smith and Shaun Vahey for their valuable comments.

Figure 1
Monetary policy phases since the 1970s



a sustained deviation of unemployment from its 'natural' rate. Phelps and Friedman also postulated that monetary policy could affect real economic activity only if inflation was increased above existing inflation expectations. The natural rate theory and the importance of inflation expectations became key concepts conditioning discretionary monetary policy in New Zealand and elsewhere in the 1970s.

Economic theory developed in North America and Europe for a closed economy model is not always fully relevant for a small open economy such as New Zealand. This was particularly true for New Zealand in the pre-1985 period where a fixed exchange rate regime effectively linked domestic monetary policy to international monetary policy developments. The monetary approach to the balance of payments was a useful theoretical model in this regard, pointing to the influence of monetary policy on the balance of payments as well as inflation (see, for example, Spencer 1977).

In the 1970s, the Bank was acutely aware of its responsibility to counter the uptrend in inflation, but it was also aware that monetary policy was hostage to the sustained fiscal deficits of the time and the fixed exchange rate. The main policy challenges related to the development of financial markets and instruments, which would allow the fiscal deficits to be funded in the private sector, and the removal of arbitrary financial regulations such as credit and interest controls, reserve ratios etc. The Bank's aim and preoccupation was to establish effective control over monetary conditions.

During this period, the Bank seriously considered various money and credit aggregates as potential intermediate targets for monetary policy. However, the Bank recognised significant difficulties in the controllability of particular monetary aggregates and the lack of a sufficiently stable relationship between the monetary aggregates and inflation. The official monetary targets instituted in many countries were never established in New Zealand.

The first of the Bank's macroeconomic models was built in 1971 (Deane 1971). It was based on a Keynesian income-expenditure structure, with wages determined by a simple Phillips curve and a cost plus price equation. By the late 1970s, the model incorporated a simple expectations

augmented Phillips Curve (eg, Model VIII, Spencer, Smith and Joseph 1979):

$$w_t = \alpha_0 + \alpha_1(u_t - u_t^*) + \alpha_2 p_t^e + \alpha_3 w_{t-1}$$

Prices were then determined by a series of cost-plus equations for components of CPI, each of the form:

$$p_t = \beta_0 p_{t-1} + \beta_1 (w_t / a_t) + \beta_2 pi_t$$

where u is the unemployment rate, u^* is the natural rate of unemployment, w is the log of wages, p is the log of the price level, pi is the log of import prices, a is the log of productivity. Price expectations are assumed to adapt via a first order adjustment process to the actual price level.

The main challenges for modellers at the Bank during this time were:

- to find ways of handling the supply side shocks of the 1970s in what was essentially a demand driven model;
- to model the monetary transmission mechanism, and in particular find a structural role for the money and credit aggregates; and
- to ensure models had sensible long run properties, through the use of Cointegration and Error Correction structures.

While the Bank acknowledged the potential force of the Lucas critique, the techniques were not yet available to incorporate truly forward-looking expectations. Spencer and Duggan (1984) made an attempt to incorporate "quasi rational expectations" into the Bank's "core model" by linking price inflation directly to money supply growth and import price inflation. They sought to assess how the short term inflation output trade-off might deteriorate in a situation where forward-looking expectations played a more dominant role in short-term production and pricing decisions

In broad terms, the Bank's macroeconomic models were ill equipped to deal with the emerging policy issues of the 1970s. They were essentially Keynesian structures which were not easily adapted to the supply shocks, monetarism and rational expectations of the 1970s.

3 The search for anchors: 1985—1990

In the late 1980's, the theoretical debate in macroeconomics was dominated by the new classical economics (Lucas 1973, Sargent and Wallace 1975) as well as hysteresis and the costs of disinflation (Fischer 1977, Taylor 1983, Blanchard and Summers 1986). Rational expectations and time consistency issues were very much in the New Zealand policy-makers' minds as they applied monetary policy solely to the purpose of reducing inflation to low single digits. However, the policy framework was new; the store of policy credibility was minimal; and the real effects of the tight policy stance through this period were significant.

Broader policy developments at this time were dominated by the widespread economic reforms and financial deregulation of the new Labour Government and Minister of Finance, Roger Douglas.² In assigning the Bank and monetary policy to the task of securing low inflation, the Minister was primarily concerned with institutional accountability within the context of the principal-agent problem.³ However, the advice from the Bank and The Treasury supporting this approach was also influenced by the New Classical and Time Consistency literature.

Following the move to market-determined interest rates and the floating of the exchange rate in March 1985, the Reserve Bank gained greater control over monetary conditions. But the widespread economic and financial reforms also led to a period of considerable structural change and volatility in asset markets. For monetary policy, there were no stable anchors or guidelines that could be relied on. Inflation expectations were high and variable, making it difficult to assess the true level of real interest rates. The exchange rate and the slope of the yield curve became the main guides for monetary policy. The Bank adopted a narrow money base concept (Primary Liquidity) as its operating target. The hope was that a stable relationship would develop between this quantity and the broader money and credit aggregates. In the event, such a relationship never eventuated.

² See Evans *et al* (1996), and Bollard, Lattimore and Silverstone (1996) for a discussion of the reforms at this time.

³ See Scott and Gorrington (1989) for a discussion in the context of the New Zealand reforms.

From the late 1980s onwards, the Bank's modelling efforts (Model 12 in the early 1990s) focussed on improving the data and introducing new econometric techniques. Internationally, there was a rapidly burgeoning literature on co-integration methodology for estimating the equilibrium relationship between trending variables. Ultimately, however, the results were disappointing for New Zealand, due in part to the lack of stable data series through this period.

Modelling in general became very difficult in the changing economic and policy environment of the late 1980s. The macroeconomic models became highly unstable and ceased to be used at the Bank for either forecasting or policy analysis. Forecasters reverted to spreadsheets and partial sector-based equations. Policy-makers relied on rules of thumb and intuition. New structural modelling efforts were stymied by a lack of data generated under the new policy regime. However, there were some useful developments in reduced form Vector Autoregression (VAR) modelling (Wells and Evans 1985), which were non-prescriptive regarding restrictions on structural parameters.

4 Inflation targeting: 1990 —2002

Theoretical developments in macroeconomics in the 1990s began to re-establish a framework for the legitimate use of a systematic monetary policy. The development of New Classical economics and Real Business Cycle (RBC) theory in the 1980s, had shifted the emphasis away from demand management back to the supply side and the role of technology shocks in generating business cycles. In this framework, based on optimising agents with perfect foresight, there was no substantive role for monetary policy. In the late 1980s and the 1990s, however, a New Keynesian literature developed which provided micro-foundations for the nominal rigidities that existed in traditional economic models, and which provided a basis for an active monetary policy.⁴

⁴ The most influential papers can be found in Mankiw and Romer (1995).

A further important area of development in the 1990s was the emerging literature on policy rules, based on the work of Taylor (1993). This literature was particularly relevant for monetary policy, and the search by central banks for policy rules that would best achieve price stability in a given economic environment and under varying degrees of uncertainty.

Monetary policy in New Zealand made considerable advances during this period. The Inflation Targeting framework contained in the new Reserve Bank Act (1989) was founded on the earlier rational expectations and time consistency literature, as well as principle-agent theory and the growing literature on central bank independence. Key elements of the framework include: a clear price stability objective for monetary policy; a credible commitment on the part of the Bank and monetary policy to achieving the objective; and the transparent application of monetary policy in pursuing the objective. The credible commitment is underpinned by a signed Policy Targets Agreement (PTA) between the Minister and the Governor of the Bank who is the sole monetary policy decision maker. Transparency is supported by the publication of regular Monetary Policy Statements and detailed economic forecasts.

By late 1991, the Bank had succeeded in reducing inflation to the then 0 - 2 per cent target range. The challenge was to stay within the target range as the economy recovered from the early 1990s recession. To inform policy decisions and to generate regular detailed forecasts, a new macroeconomic model was required to support the new Inflation Targeting regime. For this purpose, the Forecasting and Policy System (FPS) was developed in the mid 1990's. The FPS, based on the Bank of Canada's Quarterly Projections Model (QPM), and still in use today, has a number of key characteristics:

- Calibrated parameters, given the lack of stable econometric estimates;
- Keynesian responses to shocks in the short term with optimising General Equilibrium responses in the long term;

- The model converges to well defined steady state values;
- A policy reaction function for short term interest rates – as a function of inflation six to eight quarters ahead; and
- A Phillips Curve based on the output gap with price expectations that are both backward and forward looking.

The Phillips curve within FPS determines non-traded price inflation while traded goods inflation is determined as a cost-plus function of import prices, export prices and the exchange rate. Consumer price inflation is thus a function of the exchange rate and cost pressures as well as inflation expectations and the output gap.

The Phillips Curve in FPS can be characterised as:

$$\pi_t^{NT} = \pi_t^e + \beta_1(y_t - y_t^*) + \beta_2(y_{t-1} - y_{t-1}^*) + \beta_3(y_t - y_t^*)^+$$

where π is inflation, π^e is expected inflation, y is observed output, y^* is potential output and $(y - y^*)^+$ denotes the output gap with negative values set to zero (thus generating an upward asymmetry in inflation responses). Inflation expectations are determined as:

$$\pi_t^e = \lambda \pi_{t-1}^e + \frac{\delta}{6} \sum_{j=-5}^1 \pi_{t+j} + \frac{\gamma}{11} \sum_{j=2}^{12} \pi_{t+j}$$

ie, inflation expectations depend on both past price increases and future inflation outcomes. This formulation assumes a hybrid mixture of backward and forward looking economic agents. The forward-looking element ensures that policies inconsistent with the inflation target are punished fairly quickly. The backward-looking element ensures that inflation retains a degree of momentum, as observed empirically.

5 Flexible inflation targeting: 2002 –2006

During the initial inflation targeting period there was a deliberately strict interpretation of the inflation target band and the need to be within it at all times. This was part of the process of building a track record for the Bank in support of its credible commitment to price stability. From the late

1990s through to 2002, however, there was a gradual shift to a more flexible form of inflation targeting. In 1996 the inflation target was widened from 0-2 percent to 0-3 percent. In 1999 a new section (now 4b) was introduced to the PTA requiring the Bank to “avoid any unnecessary volatility in output, interest rates and the exchange rate.” The current PTA, introduced in 2002, further modified the price stability objective, requiring the Bank to maintain CPI inflation within the 1-3 percent target band “on average over the medium term”. The intention under this less strict approach to inflation targeting is to maintain the Bank’s credible commitment to price stability, while giving policy a little more latitude to influence secondary objectives related to balanced growth in the real economy. In practice, however, this more flexible approach has not avoided continued large cycles in the real exchange rate and traded sector activity.

Macro theoretical developments this decade have continued to focus on New Keynesian extensions to the earlier micro-founded RBC models, combining the key elements of forward looking optimising behaviour and tractable nominal rigidities, providing a basis for the application of systematic monetary policy. These models, under the generic heading of Dynamic Stochastic General Equilibrium (DSGE) models, have come to represent a new neoclassical synthesis, (eg Rotemberg and Woodford 1997, Chari, Kehoe and McGrattan 2002, Smets and Wouters 2003, 2004). The simple earlier DSGE models have been extended in sufficient detail to facilitate empirical policy and forecasting applications. The reduced form structure of DSGEs is comparable to traditional IS/LM models. They typically have a forward-looking IS equation, a New Keynesian Phillips Curve, and a policy rule. Unlike the traditional reduced form models, however, the reduced form coefficients of DSGEs have a structural interpretation as functions of deep behavioural parameters.

A number of central banks have started to utilise DSGE models in recent years, including; Bank of Canada, Federal Reserve Board, European Central Bank, Norges Bank; Riksbank, Czech National Bank, and Bank of Chile. These models are being used for strategic policy analysis, and in some cases forecasting. Some of the advantages of DSGE models are seen in:

- The ability to bring micro-studies to bear on the size of structural parameters, thus facilitating calibration and/or Bayesian estimation;
- the ability to provide a rich narrative alongside the numerical forecasts;
- the use of cross equation structural restrictions to identify the nature of shocks;
- the assumption of forward looking optimising agents and hence the robustness of policy analysis to the Lucas critique; and
- the ability to incorporate uncertainty in a formal manner (eg through the use of fan charts).

At the Bank we have also begun to develop DSGE models. We see this as an opportunity to broaden the Bank’s modelling strategy, while at the same time facilitating our research effort. However, the usefulness of these models is yet to be fully tested, especially in forecasting. We are currently commencing a DSGE model development program and will take some time to assess the DSGE structures before making any decision to replace the current FPS model as the core policy and forecasting framework.

Focusing again on the determinants of inflation and inflation expectations, one of the small DSGE models developed at the Bank (Liu 2005) incorporates the following (New Keynesian) inflation process:

Domestic inflation:

$$\pi_{H,t} = \beta(1 - \theta_H)E_t\pi_{H,t+1} + \theta_H\pi_{H,t-1} + \lambda_H MC_t$$

Imported inflation:

$$\pi_{F,t} = \beta(1 - \theta_F)E_t\pi_{F,t+1} + \theta_F\pi_{F,t-1} + \lambda_F e_t$$

Aggregate CPI inflation is then a weighted average of the domestic and imported components:

$$\pi_t = (1 - \alpha)\pi_{H,t} + \alpha\pi_{F,t}$$

where parameters β , θ , and λ are functions of deep behavioural parameters, e is the deviation of the real

exchange rate from the law of one price, and MC is real marginal cost, E is the expectations operator. While expectations are purely forward looking (ie, rational), the assumption of Calvo pricing introduces a degree of price stickiness, and therefore a basis for monetary policy having short term-real effects. The real marginal cost term can effectively be represented by an output gap, thus giving a “New Keynesian” Phillips curve for the determination of domestic price inflation.

6 Conclusion

Developments in macroeconomic theory since the 1970s have had a major impact on the evolution of monetary policy in New Zealand and the models that have been used to support policy, albeit with a lag. In the 1970s and 1980s, the approach to monetary analysis and modelling reflected the global shift from a Keynesian to a monetarist framework. However, the policy environment was dominated initially by attempts to achieve control over monetary conditions, and then by the impact of widespread financial reforms as policy and intermediation shifted to an effective market-based environment. By the 1990s, the underlying theoretical developments were beginning to have a more discernible impact on the monetary policy framework. In particular, the Lucas critique and the time consistency literature had an important influence on the design of the inflation targeting regime introduced in 1990. Under this regime, and under the subsequent flexible inflation targeting policy, the Bank has maintained a credible commitment to price stability by adopting a consistent rule-based monetary policy, supported by a high level of transparency in forecasting and the operation of policy.

As the search continues for greater control over activity and real exchange rate cycles as well as inflation, the lessons of rational expectations and time consistency will be kept firmly in mind. Monetary policy will continue to target price stability – albeit in the context of flexible inflation targeting. Any new policy instruments will only be used to influence real activity if they can be shown to have a sustainable influence over the long term, and they will be applied in a systematic and predictable fashion.

Despite very real challenges along the way, modelling efforts at the Reserve Bank of New Zealand have adapted to handle the new forward-looking approach to monetary policy-making. A calibrated forecasting and policy system (FPS), incorporating both forward- and backward-looking behaviour, has successfully supported policy-making over the past nine years. New approaches in the form of DSGE models are expected to improve our analysis, and potentially also our implementation of monetary policy in the future.

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Major global developments in the new millennium

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This article is an abridged version of a paper prepared for an address to the Canterbury Employers' Chamber of Commerce, on January 27, 2006.¹ It examines three major global developments that have occurred in recent years and discusses their impact on the New Zealand economy in terms of their effect on relative prices. These developments include (i) closer integration of China and other emerging economies with large pools of labour, (ii), a housing market boom in some OECD countries, and (iii) recent geopolitical and biosecurity events. The monetary and financial stability policy implications of these developments are discussed as are some lessons for households, businesses and public policymakers.

1 Introduction

At the start of this millennium few of us could have appreciated the full nature and magnitude of changes that were occurring in the world economy. These events are making a big difference to the prices of particular goods and services relative to the general level of prices within the global economy. In turn, this has influenced the cost and return of factor inputs and outputs and has facilitated quite large shifts in resource allocation and income distribution.

We focus on three key developments and examine the impact of each on relative prices. Although these developments can be broadly categorised under different headings they are probably interconnected.

- The integration of China, and other emerging market economies with large reserves of labour, into the global economy. The boost to global incomes and scale of industrialisation taking place suggests another major global industrial revolution is now under way. This structural shift in global production and trade has lowered the global price of labour relative to commodities and other factors of production and has affected global saving and investment flows. These changes have been in parallel with developments in the retail sector which in turn have improved the access of consumers in OECD countries to low-cost products.
- A housing boom in some OECD countries which has been underpinned by a lower cost of capital and a change in preferences towards housing from other investments. This has lifted house prices relative to labour earnings and prices for other goods and services. Stronger

household balance sheets have boosted demand and inflationary pressures in some OECD countries, including New Zealand. However, they have also contributed to greater economic imbalances and potentially raised the risk of a house price correction.

- An increased 'premium' placed on security arising from geopolitical and biosecurity considerations, global warming and acts of nature. These events heightened the risk of weaker global economic growth and imply temporary additional monetary policy accommodation to offset actual or projected declines in economic activity. So far, worst case scenarios on many of these events have not eventuated. Nevertheless, the risk of an occurrence has shifted relative prices in favour of more 'secure' countries.

The article then looks at whether similar events have occurred over history. As these shocks are likely to have offsetting or reinforcing effects, their overall impact on monetary policy and financial stability is discussed. We are particularly interested in how they have affected New Zealand's relative competitiveness in the world. The article concludes by outlining some key lessons for firms, households and policymakers.

2 Emergence of China and other economies

Introduction

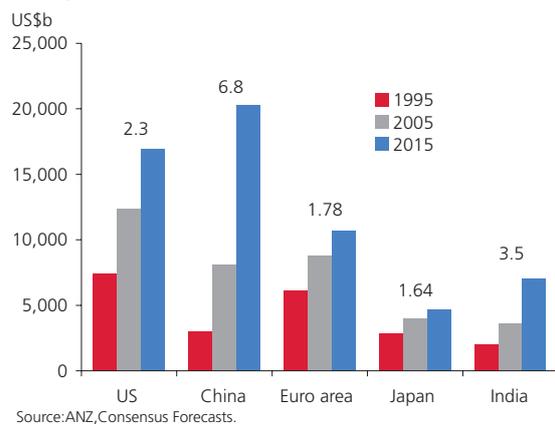
Economic developments in China today receive considerably more attention from policymakers and the public in the developed world, than even five years ago. This heightened focus reflects China's large population, its strong rates of

¹ See <http://www.rbnz.govt.nz/speeches/2233440.html>

economic growth and its intensely competitive manufacturing sector that has created extremely challenging conditions for manufacturers throughout the OECD. Similar focus is also being placed on other rapidly developing economies with large populations, including India.

Per-capita incomes in China and India are significantly below the OECD average and are likely to remain so for some time. However, faster growth is expected in emerging economies as they catch up to international best practice by adopting modern technology and business practices and lifting trade and investment. In purchasing power parity (PPP) terms the Chinese economy is expected to overtake the US as the world's largest economy by 2015 in terms of measured output.²

Figure 1
The world economy in 10 years' time
GDP at purchasing power parities, 2015 PPP
multiple of 1995 level in chart



A key feature of China's expansion has been its burgeoning participation in international trade – contributing to the process we know as globalisation. Greater mobility of capital and trade will encourage increased specialisation and investment in lower cost centres of production, and is likely to boost global income.³ Rising Chinese manufacturing

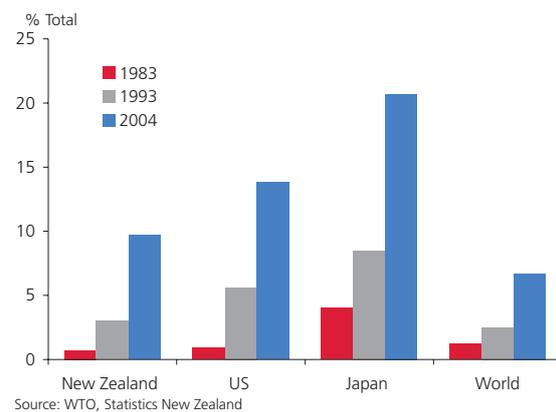
² PPP measures of GDP equalise purchasing power of different currencies by eliminating the differences in price levels between countries. As price levels in developing countries are much lower PPP estimates of GDP are higher relative to OECD countries. Revised nominal GDP estimates place the Chinese economy as the world's sixth largest in 2004 (around \$2 billion USD), after the US, Japan, Germany, UK, and France.

³ World Bank (2002) estimates suggest that global incomes would rise by USD2.8 trillion over a decade if trade was liberalised. More than half of this increase would accrue to

capacity and cheaper production costs have translated into a rise in import penetration of Chinese goods and services. While Asia's traditional trade with OECD countries continues to expand and intensify, intra-Asian trade growth has been even more brisk.

International outsourcing (where material inputs are procured from firms in foreign countries) is becoming more widespread. It has contributed to the hollowing out of parts of the manufacturing sector in OECD countries, with industries such as steel, electronics, and chemicals shifting to lower cost centres, such as China. Similar changes are happening in the services industry, with the relocation of call centres and other semi-skilled functions to lower-cost destinations such as India.

Figure 2
Chinese share of merchandise imports
calendar years



Key drivers

What have been the key factors driving the integration of China and other emerging markets into the global economy?

Economic reform and trade liberalisation

Over the last 25 years the rapid pace of economic liberalisation of the Chinese economy has been managed by the Chinese authorities:

- reforms to reduce central planning and open the Chinese economy to market forces in the late 1970s;

developing countries. Since 1990 global merchandise trade has grown nearly three times faster than output (WTO 2005).

- creation of special economic zones to promote promoting more business friendly conditions and reforms to land ownership from the early 1980s; and
- privatisation of Chinese SOEs and the relaxation of restrictions to foreign ownership from the 1990s.

Improved market access has also underpinned the growing integration of China and other emerging economies into the global trade system. A significant milestone on the path to greater trade liberalisation was the formation of the World Trade Organisation during the Uruguay round of multilateral trade negotiations in 1994.⁴ In New Zealand, the lifting of import protection on textiles and manufactured goods in the early 1990s contributed to rising import penetration. Efforts to reduce trade barriers are also being pursued on intra-regional and bilateral fronts.

Technological change, innovation and changing tastes

Increasing standardisation in shipping and transportation has facilitated the movement of products from producers to consumers. Changing tastes, rising incomes and technological progress have supported strong increases in services trade – financial, communications, transportation, and professional services, as well as tourism. Greenspan (2005c) asserts that since the 1990s technological advances and the dismantling of restrictions on capital flows have contributed to increasing globalisation of investment flows via reducing the home bias of investment. To meet changing tastes the production mix of goods and services is evolving in both OECD and non-OECD economies.

There have been significant changes in the retail environment, which have improved the access of low-cost products to consumers in OECD countries. This so-called ‘Wal-Mart effect’ has seen the emergence of retailers whose large scale, greater global buying power and better logistics have enabled economies of scale to be realised. In turn, this has contributed to increasing competition and margin

compression in parts of the retail sector.⁵ A New Zealand study by Kite (2005) reports a sizeable expansion in both the number and average size of retail stores operating in New Zealand over the past five years.

Impact on the New Zealand economy

Globalisation and strong growth in emerging economies contribute to alleviating global poverty as output and incomes are boosted.⁶ Higher global incomes and greater mobility of trade and capital flows are likely to confer significant benefits to the New Zealand economy, although the gains will not be evenly shared.

Some of the impacts on the New Zealand economy include:

A higher terms of trade

The terms of trade measures the effective purchasing power of exports and is an important determinant of incomes. Closer integration of China into the world economy should help improve the allocation of global resources and lead to a higher and more sustainable global growth path than otherwise. However, some labour-abundant developing countries will incur a loss in welfare and lower terms of trade as the relative price of resource inputs and capital-intensive goods and services rises. The terms of trade in New Zealand are currently around their highest since the early 1970s, as they are in other commodity-exporting countries, including Australia and Canada.

The combined influence of greater production capacity worldwide, more intense global competition and increasing productivity have reduced prices for manufacturing goods. Hodgetts (2005) finds that since 1997 the estimated foreign currency price of imported manufactures into New Zealand has fallen by an average of about 2½ per cent per annum, whereas up until 1996 the norm had been for positive rates of inflation.

⁴ China joined the WTO in 2001. India has been a WTO member since 1995. More progress has been made in some sectors than others. Further efforts to reduce global barriers to trade in agriculture and services are under way in the current WTO Doha round.

⁵ See early studies by Julius (1999) and Solow (2001).

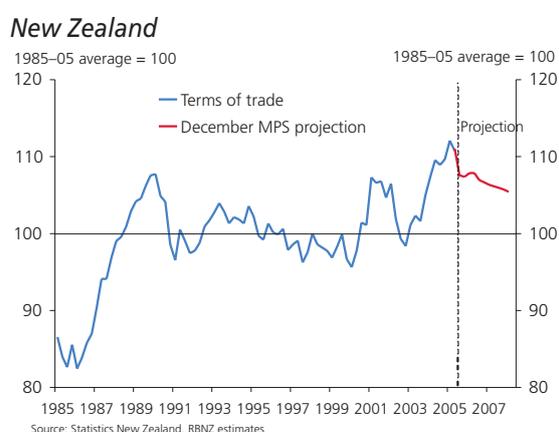
⁶ For example, World Bank (2002) estimates suggest that global incomes would rise by USD2.8 trillion over a decade if trade was liberalised. More than half of this increase would accrue to developing countries.

Conversely, prices for commodities have been boosted by cyclical recovery in OECD economies, capacity constraints and stronger demand from emerging economies. In New Zealand's case, rising global incomes and the demand for protein underpinned strong demand for agricultural exports and contributed to the high New Zealand dollar. OECD (2005a) long-term projections suggest that much of the increase in global demand for agricultural commodities is likely to come from non-OECD economies. Progress made in reducing agricultural trade barriers in the early 1990s has

underpinned prices for New Zealand's agricultural exports. Offsetting this have been strong increases in prices for New Zealand's commodity imports (including oil and metals).

The medium to long run outlook for New Zealand's terms of trade is uncertain. Although manufacturing import price inflation is likely to remain subdued, it is unclear how much of the strength of agricultural export prices reflects temporary cyclical factors that are unlikely to persist indefinitely. There are also considerable uncertainties on the outlook for oil and other imported commodities.

Figure 3
Goods terms of trade



Changes in sector growth and employment

Restructuring in the 1980s and early 1990s, technological change and innovation, and the increase in international competition have contributed to an increase in employment and output in the services sector relative to manufacturing and agriculture – see Table 1.

The decline in the relative importance of manufacturing in New Zealand and a corresponding increase in services is a trend seen in many other OECD countries. There is no

Table 1
Share of the New Zealand economy
June years unless noted otherwise

	1990	1995	2000	2005
<i>Manufacturing</i>				
Output	17.9	17.4	15.1	12.4
Employment (hours worked)	18.1	19.2	17.1	15.4
Export volumes	14.0	17.4	19.7	19.1 [†]
<i>Services</i>				
Output	62.9	63.6	65.4	67.2
Employment (hours worked)	-	61.6*	61.9	65.0
Export volumes	22.9	29.0	31.3	31.8
<i>Agriculture</i>				
Output	4.9	5.1	5.2	4.5
Employment (hours worked)	12.4#	11.4#	10.2#	8.3#
Export volumes	33.1	29.9	29.2	28.4

[†] March year

* September 1997 year

Agriculture, forestry, fishing subgroup

Source: Statistics New Zealand, RBNZ estimates

denying that global pressures have facilitated job losses in some industries and a degree of economic dislocation. What is often forgotten however is that resources are continuing to shift to areas where comparative advantages or niche market opportunities can be realised. In the manufacturing sector there has been substantial growth in output and employment seen in areas such as meat and dairy processing, and electronic equipment and photographic and scientific equipment manufacturing in recent years.

As emerging economies are growing more quickly than our traditional trading partners, it follows that these economies are becoming more important trading partners for New Zealand. Trade with China now accounts for roughly 8 per cent of New Zealand's total merchandise trade, compared to less than 5 per cent at the start of the decade and 1-2 per cent in the early 1990s.⁷

Greater influence of global factors on inflation

Policymakers have generally been surprised at how well - contained inflationary pressures have been, given the sharp increases in world oil prices and strong pace of global expansion. Low-cost manufactured imports have dampened tradeable inflation and contributed to low rates of core inflation rates being maintained. Sharply rising oil prices have contributed to a wedge between core and headline inflation rates.

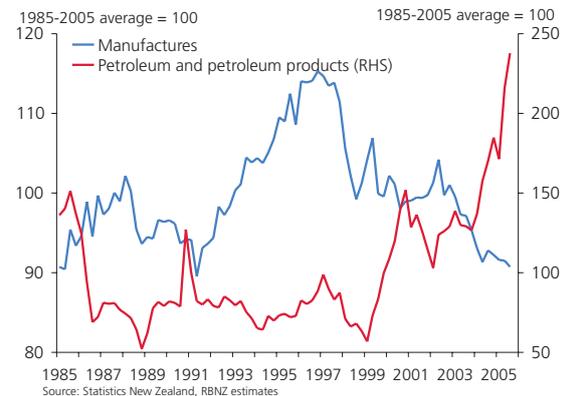
Globalisation may have affected the inflation process. Recent analysis from the Bank for International Settlements (2005) suggests that global forces have become more important relative to domestic factors in determining inflation in individual countries.⁸ BIS research into pricing power shows the correlation between domestic cost pressures and core inflation diminishing in their sample of G7 economies. Hodgetts (2005) notes that in the New Zealand case there is some evidence that traditional cost-push model of inflation has become less relevant, with the previously tight linkage between wages and CPI inflation having weakened considerably.

⁷ China is now New Zealand's fourth largest merchandise trading partner behind Australia, the US and Japan.

⁸ See "A foreign affair", *Economist* print edition, October 2005.

Figure 4

Implied world prices of New Zealand's imports



Initially the more benign global inflationary environment has made it easier to achieve inflation objectives, although sizeable increases in energy and commodity prices over the past couple of years have offset this to some extent. Policy also needs to remain aware of inflationary developments in sectors protected from international competition, particularly if these have a persistent impact on generalised inflationary pressures.

Higher emerging economy savings and greater vulnerability to sector-specific shocks

Increased international integration of both goods and financial markets can provide diversification benefits, but this can leave the economy more vulnerable to regional and sector-specific shocks. Rapid economic growth can raise the challenges being faced by financial systems.

Unlike most other historical examples, the strong growth rates currently displayed by emerging economies have coincided with large trade and current account surpluses being accumulated. Some of these proceeds have been used to fund savings shortfalls in some OECD countries, via purchases of financial assets.

Strong growth in world demand from emerging economies has placed the supply capacity for some commodities under pressure. Although the International Energy Agency and IMF believe reserves of energy will be adequate to meet increased demands, oil prices are likely to remain volatile while capacity constraints in oil extraction, refining and transportation remain. Low spare capacity is believed to be

the consequence of low investment that occurred when oil prices were considerably lower than they are now.

Is this a new phenomenon?

The 1960s saw the emergence of Japan as a low cost producer of manufacturing goods. It was not until the global downturn of the early 1980s, however, that US policymakers became concerned over the impact of increasing global competition. As in the 1980s, growing trade deficits in the US have prompted a rise of protectionist sentiment. There is also pressure for more exchange rate flexibility and further trade liberalisation for emerging economies to help rectify widening trade and investment imbalances.

The greater influence of emerging economies on the global economy and changes to global savings and investment flows requires more careful monitoring and analysis of developments and potential risks in these countries by policymakers. History tells us that imbalances in trade and current account positions are unlikely to continue indefinitely, and may eventually reverse. It does not tell us precisely when an adjustment is likely to occur and in what form it could take.

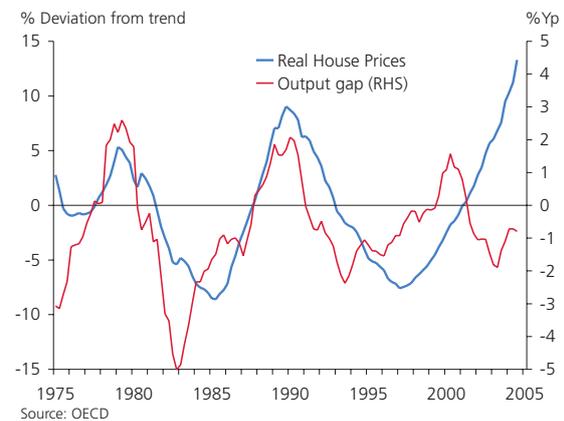
Although there are some historical parallels, the orders of magnitudes posed by closer integration of a significant pool of labour are considerably larger. Local firms face challenges, not only those in manufacturing but other industries where cheaper foreign competition is emerging. Raising productivity growth remains a key challenge, as does targeting specific niche markets, and making better use of our comparative advantages. Rapid economic development in these economies provides opportunities for some sectors of the New Zealand economy, but greater challenges for other sectors. Monetary policy has to focus on the overall impact on activity and inflation so there is little it can do to relieve pressures in particular sectors.

3 The housing market boom

Introduction

A number of OECD countries have experienced sizeable increases in real estate values in recent years. In the New Zealand case, the period of house price growth has been larger than at any time in our recent history. Traditionally, the housing market has played a key role in the economic cycle of many OECD economies, and its performance is sometimes regarded as an important barometer to future macroeconomic outcomes. What is different this time around, however, is how out of step movements in house prices have been with the OECD business cycle.

Figure 5
OECD real house prices and the business cycle



Contributing factors

The following are commonly listed as the key influences contributing to the buoyancy in residential property markets. Although factors affecting housing markets can have a very local flavour, others have a global aspect.

Low nominal interest rates

Over the last few years policy interest rates in a number of countries were reduced to historically low levels. As the housing market is mostly debt financed the demand for residential property has responded to lower interest rates. A benign global inflationary environment and expectations that policymakers would keep inflation low have acted to dampen long-term interest rates.⁹ Despite economic

⁹ A 'global glut' of foreign savings may also have had an influence.

prospects having brightened and policy accommodation being removed, longer-term interest rates overseas have remained quite low and are something of a 'conundrum', according to Alan Greenspan.

Financial liberalisation and globalisation

Greater use of revolving credit facilities and other financial products have enabled households to consolidate their balance sheets and also tap into the increased equity of their homes. In the US increasing use of home equity-linked financing (including revolving credit facilities, interest only mortgages, and reverse annuity mortgages) have provided home owners with access to more funds.

Increasing globalisation has improved the access of liquidity-constrained households to large pools of savings held by other countries. In New Zealand's case, our comparatively high interest rates have prompted strong interest in Eurokiwi and Uridashi bonds amongst retail investors in Europe and Japan.¹⁰ This, along with institutional investment directly in New Zealand's wholesale interest rate markets, has been a factor in enabling banks to offer fixed interest rate mortgage products at rates below variable mortgage rates. There has been a significant take up of these products, particularly for terms of one to three years.

Rising household incomes and expectations

Over the last few years improving labour market conditions in some OECD countries have contributed to strong growth in labour incomes. Household purchasing power has also been boosted from lower prices for imported consumption goods that have provided more income for other uses (including housing). Low unemployment has contributed to high job security and has reduced precautionary savings.

Expectations also have a role to play. It is possible that the rise in property values (and household debt) partly reflects households having raised their expectations of future income growth. The shift towards dual income households may have underpinned this, although it could be the consequence, rather than the cause of rising property values.

In some OECD countries the rise in property values is not confined to residential property. In part this reflects the expectation by investors that interest rates are likely to remain relatively low. In New Zealand the increase in rural land prices may also partly reflect higher perceived and actual returns, as represented by the strong climb in world agricultural commodity prices in recent years.

Changes to population/preferences

Population inflows tend to boost the demand for housing and coincide with periods of housing market strength and residential construction activity. Migration flows within countries are also likely to have contributed to differences in regional housing markets. External migration has played a key role in some countries, including New Zealand.

Changes in the population structure may have an influence on the demand for housing as an investment good. Baby boomers nearing retirement age may be looking to invest their savings in rental property assets that appear to provide more secure cash flow. The trend towards living in inner city apartments and townhouses has boosted construction activity, whereas the growing attractiveness of coastal property has boosted coastal property values. Increasing globalisation may also have raised foreign investment in residential property. In parts of Europe this is evidenced by rising foreign ownership of properties in countries where property values are still perceived to be relatively cheap. Similar perceptions are likely to have underpinned greater foreign investment in New Zealand residential property.

In the case of New Zealand a lack of depth in local equity markets, potential tax advantages from owning investment properties and little confidence in alternative savings vehicles may have encouraged greater investment in residential property. This has underpinned property values and resulted in a decline in rental yields.

Supply side rigidities

The supply of land is fixed. In a period of strong demand the price of land and existing dwellings rises. There are also lags in the construction process as supply cannot adjust

¹⁰ See Munro et al (2005).

instantaneously to higher demand. In some countries higher compliance costs in the construction industry and planning restrictions may also have limited the supply side response. Another contributing factor is the shortage of labour in the construction industry, which is partly a reflection of strong labour market conditions in recent years.

Impact on New Zealand and other OECD economies

Stronger household balance sheets of homeowners combined with favourable labour market conditions and low interest rates have fuelled an increase in consumer spending.

The resulting savings and investment imbalances have contributed to rising levels of household debt and large trade and current account deficits in New Zealand and some other OECD countries, including the US and Australia. The willingness of foreign savers to continue providing low-cost funding to borrowers in these countries may waver if the risks of default or currency depreciation increase.

Is this a new phenomenon?

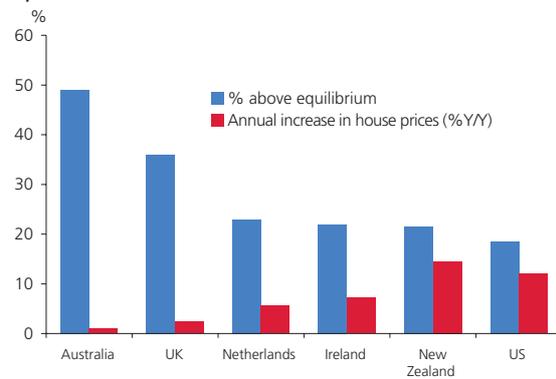
Developments in the housing market now have a potentially greater influence in the world economy. Consequences of associated high household debt levels are not well understood, but it is likely that economies could be more vulnerable to shocks hitting household sectors. In some OECD countries the increase in household debt has contributed to deteriorating savings and investment imbalances, which has manifest in widening trade and current account deficits.

Strongly rising house prices have pushed up the value of houses relative to fundamental determinants. After taking into account the impact of falling nominal interest rates on affordability a 2005 OECD study suggested that house prices are above fair value in most countries. Although a gradual correction appears to be under way in Australia and the UK (see figure 6), there remains a risk that a significant rise in interest rates or sharp falls to labour incomes could trigger a more severe adjustment. As household wealth in

New Zealand is likely to be less diversified than wealth in other countries, household balance sheets here are likely to be more susceptible to shocks affecting housing wealth. In particular, households with high levels of debt relative to their income and assets are likely to be more vulnerable to adverse shocks to debt servicing and property values than other households.

Rising residential property values have raised the issue of how monetary policy should respond to asset price movements.¹¹ In practice this can prove problematic as it can be difficult at the time to identify house price misalignments. House prices could also be displaying quite different regional trends. Targeting the housing market directly may also be inconsistent with meeting inflation objectives, and could lead to unnecessary volatility in output, employment, and interest and exchange rates.

Figure 6
House price to rent ratio
updated OECD estimates for 2005Q3



Source: Economist, OECD

To better insulate themselves against a fall in house prices, homeowners need to live within their means and ensure their expectations of future income and house price growth are realistic. In the current environment where gains to house prices may not have been fully underpinned by fundamentals, households need to look carefully at their spending decisions and focus on improving savings.

¹¹ See Bollard (2004a).

4 Geopolitical tensions, climate change, biosecurity, natural disasters

Introduction

The final group of events are more difficult to categorise under a single heading. Each has different underlying causes, and the effects are likely to be quite different. Many of these events have occurred without warning, whereas others have been anticipated. A common thread, however, is that these events have raised the premium placed on safety or security.

Geopolitical tensions, disease, climate change, biosecurity and natural disasters

The economic costs of geopolitical disturbances are substantial. Aside from the immediate disruption and loss of life there are significant ongoing costs from increased security measures. An APEC (2005) report estimated the total costs to the US economy from the September 11 terrorist attacks in 2001 at approximately USD 660 billion.¹² The large number of anti-capitalism and anti-globalisation protests may also have contributed to a perceived decline in societal cohesion and stability.

Disease outbreaks have also caused disruption and heightened concerns over human safety. In 2003 the Severe Acute Respiratory Syndrome (SARS) outbreak in Asia infected more than 8,000 people and impeded trade and tourist flows in the region. The Avian Influenza A (H5N1) outbreak is the latest to hit world headlines. Its high mortality rate has the potential to cause significant upheaval and draws comparison to the Spanish Influenza epidemic in 1918/19 which killed 40–50 million people worldwide. So far the effects of H5N1 on human life have been relatively minor as the virus is yet to have fully crossed the species barrier from animals to humans. However, due to increasing

globalisation, containing a human-to-human outbreak is likely to prove difficult.¹³

There has been increasing focus on potential climate change and its impacts. The exact causes of global warming are a source of debate but most scientists believe human activities are a major contributor to increasing concentrations of carbon dioxide, which have enhanced the heat-trapping capability of the earth's atmosphere.¹⁴ Further industrialisation of emerging economies is likely to place greater demands on the provision of energy and raw materials. Despite efforts to reduce emissions via greater efforts on conservation and the Kyoto Protocol, continued development of the global economy is likely to contribute to more CO₂ emissions over the next few decades.¹⁵

Warmer temperatures have generated higher rainfall but its distribution is uneven – areas of high rainfall are generally getting more, whereas substantial drying and more droughts are occurring in other areas. Rising sea levels are a looming issue, particularly in islands and low-lying coastal areas, where population growth has been particularly strong. In New Zealand the west coast is generally getting wetter, while the east is getting drier.

Surprise natural events have had a major effect. The Northern Sumatra earthquake in December 2004, measured 9.0 on the Richter scale, the fourth largest since 1900. More than 200,000 people were killed and more than 2 million displaced by the earthquakes and subsequent tsunamis in South Asia and East Africa. Earthquakes in Kashmir also resulted in significant casualties and disruption in the region. Flooding and hurricanes in the US have also caused significant damage and disruptions to economic activity.

¹² Rising transaction costs from more stringent security measures and fewer tourists are estimated to account for more than 90 per cent of the total costs. We note there is no global consensus on what terrorism means. The APEC study does not propose a precise definition of terrorism but describes it as occupying a space along the continuum between civil disobedience and armed insurrection.

¹³ See studies by the Asian Development Bank (2005) and Congressional Budget Office (2005) for illustrative impacts on the Asian and US economies. A New Zealand Treasury (2005) report provides a preliminary assessment of the potential impact of a severe pandemic in New Zealand.

¹⁴ The earth's average temperature has increased by about 0.6 degrees Celsius over the past 100 years, whereas sea levels have risen by 10–20 cm. The 20th century's 10 warmest years all occurred in the last 15 years of the century.

¹⁵ IEA projections suggest CO₂ emissions will be approximately 50 per cent higher than today by 2030.

Impact on the New Zealand economy

Quantifying the precise economic impacts of these events is difficult. Instead we illustrate potential linkages through which these factors affect the New Zealand economy.

Increasing volatility and risk aversion

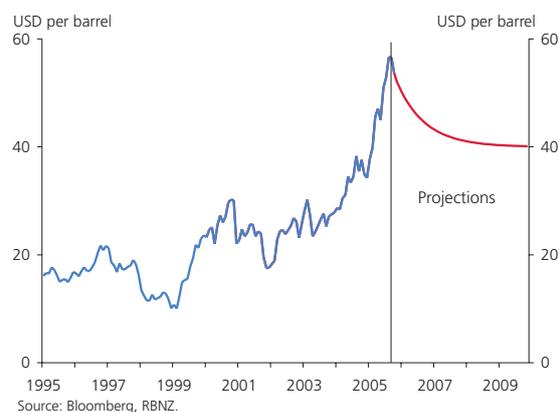
Many of these events have occurred suddenly and without warning. To risk-averse consumers, firms and investors these events have contributed to weaker economic activity via adversely affecting business and consumer confidence. The timing of these events is also important, with their economic impact likely to be more sizeable if the economy is at a vulnerable stage of the cycle. The September 11 attacks in 2001 occurred during a trough of the US business cycle and followed a period of falling business confidence and employment.

Changed perceptions and attitudes to risk have had an impact in financial markets. In 2003 for example, fears of impending economic weakness, possible deflation, and strong safe haven buying pushed down long-term interest rates in some countries. Corporate debt and money market spreads also widened. Increased risk aversion around the time of the September 11 terrorist attacks contributed to safe haven flows into established markets, and to a sell-off of assets in peripheral markets like New Zealand.¹⁶

Heightened uncertainty may have contributed to a higher premium on security. In early 2005 it was feared that the lack of a supply cushion could trigger a surge in oil prices if the geopolitical environment or weather conditions took a turn for the worse. This, and strong demand, would have been a factor contributing to the upward shift in oil prices and oil price futures at that time.¹⁷ Although world energy reserves are sufficient to meet demand, analysts believe increased investor risk aversion and past oil price volatility

has contributed to lower investment in production or refining capacity.¹⁸

Figure 7
Oil price projections
Dubai grade, December 2005 MPS



As outlined in our December 2005 *Monetary Policy Statement*, we have assumed oil prices (Dubai grade) will eventually settle at around USD 40 per barrel. This is broadly consistent with a range of estimates of the long-run cost of oil production and reflects an assumption that high oil prices will trigger a relatively quick supply response and moderation in demand. Nevertheless, oil prices are expected to settle at a level that is high in historical terms, as demand conditions remain robust.

Heightened focus on security/preparedness

Disasters have serious consequences for affected communities, individual households, and the economy as a whole. To minimise the risks of such occurrences increased efforts have been directed at heightening security, contingency planning and crisis management. Border security is of particular importance to New Zealand given our reliance on agricultural exports and tourism.¹⁹ A foot

¹⁶ Despite these shocks being fairly recent, financial market measures of volatility and risk aversion are currently around historically low levels.

¹⁷ The risk of a 'super-spike' in oil prices to over USD 100 per barrel was raised by some investment banks in early 2005, among them Goldman Sachs. At the time of Hurricane Katrina oil prices did spike above USD 70pb but have since settled back.

¹⁸ Alan Greenspan (2005b) notes that much of the world's proven resources are concentrated in politically volatile areas.

¹⁹ In the December 2005 Half Year Economic and Fiscal Update an additional NZD 13m was allocated over the forecast period towards the unquantified fiscal risk of preparing for a possible pandemic in New Zealand. see www.treasury.govt.nz/forecasts/hyefu/2005/4intro.asp

and mouth disease outbreak in New Zealand would have a severe economic impact, for instance.²⁰

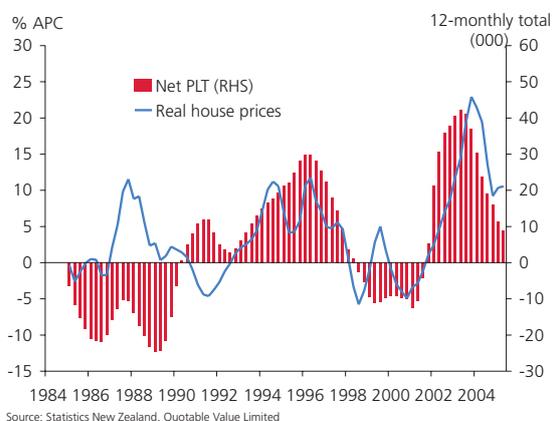
Investing in strategies to prevent or at least mitigate the impact of disasters makes economic sense. However, preparedness is not without cost. Security measures can be expensive and costly to impose, can disrupt trade, capital and migration flows, and can allocate resources away from more productive uses. Adverse shocks could also result in difficulties in particular sectors, which could raise the vulnerability of the economy to further adverse events. Losses to the insurance industry following the September 2001 attacks affected the capital base of many insurance firms and contributed to reduced coverage and higher insurance premiums. Macroeconomic policymakers need to be prepared to act to maintain economic and financial stability. An OECD study (2002) found that rapid public policy response and international cooperation were crucial factors in the rebuilding of economic confidence following the September 2001 attacks.

Increase in the New Zealand premium

Many of these events tend to highlight the advantages of living in safe haven destinations such as New Zealand,

Figure 8
Permanent and long-term migration and real house prices

New Zealand



²⁰ To illustrate of the potential losses from a foot and mouth outbreak in New Zealand, the Reserve Bank and The Treasury published a hypothetical scenario; potential losses under this scenario cumulated to slightly under 10 per cent of GDP after two years. (RBNZ 2003).

although there is never room for complacency. It is noticeable that migration flows to New Zealand picked up strongly following the September 11 attacks, whereas migration outflows slowed. The perception of being a safe haven destination may also have attracted more tourists to New Zealand from other destinations and contributed to more domestic tourism. The pick up in Australian visitor arrivals following the Bali bombings is evidence of this.

Is this a new phenomenon?

Wars, earthquakes, disease outbreaks and natural disasters have occurred throughout history, and there is nothing particularly distinctive about the events in recent years. However, technological advances in communications and globalisation have made the world smaller and more interconnected. More advanced financial markets have provided instruments for managing risk. However, without adequate systems in place, financial markets can themselves be a source of adverse shocks. Greater vigilance and preparedness is needed to prevent worst case outcomes eventuating and to protect New Zealand's reputation as a 'clean and green' producer of agricultural produce and a safe haven destination for tourists. From a financial stability perspective, we also need to ensure that the financial system remains as resilient as possible in the face of a range of international shocks. In recent years the Reserve Bank has put significant effort into ensuring that the financial system is able to withstand a host of external and domestic shocks that might plausibly occur at some stage in the future.²¹

Monetary policy also has a potential role to play in the management of external shocks that might affect New Zealand's economy. How monetary policy would respond to a given event depends on the nature of the shock, its duration and how well we can actually identify its effects. Market commentators sometimes ask what percentage point adjustment we might make to the Official Cash Rate if we were faced with a particular event such as a foot and mouth or pandemic flu outbreak. Given the complexity of

²¹ The Reserve Bank regularly assesses the soundness and efficiency of the financial system, the details of which are published in the six-monthly *Financial Stability Report*. See www.rbnz.govt.nz/finstab/fsreport/index.html

the economy and the nature of these sorts of shocks, it is simply not possible to be prescriptive in advance. Moreover, monetary policy is not a panacea to every external event that occurs. For example, there is not much monetary policy can do in the face of an adverse change in the relative price of a particular commodity in world markets that may impact on a particular industry in New Zealand. While monetary policy would take into account the effect of that relative price change on activity in New Zealand (and hence on general inflation pressures) it clearly cannot do much to insulate the particular industry from that relative price change.

Our current Policy Targets Agreement requires us to maintain price stability on average over the medium term, but it does give us the flexibility to respond to events if we can make a worthwhile difference. While maintaining price stability over the medium term remains the primary goal of monetary policy, we are able to make policy trade-offs where doing so will avoid unnecessary volatility in the wider economy.

5 Conclusion – key lessons

This paper has outlined three key phenomena that have faced global policymakers in the new millennium. The impact of each of these developments has been larger than many of us could really have anticipated. Moreover, the prognosis as to how each plays out over the years ahead is, at best, pretty unclear.

That being the case, what lessons can be distilled both globally and for New Zealand?

The first lesson is that we seem to be facing a period of considerable change in relative prices in the global economy, many of which directly affect New Zealand. Some of the effects on relative prices are temporary, whereas others are likely to prove more enduring. Changes in relative prices inevitably mean changes in the complexion of economic activity across the globe and within individual sectors. Inevitably, there will be some winners and losers in this process, which poses significant short-term challenges for firms, households and policymakers alike as the adjustment to ever-changing economic conditions is rarely a smooth process.

The second lesson is that we currently live in a world of significant global imbalances. High savings countries are funding low savings countries, particularly those whose residents are participating in the housing cycle. At some point, there is likely to be an adjustment to those global imbalances. Exactly how this plays out is also unclear, although history tells us it is likely to involve a realignment of exchange rates and interest rates as well as changes in household and business spending patterns. History also tells us that the process may not necessarily occur smoothly for all countries. This highlights the desirability of having a robust financial architecture – resilient financial institutions, payment systems and the like.

The third lesson is that much of the world has enjoyed higher growth, lower volatility and low inflation; but policymakers across the globe need to remain vigilant. It is commonly asserted that the integration of emerging economies has contributed to a more benign inflationary environment, which has made life easier for macroeconomic policymakers in OECD economies. However, the policy challenges posed by higher prices for oil and other commodities as well as issues arising from housing market developments and threats to security have become more apparent. As our knowledge of the influences driving these changes is limited it is difficult to precisely know how persistent many of these changes will be and how they will shape the global economy in the coming years. As such, policymakers around the world will need to continue to closely monitor these developments.

New Zealand has been growing strongly over the last decade driven by improved efficiency, high participation and stronger terms of trade. Ultimately our future performance will depend on our ongoing relative competitiveness. The big global changes that we have described have the potential to impact that in a significant way.

In a global sense, labour has become more internationally traded, capital is more available, and the production and distribution of manufactured goods cheaper. In New Zealand (like most OECD countries) we have known for some time we cannot compete across a range of general manufactures with the big low-cost producers. The trend has been good

news for our household and business consumers who have enjoyed very competitive import prices and tighter mark-ups. In contrast, the price of resources has increased. For some of our imported needs, particularly oil, that has been bad news for us. But on balance we have had good news: strong commodity prices for much of our primary sector, and a significant improvement in our terms of trade.

The price of global security has also increased. We are by no means immune to personal and environmental risks in New Zealand, but on balance our isolation and vigilance to bio-hazards has largely protected us from these, enhancing our competitive position in food production, tourism and education.

Finally, there has been a big adjustment to OECD balance sheets from the housing boom. Because in New Zealand there are relatively high holdings of housing assets, we have so far maintained or enhanced our relative wealth position. But this phenomenon also carries significant risks: we are highly leveraged within a world of growing imbalances. We have put considerable effort into ensuring our financial system remains robust in the face of shocks. But New Zealand has a challenge ahead as it learns to reduce household debt and work down its deficit with the rest of the world.

In this article we have noted some big global changes are afoot. They are hard to assess in the short-term, but are probably bigger than most of us have seen in our working lives. There is some good news for New Zealand's international position in the medium-term, but some big policy challenges to adjust to in the short-term. For business and households, acumen and agility will be rewarded as the world changes around us.

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Supplementary stabilisation instruments

Initial Report to: Governor, Reserve Bank of New Zealand, Secretary to the Treasury,

10 February 2006

Executive summary¹

1. The large and prolonged housing market cycle of recent years, and the associated pressure this appears to have placed on domestic resources, the inflation outlook, and the exchange rate, prompted you to commission this review. The review has looked at whether there might be useful tools, with a direct bearing on the housing market and/or the market for residential mortgage credit, which could supplement the central role of interest rates in managing inflation, either in this cycle or in future cycles in which housing-related pressures played a particularly important role. If such measures, targeted more closely to the housing or housing finance sectors, were available they might alleviate some of the pressures on the exchange rate, and on the tradables sector of the economy. A joint Treasury and Reserve Bank team has explored a range of options in this paper.
2. There are a number of areas where further work and policy development could be appropriate. However, it should come as no surprise that there are no simple, or readily implemented, options that would provide large payoffs.
3. Tailoring bank capital requirements better to the risk characteristics of loan portfolios and to the wider economic environment is an important element in refining the regulatory regime for New Zealand banks. Consideration of these issues will be a part of the implementation of the new Basel II framework over the next couple of years. Earlier, more limited, modifications to the existing capital adequacy regime could probably be made quite quickly. As the capital requirements for banks are refined, the banking system should be better placed to cope with periods of financial stress. It is less clear, however, what contribution modifications of this sort would make (as an ancillary benefit) to dampening this, or future, housing cycles, and hence how much pressure they might relieve from the Official Cash Rate (OCR) and the exchange rate. We would not expect these effects to be large, particularly for modifications to the existing regime, and hence we would be hesitant about promoting any early modification of the existing regime ahead of the Basel II schedule, except as a means of focusing banks on the emphasis the Reserve Bank will be putting on these risks in implementing the new Basel II framework.
4. Of the housing taxation instruments reviewed, there could be merit in encouraging Inland Revenue to have regard to broader cyclical stabilisation considerations when assessing the priority given to the enforcement of the existing income tax provisions that make liable for income tax any capital gains on properties (other than those occupied by the owner) purchased with the intention of resale. This would be a departure from the current practice and, as such, would raise a number of issues which would require further work, including determining the legislative basis for such a change in focus. At the margin, greater awareness of the existing tax law, and more stringent enforcement, might offer some incremental gains in dampening housing inflation in periods of particular stress. Given the growing number of investment properties reporting losses for income tax purposes, there may also be merit in some further work assessing whether the tax treatment of losses on investment property has played an important role in the cyclical behaviour of the housing market in recent years. We would note, however, that there is no clear evidence that ring-fencing such losses is associated with less pronounced housing cycles in other countries.
5. We also consider that further work would be warranted to examine issues around land use and the ability of housing supply to respond promptly to rising prices and other indications of rising demand for housing.

¹ Only the executive summary is reprinted here. The rest of the report is available at rbnz.govt.nz/news/2006/2504934.html

The American literature, for example, highlights the differences in housing cycles between markets where supply is able to respond quickly and those where that supply responds only slowly.

6. Direct discretionary stabilisation instruments, such as a comprehensive limit on loan to value ratios or a mortgage interest levy, could be used to supplement the OCR at periods of particular pressure on the housing market. Of the two options examined here, a mortgage interest levy has the merit of being an explicitly price-based instrument. Instruments of this sort, which go well beyond the mainstream of international thinking about managing cycles, might appear to offer an effective technical means of influencing the housing cycle. But they also pose a variety of quite substantial problems, including issues around the extent to which such new statutory powers could appropriately be delegated (especially tax-based provisions), consistency with New Zealand's international commitments, and the difficulty of maintaining a strong and ongoing enforcement regime. Some implementation options could also risk

eroding the operational autonomy of the Reserve Bank in the conduct of monetary policy. If you wished to consider this option further some quite extensive work would need to be done to address a number of the issues raised in this report. It would, then, also be desirable to consider this option against other possible measures for easing demand pressures, including discretionary tax ones, which were outside the scope of this particular report.

7. The tables on the following two pages outline in summary form the key considerations relating to each of the options that we examined in greater detail.

	Tax on property purchased for resale	Ring-fencing	Improve responsiveness of housing supply
Description	<p>Increased publicity and increased enforcement of current law (making gains on non owner-occupied properties purchased with the intention of resale liable for income tax).</p> <p>Other options: require reporting of all sales of property held for less than two years, or remove the exemption for owner-occupied property held for less than two years.</p>	Prevent operating losses on investment properties being offset against other income.	Measures to increase the speed at which new land and houses are able to be brought onto the market in response to evidence of rising demand
Effects on cycle	Limited positive effects are possible (the more so, the more far-reaching the measures).	Likely to be quite limited (little evidence that cycles are more muted in countries that ring-fence).	<p>Favourable, but hard to predict reliably how strong the effects would be.</p> <p>Any impact in dampening house price cycles would be offset, to some extent, by intensified pressure in the construction sector.</p>
Other impacts (efficiency, stability, distribution)	<p>Increased publicity and increased enforcement of existing law would have low efficiency costs.</p> <p>More far-reaching measures would involve greater administrative, compliance, and avoidance costs.</p> <p>Unlikely to be material adverse distributional impacts.</p>	<p>Immediate impact likely to be greatest on smaller and highly-leveraged participants in (and often new entrants to) the investment property market.</p> <p>Ongoing enforcement challenges and costs, and perhaps at the margin a reduction in the supply of rental properties.</p> <p>Represents a departure from the principle of treating similar investment activities similarly.</p>	Should be generally favourable and, by improving affordability, should also have positive distributional impacts.
Implementation (enforcement, timing, legislation)	<p>Heightening awareness of existing rules could be done quickly, although the legislative basis for any increased enforcement would need to be determined. A more extensive reporting framework would require legislation.</p> <p>Long-term effectiveness would be a challenge, with strong incentives to avoid any two year reporting threshold</p>	<p>Would require new legislation.</p> <p>Longer-term enforcement challenges, especially for more sophisticated and diversified investors.</p>	<p>Significant lags, because many constraints are likely to involve a wide variety of local authority rules.</p> <p>Understanding these and securing changes would take considerable further time and effort.</p>

	Linking bank capital to cyclical risk	Discretionary loan to value ratio limit	Discretionary mortgage interest levy
Description	<p>Ensuring that bank capital requirements, under Basel II are better tailored to cyclical risks.</p> <p>Possible earlier modifications to Basel I, to link capital to loan to value ratios.</p>	<p>Comprehensive limit on loan to value ratio, imposed on all lenders and all loans secured by residential property.</p> <p>Able to be triggered at the discretion of the Reserve Bank, in response to periods of particular stress in the housing market.</p>	<p>Levy imposed on all loans, by all lenders, secured by residential property.</p> <p>Able to be triggered in response to periods of particular pressure in the housing market and when the gap between NZ and foreign interest rates is unusually large.</p>
Effects on cycle	Likely to be quite limited. Main aim of the framework would be to ensure that banks have sufficient capital to cope with downturns rather than to dampen lending cycles.	Could be material, although would depend on correctly calibrating the scheme.	Could be material, by establishing a wedge between domestic mortgage borrowing costs and returns available to depositors.
Other impacts (efficiency, stability, distribution)	Limited adverse effects, as any changes would be designed to better align capital requirements with risk.	<p>Poorly targeted and would impinge most directly on lower income and first home buyers.</p> <p>Could also constrain small and medium enterprise borrowing.</p> <p>Ongoing efficiency costs, heightened because it is a direct control.</p>	<p>Real resource costs devoted to implementing and maintaining the regime.</p> <p>Raises price of residential mortgage credit relative to other forms of credit, irrespective of relative risk considerations.</p> <p>Lowers returns to savers. Any increases in mortgage rates would fall most heavily on lower income borrowers and highly-g geared new entrants to the housing market.</p>
Implementation (enforcement, timing, legislation)	<p>Basel II regime will not be in force for some time.</p> <p>Modifications to the existing requirements could be implemented quite quickly.</p> <p>If such measures had much effect on bank housing lending, disintermediation would be a concern because the existing powers affect registered banks only.</p>	<p>Would require new legislation.</p> <p>Long-term enforcement would rest with the Reserve Bank and would be a major challenge (especially for an instrument used infrequently).</p> <p>Particular difficulties may arise in avoiding offshore disintermediation.</p>	<p>Would require new legislation (with significant issues around ability to delegate authority to trigger the levy).</p> <p>Longer-term enforcement by IRD would face considerable ongoing challenges.</p>
Initial assessment	<p>Shift to Basel II should ensure that over time capital requirements are better tailored to risk. Limited ancillary counter-cyclical benefits are also possible.</p> <p>Weaker case for changes to Basel I, although might have positive signalling benefits.</p>	A direct control instrument and one which is relatively poorly targeted. This, together with the likely ongoing enforcement problems, suggests this instrument should not be developed further.	<p>Better-targeted and with the advantage of being explicitly price-based.</p> <p>Enforcement would be a continuing challenge.</p> <p>Further work would be needed in a number of areas. In any overall assessment other discretionary demand management tools (including tax ones) beyond the scope of this review would desirably be considered.</p>

DISCUSSION PAPERS

DP2006/01

Phillips curve forecasting in a small open economy

Troy Matheson, February 2006

Stock and Watson (1999) show that the Phillips curve is a good forecasting tool in the United States. We assess whether this good performance extends to two small open economies, with relatively large tradable sectors. Using data for Australia and New Zealand, we find that the open economy Phillips curve performs poorly relative to a univariate autoregressive benchmark. However, its performance improves markedly when sectoral Phillips curves are used which model the tradable and non-tradable sectors separately. Combining forecasts from these sectoral models is much better than obtaining forecasts from a Phillips curve estimated on aggregate data. We also find that a diffusion index that combines a large number of indicators of real economic activity provides better forecasts of non-tradable inflation than more conventional measures of real demand, thus supporting Stock and Watson's (1999) findings for the United States.

DP2006/02

Forecasting substantial data revisions in the presence of model uncertainty

Anthony Garratt, Gary Koop and Shaun P. Vahey, February 2006

A recent revision to the preliminary measurement of GDP(E) growth for 2003Q2 caused considerable press attention, provoked a public inquiry and prompted a number of reforms to UK statistical reporting procedures. In this paper, we compute the probability of "substantial revisions" that are greater (in absolute value) than the controversial 2003 revision. The predictive densities are derived from Bayesian model averaging over a wide set of forecasting models including linear, structural break and regime-switching models with and without heteroskedasticity. Ignoring the nonlinearities and model uncertainty yields misleading predictions and obscures the improvement in the quality of preliminary UK macroeconomic measurements relative to the early 1990s.

DP2006/03

A small New Keynesian model of the New Zealand economy

Philip Liu, May 2006

This paper investigate whether a small open economy DSGE-based New Keynesian model can provide a reasonable description of key features of the New Zealand economy, in particular the transmission mechanism of monetary policy. The main objective is to design a simple, compact, and transparent tool for basic policy simulations. The structure of the model is largely motivated by recent developments in the area of DSGE modelling. Combining prior information and the historical data using Bayesian simulation techniques, we arrive at a set of parameters that largely reflect New Zealand's experience over the stable inflation-targeting period. The resultant model can be used to simulate monetary policy paths and help analyze the robustness of policy conclusions to model uncertainty.

DP2006/04

Other stabilisation objectives within an inflation targeting regime: some stochastic simulation experiments

James Twaddle; David Hargreaves; Tim Hampton, May 2006

We use the Reserve Bank of New Zealand's macroeconomic model (FPS) to look at the feasibility of using monetary policy to reduce variability in output, the exchange rate and interest rates while maintaining an inflation target. Our experiment suggests that policy could be altered to increase the stability of interest rates, the exchange rate, inflation, or output, relative to the base case reaction function in FPS, but such a policy would incur some cost in terms of the variability of the other variables. In particular, we find that greater exchange rate stability would have relatively large costs in terms of the stability of all three other variables, primarily because monetary policy that leans too dramatically against exchange rate disturbances can create significant real economy variability. Relative to West (2003), we find larger

costs of operating monetary policy to achieve exchange rate stabilisation. We attribute this finding to the relatively inertial inflation expectation process in FPS.

DP2006/05

Should monetary policy attempt to reduce exchange rate volatility in New Zealand?

Dominick Stephens, May 2006

Previous research has suggested that including exchange rate stabilisation within the goals of monetary policy significantly increases the volatility of inflation, output and interest rates, and that the benefits of exchange rate stabilisation therefore do not justify the costs. The current paper tests whether

this finding is robust when various alternative models of exchange rate determination are considered. The analysis is carried out in the context of optimal full-information monetary policy rules in a New Keynesian model that is calibrated to represent the New Zealand economy. For the models that feature rational expectations, we support the conclusion that seeking to avoid exchange rate volatility would have more costs than benefits. Indeed, a major cost of including the exchange rate within the goals of monetary policy is that inflation expectations become less anchored to the inflation target, meaning that larger movements in nominal interest rates are required to control inflation.

NEWS RELEASES

OCR unchanged at 7.25 per cent

9 March 2006

The Official Cash Rate (OCR) will remain on hold at 7.25 per cent.

Reserve Bank Governor Alan Bollard said: 'Recent data have confirmed our earlier view that economic growth is slowing. Business activity and confidence have been softening for some time. On the other hand, household spending has only recently started to wane. A key driver of strong household spending has been the buoyant housing market which, while showing signs of cooling, still remains very active. Over the next two years, we expect overall growth to remain subdued while a major rebalancing takes place, with a recovery in net exports as domestic demand weakens. A decline in the New Zealand dollar exchange rate is expected to play a role in this rebalancing.

'Despite the slower growth, inflation and cost pressures remain persistent. Labour market and resource pressures have built up over many years of high growth and will take some time to dissipate. Labour costs in particular are growing strongly, at a time when firms are finding it difficult to lift sales and productivity. Realistic wage and price setting behaviour will be an important factor determining the severity of the downturn as inflation pressures are brought under control. The other key inflation risk over the next two years remains the housing market. We need to see this market continue to slow, so that consumption moderates and helps to reduce inflation pressures.

'As long as these inflation risks remain under control, we do not expect to raise interest rates again in this cycle. However, given the time that it will take to bring inflation back towards the mid-point of the target band, we do not expect to be in a position to ease policy this year. Any earlier easing would require a more rapid reduction in domestic inflation pressures than the substantial slowing already assumed in our projections.'

Review of the Reserve Bank's Liquidity Management Operations

17 March 2006

The Reserve Bank has issued a consultation document (PDF 191KB) on proposed changes to the Bank's liquidity management regime. Submissions on the consultation paper are due by the 20 April 2006.

One of the Bank's priorities for this financial year has been to review its liquidity management operation. The review commenced in mid-2005 and has highlighted that the current liquidity management system faces some issues which need to be resolved.

Under the current system the available collateral is not expanding at a similar rate to demand for liquidity. The resulting pressures affect costs to participants and the credit risks faced by the Reserve Bank.

This is a proposed technical adjustment and there are no monetary policy implications.

Reserve Bank website promotes 'Change for the better'

3 April 2006

'Change for the better' is the message on the new Reserve Bank website. The website (www.newcoins.govt.nz) is dedicated to explaining the forthcoming changes to New Zealand's silver-coloured coins.

On 31 July 2006 the current 50, 20, and 10 cent coins will be replaced with smaller and lighter coins, and the 5 cent coin will begin to be phased out. The coins will retain the same designs but the 10 cent coin will be copper-coloured. The \$1 and \$2 coins will not change.

Brian Lang Reserve Bank Currency Manager says the new website contains comprehensive information about the coin changes, provides answers to commonly-asked questions, and enables resources to be downloaded.

'As the website says, our smaller, lighter coins really will be a 'change for the better' – they will take up less room and be easier to handle. However, individuals and businesses may have a number of questions about the changes. The

website acts as a one-stop-shop for anyone wanting further information.'

There will be a transition period of three months, from 31 July 2006 to 31 October 2006. During this period the existing and the new coins can be used. From 1 November 2006 the current 50, 20 and 10 cent coins, including the 5 cent coin will no longer be legal tender, which means that retailers do not have to accept them for payment of goods. The Reserve Bank will always redeem the existing coins.

As 31 July draws closer, the Reserve Bank is encouraging people to locate any 5, 10, 20 or 50 cent coins that they may have stored away and take them to their bank.

'By locating these coins now and taking them to your bank, you'll be beating the rush, and saving yourself a job later in the year', Brian Lang said.

Reserve Bank's 2006 Monetary Policy Challenge

3 April 2006

Spanning the length of the country from Springbank School in Kerikeri to Invercargill's Southland Girls' High School, 72 schools have entered this year's Reserve Bank Monetary Policy Challenge.

The Challenge is designed to expand Year 11-13 economics students' understanding of monetary policy. Like economists working in the Reserve Bank, teams of students analyse the economy and inflation forecasts, and on the basis of that analysis, offer a mock-setting of the Reserve Bank's key interest rate, the Official Cash Rate (OCR).

The Challenge encourages the use of inquiry learning techniques and is designed to be an extension of the secondary school level economics curriculum. Reserve Bank Governor Alan Bollard commented, "The Challenge confronts students with the difficulties and considerations involved in a decision making process. It gets students thinking about how New Zealand's economy works, what influences it and the impacts of economic policy."

The Challenge begins on 8 May 2006 and runs throughout the second and third school terms. Heats will be Auckland,

Hamilton, Wellington, Christchurch and Dunedin in late July to early August.

Teams that reach the Challenge final on 24 August 2006 will travel to the Reserve Bank in Wellington and receive a \$50 book voucher and certificate. This year's winning school will be awarded \$2,500. The winning team will be invited back to the Reserve Bank to attend the September 2006 Monetary Policy Statement release and they will witness an OCR announcement, first hand.

The Challenge is now in its fifth year and each year its popularity grows. Past winners of the competition include Nelson College (2005), Hillcrest High School from Hamilton (2004), Tawa College from Wellington (2003) and Logan Park High School from Dunedin (2002).

Report on supplementary tools released

6 April 2006

The Reserve Bank and the Treasury today released a joint report (PDF 276KB) on possible additional instruments to supplement the role of interest rates in managing demand pressures and inflation.

This report, prepared under terms of reference issued in November 2005, was prompted by the recent strength and persistence of domestic household demand, the scale of the accompanying external imbalances, and the key role played by the house price cycle.

In calling for this report, it was considered that, if additional non-interest rate instruments were available to more directly target the housing sector, they might alleviate some of the pressures on the exchange rate and the traded goods sector. Such instruments would be structured so that they would be relevant for use in any future period of cyclical housing pressure, said Reserve Bank Governor, Alan Bollard, and Secretary to the Treasury, John Whitehead, in a joint statement.

"The report considered a range of possible additional instruments. It concludes that there are no simple, or readily implemented, options that would provide large payoffs in the near-term, without significant complications and costs, but there are some areas in which further work may

be appropriate. These will be picked up in the course of ongoing work on macroeconomic policy.

'We remain interested in the possibility that additional discretionary instruments, including ones not directly related to the housing sector, might be able to mitigate the impact on the tradables sector of cycles in domestic demand, but further work in this area is not a high priority for us at present.'

The report was prepared by a joint team of Treasury and Reserve Bank officials for the Governor and the Secretary, who then made recommendations to the Minister of Finance. Also released today is the letter provided by the Governor and Secretary to the Minister of Finance.

Reserve Bank works toward new rules on bank capital

10 April 2006

Capital requirements for banks will soon be made more sensitive to the risks the banks are taking, under new rules being implemented by the Reserve Bank.

Speaking at the Retail Financial Services Forum, Deputy Governor Adrian Orr said that the Reserve Bank was working intensively on the implementation of the new international framework for bank capital adequacy, known as Basel II.

'Bank capital represents the owners' stake in the business and a platform for the bank's future growth and innovation,' Mr Orr said. 'For the stability of the financial system, banks need to hold capital above certain minimum levels at all times, in order to absorb unexpected losses associated with ups and downs in the economy, including severe stress events.'

The Reserve Bank's implementation of Basel II is focused on making bank capital requirements more sensitive to risk, and particularly risks specific to the New Zealand environment.

'These include the exposure of the economy to international commodity markets, and the high concentration of housing loans in New Zealand bank portfolios,' Mr Orr said.

Basel II is not intended to lead to large changes in the level of capital in the banking system overall.

Some banks would be applying to the Reserve Bank to use their internal statistical models as part of the calculation of their minimum capital requirements. The Reserve Bank will allow this only if the internal models and the banks' processes for managing capital are of adequate quality.

'Due to the importance of banks in New Zealand that are parts of international banking groups, we are coordinating New Zealand's implementation closely with relevant foreign supervisors,' Mr Orr commented.

Engagement with the Australian Prudential Regulation Authority (APRA) will be particularly important, because of the significant place in New Zealand's banking system of banks owned by Australian parent banks.

'Under the Terms of Engagement we have with APRA, we will ensure that, in meeting our responsibilities to set capital requirements for the New Zealand subsidiaries of Australian banks, we will keep compliance costs to the minimum necessary, consistent with New Zealand capital requirements being tuned to New Zealand conditions.'

OCR unchanged at 7.25 per cent

27 April 2006

The Official Cash Rate (OCR) will remain at 7.25 per cent.

Reserve Bank Governor Alan Bollard said: "Data since our March Monetary Policy Statement (MPS) indicate that, while the economy has weakened faster than expected, short-term inflation pressures have intensified.

'The anticipated slowdown in domestic demand commenced in the latter part of 2005 and is projected to continue through this year. This will be partly offset by growth in exports and import substitution, reinforced by the recent decline in the exchange rate. Recent economic indicators suggest the economy will continue to grow modestly through 2006.

"Despite the easing in resource pressures, the short-term inflation outlook has worsened. The exchange rate drop will boost import prices. We also expect significant further price rises over coming quarters as a result of the ongoing world oil shock. These effects are expected to keep annual CPI inflation above 3 per cent for longer than previously

projected and risk putting upward pressure on inflation expectations.

‘Monetary policy remains focussed on ensuring that inflation settles back within the 1-3 per cent target band over the medium term. As we have stated previously, policy will not try to counteract the one-off boost to prices from the exchange rate and oil price shocks. In this regard, we still do

not expect to raise interest rates again in this cycle. However, monetary policy must remain vigilant against these price shocks spilling over into inflation expectations, and price and wage-setting behaviour. Given the current outlook, we maintain our March MPS view and continue to see no scope for a cut in the OCR this year.’

PUBLICATIONS

Annual Report
Financial Stability Report

Monetary Policy Statement

Reserve Bank of New Zealand Statement of Intent, 2004–2007
Snakes and Ladders – a guide to risk for savers and investors

Published in October each year.

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

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

Recent Reserve Bank Discussion Papers

2006

DP2006/01	Phillips curve forecasting in a small open economy Troy Matheson
DP2006/02	Forecasting substantial data revisions in the presence of model uncertainty Antony Garratt, Gary Koop and Shaun R. Vahey
DP2006/03	A small New Keynesian model of the New Zealand economy Philip Liu
DP2006/04	Other stabilisation objectives within an inflation targeting regime: some stochastic simulation experiments James Twaddle, David Hargreaves, Tim Hampton
DP2006/05	Should monetary policy attempt to reduce exchange rate volatility in New Zealand Dominick Stephens

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

Pamphlets

Central banking in New Zealand

This is the Reserve Bank

Your Bank's disclosure statement – what's in it for you?

For further information, go to www.rbnz.govt.nz, or contact:

Knowledge Centre
Knowledge Services Group
Reserve Bank of New Zealand
2 The Terrace, P O Box 2498
WELLINGTON
Phone (04) 4722–029

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