
Financial Stability Report

May 2007

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1 Summary and assessment

International conditions have generally been favourable for financial stability. Global growth is expected to soften, but remain relatively robust. Financial markets are performing strongly: asset prices are high, and credit spreads are low. Against this backdrop, New Zealand's financial system continues to be stable, with liquid financial markets and volatility slightly below historical levels. New Zealand banks' balance sheets are strong, their reported capital holdings exceed regulatory requirements, asset quality remains good and banks have been highly profitable. The stability of New Zealand's large banks is further supported by the healthy state of their Australian parents.

However, these developments need to be related to increases in global liquidity and the development of large current account imbalances. Strong growth of savings in Asia and oil exporting countries has contributed to a sustained low level of long-term interest rates globally. It has led to the development of large current account surpluses in the excess savings countries, mirrored by deficits in the United States and other countries such as Australia, the United Kingdom, and New Zealand.

The investment impetus created by strong liquidity has led to an increase in risk appetite, disproportionately pushing up prices on risky assets and reducing credit spreads. Lower credit spreads are consistent with either a reduced assessment of risks, or an increase in risk appetite. However, news that causes risks to be reassessed can still transmit quickly to changes in asset prices. The effects of such reassessment were evident in the case of assets secured on US sub-prime mortgages, and also in the effects on broader asset price volatility from the February sell-off in the Shanghai share market.

The effects of these events extended to a temporary reassessment of the risks inherent in New Zealand dollar investments. These concerns have more recently subsided and we are now once again seeing strong issuance of New Zealand dollar denominated bonds in offshore markets. However, if foreign investors' perception of the risk attached to New Zealand dollar assets were to rise on a more permanent basis, they would demand a higher premium for buying those assets, and New Zealand borrowers could be confronted with sharply higher interest rates.

Meanwhile, New Zealand banks have been highly competitive: interest rate margins have been low, and high loan-to-value lending has become more prevalent. But while competition is to be encouraged, its consequence has been ever increasing levels of household debt and upward pressure on house prices. Margins on some lending have contracted to the point where they might not be expected to cover operating and capital costs on a sustainable basis. This approach, if continued, could perpetuate the housing boom and increase the risk of an eventual sharp downward correction. This would in turn damage the banks' own balance sheets. More recent margins, however, have returned to more realistic levels.

Our primary concerns lie with the effects of lending on household balance sheets, which are a major driver of financial system health. However, high levels of debt also reside in the corporate and agricultural sectors. Agricultural sector balance sheets are heavily dependent on land prices, that have recently been buoyed by strong dairy returns.

Higher aggregate debt levels increase New Zealand's reliance on foreign savings, and hence increase the

vulnerability of New Zealand's financial system to an adverse shock, and in particular, to a shock that might cause a correction in the housing market and a broader reassessment of the risks around New Zealand dollar assets. Such a development would deteriorate bank asset quality. The banks most at risk would be those with the greatest exposure to high-risk households, such as borrowers with high LVR (Loan-to-Value Ratio) loans and high debt servicing burdens.

This raises the question of whether the existing regulatory framework for capital adequacy is sufficiently sensitive to the riskiness of bank assets. An increased focus on risk sensitivity under Basel II will introduce a better alignment of risk and regulatory capital going forward. For instance, higher LVR loans will require higher regulatory capital holdings. The

Reserve Bank is considering whether the current framework should be modified in this direction ahead of the introduction of Basel II. The best contribution to future financial stability would be a moderation and gradual adjustment in the New Zealand housing market. Banks should be mindful of this and take care that their own behaviour does not exacerbate the risks inherent in already-stretched household balance sheets.



Alan Bollard
Governor

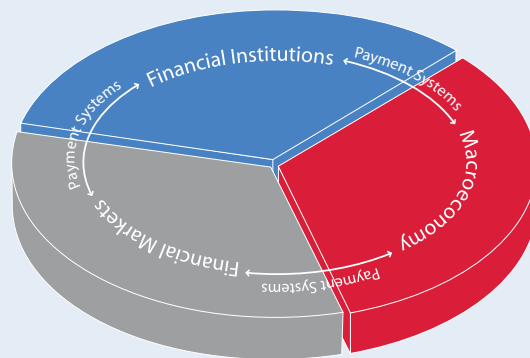
Box 1

Objectives of the *Financial Stability Report*

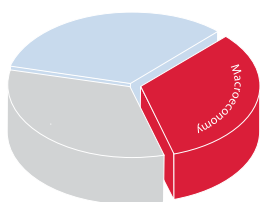
The *Financial Stability Report* provides a regular overview of the Reserve Bank's assessment of the relevant financial system risks in New Zealand. It also provides a summary of the Bank's activities aimed at promoting financial system soundness and efficiency. The financial system comprises financial institutions, financial markets, and payment and settlement systems. Financial stability is likely to be achieved when all relevant financial risks are adequately identified, priced, and allocated to those best able to manage them. These conditions help to ensure that the financial system is resilient to a wide range of economic and financial shocks, and able to absorb financial crises with least disruption.

Figure 1.1

Financial stability: Linkages between key components



2 The economic and financial environment



New Zealand household indebtedness and debt-servicing costs continue to grow while, at the same time, house prices appear stretched. Recent growth in corporate earnings has been good, although generally below expectations. Corporate sector credit growth remains strong. Debt levels are particularly high in the dairy sector, and high dairy land prices appear to be impacting on agricultural land prices more generally.

The global backdrop continues to be favourable overall, despite recent volatility in asset prices and pressures in the US sub-prime mortgage market.

2.1 The international environment

The global economy has performed solidly in recent years, and most commentators expect the outlook for global growth to slow, but remain relatively robust. Inflation in most major economies is also expected to remain contained as falls in oil prices during the second half of 2006, and various central bank monetary policy tightenings, begin to take effect. Market pricing suggests that a number of these central banks retain a tightening bias (including the Bank of England, the European Central Bank, and the Bank of Japan), with some chance of further rate increases currently priced in.

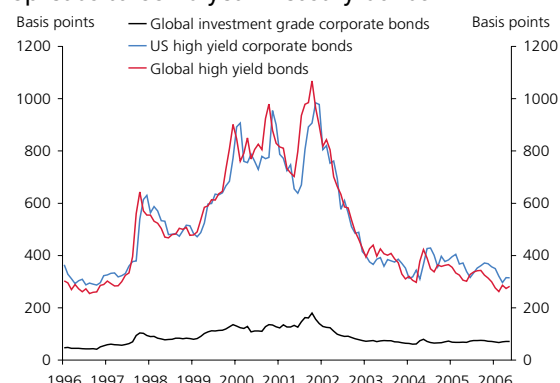
Late February/early March saw downward moves in most major equity markets, scaling back of carry trades (with funding currencies strengthening and recipient currencies weakening) and increased levels of risk aversion.¹ These developments were sparked by a sell-off in the Shanghai share market and growing concerns about the sub-prime mortgage market in the US.

Recent volatility in asset prices serves as a reminder of the ramifications of sharp changes in risk appetite. Following the bursting of the US 'tech bubble', markets have implicitly priced in lower levels of risk, as demonstrated by narrower

¹ 'Carry trades' involve borrowing in a low interest rate currency and investing in higher interest rate currencies (such as the New Zealand dollar).

Figure 2.1

Spreads to US 10-year Treasury bonds



Source: Merrill Lynch, Bloomberg.

credit spreads, particularly on riskier assets (figure 2.1). Various factors may be contributing to narrower credit spreads. For example, it is possible that increased use of structured finance products (such as credit default swaps and collateralised debt obligations) have improved the ability of market participants to manage risk. Another factor has been high levels of saving in current account surplus countries, that has created high levels of global liquidity and brought about a period of relatively low long-term global interest rates.² These low global interest rates are expected to persist

² Bollard (2006), 'Easy Money: Global Liquidity and its Impact on New Zealand', Reserve Bank of New Zealand <http://www.rbnz.govt.nz/speeches/>

for some time yet, contributing to a 'search for yield' that is exerting upward pressure on prices in asset markets.

Global imbalances

Global imbalances remain a feature of the international environment. The US and other economies (including New Zealand) are still recording large current account deficits (figure 2.2). Conversely, oil exporters and Asian economies such as Japan and China continue to run substantial current account surpluses.

As noted in the last *Report*, large and persistent saving and investment imbalances raise the possibility of a disorderly correction in foreign exchange and capital markets. Since the last *Report* there has been a modest improvement in the US trade balance and a depreciation in the US dollar. However these adjustments have yet to result in any substantial alleviation of global imbalances, as Asian country surpluses have continued to rise. Hence the risk of a disorderly adjustment in financial markets remains.

US sub-prime housing market

Following the slowdown in the US housing market, the sub-prime mortgage market has come under pressure.³ Problems have arisen from low lending standards in the sector, coupled with borrowers' appetite for debt and, in some cases, taking on debt they could not service. There have also been high profile cases of fraud and misconduct. With rising interest rates (partly due to the rolling off of special introductory offers) and slowing house price growth, conditions have become more difficult for some borrowers.

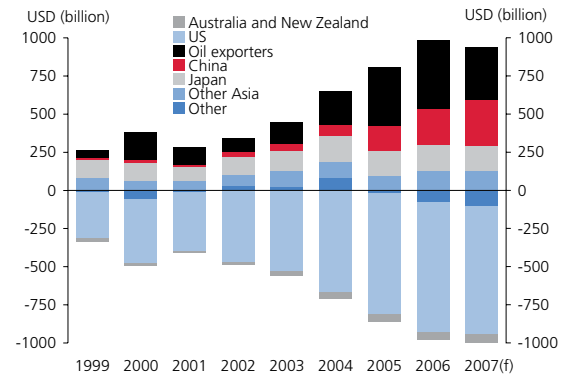
Delinquencies and defaults amongst US sub-prime mortgage lenders increased substantially in late 2006/early 2007. The industry has borne losses, and the collapse of several sub-prime lenders. Lenders' stock prices have fallen, as have the prices of securities backed by sub-prime loans. These events have contributed to a recent downgrade in US

³ 'Sub-prime lending' means lending (in this case mortgage lending) to customers who may not qualify for loans through traditional lending channels. Because these debtors are considered to be of a lesser credit quality, they are generally charged a higher rate of interest and fees.

⁴ Annual average percentage change. Consensus Forecasts Inc. April 2007.

Figure 2.2

Current account positions



Source: IMF World Economic Outlook, IFS, ECB and RBNZ calculations.

growth expectations to around 2.3 percent for 2007,⁴ and could yet have a more negative impact on the US economy. So far, however, expectations for long-term economic growth remain robust, at around 3 percent.

Australian households and corporates⁵

New Zealand's financial stability is particularly linked to Australia. In addition to other strong economic ties, New Zealand's largest banks are all owned by Australian parents. Aggregate assets and liabilities on Australian household balance sheets have grown substantially over the past decade, supported by the robust Australian economy and a firming in median house prices. Net worth now stands at 6½ times annual household disposable income. Housing credit growth remained high for owner-occupiers, at approximately 15 percent in the year to March 2007, while investor housing credit growth over the same period was 11 percent, and near its cyclical lows. Returns from rental property have been depressed by record low rental yields combined with slower rates of capital appreciation. Higher leveraging has contributed to increased household debt-servicing ratios, continuing a relatively rapid growth in debt-servicing burdens over recent years.⁶ Over the year to December 2006 the ratio of household interest payments to income was approximately 12 percent. However, many borrowers have substantial repayment buffers, loan arrears

⁵ This section draws on material from the Reserve Bank of Australia's *Financial Stability Review*.

⁶ OECD (2006), 'Has the rise in household debt made households more vulnerable?', *OECD Economic Outlook*.

remain low, debt appears to be concentrated amongst higher-income households, and average housing equity levels are high.

Australian corporate balance sheets are generally in good shape, profitability has been strong, and investment is at high levels. At around 65 percent, debt-to-equity ratios for listed non-financial corporations remain at average levels relative to the last decade. However, business sector intermediated borrowing has continued to increase. Intermediated credit has grown by 17 percent for the year to March, the highest pace since the late 1980s. Competition by lenders to provide

credit has been strong as the banking sector has vied for corporate market share, given expectations of lower growth in mortgage lending. This has seen interest rate margins on lending continue to fall.

Balance sheets are also becoming more highly geared through leveraged buyout activity by private equity funds. The Reserve Bank of Australia estimates that 28 large private equity transactions were taken up or endorsed during 2006, with a total value in the order of AUD 26 billion for the year. This is a large increase over the previous five years.

Box 2

International house price adjustments

Over the past few years, a number of countries have recorded strong house price growth. A recent OECD study⁷ examined house price cycles – both downturns and upturns – over the 35 years from 1970 to 2005. The study found that the most recent period of widespread real global house price growth has been unprecedented on several counts: the size and duration of the current real house price increases across countries; the degree to which this cycle has been correlated across countries; and the extent to which the house price cycle has diverged from the business cycle. However, in many of the countries, periods of strong house price growth were followed by sustained periods of falling real house prices, eg in the UK in the early-to-mid 1990s.

The study shows that, on average across countries, real house price upturns have lasted around 23 quarters, while downturns have lasted around 18½ quarters. In New Zealand, both upturns and downturns have, on average, tended to be of shorter duration than in the other countries. The average price increase during upturns in New Zealand has been somewhat smaller than in other countries (table 2.1, overleaf).⁸ Fluctuations have occurred

around a secular trend increase in real house prices, and the main factors driving this trend include increasing per capita income, population growth, limited supply of suitable land for development, and relatively low productivity growth in the construction sector.

In order to put the latest increase in real house prices into perspective, major house price cycles (where cumulative real price increases or decreases exceeded 15 percent) are shown in figure 2.3, overleaf. While New Zealand has experienced only one such period the size of the decline is in the upper half of those recorded, at well over 35 percent. This period ran from the third quarter of 1974 to the end of 1980 (figure 2.4, overleaf). The 1970s downturn occurred in conjunction with two oil price shocks and at a time when New Zealand lost preferential access to the British market for agricultural products. It also occurred in the context of a heavily regulated environment with high and variable inflation that may have masked the extent of real house price declines for some home owners. It remains uncertain how a similarly-sized adjustment would play out in an environment of low and stable inflation.

at the 2003 Australian Meeting of the Econometric Society. Periods of increases and decreases were restricted to those longer than six quarters. See also Hall, McDermott, and Tremewan (2006), 'The ups and downs of New Zealand house prices', MOTU Working Paper, 06/03. This paper found that the average expansion phase is around three years, while the average contraction phase lasts about 1½ years. The difference in the estimates is largely due to the different sample periods, as well as different business cycle dating methods.

⁷ Girouard, Kennedy, Van den Noord and Andre (2006), 'Recent house price developments: the role of fundamentals', OECD working paper No.475.

⁸ The study follows the Bry and Boschan cycle dating procedure identified in Harding, D (2003), 'Towards an econometric foundation for turning point based analysis of dynamic processes', Paper presented

Table 2.1

Summary statistics on real house price cycles

1970Q1 – 2005Q1

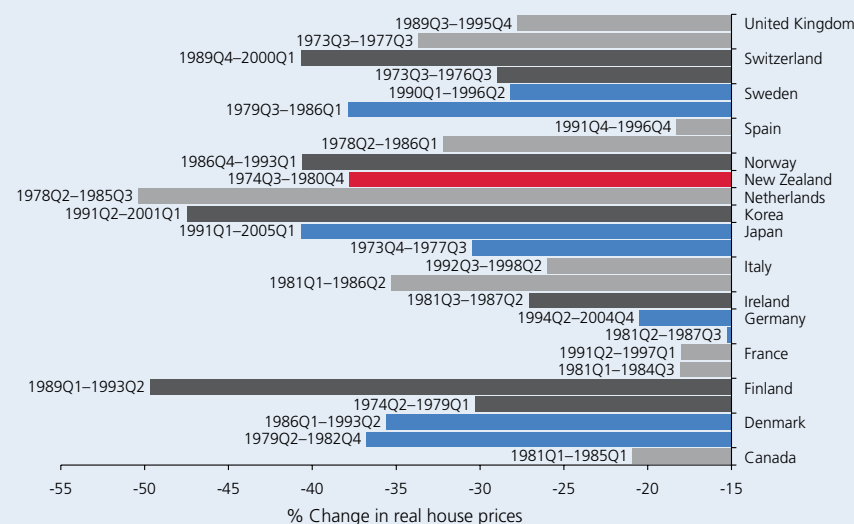
Upturns	Number of upturns	Average duration (quarters)	Average price change (%)	Maximum duration of upturn	Maximum price change (%)	Number of upturns >15%
New Zealand	4	15.8	37.3	22	62.7	4
Average*	2.7	22.7	45.6	32.7	67.6	2.1
Downturns	Number of downturns	Average duration (quarters)	Average price change (%)	Maximum duration of downturn	Maximum price change (%)	Number of downturns >15%
New Zealand	4	15	-15.1	25	-37.8	1
Average*	2.6	18.5	-23.3	25.4	-32.4	1.3

Source: Girouard, Kennedy, Van den Noord and Andre (2006), op cit.

* Average includes: United States, Japan, Germany, France, Italy, Canada, United Kingdom, Australia, Denmark, Finland, Korea, Ireland, Netherlands, New Zealand, Norway, Spain, Sweden, and Switzerland.

Figure 2.3

Periods of real house price declines larger than 15 percent



Source: Girouard, Kennedy, Van den Noord and Andre (2006), op cit.

Figure 2.4

New Zealand real house price index



Source: Quotable Value Ltd, Statistics New Zealand, RBNZ calculations.

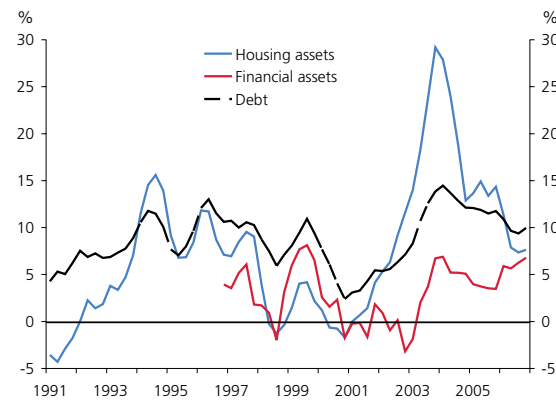
2.2 The household sector

Household debt increased by 10 percent in real terms over the year to December 2006, and now stands at approximately 160 percent of household disposable income. In nominal terms, household debt is over \$150 billion. Over the same period, total household assets increased by around 7 percent in real terms (figure 2.5).⁹

Despite faster growth in debt, total net worth has continued to increase. Housing is by far the dominant asset held by households, at roughly three times financial assets. The concentration of assets in housing has increased since 2001 (the start of the current housing upturn). Table 2.2 highlights the undiversified nature of household wealth and the vulnerability of the sector to a housing downturn. Years of house price inflation have boosted the values of banks' collateral, but uncertainties about the sustainability of current house prices, and their potential vulnerability to sudden changes in conditions, mean there are important risks to households' and hence banks' portfolios.

A fall in house prices alone will not directly translate into material bank losses unless there are sufficiently large shocks at the same time to households' ability to service their debt. Households' ability to service debt, measured by the ratio of mortgage interest payments to disposable income, has been

Figure 2.5
Real household assets and debt
(Annual percentage change)



Source: RBNZ.

deteriorating for some time, due largely to faster growth in debt (figure 2.6). Strong labour market conditions have supported the rising debt-burden of households thus far, and are an important mitigating factor for household credit risks facing the banks. The unemployment rate remains low and wage growth has been strong. Other indicators of financial stress, such as personal bankruptcy rates, do not show marked changes in financial stress in the household sector since the last *Report* (figure 2.7).

Table 2.2
Household assets and liabilities, as percent of household disposable income

As at December	1991	1996	2001	2006
Total household assets				
Equities	40	50	55	55
Other financial assets	120	130	125	135
Housing value	255	335	335	585
Total	415	515	515	775
Total household liabilities	60	90	110	160
Household net worth	355	425	405	615

Source: RBNZ, Statistics New Zealand, New Zealand Institute of Economic Research.

Notes:

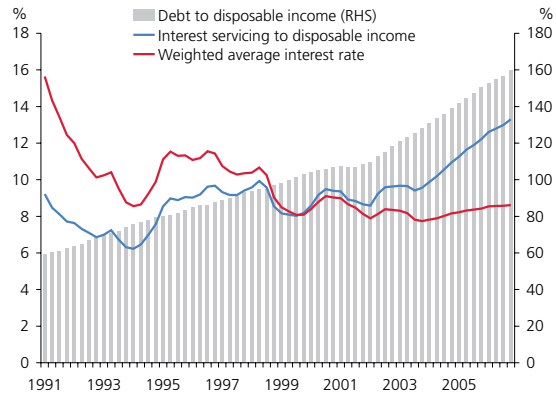
1. 2006 financial data are provisional.
2. Household liabilities exclude student debt. See footnote 9.

⁹ Some important household assets are excluded from the data in New Zealand. These include commercial property, equity in unincorporated businesses, and some direct ownership of overseas assets.

Figure 2.6

Household debt-servicing costs

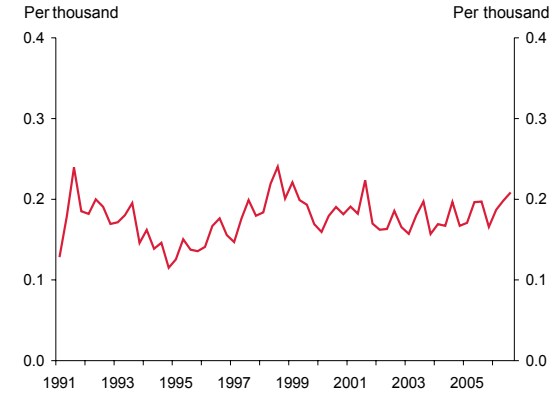
(Percent of household disposable income)



Source: RBNZ.

Figure 2.7

Personal bankruptcies



Source: MED, RBNZ.

Box 3

New Zealand house price valuations

This box discusses three broad approaches that can be used to consider whether house prices are under- or over-valued. These are: affordability measures, econometric estimates, and investment-return measures.

Affordability measures are relatively simple to calculate and interpret: if prices are too high relative to income, then demand for houses should fall and put downward pressure on house prices. However, a drawback of these measures is that it is necessary to judge what constitutes 'too high' – this will generally depend on factors that the affordability ratios do not capture. These additional factors include fundamental variables that impact on current house prices, and expectations of future house prices. For example, variables such as interest rates, economic growth, employment, migration, or factors that influence housing supply. Econometric methods may be used to bring these additional variables into the analysis. A different approach considers how houses are priced as investment assets; although most people would not view their own house in only this way.

Studies that have used these approaches find a range of different answers, and results are often sensitive to the particular techniques and specification of variables that are employed. It is important to note that estimates can quickly become outdated, given the strength in New Zealand house price inflation over recent years. In summary, New Zealand house prices are at historically extreme levels of unaffordability, which would suggest over-valuation. Econometric findings are varied, but tend to support over-valuation. Analyses based on treating houses as investments generally do not support over-valuation.

Hence, the available analysis is inconclusive regarding current house price valuations. However, in our judgement house prices are stretched beyond levels that economic fundamentals can sustain over the longer-term. While the housing market could gradually move into line with longer-term fundamentals through a period of housing market

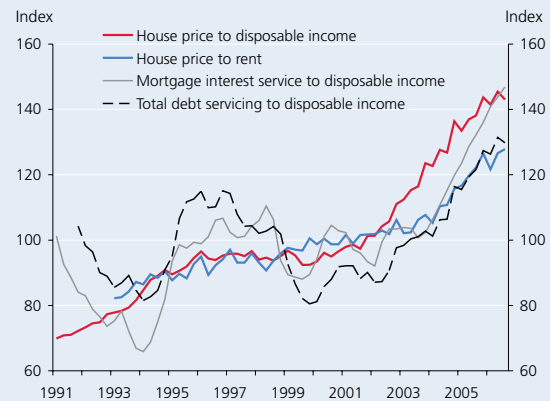
weakness, a correction in the form of a fall in nominal house prices remains a risk.

Affordability measures

Figure 2.8, plots four commonly-used affordability ratio measures. These are: the ratio of house prices to disposable income, the ratio of mortgage interest payments to disposable income, total debt servicing payments (including amortisation) to disposable income, and house prices to rent. All four ratios show a similar trend since the beginning of the 1990s, and are between 30 and 50 percent higher than their averages since 1991.

Figure 2.8

Affordability measures (sample averages = 100)



Source: RBNZ calculations.

Econometric estimates

Many econometric models have been developed to investigate particular aspects of the housing market – for example, models have been developed to show relationships between house prices and particular economic variables, or to forecast house prices. A recent addition to this literature is Aitken and Grimes' (2006)¹⁰ investigation of the relationship between house prices and the responsiveness in housing supply, using regional data from 1991 to 2004. They interpret their results as indicating that regions with low supply responses face more volatile price adjustment after demand shocks, 'possibly due to regulatory constraints.' Over the long term, however, the

¹⁰ Aitken and Grimes (2006), 'Housing supply and price adjustment', *MOTU Working Paper 06.01*, MOTU Economic and Public Policy Research.

authors found no relationship between house prices and the supply of housing, suggesting that in the 15 years studied, the housing supply in New Zealand responded fully to changes in housing demand.¹¹

Two recent papers that have attempted to shed light on the issue of valuation are Noord (2006) and Fraser et al. (2006). Fraser et al. (2006)¹² estimate fundamental house prices using data from 1970-2005. In their model, real house prices depend on household disposable income, interest rates, and household attitudes towards risk. They find that, by the end of 2005, real house prices in New Zealand were over-valued by approximately 25 percent.

Noord (2006)¹³ estimated the probability of a turning point in the housing market in New Zealand and other OECD countries, using data from 1970-2005. The probability is modelled as a function of both fundamental (eg, real interest rates) and non-fundamental factors such as recent growth in house prices and the deviation of current house prices from their long-run trend. By the end of 2005 the estimated probability that the New Zealand housing boom would end during 2006 was higher than for most other countries in the study, at slightly over 25 percent.

Investment-return based measures

Cash-flow models are based on the idea that households shift between renting and owning a house until the costs of ownership (net of capital gains) equal the annual costs of renting. The house price at which the two are exactly equal can be used as an estimate of the fundamental house price.¹⁴

Girouard et al. (2002) calculated the actual versus the fundamental house prices implied by this approach for New Zealand along with other OECD countries. They found that New Zealand house prices were over-valued by 7.6 percent relative to fundamentals, which they described as 'not very significant'. O'Donovan and Stephens (2007)¹⁵ used a similar approach but used different assumptions about the tax treatment and the level of gearing. They found that house prices in New Zealand were not over-valued.

Under the discounted cash-flow model the fundamental value of a house is calculated as the discounted present value of the rental income stream (rent) associated with the house using an appropriate discount rate.¹⁶ Studies using this approach under different assumptions about these variables reach different conclusions about house price valuation relative to fundamentals. For example, a Goldman Sachs study, recently reported in the media, found that New Zealand house prices could be roughly 30 percent over-valued.

¹¹ Aitken and Grimes (2006), op cit., p.16: 'This long-run result is consistent with the nature of long run price shifts ...in which a ... more responsive... supply schedule reduces the long run price increase consequent on an increase in demand'. Note that regulatory or other supply-side constraints are not explicitly allowed for in their models.

¹² Fraser, P., M. Hoesli and L. McAlevey (2006) 'House Prices and Bubbles in New Zealand', Swiss Finance Institute Research Paper Series No. 06-20.

¹³ Noord (2006) 'Are House Prices Nearing a Peak?: A Probit Analysis for 17 OECD Countries', OECD Economics Department Working Papers, No. 488.

¹⁴ For more discussion see Herring (2007) 'Booms and Busts in Housing Markets: How Vulnerable is New Zealand?', forthcoming RBNZ paper.

¹⁵ O'Donovan B. and D. Stephens (2007) 'Bubble, Schmubble', *Westpac Bulletin* 16 March 2007.

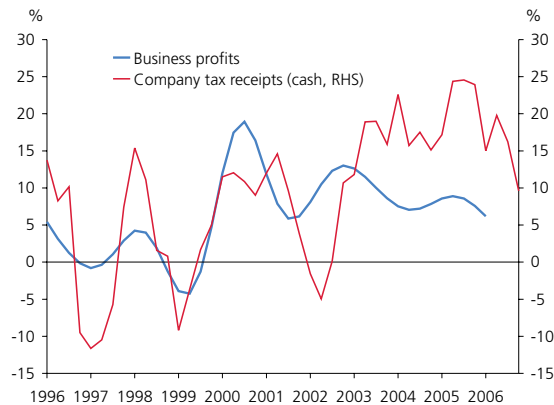
¹⁶ The real discount rate (ie, the required rate of return on housing investment) can be modelled explicitly using the capital asset pricing model, as in Griffith (2007). It can alternatively be estimated using data on real house prices, rent and alternative scenarios of the anticipated growth in real rent.

2.3 The business sector

Business profitability continues to soften

Recent growth in business earnings has been good but, with few exceptions, 2006 results were lower than expected. Business profitability, measured by company tax receipts, has continued to slow since the last *Report* (figure 2.9). Business confidence surveys anticipate a further squeeze on profits over the coming year, particularly in the retail and construction sectors, and in industries exposed to the high level of the New Zealand dollar. In addition to lower earnings, respondents in the retail sector anticipate a fall in employment.

Figure 2.9
Growth in business profits and company tax¹⁷

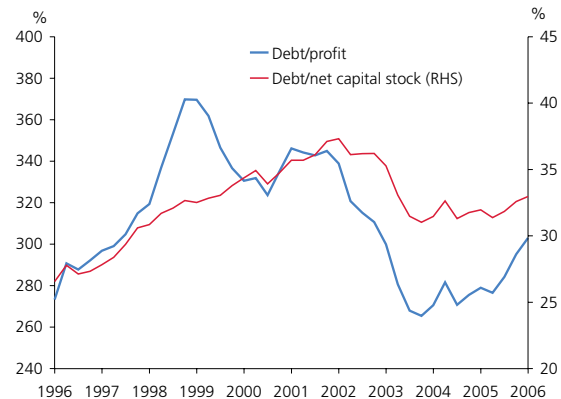


Source: Statistics New Zealand, Treasury.

Company balance sheets strong, but weakening

Growth in earnings over recent years has strengthened company balance sheets, and much investment has been financed through retained earnings or equity. Figure 2.10 shows two debt ratios: debt-to-profit and debt-to-net capital stock ratios. Despite the upward drift in both ratios since 2004, business leverage remains lower than in the early part of the decade, although there is likely to be significant variation across sectors.

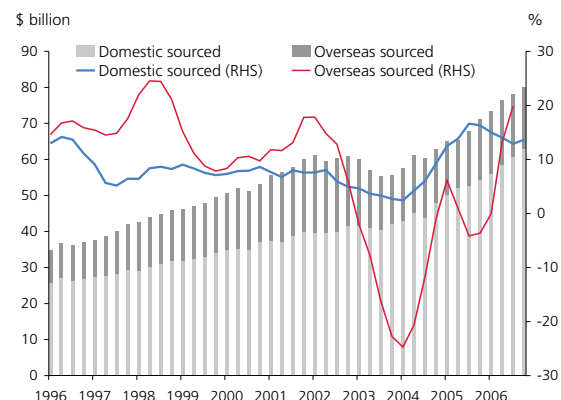
Figure 2.10
Business debt ratios



Source: Statistics New Zealand, RBNZ calculations.

Direct offshore financing remains low as a share of total business financing, but low global interest rates, coupled with the strength of the NZD, have made offshore financing attractive for many firms (figure 2.11). However, domestic financing (through banks) continues to be the main source of external financing for firms. Exposure of registered banks to businesses rose to \$63 billion, 78 percent of estimated business sector debt at year-end 2007.¹⁸ Bank credit to the business sector increased by 15 percent in the year to February 2007. This was faster than credit growth to households and the agricultural sector, which each grew by approximately 13 percent in the same period.

Figure 2.11
Business debt (level and growth)



Source: Statistics New Zealand, RBNZ calculations.

¹⁷ Business profits are Statistics New Zealand's estimate of net operating surplus, which is roughly equivalent to an Earnings Before Interest, Tax and Depreciation (EBITDA) measure. The data are published as part of the National Accounts. We have excluded farms, sole proprietorships, and owner-occupied dwellings. See Goh (2005), 'Developments in the New Zealand Corporate Sector', Reserve Bank of New Zealand *Bulletin*, Vol. 68, No. 2.

¹⁸ Note that these estimates exclude corporate bonds issued domestically. At year-end 2006, the corporate bond market – including local authorities – had an estimated \$21 billion outstanding (\$17 billion in bonds and a further \$4 billion in commercial paper).

The upturn in business borrowing can be partly explained by recent merger and acquisition activity, and with it, an increase in leveraged buyouts driven by private equity funds. In Australia and New Zealand, these funds have emerged as large players in the healthcare and retail sectors (see box 4). Softer economic growth has also prompted increases in capital expenditure in some sectors, which are now being debt-funded. Increased leverage has raised credit risks in the sector. Indeed, Standard & Poor's report that corporate

downgrades in Australia and New Zealand outnumbered upgrades in 2006, for the first time since 2003.¹⁹

¹⁹ 'Asia-Pacific Credit Outlook 2007: Australia and New Zealand', Standard & Poor's RatingsDirect, December 2006.

Box 4

Private equity in New Zealand

Previous *Reports* have suggested that the upturn in business leverage can be partly explained by recent mergers and acquisitions, many of which have involved well-known New Zealand brand names, including Yellow Pages, Kathmandu, Griffins, Tegel and Hirepool. Much of this activity has been driven by private equity.²⁰

On the basis of available information, we conclude that, although private equity-led buyout activity will have increased leverage in parts of the non-financial corporate sector, it does not appear to present a significant risk to financial stability in New Zealand. New Zealand financial institutions' exposures to leveraged buyouts are small and, in aggregate, corporate sector balance sheets remain strong. Nonetheless, in the context of continued strong growth in corporate borrowing, we will continue to monitor industry developments.

Private equity companies

The term 'private equity' covers both private equity investment companies and private equity funds. Private equity investment companies invest in firms in the form of equity. Investments are financed by way of a fund, the

contributions to which are made by institutional or retail investors (typically 'high-net worth individuals'). Investors in the fund receive a return based on the performance of the company's management of the portfolio of companies acquired by the fund. New Zealand private equity companies raised funds of \$11.6 million in 2006, and \$302 million in 2005.

Approximately 80 percent of funds invested in New Zealand by private equity companies are raised in Australia. New Zealand private equity companies invested \$205 million in New Zealand firms in 2006, compared with close to \$1 billion from Australian private equity companies (and approximately \$40 million from other countries).

Private investment companies are active investors, and they may bring specific industry or managerial expertise to a firm. In addition, industry contacts argue that restructuring aimed at improving long-term profitability can involve significant short-term costs. These costs may prevent restructuring in a publicly listed company. The downside is a lowering of transparency, which makes identifying risks, including those associated with higher leverage, difficult for third parties.

Related to the issue of transparency is the possible impact on equity markets of de-listing public companies. De-listing companies reduces the overall liquidity of equity markets. This could have implications for market stability and the efficient allocation of capital. For example, the enterprise value of deals in 2006 in New Zealand was

²⁰ The information contained in this box is drawn from industry contacts, and a survey undertaken for the New Zealand Venture Capital Association by Ernst & Young. See Ernst & Young, 'The New Zealand venture capital and private equity monitor', April 2007.

equivalent to 8.6 percent of stock-market capitalisation (\$4.5 billion). On the other hand, private equity is concentrated in the 'mid-market' companies with an enterprise value of up to \$150 million, which, in New Zealand, are typically private companies. If private equity investment companies were to exit their shareholdings in these companies through initial public offerings (IPOs), the increase in listings may deepen equity markets.

Forms of private equity

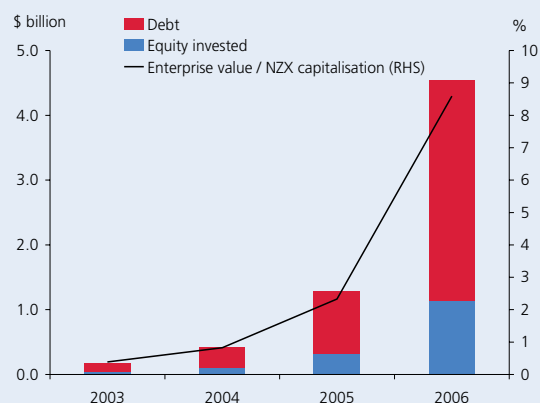
There are two main forms of private equity: venture capital and buyouts (figure 2.12). Venture capital invests in new, unproven companies that have new technologies and strong growth potential. Usually small and high-risk, these companies are less able to access bank financing or capital markets because they lack sufficient collateral or a track record of profitability. Transactions are usually small. A total of \$75.6 million was invested in 2006, with an average deal size of \$1 million.

In contrast, buyouts typically invest in mature businesses with stable cash flows and a larger stock of tangible assets. The acquisition of a firm is financed with equity from a private equity fund, and debt from commercial banks and specialised lenders (a leveraged buyout). Lending is secured against the firm's assets, and cash-flows used to amortise the acquisition loans.

Leveraged buyouts are one of the factors behind growth in corporate leverage. Figure 2.12 shows the equity invested by private equity funds over the past four years. Equity investment of \$1.13 billion was invested in 2006. Assuming a ratio of debt-to-equity of three (ie, 75 percent debt and 25 percent equity), buyouts activity could have increased business debt by up to \$3.4 billion (or 12.5 percent of the increase in corporate debt in 2006, roughly the same size as the increase in debt that arose from the agricultural sector).

As a percentage of GDP the total value of acquisitions in 2006 was about 2.8 percent of GDP or 8.6 percent of the capitalisation of the NZX (figure 2.12). In Australia, acquisitions equated to an estimated 9.6 percent of GDP or 2 percent of the capitalisation of the ASX. Consequently, with few exceptions, individual deals in New Zealand are small. The median equity investment by funds is \$18 million, implying a median debt level of \$54 million, a level that can generally be funded by a single commercial bank, in a senior tranche repayable over five years. Larger deals are syndicated between two or more commercial banks. Industry contacts suggest that single exposure limits may also be lower for private equity transactions than for regular corporate lending.

Figure 2.12
Estimates of private equity transactions



Note: Total debt and enterprise values have been estimated using a debt-to-equity ratio of three.

Source: New Zealand Venture Capital Association (NZVCA), Ernst & Young. Debt figures are RBNZ estimates.

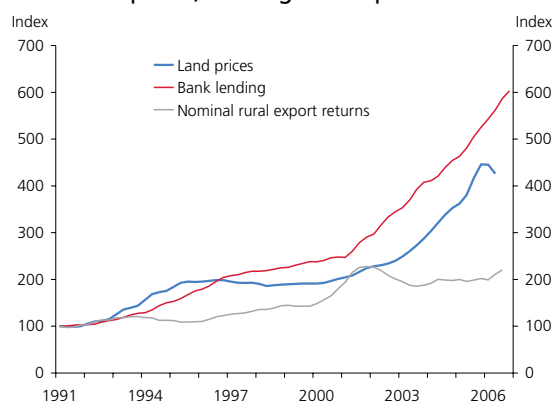
Agriculture

Previous *Reports* have highlighted increases in agricultural indebtedness and the vulnerability of the sector to lower commodity prices, higher interest rates, and the exchange rate. The farming sector is subject to volatile income fluctuations which influence land prices and lending growth with varying lags, and give rise to risks in farm balance sheets.

Commodity prices have increased in recent months.²¹ In some sectors, the increases have more than offset the rise in the exchange rate, meaning that NZD-denominated prices have improved. Buoyant returns have underpinned increases in agricultural land prices. However, there are now signs that these land prices have become excessively stretched, with some farm prices decoupled from expected future earnings (figure 2.13).

Figure 2.13

Rural land prices, lending and exports



Source: Quotable Value Ltd, Statistics New Zealand, RBNZ.

Credit growth to the agricultural sector has been supported by growth in rural land prices. Bank credit to the agriculture sector was \$31 billion at year-end 2006, or roughly 12 percent of total bank credit. While this is a small proportion of bank balance sheets, the lending risks are concentrated, with about 20 percent of farms thought to account for 80 percent of rural debt. New entrants – who tend to be highly leveraged – are particularly vulnerable.

There is considerable variation across sectors, however. Recent gains in commodity prices have been concentrated in dairy prices, where prices have increased sharply, due in large part to global supply shortages. Data from the Ministry of Agriculture and Forestry suggests that debt is close to 9 times earnings before interest and tax (EBIT) in the sector.²² Growth in land prices and in the share price of Fonterra Co-operative Group Ltd, have also strengthened farm balance sheets. Debt as a ratio of farm assets is 21 percent, compared to 31 percent in 2000.

For the non-dairy agricultural industries, commodity and farm-gate prices have generally fallen, while non-dairy borrowing increased by 17 percent in the year to June 2006. A combination of lower farm income and increased borrowing has lifted debt to 11 times EBIT, compared to five times EBIT in 2004. As in the dairy sector, farm balance sheets remain strong, reflecting growth in land prices. The ratio of debt-to-assets for sheep and beef farms is estimated to be approximately 12 percent for the year to June 2007.

2.4 Government

The Government's finances are sound and broadly supportive of financial stability. A robust balance sheet, coupled with operating surpluses averaging \$6.5 billion (or 4.5 percent of GDP annually over the past five years), are key factors supporting New Zealand's foreign currency ratings of 'Aaa' from Moody's and 'AA+' from Standard & Poor's. Indeed, New Zealand's net general government debt is among the lowest in the OECD (figure 2.14).

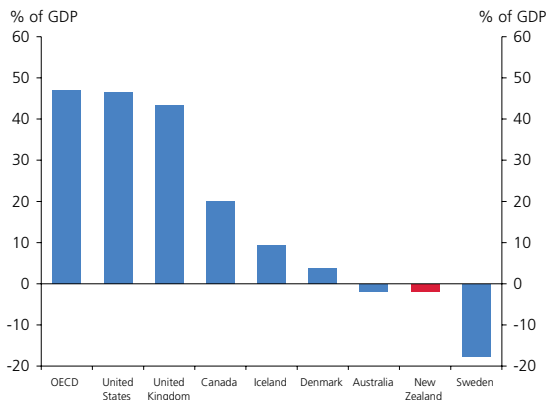
Analysis from both rating agencies highlights the importance of prudent budget policies in the face of large and sustained current account deficits. Given high private sector debt levels, a deterioration in the government's operating balance would lead to a fall in recorded national savings.

²¹ Reserve Bank of New Zealand, *Monetary Policy Statement*, March 2007.

²² The Ministry of Agriculture and Forestry monitors the production and financial status of farms and orchards. Five model farms are derived from information obtained from 20 farms and a cross section of agribusiness representatives, and utilises average livestock improvement data from the regions represented. The aim of the models is to typify an average owner-operated farming operation in the respective regions.

Figure 2.14

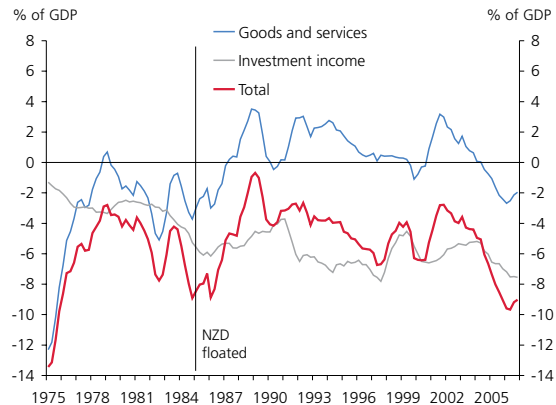
Net general government debt, 2006, percent of GDP²³



Source: OECD.

Figure 2.15

Components of current account deficit



Source: Statistics New Zealand, RBNZ calculations.
Note: Annual average.

2.5 New Zealand's external imbalances

Evolution and outlook

Despite marginal improvements in recent quarters, New Zealand's annual current account deficit remains around nine percent of GDP (figure 2.15). The main driver for the decline in the current account deficit has been an improvement in the annual trade balance. While we expect that the current account balance will continue to show trend improvement, this is likely to be very gradual, with domestic demand expected to keep the trade balance in deficit and the investment income deficit large. The persistently high level of the exchange rate may also slow the current account correction. As a result, we expect net international liabilities to continue to trend above the current 90 percent of GDP.

Debt liabilities

Of the \$236 billion of gross liabilities owed to foreigners by New Zealand resident entities, debt comprises around 71 percent. Unlike equity investment, a large proportion of debt in total liabilities exposes New Zealand to a degree of 'roll-over-risk' where investors may choose not to renew their investment when that debt matures, or more likely, investments would only roll over at a higher interest rate.

²³ Data refer to the general government sector, which is a consolidation of balance sheets for central, state and local governments plus social security. Net general government debt is calculated by subtracting general government assets, which includes pension funds, equity holdings, and reserve assets, from gross general government debt.

The risk increases with shorter maturity debt because of the higher frequency with which the debt needs to be rolled over (or repaid). Longer maturities provide the borrower more time to seek alternative funding options, and increase the likelihood that the funding pressures pass before the existing liability matures. Around 51 percent of New Zealand's foreign debt liabilities mature within 12 months, compared with 44 percent in Australia and 37 percent in the US.²⁴

Banks have done most of New Zealand's overseas borrowing in recent years, so if there were a reduced appetite for New Zealand debt, then households would face an increase in mortgage rates as banks faced higher offshore funding costs.²⁵ However, the roll-over-risk on foreign debt is mitigated to some extent by the fact that banks receive around 30 percent of their total funding from

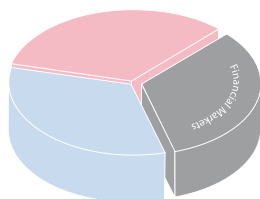
²⁴ This excludes overnight deposits at the United States' Federal Reserve.

²⁵ An additional risk stems from much of the debt with longer maturities having interest rates that are reset more frequently, often every 90 days – banks, for example, have around 80 percent of total (domestic and foreign) debt funding with interest rates reset within 90 days. To overcome this risk, banks often enter into interest rate swap agreements (where, for example, a bank agrees to make interest payments at a rate that is fixed for the term of the contract in return for receiving interest payments at rates that are set off the 90-day interest rate every three months). This helps offset the mismatch generated from funding at short-term interest rates while their assets (predominantly residential mortgages) have their interest rates fixed typically for two or more years. Irrespective of maturity, however, new funding will still be vulnerable to changes in investor appetite.

related parties, most often their parent. Hence, provided the parent banks are not also severely affected by the decline in investor appetite, the New Zealand banks would likely still be able to obtain funding at reasonable rates direct from their parents.²⁶ That said, while the New Zealand banking system is largely foreign-owned, it is heavily exposed to Australia through parent banks. This means that shocks that affect both New Zealand and Australia, or just Australia alone, could have an impact on New Zealand bank funding.

²⁶ The same may also apply for New Zealand resident companies with offshore parents or head offices.

3 New Zealand's financial markets



Liquidity in the New Zealand dollar (NZD) market remains strong, as the cyclical factors mentioned in the last Report continue to support the NZD. Liquidity is also strong in interest rate markets, with volatility remaining contained. However, recent developments in global markets have highlighted the risks around sudden changes in investor sentiment.

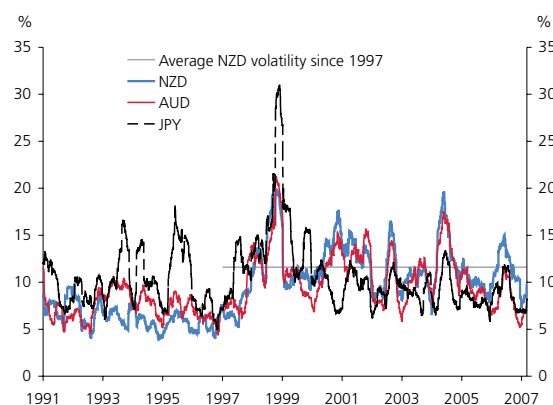
3.1 The foreign exchange market

New Zealand's relatively high interest rates continue to underpin demand for the NZD and the currency has undergone some large movements, as have several other exchange rates such as the sterling, the euro, and the Swiss franc. The currency is now at higher levels than at the time of the last Report. Overall, recent movements have seen an increase in short-term NZD exchange rate volatility, but volatility remains below historical averages (figure 3.1).

While daily exchange rate movements have been large at times, these have been associated with greater-than-average traded volumes. Hence, movements in the NZD have remained orderly and market liquidity remains robust. Good levels of liquidity are reflected in the daily movement in the NZD/USD per NZD 1 million traded, falling back below the historical average in recent months (figure 3.2). Furthermore, bid-offer spreads in the NZD spot market have remained low.

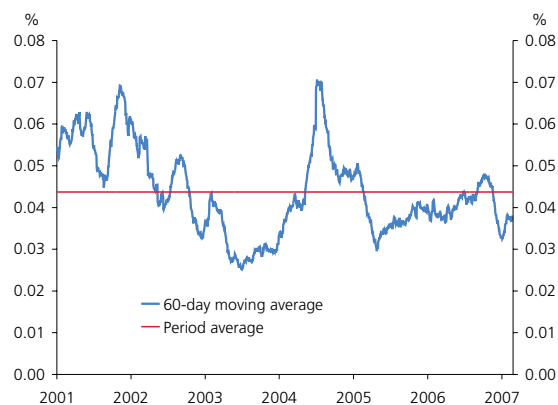
The high interest in the NZD has been supported by the yield differential, and the pace of NZD-denominated bond issuance in offshore markets (Eurokiwi and Uridashi bonds), which remains strong (figure 3.3). This strength in issuance has played an important role in the popularity of carry trades, as investors borrow in a low-yielding currency (eg, the yen) to invest in a high-yielding currency (eg, the NZD), thus supporting the appreciation in the NZD.

Figure 3.1
Historical volatility in the NZD, Australian dollar (AUD) and Japanese yen (JPY)



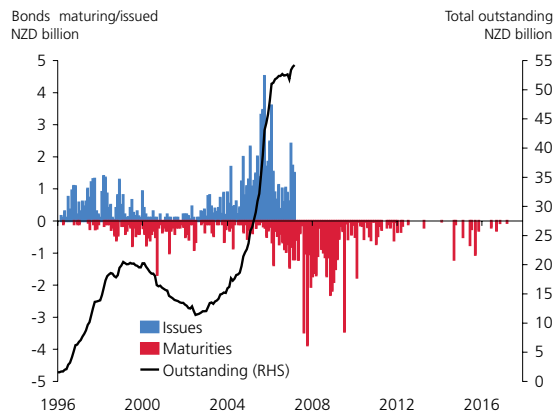
Source: RBNZ, Bloomberg.

Figure 3.2
Daily movement in NZD/USD per NZD 1 million traded



Source: RBNZ, Reuters.

Figure 3.3
Offshore NZD-denominated bond issuance



Source: RBNZ, Bloomberg, Reuters.

However, in light of the substantial amount of maturities in these NZD-denominated bonds over the coming months, the potential for a substantial portfolio shift in offshore investor preferences away from these securities remains a risk to stability. As discussed in previous Reports, a sudden withdrawal of funds from offshore investors could see the NZD fall sharply and put upward pressure on domestic interest rates.

Recent global market developments have highlighted the potential for an abrupt change in market participants' appetite for risk, particularly as many indicators suggest that the price of risk is still at relatively low levels on an historical basis. Signs of increased risk aversion were reflected in the relatively sharp depreciation in the NZD in late February as investors sought to unwind carry trades.

Carry trade activities will have contributed to the increased trading volumes in the NZD. While the size of these carry trades are hard to quantify, information from market contacts suggests that NZD volumes traded in the global market have grown over the past year, as New Zealand's interest rate differential widened. Given the widening in the interest rate differential, it is likely that upcoming maturities will be met with continued offshore issuance of NZD-denominated bonds. Anecdotal evidence suggests that a sudden withdrawal from New Zealand assets is unlikely given the dispersed nature of the investors (across many Japanese and European retail investors) and their typical investment horizon (long-term holders of financial assets more focused on income). In addition, risk appetite

has remained robust, although recent developments may have increased awareness of the risks involved in such investments. To the extent that this has been the case, it would be positive for the overall stability of financial markets in the long term.

3.2 Interest rate markets

Liquidity in the interest rate markets has also remained strong since the last Report, with strong trading volumes. This is important for the stability of markets, as it allows large flows in either direction to be readily absorbed, thus helping reduce volatility.

Transaction volumes have been particularly high in the short-term interest rate markets (figure 3.4). Volumes traded across the first four 90-day bank bill futures contracts reached record highs on the day of the March *Monetary Policy Statement*, with high volumes also traded in the days prior to the *Statement's* release. Market participants have also noted strong volumes in overnight index swap markets over recent months.

Figure 3.4
Turnover of first four 90-day futures contracts (30-day moving average)

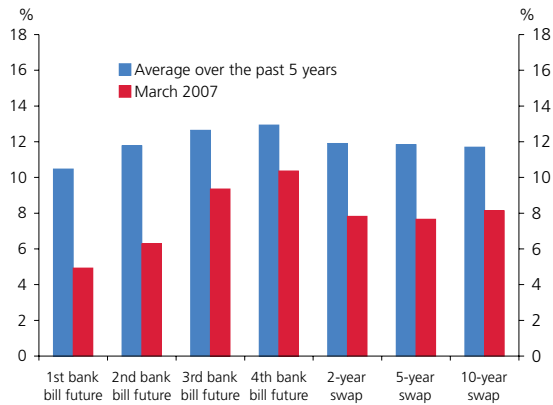


Source: RBNZ, Reuters.

The high trading volumes have been accompanied by relatively contained volatility in bank bill futures rates (figure 3.5). This is consistent with market intelligence suggesting strong two-way interest in the markets, and a relatively low level of uncertainty over future short-term interest rate movements.

Long-term New Zealand interest rate markets have also generally seen low levels of daily volatility since the last

Figure 3.5
Historical volatility of 90-day futures contracts and swap rates
(Average over the past 5 years and current)



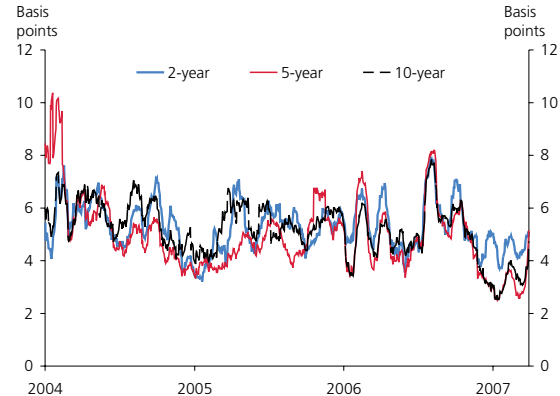
Source: RBNZ, Bloomberg.

Report. This is despite the level of long-term interest rates, as reflected by interest rate swaps, having increased by between 25 and 40 basis points over the period, reflecting expectations of higher future short-term interest rates.¹

While liquidity in the swaps market has been generally high, some market contacts have pointed towards a relative decline of late, particularly in long-term swaps. This is attributed to market participants reducing the amount of financial market risk they are willing to take, given recent global developments. Data on the spread between the daily high and low swap yield traded over the last few years gives some indication of trends in intra-day volatility. This spread would tend to be larger in times of illiquidity, as flows had a greater potential to push interest rates around, thus resulting in higher volatility. While the spreads between the daily highs and lows traded in the market have been increasing since the beginning of the year, they are not at unusually high levels relative to the past few years (figure 3.6). This suggests that while liquidity has fallen recently – leading to some large movements in swap rates during some trading sessions – this has followed a period of particularly liquid conditions in the interest rate swaps market.

¹ An interest rate swap is a derivative instrument under which parties agree to exchange a stream of fixed interest payments on a notional amount of capital with a stream of floating interest payments, over a certain time horizon.

Figure 3.6
Difference between the high and low swap rates traded on the day
(20-day moving average)

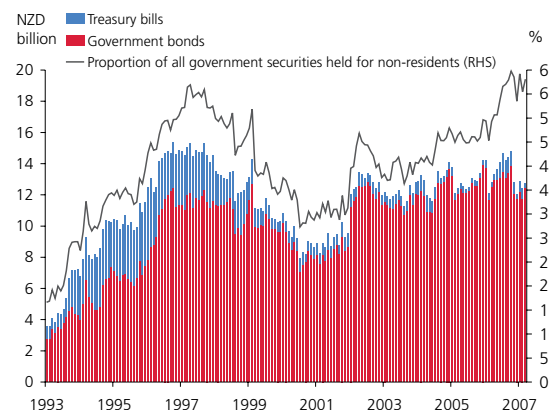


Source: Bloomberg, RBNZ calculations.

Despite overall volatility in the swaps market remaining low, swap spreads (the difference between swap rates and bond yields) have widened recently. A large part of this is due to continued offshore interest in NZD assets, including domestic government bonds, which has helped keep bond yields at relatively low levels. Spreads between swap rates and bond yields have widened most at long-dated maturities, with a considerable increase since late February.

While a widening in swap spreads could indicate investors demanding return for taking on a greater level of perceived credit risk, the current wide level in swap spreads appears to be largely due to a continued shortage of supply in the government bond market. Despite the proportion of

Figure 3.7
Non-resident holdings of NZ government securities



Source: RBNZ.

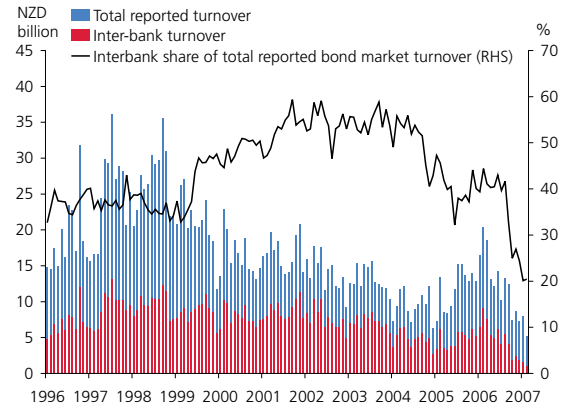
all government securities held by non-residents easing from the highs reached late last year, it is still at historically high levels (figure 3.7).

Meanwhile, the widening in the shorter-term swap spreads has also been supported by continued borrowing from banks looking to fund the mortgage loans on their balance sheets.

In addition to the large amount of government bonds held offshore, the increasing importance of offshore market participants is also reflected in the continued decline in estimated turnover in the domestic interbank bond market, both in absolute terms and as a proportion of total turnover in the government bond market (figure 3.8). A further domestic institution ceased to participate in the interbank bond market during the year, leaving only three domestic interbank participants in the market.

The temporary sell-off in global equity markets and reduction in global risk appetite had a brief but sharp impact on the NZD and New Zealand interest rates. New Zealand's financial markets are vulnerable to shifts in global investor preferences. While liquidity is robust in normal times, a substantial and abrupt shift away from New Zealand assets by offshore investors would be difficult for the domestic market to absorb.

Figure 3.8
Turnover in the government bond market



Source: RBNZ.

Box 5

Risks from international influences on New Zealand interest rates

As this chapter has outlined, New Zealand's financial markets have generally been stable with good levels of liquidity. However, risks around sudden changes in investor sentiment has been noted, given recent episodes of volatility seen in global markets. In this box we look more closely at the potential risk from transmission of an offshore financial shock to domestic interest rates. International influences usually have most impact on long-term interest rates. However, for a small open economy such as New Zealand, global influences can also impact on shorter-term interest rates – for example, through sharp changes in financial market expectations of risk premia.

Figure 3.9 shows variation in the slope of New Zealand's yield curve over the past decade, where the slope of the yield curve is the difference between long-term and short-term interest rates. Volatile periods in the earlier half of the decade correspond to periods of international financial stress, including the Asian crisis of mid-1997, and the Russian debt crisis of mid-to-late 1998. However, the past few years have been a relatively benign period for global financial markets. Global interest rates have been relatively low and stable, which has helped volatility in New Zealand's yield curve remain low.

Studies have looked at the extent to which domestic interest rates are influenced by movements in the capital markets of other countries. For example, Bank of England

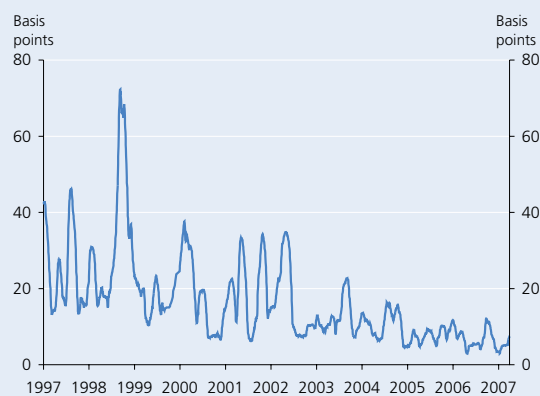
researchers find that the yield curves of Germany, the United Kingdom and the US are influenced by international factors.² Even for these large economies, international factors are sometimes more important influences on interest rates than domestic factors.

We have applied the Bank of England method to interest rate swaps data for New Zealand, Australia and the US (figure 3.10). Within the New Zealand financial system, the interest rate swap market performs an important and central role. The swap yield curve is used by banks to price and hedge the risks involved in many financial products; this includes residential mortgages and corporate bond issues. Reduced functioning of the swaps market, due to poor liquidity conditions or a lack of deep two-way participation, would impair the ability of banks to effectively or efficiently hedge the market risk involved in providing fixed-rate mortgages. In our model, international influences were proxied by US and Australian interest rates.

On average since the Official Cash Rate (OCR) was introduced, domestic factors have influenced around 40 percent of the variation in the yield curve's slope, while international factors have explained around 60 percent. Over the past 10 years, there have been five sustained periods during which international factors have dominated the slope of the New Zealand yield curve. Two of these periods were related to the Asian and Russian debt crises of 1997/98, and the 'tech bubble' bust and fall in US equity markets during 2001. Similarly, the other periods correspond to times when financial market participants were more focused on offshore developments, relative to domestic ones.

The model suggests that the potential for international interest rates to influence domestic markets is likely to be large during a crisis. This influence could be disruptive in extreme circumstances, particularly where liquidity conditions in domestic markets are adversely affected by high volatility, or when interest rate levels move sharply in a way that exacerbates vulnerabilities in domestic financial markets, institutions or the real economy.

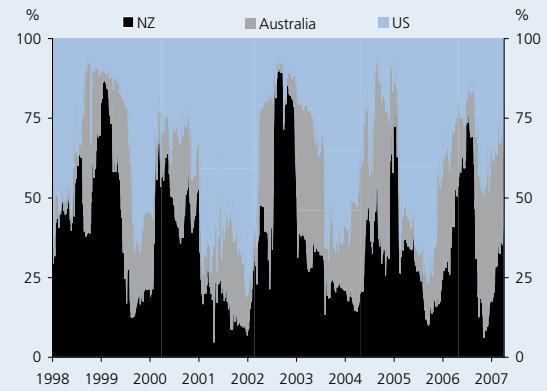
Fig 3.9
Volatility in the slope of the NZ yield curve



² Clare and Lekkos (2000), 'An analysis of the relationship between international bond markets', Bank of England Working Paper, <http://www.bankofengland.co.uk/workingpapers/wplist.htm>.

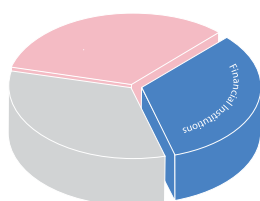
Researchers have found that in past periods of widespread stress, financial markets have been volatile and more highly correlated across both asset classes and national borders. Hence it is possible that actions that the Reserve Bank could take to lean against the effects of abrupt movements in financial markets would have less immediate impact during such times.

Figure 3.10
The influence of international factors on the NZ yield curve



Source: Bloomberg, RBNZ calculations.

4 New Zealand's financial institutions



The banking system remains sound, following a favourable period of economic expansion. Record levels of household debt and stretched house prices leave the economy - and the banking system - relatively more exposed to negative economic shocks. Should economic growth slow, households may find their debt obligations more constraining.

While risks remain in some areas of the non-bank sector, consolidation of institutions has probably been beneficial to the stability of the sector overall.

4.1 The banking system

The banking system remains sound, with good asset quality, low levels of asset impairment, and loan arrears continuing to fall both in quantum and as a percentage of total lending. In addition, credit ratings have recently been upgraded. While competition has seen interest margins reduced, profits continue to grow strongly due to large increases in bank lending volumes. Profit growth (net of dividends) has bolstered banks' capital levels, which are in excess of regulatory requirements.

As noted in chapter 2, strong labour market conditions, comparatively low interest rates, and rising collateral values, have encouraged households to take on additional debt. Should these conditions deteriorate significantly, households may find their debt repayment obligations more onerous. Banks' balance sheet concentration in residential mortgage lending means that such a deterioration in economic conditions could lead to a sharp downturn in banks' asset quality and financial performance. Recent problems in the US sub-prime mortgage market serve as a reminder of the problems that could arise in higher-risk segments of banks' and non-bank lending institutions' residential mortgage portfolios.

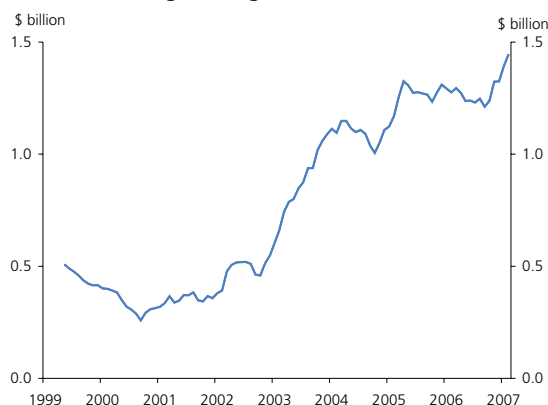
Lending and pricing

Residential lending

Bank residential mortgage lending has shown a resurgence over recent months (figure 4.1). As at the end of December 2006, bank residential mortgage lending was approximately 136 percent of personal disposable income (figure 4.2). At the end of February 2007 lending to this sector stood at approximately \$132 billion, which represents just over half (52 percent) of total bank claims.

Part of the recent advance in mortgage lending has involved some banks increasingly offering new mortgages that require little or no initial borrower deposit. This is

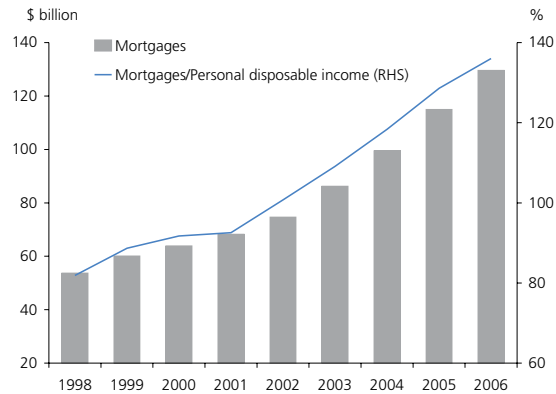
Figure 4.1
Net growth in banks' housing lending – six month moving average



Source: RBNZ - table C6.

Figure 4.2

Banks' exposure to residential mortgages



Source: Statistics New Zealand for personal disposable income, adjusted by RBNZ. Table C6.

commonly referred to as high loan-to-value ratio (LVR) lending (figure 4.3). These products expose banks to significantly more risk of loss compared to lending that requires higher borrower equity – even taking into account measures to mitigate risk, such as mortgage insurance which is used by some banks. Not only are such borrowers materially more likely to default, but the loss in the event of default for a high LVR loan (80 percent or more) is much higher than for a loan with a more conservative LVR ratio.

Competition among banks has also manifested itself in pressure on interest margins (the ratio of net interest income to interest-earning assets). The total interest margin

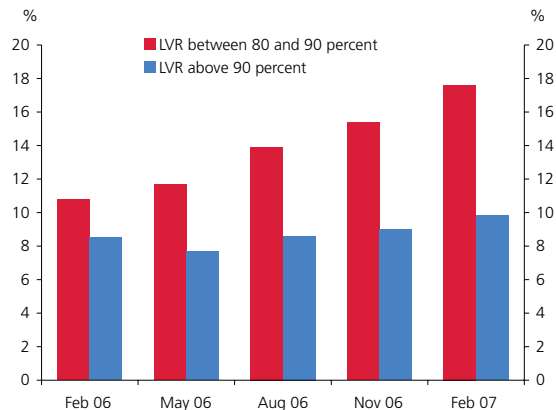
has declined during the last year from 2.39 to 2.33 percent (figure 4.4).¹ Mortgage interest margins (defined as the spread between mortgage rates and swap rates) have also been squeezed. Discounting has been particularly fierce in the two- and five-year fixed-rate mortgage markets. The effects of competition in these markets are illustrated by the compression of mortgage margins shown in figures 4.5 and 4.6.

While competition is to be encouraged, from a prudential perspective we have two concerns. First, that returns adequately reflect risk, as banks concentrate on growing lending portfolios by discounting lending rates, at the same time as risk profiles are increasing. Second, that margins are sustainable, in the sense of covering fixed, variable and capital costs over the medium term.

If the narrowing of margins proves to be unsustainable, then these margins will be forced up in the future, potentially when housing has entered a downswing. Unsustainable margins would exacerbate the housing cycle and the ultimate impact of that cycle on banks' own balance sheets. The recent widening of fixed-rate lending margins in March and April 2007 (figures 4.5 and 4.6) suggests an industry move back towards a more sustainable position. If this proves to be of a more permanent nature, then our prudential concerns would be ameliorated to some extent.

Figure 4.3

Proportion of large banks' new mortgage lending with loan-to-value ratios above 80 percent

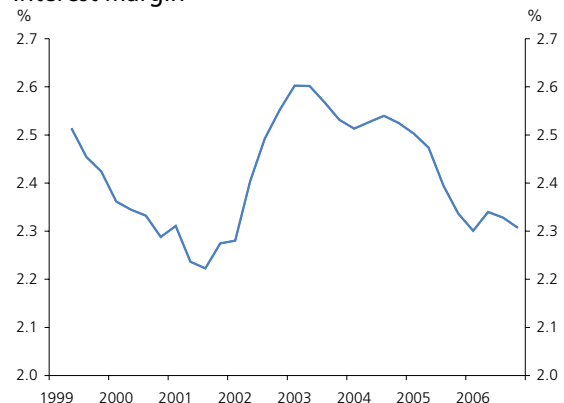


Source: RBNZ.

Note: This chart is based on preliminary data from the large four banks, and is therefore indicative only. The chart shows monthly proportions of new mortgage lending above 80 percent LVR for each of the months displayed.

Figure 4.4

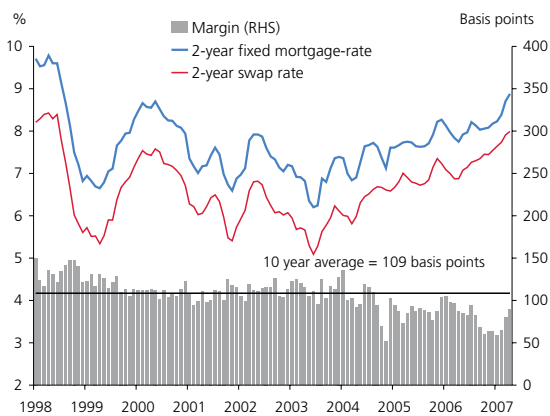
Interest margin



Source: Registered banks' general disclosure statements (GDS), to December 2006.

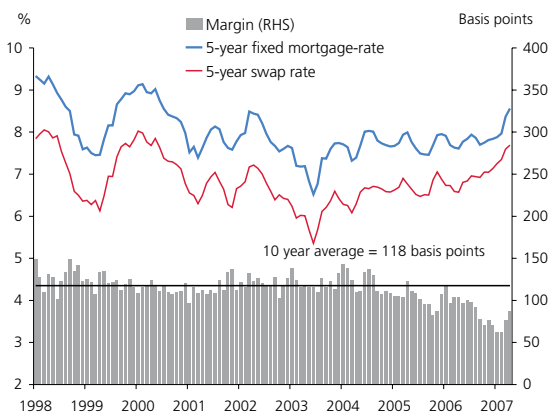
¹ Changes to the International Financial Reporting Standards (IFRS) will be affecting these margin calculations.

Figure 4.5
Two-year fixed-term residential mortgage interest rate, two-year swap rate, and margin



Source: Bloomberg, RBNZ. The margin and the mortgage rate for April 2007 are RBNZ estimates.

Figure 4.6
Five-year fixed-term residential mortgage interest rate, five-year swap rate, and margin



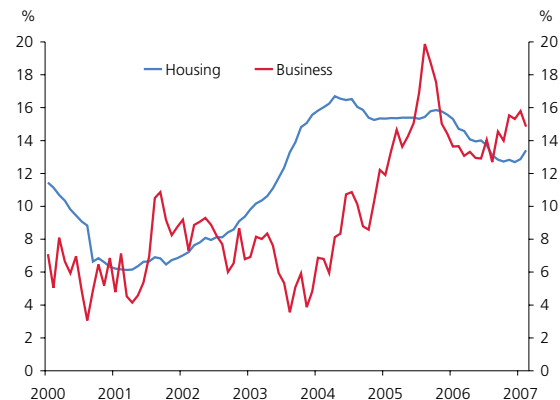
Source: Bloomberg, RBNZ. The margin and the mortgage rate for April 2007 are RBNZ estimates.

Business lending

Bank lending to business continues to grow, although since 2003 it has been well outpaced by household lending (figure 4.7). Annual average business lending growth was 11.8 percent since June 2003, compared to 15.6 percent for housing lending. Growth in business lending reflects buoyant economic conditions in recent years, and high levels of investment in 2004-05 in particular.

Banks have also been involved in an upsurge in private equity activity that has targeted some New Zealand companies. However as discussed in box 4, New Zealand bank exposure to private equity is small and does not currently give rise to stability concerns.

Figure 4.7
Growth in bank lending



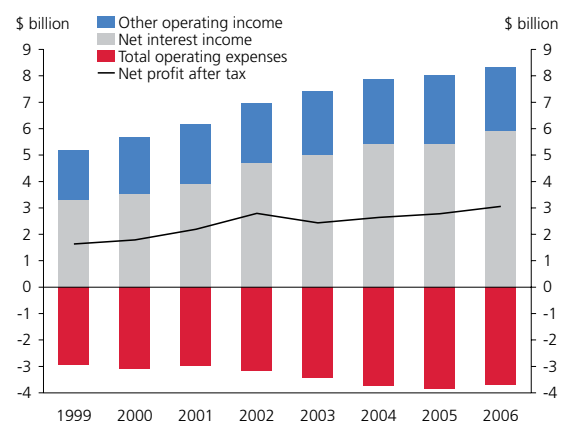
Source: RBNZ – Tables C5 and C6.

Income and profitability

The negative effect of declining margins on income and profits has been more than offset by strong lending growth. Since June 1999 banks have nearly doubled interest-earning assets, while net interest income has grown by just over 75 percent.

Net interest income continues to expand (figure 4.8) as a result of lending growth. This has been the prime contributor to a steady rise in reported net profit after tax. Net of dividends paid, net profit after tax feeds banks' capital.

Figure 4.8
Banks' financial performance



Source: Registered banks' GDS as at December.

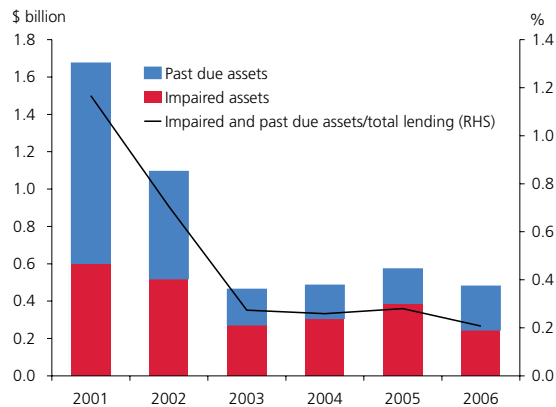
Asset quality and bank capital

Measures of asset quality continue to improve, with a decline in impaired and past due assets being consistent with the buoyant economy (figure 4.9).² However, should economic conditions deteriorate, levels of impaired and past due assets could rise significantly.

Capital levels have benefited from strong profit performance. Tier one capital to total risk-weighted assets for locally-incorporated banks is above 8 percent and has had an upward trend since 2001 (figure 4.10). The ratio of total capital to risk-weighted assets remains stable at just under 11 percent.

Figure 4.9

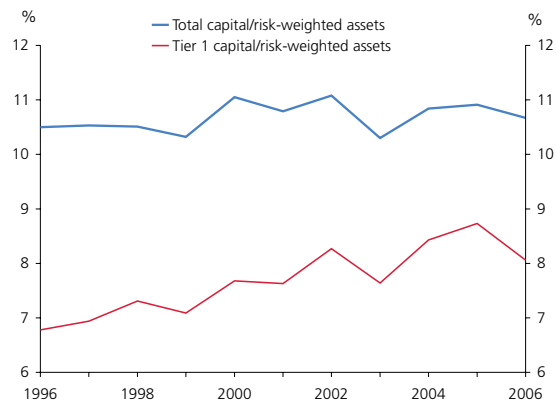
Bank asset quality



Source: Registered banks' GDS, as at December

Figure 4.10

Bank capital ratios



Source: Registered banks' GDS, as at December.

² Similarly, both individual and collective provisions have generally declined. However, the recent accounting changes from IFRS make comparisons over longer time scales less obvious.

Funding

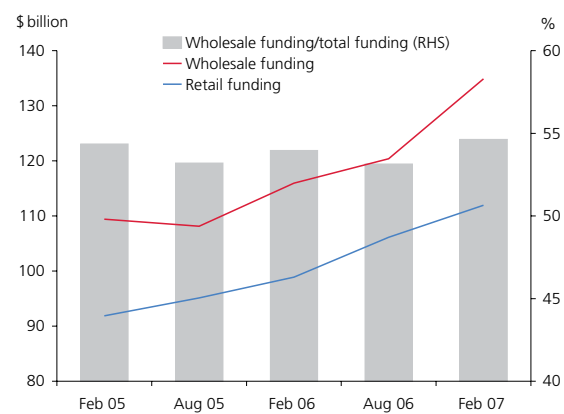
Wholesale and retail funding

Wholesale funding comprises approximately 55 percent of total bank funding (figure 4.11), a large proportion of which is sourced from non-residents, including offshore members of banking groups. While group funding can be expected to be stable, non-related wholesale funding can be prone to large volume shifts. A sudden change in the appetite of overseas investors for New Zealand-based assets could have the potential to sharply increase funding costs.

Retail funding (deposits) is generally less prone to volatility in stress situations than wholesale funding. It currently accounts for 45 percent of total bank funding.

Figure 4.11

Banks' funding



Source: RBNZ – registered banks' SSR.

Australian parent banks

Continued improvement in financial profiles and risk management capabilities was cited by Standard & Poor's in their February 2007 decision to upgrade long-term credit ratings on the large four Australian parent banks from AA- to AA. Largely reflecting that move, long-term credit ratings for the New Zealand subsidiaries were also upgraded to AA.

4.2 Non-bank lending institutions

Non-bank lending institutions' assets amounted to approximately \$29.5 billion as at December 2006, around 7 percent of total financial system assets (figure 4.12). Banks remain the most important part of the financial system, and a bank failure is more likely to threaten financial stability than failure of any other financial institution. Nevertheless, failure(s) of other participants could pose a threat through, for example, confidence or contagion channels.

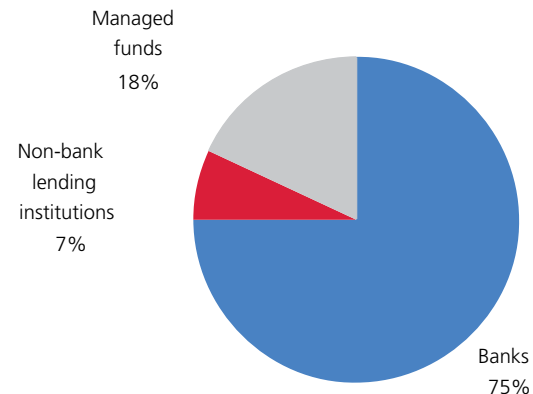
Non-bank lending institutions' assets have grown by almost 14 percent in the year to December 2006, slowing from 17 percent growth in the previous year. For the household sector, non-bank lending institutions' funding and asset shares are similar. The reduction in asset growth during the December 2006 year may be a result of renewed competition between banks and non-bank lenders for both loans and funding. Banks have been offering higher deposit rates (for example on on-call internet accounts), bringing them closer to some rates from non-bank lending institutions. The finance company failures of 2006 may also be a factor influencing investor perceptions of the sector (figure 4.13), and there has been lower demand for consumer finance loans from non-bank lenders. Total consumer loans outstanding fell by 1 percent in the year to December 2006, compared to a growth of 12 percent in the previous year.

Non-bank lenders in total have a greater share of their lending in consumer finance, and less in housing lending, compared to banks (figures 4.14, 4.15).^{3,4} Significant heterogeneity in the sector means that consumer lending is concentrated in certain non-bank lenders, rather than being spread equally across the sector. Given that any problems in the household sector will likely appear earlier and with greater severity in the quality of a consumer lending portfolio than a residential mortgage portfolio, any such problems would cause faster and greater disruption for these non-

³ Total non-bank lending institutions' housing lending stood at \$7.7 billion as at December 2006, or 29 percent of non-bank lenders' total claims. This compares to \$129.6 billion and 52% respectively for banks.

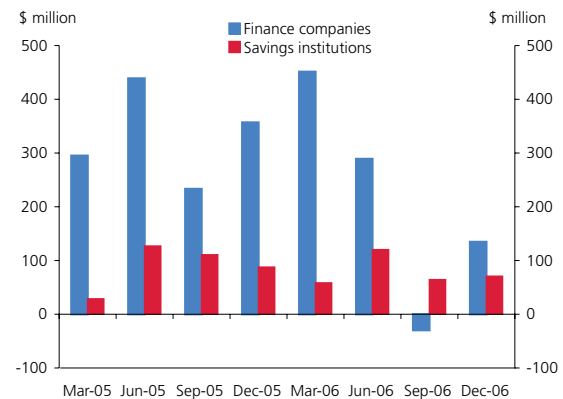
⁴ Non-bank lending institutions' consumer lending was \$6.5 billion as at December 2006, which represents 25% of non-bank lenders' total claims. The equivalent numbers for banks are \$6.5 billion and 3 percent respectively.

Figure 4.12
Shares of New Zealand financial system assets



Source: RBNZ – Appendix table A2, registered banks' and non-bank lending institutions' SSR, as at 31 December 2006. General insurance liabilities and assets are not included.

Figure 4.13
Quarterly deposit growth in finance companies and savings institutions



Source: RBNZ – non-bank lending institutions' SSR, as at 31 December 2006.

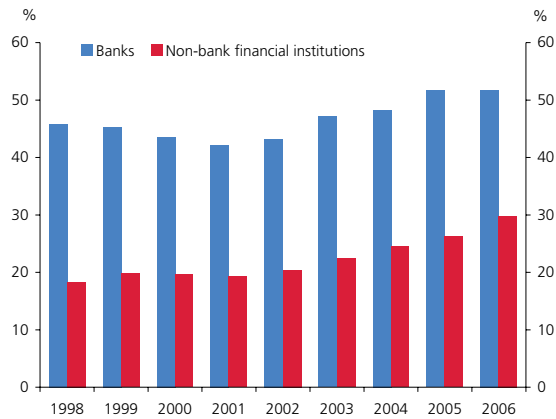
bank lenders. Risks persist in the property and used motor vehicle markets. However latent property sector risks will take longer to play out given the currently strong housing market conditions.

Unlike banks (under the Basel Capital Accord rules), non-bank lenders do not have set rules for the amount of capital they have to set aside for particular classes of lending. Their ability to absorb losses through capital in the event of a severe downturn in macrofinancial conditions is highly variable across the sector.

However, non-bank lenders in total have also increased their share of the housing market, and their market share of consumer finance has fallen slightly in the year to February 2006. Several finance companies have obtained credit ratings, and for most, reported profits remain good.

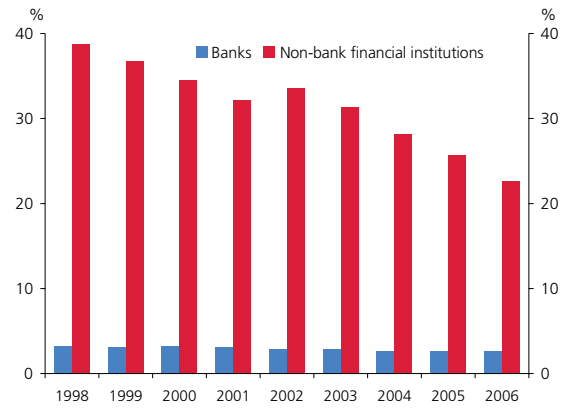
In addition, there has been ongoing consolidation activity and growth by acquisition, which has likely been related to competition in the sector. This consolidation has probably been beneficial for stability for the sector overall. Corporate action has included merger talks between large players in the industry. Additionally, some companies have accumulated large equity positions in others.

Figure 4.14
Housing lending as a percentage of total lending



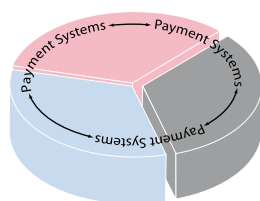
Source: RBNZ - Table C6.
Note: 'Total lending' includes securities held.

Figure 4.15
Consumer lending as a percentage of total lending



Source: RBNZ - Table C6.
Note: 'Total lending' includes securities held.

5 New Zealand's payment systems



Changes have been proposed to the governance arrangements of New Zealand's high-value payment systems (ESAS and the Austraclear New Zealand System (Austraclear)),¹ and governance changes are also being considered for the retail payment system. These changes are designed to improve the effectiveness, accountability and transparency of governance arrangements, which will contribute to the overall soundness and efficiency of the payment system.

High-value payment systems have performed well since the last Report, with low levels of outages, although there has been some change in the pattern of daily settlement.

5.1 Proposed improvements to high-value payment system governance

The Reserve Bank, as owner of ESAS and Austraclear, has recently considered how to make the governance arrangements for these systems more effective, accountable and transparent for system users. Towards these objectives, the Reserve Bank proposes to produce annual reports for both ESAS and Austraclear, and an 'Annual Plan and Objectives' document for Austraclear. The Austraclear 'Annual Plan and Objectives' would be prepared at the start of each year, in consultation with Austraclear members.

The Reserve Bank has also proposed the establishment of an Austraclear User Council. While the Reserve Bank would make final decisions, the User Council would give Austraclear members more voice and, through this, the ability to influence Austraclear developments.

The User Council will meet quarterly to:

- a) advise the Reserve Bank on strategic and operational matters that relate to Austraclear, including prices charged for using the system;

- b) discuss matters referred to the User Council by the Reserve Bank or Austraclear members and advise the Reserve Bank and Austraclear members as appropriate – for example, in relation to plans, reports and proposed new services or developments; and,
- c) identify industry trends and issues that are relevant to Austraclear and their implications for Austraclear, and discuss these with the Reserve Bank.

5.2 Retail payment system access and governance

The ISL Switch is a focus point for the New Zealand retail payment system. It is operated by Interchange and Settlement Limited (ISL), a company owned by eight banks. There are particular soundness and efficiency issues that exist in relation to the processing of retail payments through the ISL Switch. These issues are being addressed by the New Zealand Bankers' Association through two projects; the Reserve Bank is also actively engaged with the New Zealand Bankers' Association with regard to both.

The first is the 'Failure to Settle' project, which is primarily concerned with reducing the risk in the retail payment system.² The second is the 'Access and Governance' project,

¹ Both of these payment systems have systemic importance. ESAS is the Reserve Bank's Exchange Settlement Account System. The Austraclear New Zealand System (Austraclear) is a securities settlement system owned and operated by the Reserve Bank.

² See previous Reports for further discussion.

which seeks to allow for more open access to the ISL Switch. Fair and open access to the ISL Switch is an important prerequisite for efficiency in the retail payment system.

The New Zealand Bankers' Association has stated that having more open access to the ISL Switch depends on whether settlement risk issues in the Failure to Settle project can be successfully resolved. Hence, the resolution of settlement risk issues will need to be prioritised and properly coordinated between both projects to ensure that project timelines in relation to more open access are met.

With improved access to the ISL Switch, the ISL Switch governance arrangements will need to accommodate new participants. It will be important that the governance arrangements are sufficiently effective, accountable and transparent for those new participants.

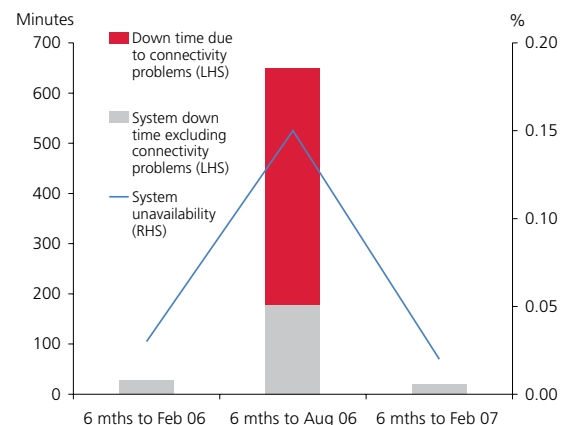
In other countries, it is common for payment system governance arrangements to also accommodate major customers of direct participants (eg, social welfare agencies, large employers, large retailers) or suppliers to payment systems (eg, technology and telecommunications companies). A good touchstone for identifying key stakeholders is to consider to whom the system allocates risk, who might be materially affected by the pricing and operational performance of the system, and who might have a material interest in the strategic development of the system.

5.3 High-value payment system performance

ESAS and Austraclear availability

The availability of ESAS and Austraclear to users is consistently very high, and broadly comparable with that reported in respect of large-value payment and settlement systems in other jurisdictions,³ and with that reported in respect of comparable systems in New Zealand.⁴ The performance of ESAS and Austraclear over the six months to February 2007 and over earlier periods is shown in figure 5.1 in terms of outages and unavailability. The overall performance during

Figure 5.1
ESAS and Austraclear system outages and system unavailability as a percentage of core hours



Source: RBNZ.

Note: Core hours are from 7 am till 30 minutes after the last CLS window (which ends at 10.30 p.m. in summer, 8.30 p.m. in winter).

³ There is limited published data internationally on the availability of large-value payment systems. However international comparators include an MOU requirement for the UK's Real Time Gross Settlement System to maintain 99.95 percent availability and the Reserve Bank of Australia's goal of 99.9 percent availability for its real-time gross settlement system. These standards may be based on slightly different measures of availability from that reported for the ESAS and Austraclear system and may not be strictly comparable.

⁴ The most comparable system in New Zealand is the NZX system run by the New Zealand Exchange for the trading and settlement of securities. In September 2006, the Securities Commission published the 'Oversight Review of NZX 2005'. In this publication, it was noted that the whole market operated without fault for 99.67 percent of total market operating hours (this figure excludes outages caused by general Telecom network faults).

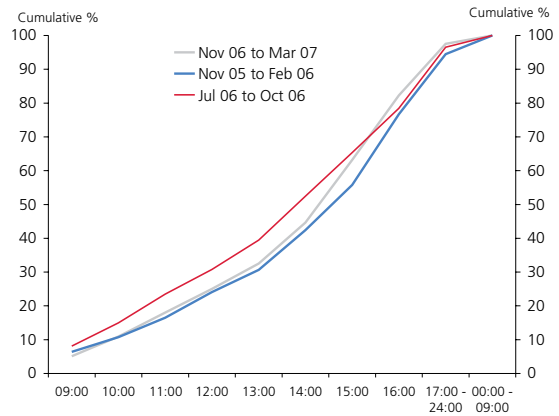
the six months to August 2006 was significantly affected by connectivity-related outages which affected only a minority of users.

ESAS settlement

In our November 2006 *Report*, we reported that the performance of ESAS appeared to have improved following the implementation of the new liquidity management regime, in terms of the timeliness of settlement during the day. We have since observed a reversion in timeliness towards the levels prior to the implementation of the new regime (figure 5.2).⁵ It is likely that the reversion in settlement times was related to one participant having held a large ESAS account balance over the end of a reporting period. This left other participants short of liquidity, and may have caused them to delay payments in order to ensure liquidity throughout the day.

Faster settlement times per payment are generally better, as this reduces the risks around failed settlements, and the costs associated with delayed settlement. However, the current levels pose no particular concerns from a payment system oversight perspective.

Figure 5.2
Timeliness of ESAS settlement
Cumulative proportion of daily transactions settled (by value), by hour of the day



Source: RBNZ.

Note: The time periods are chosen to show the settlement of transactions prior to the new liquidity management regime; immediately following the implementation of the new regime; and more recently.

⁵ Points on the graph in figure 5.2 relate to payments made during that hour or before. For example, during the period November 2005 to February 2006, on average, about 25 percent of total daily payments were made during the hour commencing 12:00, or earlier in the day. The period from March 2006 to June 2006 is not shown because during this time the RBNZ supplied more cash to the system than previously, but significantly less than the level provided from July 2006 (ie, it was in effect, a transitional period). Also note that the magnitude of difference between the November 2005 to February 2006 period and the July 2006 and October 2006 period was exaggerated, in error, in the November 2006 *Financial Stability Report*. However, the conclusions in that report remain valid.

Box 6

Payment system governance

Payment system governance arrangements warrant special attention because payment systems have natural monopoly and network characteristics that can confer a substantial degree of market power. Under these circumstances, governance arrangements can help to ensure that matters of wider stakeholder interest are properly addressed. For example, they can help to ensure that services are provided on commercially reasonable terms, and innovations and technological developments are made on the basis of user needs.

The recognised set of international standards for payment systems is the Core Principles for Systemically Important Payment Systems.⁶ These standards, which inform the Reserve Bank's approach to payment system oversight, state that a payment system's governance arrangements should be effective, accountable and transparent:

⁶ The Core Principles are set out and extensively discussed in CPSS 'Core principles for systemically important payment systems', CPSS Publications No. 43 (January 2001), available on the website of the Bank for International Settlements at <http://www.bis.org/publ/cps43.htm>.

- Effectiveness is about having a relevant and clear framework for developing and adopting strategic objectives and plans, and for monitoring and managing risks and performance. Effectiveness is also about defining the relationships and accountabilities between and among a payment system's management, owners, users and other stakeholders.
- Accountability underpins effectiveness, requiring that major decisions and actions are justified to owners, users and other stakeholders.
- Transparency underpins both effectiveness and accountability by ensuring that the governance framework and the payment system more generally are open to scrutiny by owners, users and other stakeholders.

The proposed changes to payment systems governance discussed in this chapter are aimed at making the governance arrangements more effective, accountable and transparent for users and other key stakeholders who are not owners of those systems. If governance arrangements have these characteristics, then soundness and efficiency issues are more likely to be addressed appropriately and in a timely manner.

6 Recent developments in financial regulation

Residential mortgages account for a major share of New Zealand banks' lending exposures, and it is important to ensure that the risks associated with these portfolios are adequately managed. Part of the way in which this is done is through banks' holdings of capital. The Reserve Bank is working with locally-incorporated banks to implement the recent update of the international framework for bank capital adequacy, Basel II. Compared with the previous (Basel I) framework, Basel II increases the sensitivity of capital to key bank risks.

Significant progress has been made regarding banks' outsourcing arrangements, and implementation of the new international financial reporting standards. Other continuing work includes the inter-agency Review of Financial Products and Providers.

6.1 New Zealand bank capital adequacy requirements

Capital adequacy rules: Basel I and II¹

Capital provides a buffer to reduce the risk of a bank becoming insolvent as a result of unexpected losses.² As such, it gives depositors and investors confidence in the bank's ability to absorb unexpected losses (and depositors and investors are also more likely to provide funds when they see that bank owners also have funds at stake in the operation of the bank). Because capital mitigates banks' risks, higher capital ratios are generally associated with higher credit ratings. Higher credit ratings will typically reduce the interest rates at which financial institutions can borrow funds.

Banks will generally take the above considerations into account when setting their capital levels. However, the importance of adequate capital is such that most banking regulators, including the Reserve Bank, specify the minimum

levels and quality of capital that banks should hold. Capital requirements are set because of the system-wide effects that could result from the failure of a bank, and are one of the principal ways the Reserve Bank undertakes prudential supervision.

The Reserve Bank's current capital adequacy standards are based on an international capital standard known as Basel I, which was developed in 1988 by the Basel Committee on Banking Supervision, a group of banking supervisors from G10 countries. In 2004, the Basel Committee released a new capital standard that recognised industry developments since Basel I. The new standard, Basel II, increases the sensitivity of capital to key bank risks, particularly credit risk.

Within Basel II there are two approaches to measuring credit risk. The default approach is the Standardised Approach, which retains the relative simplicity of Basel I, but sets some specific measures of risk sensitivity. The alternative is the Internal Ratings Based (IRB) approach. Banks wanting to adopt this approach (IRB banks) base their minimum capital requirements on their own risk-measurement models, subject to certain minimum conditions, disclosure requirements and supervisor approval.

¹ A more complete discussion of the importance of capital, and of the Basel I and Basel II frameworks, is contained in Yeh, A, J Twaddle and M Frith (2005) 'Basel II: A new capital framework', *RBNZ Bulletin*, Vol. 68, No. 3.

² Two types of capital are used for regulatory purposes in New Zealand. Tier one capital, which includes ordinary shares, is set to absorb losses without the bank being obliged to cease trading and is therefore a buffer against insolvency. Tier two capital, which includes subordinated debt, generally absorbs losses only in the event of the winding-up of a bank.

Capital for residential mortgage exposures

Under the Reserve Bank's current capital rules, the amount of capital required in relation to a mortgage depends only on the size of the mortgage. In implementing Basel II, the Reserve Bank will require banks to hold capital that takes into account both the size and the riskiness of its mortgages. Our objectives in setting capital requirements in relation to mortgages under Basel II are to ensure that:

- banks' capital holdings throughout the economic cycle are sufficiently calibrated to economic downturn conditions; and
- factors that drive the risk of loss in a downturn are identified and incorporated into the calculation of capital.

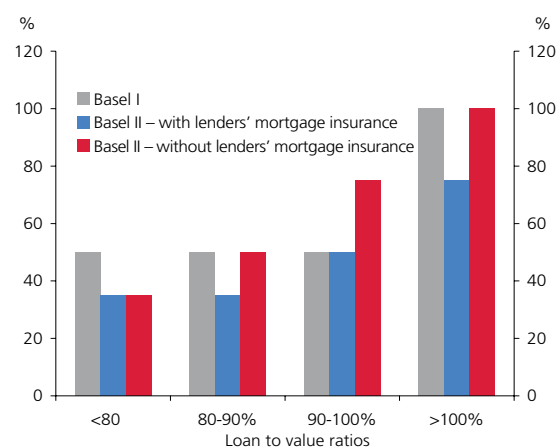
With these objectives and greater risk sensitivity in mind, the Reserve Bank has developed draft capital adequacy requirements for banks adopting the Standardised Approach.³ These requirements recognise that loan-to-value ratios (LVR) and lenders' mortgage insurance⁴ are both useful for differentiating the riskiness of residential mortgage loans. Under these requirements, the minimum capital required for banks adopting the Standardised Approach would therefore vary depending on the composition of their portfolio in terms of these risk drivers.

Figure 6.1 below illustrates the risk sensitivity of capital requirements proposed for the Basel II Standardised Approach compared with the current Basel I standard. The graph shows how risk weights vary with LVR and lenders' mortgage insurance. A bank's minimum capital requirements are linked directly to its risk-weighted assets. For example, under the Basel II Standardised Approach, a 50 percent LVR loan will have a lower capital requirement than a 90 percent LVR loan, whereas under Basel I they have the same capital requirement.

The risk weight for some residential mortgage lending under Basel II is lower than under current rules. This effect occurs partly because operational risk (as well as credit risk)

Figure 6.1

Risk weights for a residential mortgage under Basel I and the Basel II standardised approach



Source: RBNZ.

was previously captured in the risk weights for residential mortgages and for other particular categories of lending. Capital requirements in respect of operational risk and credit risk will now be determined separately.

Banks adopting the IRB approach have an opportunity to use more complex models for measuring risk and can therefore calculate capital requirements that are more closely tailored to their risk profile. However, in practice, it has been challenging for IRB banks to build rigorous models for residential mortgage exposures because they have only relatively recent data.

One problem with using recent data is that it reflects the relatively favourable economic conditions that have existed in the housing market during recent years, whereas what is needed for capital purposes is an understanding of risk in an economic downturn. Many defaults during favourable economic times are due to idiosyncratic events that are particular to the individual circumstances of the borrower and often the loan can be discharged at no loss to the bank by selling the house. In an economic downturn, a much larger portion of defaults are driven by economy-wide events such as high interest or unemployment rates, and bank losses can be significantly affected by depressed house prices.

Another problem is that, to the extent models give emphasis to only recent data, the calculated capital requirements can be procyclical. In particular, during a downturn, capital requirements that reflected recent

³ The capital adequacy requirements for banks adopting the Standardised Approach are part of the draft prudential standards referred to towards the end of this chapter.

⁴ Lenders' mortgage insurance is protection for lending banks against losses incurred as a result of mortgage defaults.

conditions would be relatively high, and, during favourable economic periods, capital requirements would be relatively low. There are practical difficulties with raising additional capital during a downturn, and these would be made worse if capital requirements increased at the same time.

From a financial stability perspective, procyclical capital requirements may increase the risk in the financial system by influencing the lending practices of banks. With relatively low capital requirements applying during favourable economic times, banks might find it easier to source capital and consequently may loosen their credit standards. While this can result in increased profits in the near term, given the reduced quality of the loan portfolio, it can also lead to greater losses during a downturn.

The Reserve Bank recognises the difficulties that banks wanting to use the IRB approach have constructing suitable models in the absence of sufficient historical data. Our responses to date have been:

- First, to work with banks to develop a set of risk estimates that banks can use to measure downturn Loss Given Default (LGD) should their available data not be sufficient for them to develop their own robust estimates.⁵ Given the importance of risk sensitivity in capital requirements, our initial thinking is that the estimates should be differentiated by LVR, reflecting that this is a key driver of LGD in a downturn. Taking a risk-sensitive approach is consistent with our draft capital adequacy requirements for banks adopting the Standardised Approach.
- Second, where risk-measurement models have been developed that are very sensitive to current economic conditions, and hence may generate procyclical capital requirements, the Reserve Bank will require banks to hold additional capital to compensate.

We anticipate that IRB banks that are unable to develop their own LGD estimates in the short run will adopt the

supervisory estimates. Over the medium term, banks may develop their models further so that there is less need for direct supervisory measures.

Basel II timelines

In the first half of 2007, the Reserve Bank will release draft prudential requirements relating to the Standardised Approach, for consultation with banks.

Banks seeking accreditation under the IRB approach were required to make formal applications. These were received in July 2006 and the Reserve Bank has been working with applicants to review their models and identify where further development of their models is necessary. The draft prudential standards for the IRB approach will be released for consultation in mid-2007.

Implementation of Basel II is scheduled for January 2008.

Capital requirements given the current state of the housing market

As discussed elsewhere, the housing market appears to be at the high end of the cycle and households have been taking on increasing levels of debt. Should economic conditions change and households find it difficult to service their debt and repay their borrowing, there could be impacts on the wider financial system, including the banks. As noted in chapter 4 of this *Report*, a significant deterioration in economic conditions could lead to a deterioration in banks' asset quality. Those banks most at risk are likely to be those that have the greatest exposure to households most at risk, such as borrowers with high LVR loans and high debt-servicing burdens.

This financial stability risk raises the question of whether a regulatory response is needed to better manage the risks to a sound and efficient financial system. The increased focus on risk sensitivity in Basel II will introduce a better alignment of risk and regulatory capital; for instance, high LVR loans will command higher regulatory capital holdings. The Reserve Bank has been considering whether elements of the increased risk sensitivity in Basel II should be implemented in the near term to ensure capital requirements are more closely aligned with housing market risk.

⁵ LGD is the economic loss incurred on a loan, given it goes into default. Loss Given Default is one of three risk parameters that IRB banks need to estimate in respect of their residential mortgage portfolios. The others are Probability of Default and Exposure at Default. A fuller explanation of the Basel II risk parameters is given in Yeh, A, J Twaddle, and M Frith (2005) *op cit*.

Any policy move of this sort would be consistent with the move to a more risk-based prudential regime for banks. It would also be consistent with the Reserve Bank's objectives of maintaining soundness and efficiency in the financial system. The latter objective is particularly relevant at present given the macroeconomic imbalances discussed in chapter 2 of this *Report*, and the important role that has been played by the housing and mortgage credit expansion. A less procyclical credit cycle would reduce risk in the macro economy and bank balance sheets alike.

6.2 Other policy developments

The Ministry of Economic Development has been leading a review of the regulation of non-bank financial institutions and financial products with input from the Reserve Bank, the Treasury, the Ministry of Consumer Affairs and the Securities

Commission. A series of consultation papers were released in August 2006, and submissions are currently being assessed. Policy recommendations are soon to be considered by Cabinet.

We have continued work with large banks to implement rules designed to ensure large bank outsourcing arrangements are robust in times of stress and that work is now entering its final stages. In the last report we discussed largely technical changes to bank capital and disclosure rules to address the introduction of New Zealand equivalents of international financial reporting standards and international accounting standards. Those changes were successfully implemented on 31 March 2007 and we are now working on some final tidy-up changes to bank disclosure rules to reflect that all banks will have adopted international accounting standards by the end of 2007.

Graphical appendix¹

International

Figure A1a

Real GDP growth

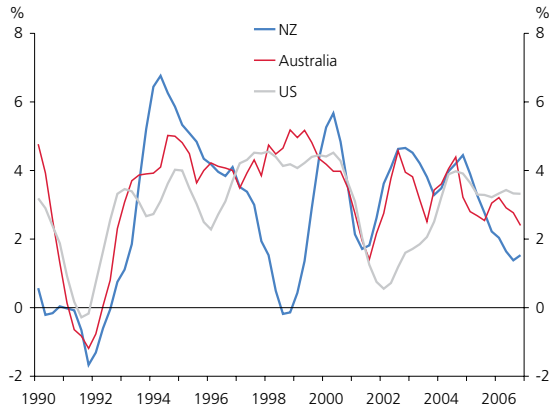


Figure A1b

Real GDP growth

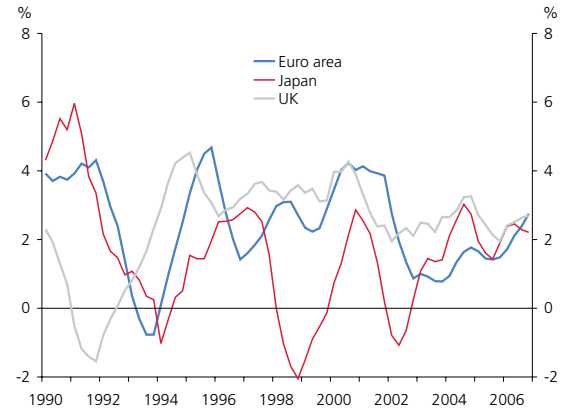


Figure A2a

Current account balance

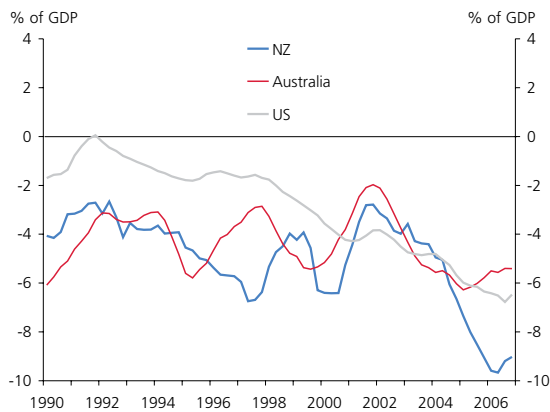


Figure A2b

Current account balance

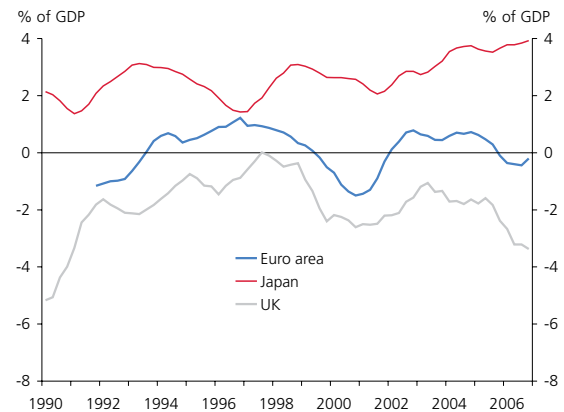


Figure A3

Trade-weighted exchange rate indices

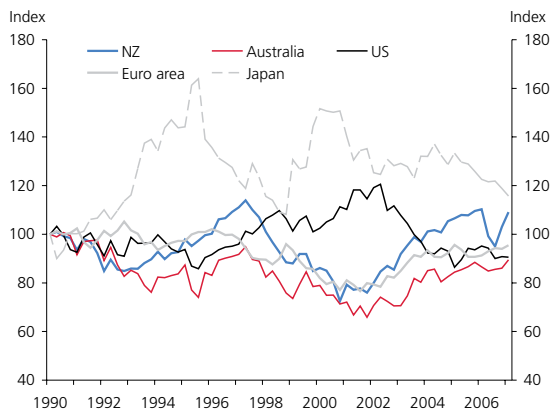
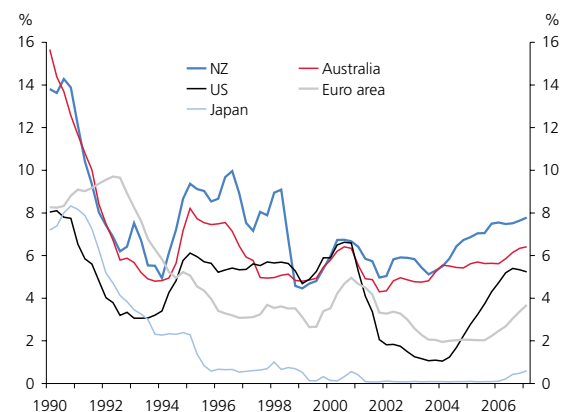


Figure A4

Short-term interest rates



¹ The data contained in this appendix was finalised on 20 April 2007, with the exception of Table A5. Definitions and sources are listed on pages 49-50.

Asset prices

Figure A5

Equity market indices

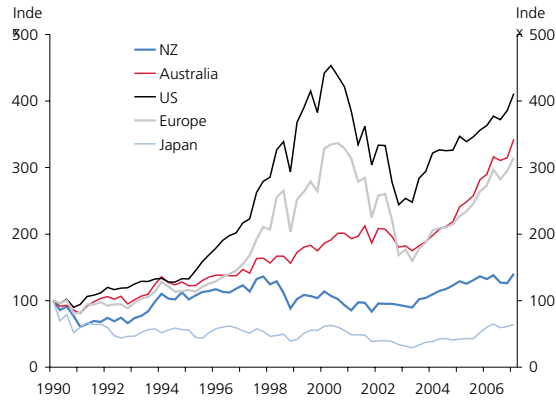
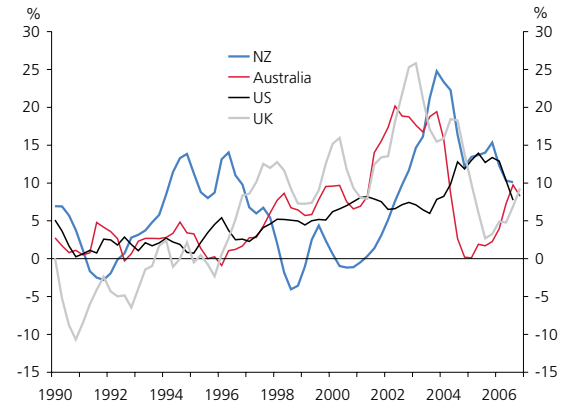


Figure A6

House price inflation



New Zealand

Figure A7

Household debt and servicing costs

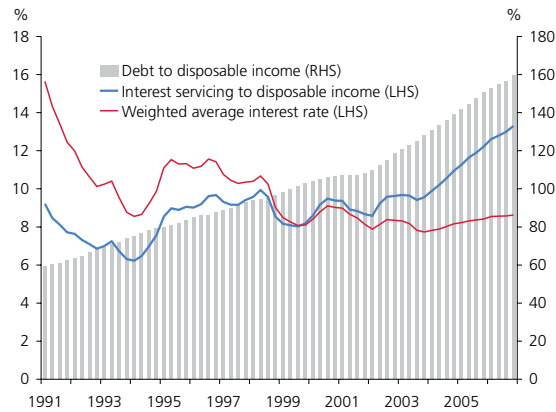


Figure A8

Household assets and liabilities

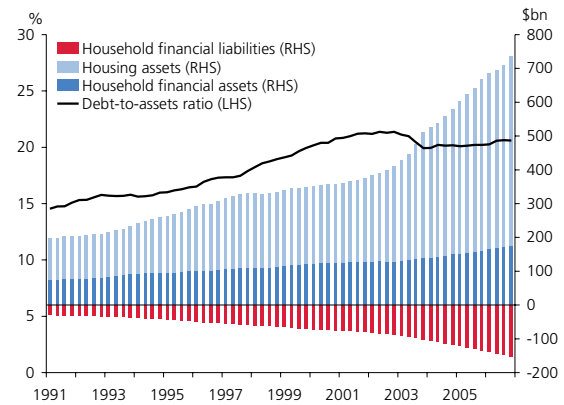


Figure A9

Property price inflation

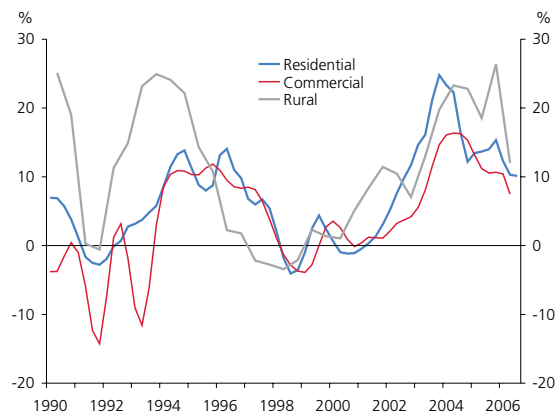
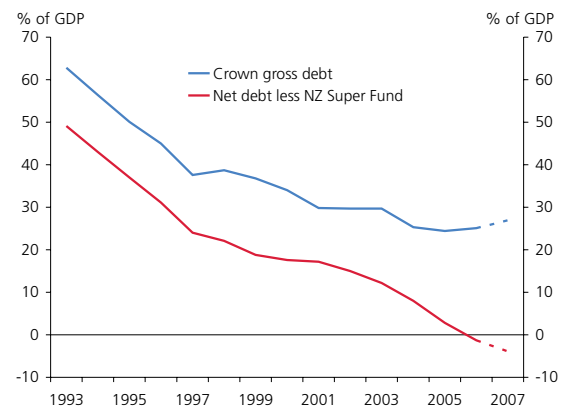


Figure A10

Government debt



New Zealand financial markets

Figure A11

Government bonds on issue and turnover

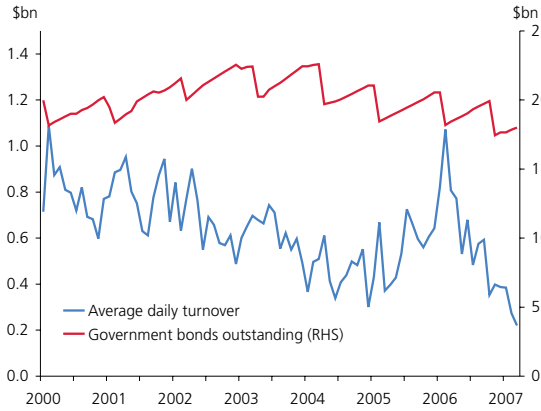


Figure A12

Ten-year government bond spreads

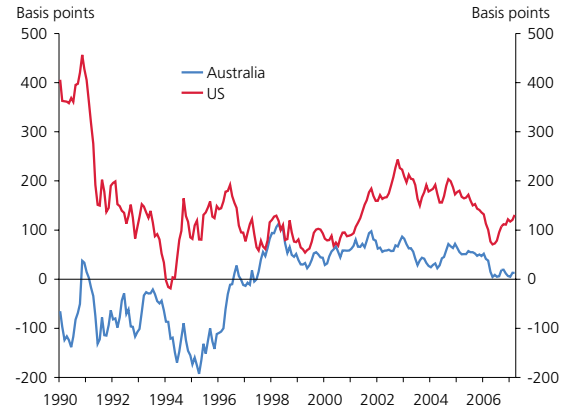


Figure A13

NZD/USD turnover in domestic markets

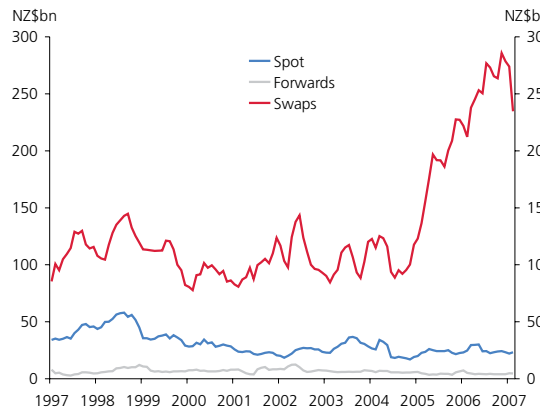


Figure A14

NZD/USD and implied volatility

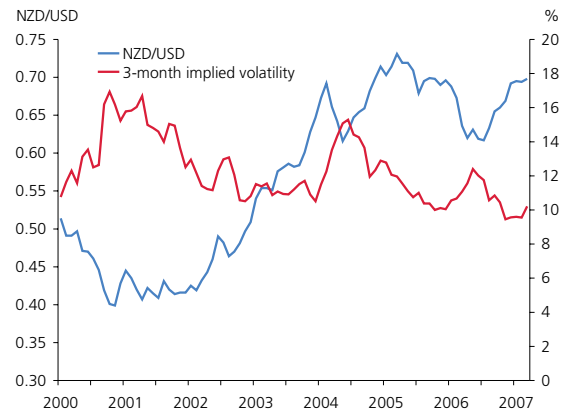


Figure A15

Equity market capitalisation to GDP

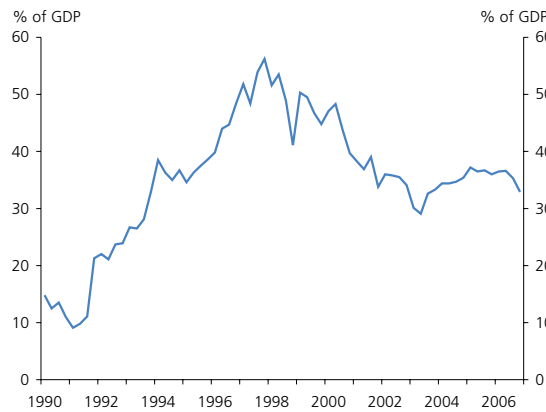
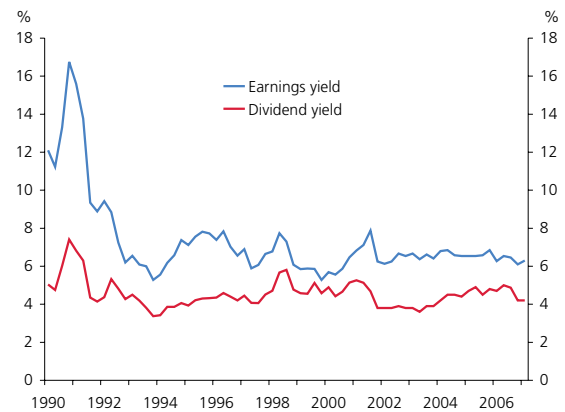


Figure A16

Earnings and dividend yields



Banking sector indicators

Figure A17

Capital adequacy ratios

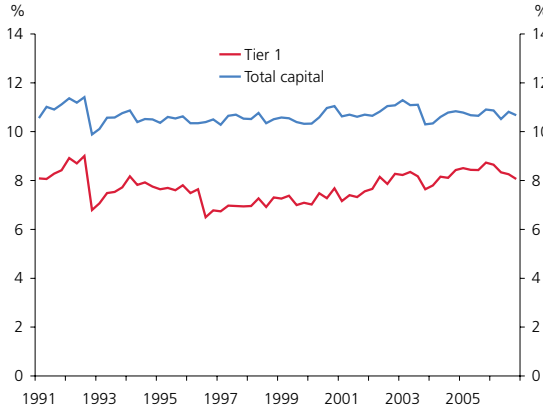


Figure A18

Asset impairment

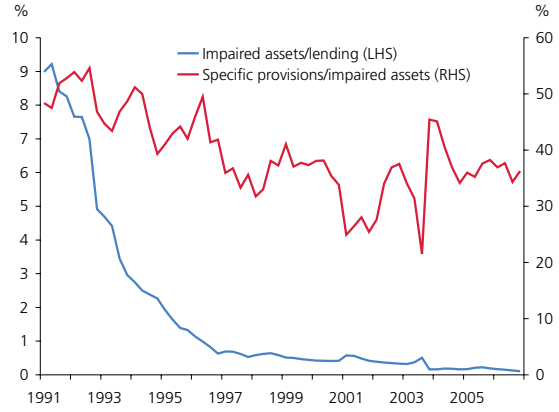


Figure A19

Return on assets

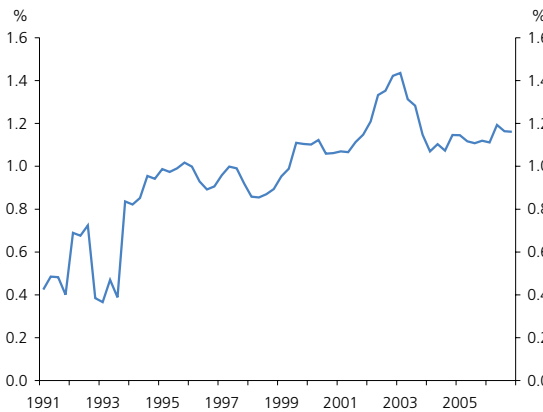


Figure A20

Operating costs to income

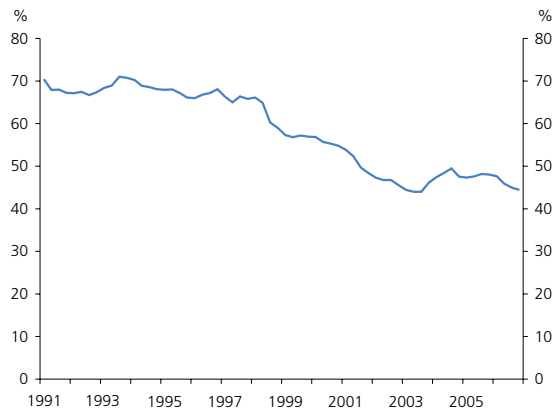


Figure A21

Interest margin

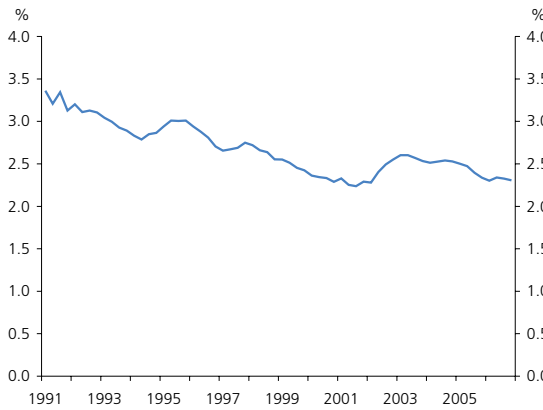


Figure A22

S&P credit ratings for registered banks

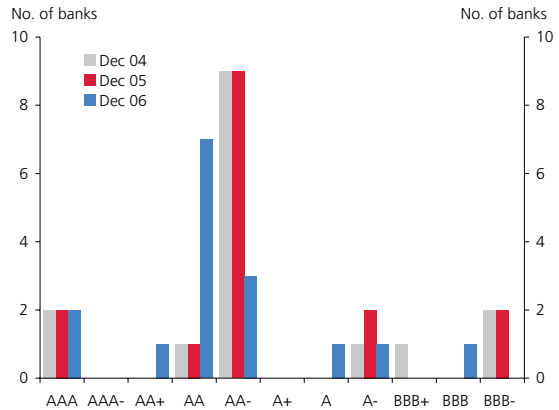


Figure A23
Bank asset composition

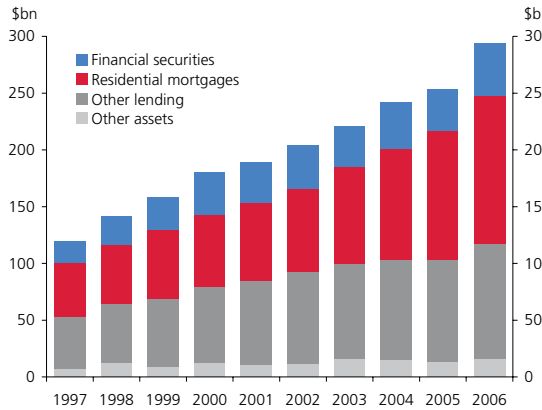


Figure A24
Bank funding composition

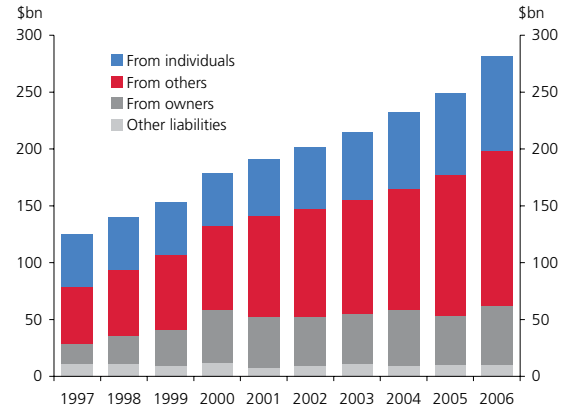


Figure A25
Bank asset growth

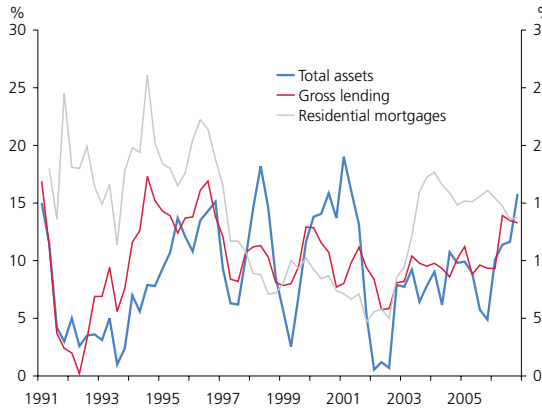


Figure A26
Bank market share

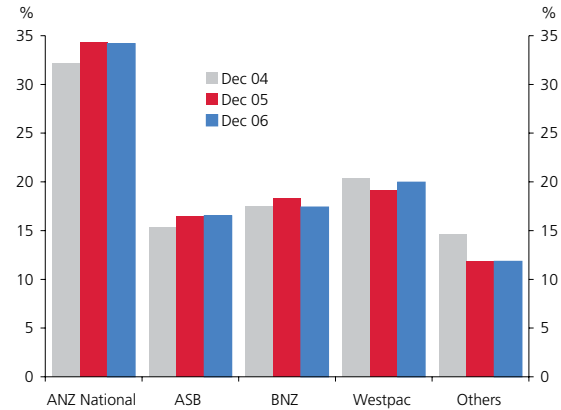


Figure A27
Bank-wide capital adequacy ratios

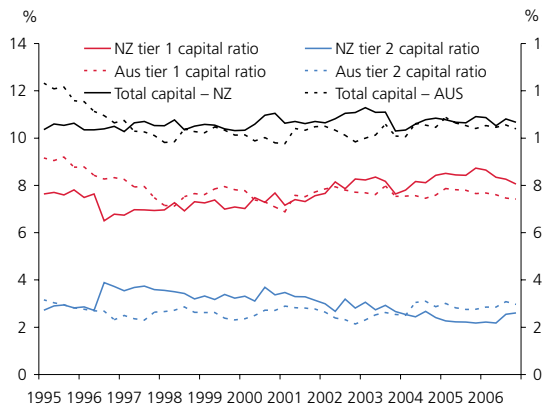


Figure A28
Large bank operating expenses to average assets



Non-bank lending institutions

Figure A29

NBLI asset composition

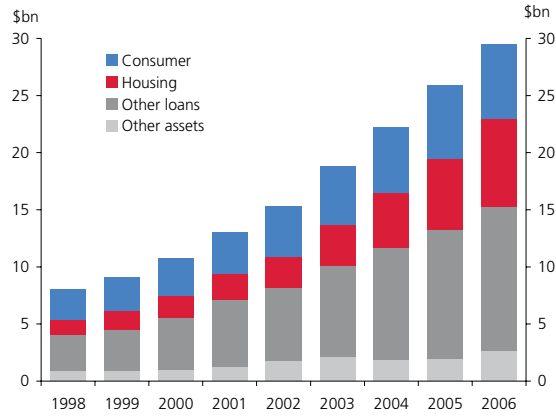
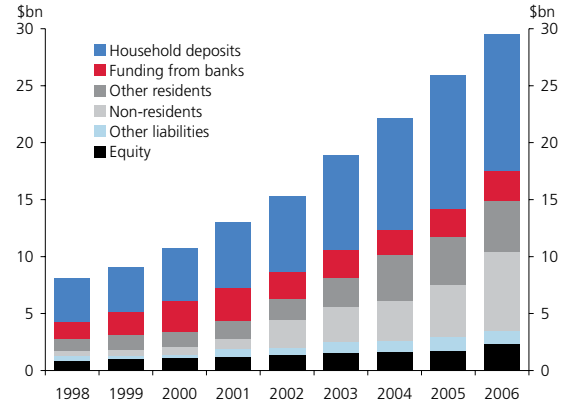


Figure A30

NBLI funding composition



New Zealand financial system assets and liabilities

Table A1

Financial system liabilities

As at 31 December, \$ billion	1990	1995	2000	2002	2003	2004	2005	2006
Banks								
Households	28	37	41	48	52	56	61	70
Other residents	25	30	55	64	72	74	84	90
Non-residents	11	22	56	64	64	77	85	96
Other liabilities	14	14	28	29	34	35	24	39
Total	78	103	180	205	221	242	254	294
Other deposit-taking institutions								
Households	2	3	4	7	8	10	12	12
Other residents	3	2	4	4	5	6	7	7
Other funding and liabilities	1	1	2	4	6	6	7	10
Total	6	6	10	15	19	22	26	29
Funds under management								
Household assets	25	41	56	50	52	53	56	63
Other sector assets	2	1	4	5	6	7	8	8
Total	27	42	60	55	58	60	64	71
Total financial system liabilities	111	151	250	275	298	324	344	394

Table A2

Financial system assets

As at 31 December, \$ billion	1990	1995	2000	2002	2003	2004	2005	2006
Banks								
Households	20	42	66	77	89	103	119	135
Other residents	36	45	72	78	79	90	102	113
General government	8	6	7	8	8	6	6	3
Non-residents	2	2	17	29	27	27	12	14
Other assets	12	8	18	13	18	16	15	29
Total	78	103	180	205	221	242	254	294
Other deposit-taking institutions								
Households	2	3	5	7	9	11	13	14
Other residents	3	2	4	6	8	10	11	13
Other assets	1	1	1	2	2	2	2	3
Total	6	6	10	15	19	22	26	29
Funds under management								
Domestic fixed interest	na	na	27	25	24	24	25	27
Domestic equities	na	na	7	6	8	8	8	9
Domestic other	na	na	4	4	4	5	6	6
Overseas investments	na	na	22	20	22	23	25	29
Total	27	42	60	55	58	60	64	71
Total financial system assets	111	151	250	275	298	324	344	394

Totals and sub-totals may not add due to rounding.

Source: RBNZ surveys and registered banks' GDS. Data for 2006 is provisional.

Notes apply to tables A1 and A2.

Note: Figures for other deposit-taking institutions incorporate the value of related off-balance-sheet assets (securitised assets). For these institutions, securitised assets represent over 12 percent of total assets in 2005 and 2006. For registered banks, securitised assets represent less than one percent of total assets and figures remain those reported in GDS under current accounting standards. Counterpart funding is included in 'other residents'. General insurance liabilities and assets are not included.

Table A3
New Zealand-registered banks

As at 31 December 2006						
Registered bank's name	Market share ¹	Credit ratings			Ultimate parent	Country of parent
		S&P	Moody's	Fitch		
ABN AMRO Bank NV	0.4	AA-	Aa1	AA-	branch ²	Netherlands
ANZ National Bank Limited	34.2	AA ³	Aa3	-	ANZ Banking Group Limited	Australia
Commonwealth Bank of Australia	1.6	AA	Aa3	AA	branch ²	Australia
ASB Bank Limited	16.5	AA ³	Aa3	-	Commonwealth Bank of Australia	Australia
Bank of New Zealand	17.4	AA ³	Aa3	-	National Australia Bank	Australia
Citibank N A	1.1	AA+	Aaa	AA+	Citigroup Inc.	USA
Deutsche Bank A G	2.0	AA-	Aa3	AA-	branch ²	Germany
Kiwibank Limited	1.4	AA-	-	-	New Zealand Post	New Zealand
Kookmin Bank	0.1	A-	A3	-	branch ²	South Korea
Rabobank Nederland	0.4	AAA	Aaa	AA+	branch ²	Netherlands
Rabobank New Zealand Limited	1.6	AAA	-	-	Rabobank Nederland	Netherlands
The Bank of Tokyo-Mitsubishi UFJ, Ltd	0.2	A	A1	-	branch ²	Japan
The Hongkong and Shanghai Banking Corporation Limited	2.2	AA	Aa2	AA	HSBC Holdings	UK
TSB Bank Limited	1.0	BBB	-	-	Taranaki Community Trust	New Zealand
Westpac Banking Corporation	6.1	AA ³	Aa3	AA-	branch ²	Australia
Westpac New Zealand Ltd	13.9	AA ³	Aa3	-	Westpac Banking Corporation	Australia

Source: Registered banks' GDS.

Notes:

¹ Registered banks' assets as a proportion of the total assets of the banking system.

² The New Zealand registration is for a branch of the ultimate parent.

³ Standard and Poors upgraded the ratings of these banks from AA- to AA, just after these banks published their 31 December 2006 disclosure statements.

Table A4

New Zealand-registered banks' interest spreads

		Mar-05	Sep-05	Mar-06	Sep-06
		%	%	%	%
ANZ National	Post IFRS	2.13	2.00	2.24	2.15
	Pre IFRS	2.13	2.00		
ASB Bank	Post IFRS		2.04	1.96	2.05
	Pre IFRS	2.50			
BNZ	Post IFRS	2.69	2.40	2.37	2.23
	Pre IFRS	2.68	2.41		
Westpac	Post IFRS	2.83	2.51	2.73	2.58
	Pre IFRS	2.85	2.56		

Source: Registered banks' GDS.

Note: ASB Bank GDS data are for June (in March column) and December (in September column).

Notes to the graphical appendix

The appendix contains a suite of charts that appear regularly in the *Financial Stability Report*. They provide an overview of developments in a set of key economic and financial indicators. Definitions and sources (in italics) are noted below. The data for the charts in this *Report*, including those in the graphical appendix, is available on the Reserve Bank website.

1	Real GDP growth	Annual average percentage change in real GDP. <i>Datastream</i> .
2	Current account balance	Current account balance as a percentage of GDP, four-quarter total. <i>Datastream</i> .
3	Trade-weighted exchange rate indices	Trade-weighted indices, 31 March 1990 = 100. <i>Bank of England</i> .
4	Short-term interest rates	Yields on 90-day bank bills.
5	Equity market indices	Morgan Stanley Capital Indices, 31 March 1990 = 100. <i>Datastream</i> .
6	House price inflation	Year-on-year change in national house price indices. <i>Datastream</i> , <i>Quotable Value New Zealand Ltd</i> .
7	Household debt and servicing costs	Household debt excludes student loans. Household disposable income is gross before deduction of interest paid and consumption of fixed capital, and is interpolated from March-year data from <i>Statistics New Zealand</i> , with <i>RBNZ</i> 2007 forecasts. The weighted average interest rate is published in <i>RBNZ</i> residential mortgage rate data with an estimate for consumer loan interest rates.
8	Household assets and liabilities	Housing assets are aggregate private sector residential dwelling value. Data are from <i>Quotable Value Ltd</i> from 1995, with <i>RBNZ</i> estimates based on the HPI for prior years. Household financial assets are as published annually by <i>RBNZ</i> , with aggregate quarterly figures interpolated prior to 1995, based on component estimates from then. Household liabilities are from <i>RBNZ</i> series as for figure A7.
9	Property price inflation	Year-on-year change in property price indices. Commercial and rural property prices are interpolated from semi-annual figures. <i>Quotable Value Ltd</i> .
10	Government debt	<i>The Treasury</i> .
11	Government bonds on issue and turnover	<i>RBNZ</i> : total government securities on issue (D1) and New Zealand government bond turnover survey (D9).
12	Ten-year government bond spreads	Yield on 10-year benchmark New Zealand government bond, less yield on US and Australian equivalents. <i>RBNZ</i> .
13	NZD/USD turnover in domestic markets	<i>RBNZ</i> survey. Three-month moving average.
14	NZD/USD and implied volatility	Standard deviation used to price three-month NZD/USD options. <i>UBS</i> , <i>RBNZ</i> .
15	Equity market capitalisation to GDP	Total market capitalisation of firms listed on New Zealand Stock Exchange, as a percentage of annual nominal GDP. <i>Datastream</i> .
16	Earnings and dividend yields	Earnings and dividends as a percentage of total market capitalisation. <i>First New Zealand Capital</i> .
17	Capital adequacy ratios	Tier 1 and Tier 2 capital as a percentage of risk-weighted assets, for all locally incorporated banks. <i>General Disclosure Statements (GDS)</i> .
18	Asset impairment	Impaired assets as a percentage of total lending; specific provisions as a percentage of impaired assets; for all registered banks. <i>GDS</i> .

19	Return on assets	Net profits after tax and extraordinary items, as a percentage of average total assets, four-quarter average, for all registered banks. <i>GDS</i> .
20	Operating costs to income	Operating expenses as a percentage of total income, four-quarter average, for all registered banks. <i>GDS</i> .
21	Interest margins	Net interest income as a percentage of average interest-earning assets, four-quarter average, for all registered banks. <i>GDS</i> .
22	S&P credit ratings for registered banks	Standard & Poor's credit ratings on NZD long-term senior unsecured obligations in New Zealand. <i>GDS</i> .
23	Bank asset composition	As at 31 December. <i>GDS</i> .
24	Bank funding composition	As at either 30 September or 31 December. <i>GDS</i> .
25	Bank asset growth	Year-on-year change in total assets of all registered banks. Gross lending is before provisions. <i>GDS</i> .
26	Bank market share	Bank assets as a percentage of total assets of registered banks. <i>GDS</i> .
27	Bank-wide capital adequacy ratios	Capital is a percentage of risk-weighted assets for all locally incorporated banks. <i>GDS, Reserve Bank of Australia</i> .
28	Large bank operating expenses to average assets	Excluding interest costs. As at the applicable annual bank balance dates. <i>GDS</i> .
29	NBLI asset composition	<i>RBNZ Annual Statistical Return</i> and <i>NBFI SSR</i> as at 31 December.
30	NBLI funding composition	<i>RBNZ Annual Statistical Return</i> and <i>NBFI SSR</i> as at 31 December.

