Can Market Discipline Substitute for Bank Supervision?

New Zealand Banks Tested.

William R. Wilson

Massey University

Professor Lawrence C. Rose

Massey University

Associate Professor John F. Pinfold

Massey University

October 2005

Contact: William R Wilson
Private Bag 102-904, NSMC
QB2.50. Dept. of Commerce
Massey University at Albany
Paper Available for Publication
Phone: 64-9-414-0800, Ext. 9450
Fax: 64-9-441-8177
Email: w.r.wilson@massey.ac.nz

Key Words: Market Discipline, New Zealand Banks

Can Market Discipline Substitute for Bank Supervision? New Zealand Banks Tested.

Abstract

Banks, the foundation on which our modern financial system rests, are often subject to onerous prudential regulation. Provision of a payments system and financial intermediation are a key function provided by banks, but is this sufficient justification for the imposition of what is often an onerous prudential supervision system?

In the early 1990's, the Reserve Bank of New Zealand (RBNZ) concluded that bank supervision in New Zealand could be considerably improved. After an extensive consultative process the RBNZ designed a system which they believed could address the concerns identified with the current conventional bank supervision regime. It was their belief that a system that used market discipline to its fullest potential would reduce compliance costs and market distortions inherent in conventional regimes and at the same time reduce the financial risk faced by the taxpayer when the central bank was solely responsible for bank supervision (Brash, 1995).

This paper details the New Zealand bank supervision market discipline model and evaluates its effectiveness by testing the relationship between bank risk premiums and the risk indicators contained in disclosure statements. We find that bank disclosure statements do provide depositors with valuable information and this information is reflected in the interest rates charged by individual banks.

Can Market Discipline Substitute for Bank Supervision? New Zealand Banks Tested.

Introduction

> *"Effective supervision of banking organisations is an essential component of a strong economic environment in that the banking system plays a central role in making payments and mobilising and distributing savings"* (Basel Committee on Banking Supervision, 1997).

Banks are the foundation stone on which our modern financial system rests. It is difficult to imagine any economy that could function without a system in which payments can be made, or surplus funds transferred from lenders to borrowers. Provision of a payments system and financial intermediation are key functions of modern banks. But is this sufficient justification for the imposition, on banks, of an onerous prudential supervision system?

Barth, Caprio and Levine examined banking systems around the globe, finding that, in countries where banks face a greater degree of regulation and restrictions there is a higher probability of a banking crisis (Barth, Caprio, & Levine, 2001). A finding such as this calls into question the effectiveness of traditional prudential regulation. Given the importance of banking institutions in our modern economies, are there better ways of avoiding banking crises?

In the early 1990's the Reserve Bank of New Zealand (RBNZ) examined New Zealand's traditional banking supervision regime. The RBNZ concluded that bank supervision in New Zealand could be considerably improved and after an extensive consultative process the RBNZ designed a system that addressed the concerns identified with the current conventional bank supervision regime. A system that used market discipline to its fullest potential should reduce compliance costs and the market distortions inherent in conventional regimes and at the same time reduce the financial risk faced by the taxpayer when the central bank was solely responsible for bank supervision (Brash, 1995).

Under the 1996 system introduced in New Zealand, the RBNZ shoulders no responsibility for the protection of depositors; its responsibilities for bank registration and supervision lie with the two stated purposes of: *"promoting the maintenance of a sound and efficient financial system; and avoiding significant damage to the financial system which could result from the failure of a registered bank"* (RBNZ Banking System Dept, 2001). Currently New Zealand has no system of deposit insurance and the New Zealand government offers no guarantees to depositors. New Zealand depositors are solely responsible for judging the riskiness of New Zealand's Registered Banks[1] and are then expected to act accordingly.

Market discipline is facilitated with all New Zealand banks required to publish regular disclosure statements. The purpose of disclosures is: "*to strengthen the incentives for banks to maintain sound banking practices; and to assist depositors and other investors to make well informed decisions as to where to put their money"* (RBNZ Banking System Dept, 1998). This paper details the New Zealand bank supervision market discipline model and evaluates if New Zealand depositors enjoy a sound and efficient financial system.

The Development of NZ's System of Bank Supervision

The New Zealand economy became somewhat of an economic testing ground in the ten years after the general election of 1984. On coming to power in 1984 the Labour government inherited an economy in disarray. What was once a prosperous nation was badly damaged? The ready market for cheap agricultural commodities was gone with Britain joining the European Union, and the 'Think Big' energy projects, New Zealand's response to the oil shocks of the 70's, were turning into 'White Elephants'.

[1] The use of the name "Bank" in NZ is only able to be used by "Registered Banks" of which there are currently 16. Other financial institutions while still able to undertake many of the traditional functions of banks such as making loans and taking deposits are not allowed to use the name "Bank" and instead fall under the regulatory oversight of the NZ Securities Commission.

The previous National government had managed the economy with rigid controls and frequent interventions. New Zealanders were enduring a wage and price freeze, interest rates were controlled, the exchange rate was fixed, many export industries were heavily subsidised, and there were extensive quotas and tariffs on imports. Labour's response was to deregulate. Change came quickly, as the new government ended the wage and price freeze, interest rate limits were lifted and the exchange rate was allowed to float freely.

The New Zealand economy went through a decade of turmoil, moving from a centrally planned economy to one with an almost completely laisser-faire attitude. The mantra of the new economy was 'let the market decide'.

Banks likewise had been tightly regulated, with controls on the number and type of banks. There was a clear demarcation line separating business from retail banking, with business customers being served by four 'Trading Banks'[2], while retail depositors were largely confined to the Post Office Savings Bank, twelve regionally based 'Trustee Savings Banks' and four private 'Savings Banks'. No formal system of bank supervision existed; however, New Zealand did have a compulsory reserve ratio system, forcing banks to hold government stock.

Restrictions on the number of banks in New Zealand, both foreign and domestic, were lifted in 1986 with an amendment to the 1964 Reserve Bank Act. This amendment also introduced the first formal approach to banking supervision in New Zealand. While the system was orthodox in many respects, there was no explicit government guarantee offered to depositors apart from that already enjoyed by the customers of the government owned Post Office Savings Bank and the twelve regional Trustee Savings Banks (Peare, 1999).

In the 1980's, banking had been considered relatively 'low-risk' by the RBNZ with one staff member describing it as 'boringly stable' (Ledingham, 1995). However this viewpoint had to change as the

[2] Bank of NZ, National Bank, Australia New Zealand Bank, and Westpac.

RBNZ became aware of the increased risks now facing banks in the newly deregulated New Zealand economy. Economic reforms allowed many new business opportunities and banks expanded accordingly. New opportunities resulted in new risks, and along with other factors such as; the increase in the number of banks, increased foreign bank ownership, and the withdrawal of the Government from bank ownership[3]. The 1987 stock market crash exposed weaknesses in a number of New Zealand banks and financial institutions, many of which had an overexposure to the commercial property market. As a result of the above some institutions were placed at risk.

Problems were most apparent at the Bank of New Zealand (BNZ) and the Development Finance Corporation (DFC), and lead ultimately to the failure of the DFC in 1989 and problems for the BNZ in October 1990 (Tripe D W, 2001). Although the New Zealand Government had formerly owned both the DFC and the BNZ their problems were handled differently. The RBNZ placed the DFC under statutory management in 1989 before a deal was eventually brokered between its owners and creditors in October 1990. While the DFC was not a registered bank (but was seeking registration) it was the first failure of a financial institution that the RBNZ dealt with and provided a valuable learning experience (Brash, 1991).

In contrast, the problems of the BNZ were dealt with differently. Firstly in 1989, the bank required a capital injection its capital adequacy had fallen to 2.4% as a result of the previous year's $648.8 million loss (Reuters Staff, 1989). The government, who were still a major shareholder in the recently privatised bank, were forced to temporarily advance an additional $200 million of preference shares to lift while the bank awaited the proceeds of a rights issue. Again in 1990 problems arose and were handed directly to the incoming National Government who had just won the parliamentary elections after six years in opposition. The day after the election the new government was told by the RBNZ and Treasury that the BNZ was technically bankrupt (Bolger J B, 1996). The government, who still owned

[3] The 1st Labour Government of 1935-49 had nationalised both the RBNZ and BNZ but the 4th Labour Government 1984-90 allowed for the privatisation of the BNZ, POSB, and DFC.

a majority position in the BNZ, was forced to inject an additional $640 million of capital into the bank in order to keep it as a going concern.

The New Zealand economy in the 1990's was completely unrecognisable in comparison to what it had been in the 1980's. The capabilities of the RBNZ and existing regulation had been severely tested, and found wanting, by events at the DFC and BNZ. The RBNZ recognising this and at their own initiative began a review of New Zealand's system of banking supervision. They designed a system that addressed their concerns while still meeting their twin objectives of promoting the maintenance of a sound and efficient financial system and avoidance of significant damage to the financial system as a result of a registered bank failure.

The new disclosure regime, introduced on 1 January 1996, replaced most existing prudential regulation with market discipline while also increasing the incentives for a bank's management and board of directors to manage in a sound and responsible manner. However, not all regulation was removed, prudential regulation still requires that locally incorporated banks have a minimum capital of $15 million and be in line with the Basel Capital Accord. Restrictions on exposure levels and lending to related parties are also retained. The RBNZ gives some discretion for overseas banks but normally requires the bank to comply with the Basel standard as a minimum and all other requirements of the home supervisor.

The 1996 disclosure regime requires banks to issue two forms of disclosure statements to the public on a quarterly basis. The first is the Key Information Summary (KIS) for the bank. The KIS is designed primarily for retail depositors and contains information about the bank's credit rating, Basel capital ratios, peak exposure concentrations and exposures to related parties, asset quality and lastly profitability. This summary must be displayed prominently in every branch and given freely when requested by customers. The second statement is the bank's General Disclosure Statement (GDS) that adds considerable detail to the KIS, and includes corporate information, financial statements including a five year summary, detailed information on capital adequacy and risk exposures, as well as fund management, securitisation, management systems and market risk exposure.

The GDS is the subject of a limited audit on a six monthly basis and full external audit at balance date; there are no audit requirements for the GDS in the other quarters. Disclosure statements are required to be timely, audited statements should be published within three months and other statements within two months. Statements should be available on demand from the bank's head office or within five days from any branch of the bank. In addition, banks are required to publish the statement on their web sites and the RBNZ web site maintains the historical series of all KIS data.

A key feature of the system is the requirements placed on bank directors to sign all disclosure statements attesting that they comply with RBNZ prudential regulations, risk management systems are being properly applied, there are no exposures to related parties that are contrary to the interests of the bank, and all required disclosures are contained and that they are not false or misleading. Directors who sign a disclosure statement that is false or misleading may be jailed for up to three years or face personal liability for creditor's losses.

Although the New Zealand system of bank supervision relies heavily on the Basel Committee's third pillar of market discipline, consideration is given to pillar one, since New Zealand incorporated banks are required to maintain minimum Basel capital adequacy ratios. Foreign incorporated banks, which are branches of an overseas bank, are required to comply with the capital adequacy standards of the home country supervisor (RBNZ Banking System Dept, 2001). Banks in this study all comply with this requirement.

When it comes to the second Basel pillar, the supervisory review process, the RBNZ monitors published disclosure statements from individual banks as well as an annual meeting with bank management. There is no on site inspection of banks, although the RBNZ retains the power to intervene where bank distress or failure threatens the soundness of the New Zealand financial system.

If it is accepted that the purpose of banking supervision in New Zealand is the maintenance of a sound and efficient financial system, how do we judge the effectiveness of the RBNZ in achieving this goal?

It is not enough to say that during the time period the disclosure regime has been in place no bank has suffered financial distress. The comment made by one bank analyst (Tripe D W, 2001) is,

"*Until such a situation* [bank failure] *arises, it is arguable that it doesn't really matter what the Reserve Bank does. On balance, the lack of failures is more likely a reflection of a benign operating environment for banks than of the effectiveness of the disclosure regime*".

Waiting for a bank failure to occur in order to say that the banking regime is ineffective is also not a credible test. An alternative method of judging the effectiveness of the disclosure regime is to look at the behaviour of banks in the system and their depositors. The question becomes: does compliance with the disclosure regime cause banks to modify their behaviour in such a way as to ensure the maintenance of a sound and efficient financial system? An key facet of the New Zealand disclosure regime is that information is provided freely to bank customers so that they can compare the financial soundness of all banks in the market. Depositors armed with this information should then seek to optimise their portfolio decisions.

The Purpose of Bank Regulation

A sound and efficient financial system is an essential requirement of a modern economy and is the justification given for the regulations of banks. The Basel Committee on Banking Supervision (Basel Committee on Banking Supervision, 2001) suggests that a sound and efficient financial system can be achieved through application of the three pillars contained in their new Capital Accord. The three Basel Pillars are capital regulation, supervisory review and market discipline. The pillars are mutually reinforcing and should be taken as a complete package. However, as a minimum pillar one should be implemented, but the committee warn, that partial implementation of the package will not deliver an adequate level of soundness to the country's banking system.

Governments attempt, through the application of regulation, to moderate excessive risk taking of banks. This is necessary because few governments are prepared to risk the destabilising effects of the failure of a significantly large bank. These effects could include not only the loss of the savings of

individual citizens, but also the collapse of other financial institutions. As a result most governments apply some sort of 'Too-Big-To-Fail' policy when it comes to bank regulation. One problem identified with a 'Too-Big-To-Fail' is that it increases the moral hazard incentives for banks, encouraging even greater risk taking (Mishkin, 2000). This is a likely cause of the Barth, Capiro and Levine (2001) finding of an increased bank failure rate in countries with a greater degree of bank regulation and restrictions.

Market discipline should therefore attempt to reduce the moral hazard incentives caused when traditional regulation has resulted in the provision of either an explicit or implicit safety net. Market discipline must penalise either unwarranted risk taking, or just poor management in ways that government regulation is unable to (Calomiris, 1999). The penalty imposed by the market is a price penalty in that if market discipline is truly working banks that engage in unwarranted risk taking or are poorly managed will be required to face an increase in their cost of funds.

Studies in other countries have looked at the use of market data as an adjunct to more direct supervisory methods. These have focused on either a bank's share price or the price of its subordinated debt, relying on large institutional investors to monitor the behaviour of banks, and price their equity and debt instruments accordingly (Flannery, 1998). However, this is not possible in New Zealand as there is no observable market for bank equity and only a very limited market for subordinated bank debt.

Of the sixteen registered banks currently operating in New Zealand, fouteen banks (comprising 99% of bank assets) are owned by overseas parent banks, of the other two, Kiwi Bank is owned by NZ Post which is a State Owned Enterprise and the Taranaki Savings Bank is owned by a community trust. The New Zealand stock exchange does list the shares of ANZ and Westpac, but these are cross listings of the Australian parent bank.

Subordinated debt issued by New Zealand banks is of limited use in this research as most appears to be due to the parent bank or is issued in the name of the parent in an overseas market. The only bank

with subordinated debt marketed in New Zealand is the ANZ, who in July 2002 issued $300 million of subordinated debt which is listed on New Zealand Debt Exchange (NZDX). One would expect that the price history of this issue would give some insight into the risk profile of ANZ. However its value for this purpose is severely hampered in that 36% (Table 1) of the total $300 million is owned by New Zealand Central Securities Depository (NZCSD). NZCSD is owned by the RBNZ which holds securities for the benefit of individual members and facilitates the trading of these securities between members. NZCSD currently has an inventory of $80 billion securities, made up of Registered Certificates of Deposit, Bonds, Treasury Bills, Registered Notes, and Equities. There is no public information available as to trading amongst NZCSD members with details not reported to either the NZDX or NZSX. Public trading of this debt is very limited and trading volumes have fallen significantly since it was first introduced with yields remaining unchanged for extended periods of time. It appears that these holders who do not belong to NZCSD are long term holders of the security.

Research Aim

A basic precept in finance theory is that there is a positive relationship between risk and return. As the risk of an investment increases rational investors require a greater return in compensation. An underlying assumption of New Zealand's disclosure regime is the that those with funds at risk in the banking system will analyse the published Key Information Summaries and General Disclosure Statements when making their investment choices and act accordingly. The aim of our research is to establish if bank disclosure statements contain useful information for assessing the riskiness of New Zealand largest banks. If this is the case then we should be able to observe a change in the required risk premium of banks in response to changing disclosure risk indicators.

Earlier tests conducted by the authors (Wilson W.R, Rose L.C, & Pinfold J.F,) have found this may not to be the case when they tested the retail market (deposits less than $10,000). Many reasons for this can be advanced, the public's general lack of financial sophistication, the small benefit they derive from the cost of monitoring, and an implied government guarantee of the banking system. This study hopes to avoid the first two reasons given above by concentrating on deposits over $10,000.

The earlier tests of retail deposit rates also only considered one risk indicator, Tier 1 Capital. Event study methodology was used with an increase in T1 being classified as a positive event and the official cash rate was used as the market rate. We would expect that larger depositors would have a more sophisticated understanding of bank risk so have considered more risk indicators in this study. Additionally we have restricted this study to the five largest banks in New Zealand, who between them control 85% of banking assets, rather than the entire market. This restriction avoids any distortions to the results caused by small players in the market.

Sample Selection

Over the period of this study there were 18 registered banks in New Zealand, however this has since been reduced to 17 with the merger of ANZ and NBNZ into ANZ National Ltd in June 2004. The five registered banks that comprise this sample, ANZ Banking Group NZ Ltd (ANZ), The National Bank of New Zealand Ltd (NBNZ), Bank of New Zealand Ltd (BNZ), Westpac Banking Corporation New Zealand Division (WBC), and ASB Bank Ltd (ASB), are the five largest banks operating in the New Zealand market, who together comprise 85% of total bank assets in New Zealand.

All five are now owned by Australian parent banks, ANZ and NBNZ[4] are owned by the Australia New Zealand Banking Group Ltd, the BNZ is owned by the National Australia Bank, WBC is a branch operation of Westpac Banking Corporation, and the ASB is owned by the Commonwealth Bank of Australia. All compete fiercely against each other in the New Zealand market as their parents do in the Australian market.

The five sample banks have extensive branch networks throughout New Zealand. At the end of 2003 total branches at ANZ were 145, NBNZ 159, BNZ 177, WBC 198, and ASB 116, and although Kiwibank has a largest branch network of any, with 290 branches, these are in main agencies within Post Shop outlets, while the next largest branch network is that of Radobank NZ Ltd with 26 branches (Dinsdale A. J., 2004).

[4] NBNZ was purchased by ANZ from Lloyds TSB Group plc in October 2003.

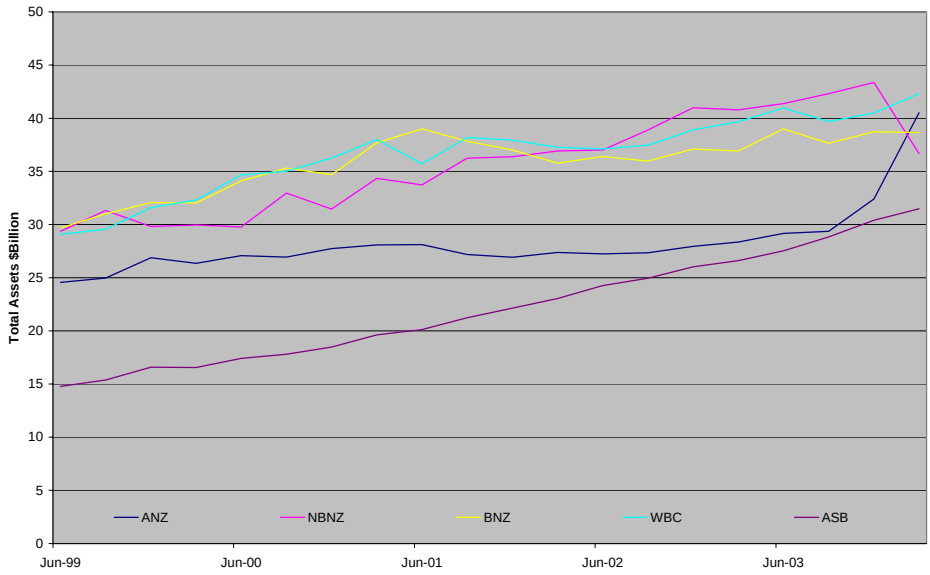

Figure 1 - Bank Total Assets

When total assets are used as a comparative basis again the similarities are immediately apparent with total assets, as at March 2004, ranging from $31 billion to $41 billion. In comparison the next largest bank in New Zealand is the Hong Kong and Shanghai Banking Corp with total assets of $6.2 billion at the same date. (RBNZ KIS's)

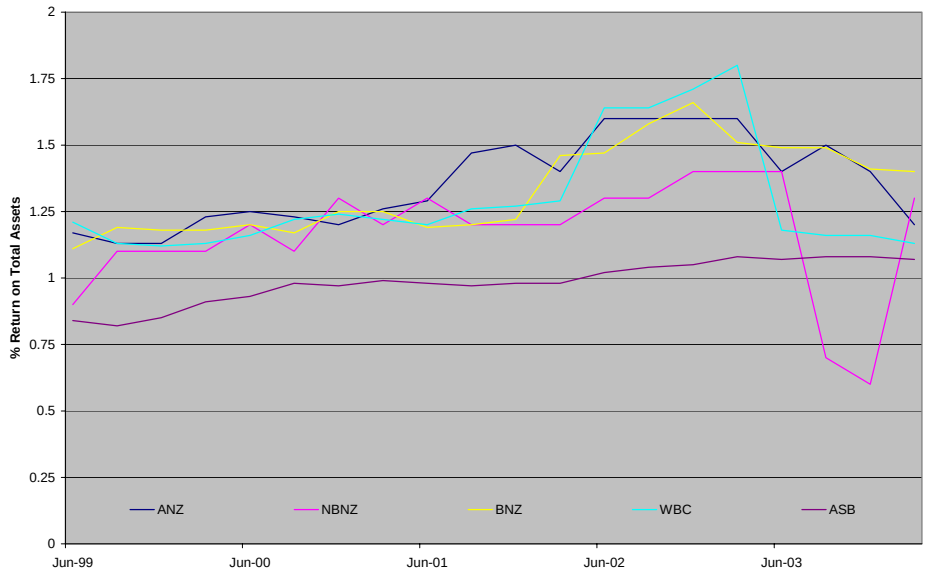

Figure 2 - Bank Profitability

These large banks are also all profitable with average return on total assets for each over the period, being ANZ 1.37%, NBNZ 1.13%, BNZ 1.31%, WBC 1.30% and ASB 0.90 % (RBNZ KIS's).

All five banks have a similar risk profile with risk ratings from Standard and Poor's of; ANZ AA-, NBNZ AA-, BNZ AA, WBC AA- and ASB AA. These were relatively stable throughout the period, with banks only having temporary deviations from their normal rating.

Sample Data

Interest Rates – Dependent Variable

Bank 3mth Deposit Rate (Bnk3mD): The three month term deposit rate, for the five banks in the sample, for deposits over $10,000 was collected for the period 30/06/1999 to 30/06/2004 from Datex New Zealand, as a weekly series.

Market 3mth Deposit Rate (Mkt3mD): The average three month term deposit rate, for all banks in the New Zealand economy, for deposits over $10,000, was collected for the period 30/06/1999 to 30/06/2004 from Datastream, as a weekly series.

Excess to the Market Rate (Excess): The dependant variable in the study was the excess return to the market return for each bank. This was calculated in TSP as Bnk3mD - Mkt3mD = Excess. The underlying hypothesis of this study is that banks which are considered more risky than others will be required to pay a greater risk premium on deposits.

Risk Indicators – Independent Variables

Risk indicators used were sourced from each bank's KIS's downloaded from the RBNZ web site and a judgement was made as to whether they were expected to have a positive or negative influence on risk

Standard and Poor's Rating (S_P_Rate) +ve. The S&P ratings, of long-term unsecured obligations payable in New Zealand, were given a numeric code to form the SP data series. In this series AA = 5, AA- = 6, and A+ = 7. Therefore the higher the number the riskier the bank.

Net Profit % TA (NP) -ve. Net profit for the previous 12 months as a percentage of average total assets. Profitable banks should be more capable of meeting their obligations therefore profitability is a negative indicator of risk

Tier 1 Capital % TA (T1) –ve. Tier 1 capital as a percentage of total assets is a fundamental indicator of risk in banking organisation. New Zealand banks are required to maintain T1 capital in excess of 4%. T1 capital generally represents equity capital and retained earnings which can be called upon to meet any losses that a bank might face, without the bank being forced to stop trading. The higher that T1 is the less risk faced by depositors.

Tier 2 Capital % TA (T2) –ve. T2 is capital other than T1 capital and in the main are, revaluation reserves, un-audited retained earnings, preference shares and long-term subordinated debt. This capital is only available to meet losses in the event of the winding up of the bank so provides less protection than tier 1 capital.

Total Assets (Size) –ve. A log transformation is applied to total assets to give the Size series. Large organisations are usually considered to be less risky than small organisations. Banks are no different in this, with large banks being considered less risky than small banks.

TA Change (Growth) +ve. Changes in total assets are taken as a proxy for growth. While a larger bank can be considered less risky growth its self often increases risk, so growth is a positive indicator of risk.

Impaired Assets % TA (IPasset) +ve. Impaired Assets are any credit exposure for which the bank is unlikely to receive the full amounts owed to it. IPasset should indicate an increase in risk as the bank has booked a large number of bad loans.

Specific Provision % TA (SpProv) +ve. SpProv is the amount of identified credit losses, or reduction in value of specific assets, that have expensed in income statement. As with impaired assets[5] this is an indicator of past bad loans and is therefore an indicator of risk.

Univariate Statistics

The univariate results in Table 2 tend to confirm that these banks are a peer group. Possibly the most unlike of the group is WBC which is the only member of the sample which is a branch operation of its Australian parent. The implication of this is that their S & P rating, Tier 1 and Tier 2 are for the entire banking organisation, not just the New Zealand bank as is the case with the rest of the sample. Westpac has the lowest average Capital and Tier 1, at 9.74% and 6.71% respectively, of the sample banks. The remaining statistics reported are for the New Zealand bank.

The growth of our sample banks is interesting, with the maximum growth of 172% at ANZ being when they purchased NBNZ at the end of 2003. NBNZ was an attractive acquisition for ANZ having achieved significant growth (maximum 48%) through its operational activities.

As a preliminary step in deciding on the appropriateness of our risk indicator variables, as predictors of the excess market return, the correlation matrix as reported in Table 3 was calculated. The first column shows the correlations between the excess market return and our risk indicators. Excess market return is negatively correlated with NP, T2, Size, and Qtr indicating that as these variables increase the required return decreases. The opposite is the case for the S & P rating, T1, Growth IPAsset, and SpProv. Correlation between T1 and T2 at -.517 and significant is interesting as it was originally thought that T1 and T2 was a measure of similar things, this would seem to indicate that T2 is being converted to T1 (or vice versa).

[5] Correlation between IPasset and SpProv is 0.7509

Hypothesis

The dependent variable Excess can be represented by the following equation;

Equation 1 - Base Hypothesis

Dependent Variable	Independent Variables	Expected Sign of Beta
Excess =	C	
	$+\beta_{Qtr}$Qtr	
	$+\beta_{NP}$NP	-ve
	$+\beta_{S_P_Rate}$S_P_Rate	+ve
	$+\beta_{T1}$T1	-ve
	$+\beta_{T2}$T2	-ve
	$+\beta_{Size}$Size	-ve
	$+\beta_{Growth}$Growth	+ve
	$+\beta_{IPASSET}$IPASSET	+ve
	$+\beta_{SPPROVE}$SPProv	+ve
where all *Betas* are significant and of the expected sign.		

In the above equation the Excess is dependent on the current period's disclosure statement. There is however a valid argument for using the previous or lagged disclosure statement. This is because depositors do not have current data when making their investment decision, the best data they have is the last quarter's disclosure statement. The counter argument to this is that the interest rate is not set by depositors rather, it is the bank that sets the rate, and as they have timely access to their accounting information, we should use the current disclosure data to predict the current excess to the market.

Regression Results

The first regression was the base hypothesis using all risk indicators as previously discussed resulted in an R Square of 26.7% and a highly significant F statistic of 3.472 (Regression 1). Examining the regression coefficients show significant t-stats for the coefficients of Size (.003), SPProve (.058), and Growth (.058) and the coefficients are of the expected sign. However the coefficients for S_P_Rating and IPAsset are negative rather than positive and T2 is positive instead of negative.

From this it would appear that smaller banks that are growing and have a high level of specific provisions are required to offer the market a greater risk premium in order to attract depositors.

Regression 1 - Dependent Variable: Excess, No Lag

Expected Sign		Unstandardized Coefficients		Std Coefficients		
		B	Std. Error	Beta	t	Sig.
	(Constant)	7.104	2.378		2.987	.004
	Qtr	.007	.010	.124	.675	.501
-ve	NP	-.159	.166	-.118	-.959	.340
+ve	S_P_Rate	-.059	.086	-.104	-.690	.492
-ve	T1	-.055	.051	-.155	-1.082	.282
-ve	T2	.014	.061	.040	.234	.815
-ve	Size	-.634	.209	-.550	-3.030	.003
+ve	Growth	.003	.002	.184	1.715	.090
+ve	IPAsset	-.088	.364	-.043	-.241	.810
+ve	SPProve	1.368	.713	.373	1.920	.058

The second regression was the base hypothesis using all previous risk indicators but lagged one quarter. This regression resulted in improvements in the R Square to 34.4% and F Statistic to 5.016 (regression 2). Coefficients for Lagged Size, Growth and SPProv are still significant and there has been an increase in significance of T1 (.122).

Regression 2 - Dependent Variable: Excess, Lag 1 Qtr

Expected Sign		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	7.731	2.316		3.339	.001
	Qtr	.019	.009	.342	1.963	.053
-ve	lag_NP	-.084	.176	-.065	-.479	.633
+ve	lag_S_P_Rate	-.021	.082	-.038	-.254	.800
-ve	lag_T1	-.074	.048	-.209	-1.564	.122
-ve	lag_T2	.068	.056	.197	1.219	.226
-ve	lag_Size	-.773	.202	-.653	-3.822	.000
+ve	lag_Growth	.008	.004	.219	1.966	.052
+ve	lag_IPAset	.394	.347	.198	1.135	.260
+ve	lag_SPProv	1.230	.644	.347	1.912	.059

Once again S_P_Rating and T2 are of the wrong sign and insignificant. The explanation for this may be that the correlations between the S_P_Rating and our other variables are obscuring their impact on the excess return.

To rectify this we remove S_P_Rating from the equation (Regression 3) and find that it has little impact on our R Square or F Statistic, which remain unchanged. However where we see an improvement is in T2 which has how become significant with a T Stat of 1.754 (.083), although the sign is still opposite to that originally expected.

Regression 3 - Dependent Variable: Excess, Lag 1 Qtr

Expected Sign		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	7.326	1.673		4.379	.000
	Qtr	.018	.009	.331	1.975	.051
-ve	lag_NP	-.094	.171	-.072	-.550	.584
-ve	lag_T1	-.071	.046	-.200	-1.561	.122
-ve	lag_T2	.077	.044	.222	1.754	.083
-ve	lag_Size	-.748	.175	-.631	-4.274	.000
+ve	lag_Growth	.008	.004	.217	1.963	.053
+ve	lag_IPAset	.390	.345	.196	1.131	.261
+ve	lag_SPProv	1.199	.629	.338	1.908	.060

Discussion and Conclusions

The aim of this research was to establish if bank disclosure statements contain useful information for depositors. We have found that the risk indicators contained within are able to explain a portion of the risk premium faced by individual banks. Significantly our best results were obtained using data lagged one quarter (regression 3) this would suggest that market reaction to disclosure statements is important when banks are determining their interest rates. The whole point of market discipline is that the actions of individual depositors have a moderating affect on bank management. Publication of the disclosure statements is therefore of value to New Zealand depositors.

Lagged variables of greatest significance are Size, Growth, SPProv, T1 and T2 capital. However, the sign of T2 is opposite to that originally anticipated (equation 1). On the face of it this appears nonsensical, as why should banks become less risky when T2 is reduced? The explanation however, is buried in our original definition of T2 capital, where we defined T2 capital as comprising of; revaluation reserves, unaudited retained earnings, preference shares and long-term subordinated debt. Of theses components revaluation reserves, preference shares and subordinated debt remain largely unchanged from quarter to quarter, leaving the unaudited retained earnings as the variable having the greatest impact on T2 capital and the cause of our unexpected result. Bank disclosure statements are only subject to audit on a six monthly basis, what is happening is that retained earnings increase T2 capital on the unaudited quarter before being converted to T1 capital on the subsequent quarter. Therefore the result we have obtained with T2 capital is a reflection of this conversion from T2 to T1 capital rather than a fundamental change in T2 capital.

Our results show that bank disclosure statements do provide valuable information and this information is communicated to depositors in a timely manner, one quarter. The only alternative available to depositors wishing to assess the credit quality of banks is to rely on the bank's Standard and Poor's rating. We find that the Standard and Poor's rating is not significant in determining a bank's risk premium and removing it from the regression does not detract from the overall explanatory power of the model.

In conclusion, we find that four factors are important in determining the risky of bank depositors and corresponding bank risk premiums. Firstly the banks overall size is important with larger banks being required to pay a lower risk premium. Secondly a bank's rate of growth is significant, with high growth banks having to pay higher rates for deposits. However, it is debateable as to if this due to an increase in risk or simply as a result of the bank 'buying' additional assets. The third factor of significance is the bank's level of specific provisions with past bad loans being a risk indicator. Lastly capital is important, specifically T1 capital with the more T1 capital the bank has the less risk it is.

While New Zealand's system of supervision by disclosure does not provide depositors with any absolute guarantees as to the safety of their deposits, it does arm depositors with information to judge the riskiness of competing banks.

Reference List

Barth, J. R., Caprio, G. Jr., & Levine, R. (2001). The Regulation and Supervision of Banks around the World: A New Database. Brookings-Wharton Papers on Financial Services, 0(0), 183-240.

Basel Committee on Banking Supervision. (1997). Core principles for effective banking supervision. Bank for International Settlements, 30.

Basel Committee on Banking Supervision. (2001). The new Basel capital accord. Bank for International Settlements.

Bolger J B (Prime Minister). (1996) Educating for tomorrow [Web Page]. URL D:\Bolger96.htm [1917, April 3].

Brash, D. T. (1991). The DFC failure - Lessons for banking supervision. Reserve Bank Bulletin, 54(1).

Brash, D. T. (1995). Banking Supervision in New Zealand. Economic Affairs, 15(2), 28.

Calomiris, C. W. (1999). Building an incentive-compatible safety net. Journal of Banking & Finance, 23(10), p1499, 21p.

Dinsdale A. J. (2004). Fiancial Institutions Performance Survey 2004. Wellington, NZ: KPMG.

Flannery, M. F. (1998). Using market information in prudential bank supervision: A review of the U.S. empirical evidence. Journal of Money, Credit & Banking, 30 (3), p273, 33p.

Ledingham, P. (1995). The review of bank supervision arrangements in New Zealand: The main elements of the debate. Vol. 58(3).

Mishkin, F. S. (2000). Prudential Supervision: Why Is It Important and What are the Issues?

Peare, P. (1999). An Introduction to the New Zealand Financial System. Auckland, New Zealand: Addison Wesley Longman.

RBNZ Banking System Dept. (1998). Your Bank's Disclosure Statement. What's In It For You?

RBNZ Banking System Dept. (2001). Statement of Principles: Bank Registration and Supervision.

Reuters Staff. (1989 June). N.Z. Government Moves to Boost BNZ Capital. Reuters.

Tripe D W. (2001). Banking supervision by disclosure - a review of the New Zealand regime. Working Paper.

Wilson W.R, Rose L.C, & Pinfold J.F. Market Discipline: New Zealand's Experiment in Banking Regulation. 17th Academy of Financial Services Denver: Academy of Financial Services.

Table 1 - ANZ Bond Holders (Source Datex NZ)

Total Top 25 Holdings ANZ Bonds	Value	%Total
NZ CENTRAL SECURITIES	108,217,000	36.07
CUSTODIAL NOMS LTD	9,336,000	3.11
MASFEN HOLDINGS LTD	6,500,000	2.17
SOUTHERN CROSS MEDICAL CARE SOC.	5,000,000	1.67
FORBAR CUSTODIANS LTD	4,271,000	1.42
PORTFOLIO CUSTODIAN LTD	4,000,000	1.33
FORBAR CUSTODIANS LTD	3,024,000	1.01
TAPPENDEN HOLDINGS LTD	3,000,000	1.00
FIRST NZ CAPITAL CUSTODIANS LTD	2,599,000	0.87
FRANCIS HORTON TUCK & O'R	2,000,000	0.67
HAROLD HILLIAM & O'R	2,000,000	0.67
FORBAR CUSTODIANS LTD	1,855,000	0.62
TIMARU DISTRICT COUNCIL	1,500,000	0.50
COLMAN SECURITIES LTD	1,500,000	0.50
K P S SOCIETY LTD	1,500,000	0.50
GUAN PING YANG	1,500,000	0.50
CUSTODIAL SERVICES LTD	1,451,000	0.48
UNIVERSITY OF OTAGO	1,310,000	0.44
ASHBURTON DISTRICT COUNCIL	1,200,000	0.40
STERLING HOLDINGS LTD	1,000,000	0.33
PAO-CHIN LIN YANG	1,000,000	0.33
MGL SUPERANNUATION LTD	1,000,000	0.33
FISHER & PAYKEL TRUSTEE LTD	1,000,000	0.33
CHIANG YUAN LEE	1,000,000	0.33
MAORI TRUSTEE	1,000,000	0.33
Total Top 25 Holdings	167,763,000	55.92
Total Number of Holders	2775	100.00

Table 2 - Univariate Statistics

Bank		Excess	NP	S_P_Rate	T1	T2	Size	Growth	IPAsset	SPProve
1 ANZ	Mean	.0018	1.3467	6.00	7.2052	3.5819	10.3045	19.6871	.2314	.0950
	Minimum	-.30	1.12	6	6.37	2.40	10.05	-3.10	.10	.04
	Maximum	.80	1.60	6	8.30	4.34	11.25	172.20	.41	.14
	Std. Dev	.31572	.17238	.000	.50059	.51773	.31722	50.70118	.10933	.03483
2 NBNZ	Mean	-.0360	1.1429	6.14	8.2905	2.1762	10.4656	11.3429	.4048	.2408
	Minimum	-.30	.60	6	6.80	1.40	10.29	1.40	.20	.14
	Maximum	.80	1.40	7	9.50	2.80	10.68	48.40	.70	.35
	Std. Dev	.24143	.23361	.359	.75954	.35483	.13163	11.38932	.15645	.06934
3 BNZ	Mean	-.1560	1.3186	5.05	7.0390	4.1657	10.4741	6.1105	.2171	.0533
	Minimum	-.45	1.08	5	6.10	3.17	10.29	-6.70	.08	.03
	Maximum	.90	1.66	6	8.26	4.71	10.57	17.68	.63	.10
	Std. Dev	.29251	.17021	.218	.83990	.34590	.08914	6.55461	.14443	.02263
4 WBC	Mean	-.2300	1.2905	6.00	6.7143	2.9619	10.4930	6.6857	.3190	.0790
	Minimum	-.50	1.12	6	6.10	2.10	10.28	-3.00	.20	.02
	Maximum	.20	1.80	6	7.20	3.60	10.65	19.10	.50	.15
	Std. Dev	.16207	.20996	.000	.37321	.52581	.11148	6.45091	.10305	.04247
5 ASB	Mean	.0915	.9767	6.33	7.5952	2.4190	9.9597	16.8905	.1290	.0366
	Minimum	-.30	.82	6	6.20	1.00	9.55	11.50	.10	.02
	Maximum	1.00	1.08	7	9.10	3.30	10.36	21.10	.24	.06
	Std. Dev	.37721	.08702	.483	.68372	.60218	.24646	2.41162	.04657	.00889
Total	Mean	-.0661	1.2150	5.90	7.3689	3.0610	10.3394	12.1433	.2603	.1009
	Minimum	-.50	.60	5	6.10	1.00	9.55	-6.70	.08	.02
	Maximum	1.00	1.80	7	9.50	4.71	11.25	172.20	.70	.35
	Std. Dev	.30383	.22595	.528	.84096	.87531	.28156	23.79520	.14970	.08346

Table 3 – Spearman Correlations

		Excess	Qtr	NP	S_P_Rate	T1	T2	Size	Growth	IPAsset	SPProve
Excess	Correlation Coefficient	1.000	-.363(**)	-.406(**)	.237(*)	.002	-.156	-.431(**)	.228(*)	.076	.226(*)
	Sig. (2-tailed)	.	.000	.000	.020	.984	.128	.000	.025	.461	.027
	N	96	96	96	96	96	96	96	96	96	96
Qtr	Correlation Coefficient	-.363(**)	1.000	.399(**)	-.055	.311(**)	-.069	.521(**)	-.041	-.531(**)	-.387(**)
	Sig. (2-tailed)	.000	.	.000	.576	.001	.486	.000	.680	.000	.000
	N	96	105	105	105	105	105	105	105	105	105
NP	Correlation Coefficient	-.406(**)	.399(**)	1.000	-.293(**)	.039	.359(**)	.459(**)	-.562(**)	-.038	.026
	Sig. (2-tailed)	.000	.000	.	.002	.691	.000	.000	.000	.699	.791
	N	96	105	105	105	105	105	105	105	105	105
S_P_Rate	Correlation Coefficient	.237(*)	-.055	-.293(**)	1.000	.270(**)	-.681(**)	-.322(**)	.262(**)	.026	.219(*)
	Sig. (2-tailed)	.020	.576	.002	.	.005	.000	.001	.007	.794	.025
	N	96	105	105	105	105	105	105	105	105	105
T1	Correlation Coefficient	.002	.311(**)	.039	.270(**)	1.000	-.517(**)	-.028	.015	-.064	.168
	Sig. (2-tailed)	.984	.001	.691	.005	.	.000	.776	.876	.514	.086
	N	96	105	105	105	105	105	105	105	105	105
T2	Correlation Coefficient	-.156	-.069	.359(**)	-.681(**)	-.517(**)	1.000	.067	-.327(**)	-.094	-.291(**)
	Sig. (2-tailed)	.128	.486	.000	.000	.000	.	.498	.001	.341	.003
	N	96	105	105	105	105	105	105	105	105	105
Size	Correlation Coefficient	-.431(**)	.521(**)	.459(**)	-.322(**)	-.028	.067	1.000	-.166	.125	.109
	Sig. (2-tailed)	.000	.000	.000	.001	.776	.498	.	.090	.203	.270
	N	96	105	105	105	105	105	105	105	105	105
Growth	Correlation Coefficient	.228(*)	-.041	-.562(**)	.262(**)	.015	-.327(**)	-.166	1.000	-.120	-.127
	Sig. (2-tailed)	.025	.680	.000	.007	.876	.001	.090	.	.221	.197
	N	96	105	105	105	105	105	105	105	105	105
IPAsset	Correlation Coefficient	.076	-.531(**)	-.038	.026	-.064	-.094	.125	-.120	1.000	.771(**)
	Sig. (2-tailed)	.461	.000	.699	.794	.514	.341	.203	.221	.	.000
	N	96	105	105	105	105	105	105	105	105	105
SPProve	Correlation Coefficient	.226(*)	-.387(**)	.026	.219(*)	.168	-.291(**)	.109	-.127	.771(**)	1.000
	Sig. (2-tailed)	.027	.000	.791	.025	.086	.003	.270	.197	.000	.
	N	96	105	105	105	105	105	105	105	105	105

Regression 1

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	SPProve, Growth, NP, S_P_ Rate, T1, Qtr, IPAsset, T2, Size[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Excess

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.516[a]	.267	.190	.27348

a. Predictors: (Constant), SPProve, Growth, NP, S_P_ Rate, T1, Qtr, IPAsset, T2, Size

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.337	9	.260	3.472	.001[a]
	Residual	6.432	86	.075		
	Total	8.769	95			

a. Predictors: (Constant), SPProve, Growth, NP, S_P_Rate, T1, Qtr, IPAsset, T2,

b. Dependent Variable: Excess

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.104	2.378		2.987	.004
	Qtr	.007	.010	.124	.675	.501
	NP	-.159	.166	-.118	-.959	.340
	S_P_Rate	-.059	.086	-.104	-.690	.492
	T1	-.055	.051	-.155	-1.082	.282
	T2	.014	.061	.040	.234	.815
	Size	-.634	.209	-.550	-3.030	.003
	Growth	.003	.002	.184	1.715	.090
	IPAsset	-.088	.364	-.043	-.241	.810
	SPProve	1.368	.713	.373	1.920	.058

a. Dependent Variable: Excess

Regression 2

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	lag_ SPProv, lag_ Growth, lag_S_P_ Rate, Qtr, lag_T1, lag_NP, lag_T2, lag_Size, lag_IPAset[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Excess

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.587[a]	.344	.276	.25859

a. Predictors: (Constant), lag_SPProv, lag_Growth, lag_ S_P_Rate, Qtr, lag_T1, lag_NP, lag_T2, lag_Size, lag_ IPAset

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.019	9	.335	5.016	.000[a]
	Residual	5.751	86	.067		
	Total	8.769	95			

a. Predictors: (Constant), lag_SPProv, lag_Growth, lag_S_P_Rate, Qtr, lag_T1, lag_ NP, lag_T2, lag_Size, lag_IPAset

b. Dependent Variable: Excess

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.731	2.316		3.339	.001
	Qtr	.019	.009	.342	1.963	.053
	lag_NP	-.084	.176	-.065	-.479	.633
	lag_S_P_Rate	-.021	.082	-.038	-.254	.800
	lag_T1	-.074	.048	-.209	-1.564	.122
	lag_T2	.068	.056	.197	1.219	.226
	lag_Size	-.773	.202	-.653	-3.822	.000
	lag_Growth	.008	.004	.219	1.966	.052
	lag_IPAset	.394	.347	.198	1.135	.260
	lag_SPProv	1.230	.644	.347	1.912	.059

a. Dependent Variable: Excess

Regression 3

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	lag_SPProv, lag_Growth, lag_T1, lag_Size, lag_T2, lag_NP, Qtr, lag_IPAset[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Excess

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.586[a]	.344	.283	.25719

a. Predictors: (Constant), lag_SPProv, lag_Growth, lag_T1, lag_Size, lag_T2, lag_NP, Qtr, lag_IPAset

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.014	8	.377	5.696	.000[a]
	Residual	5.755	87	.066		
	Total	8.769	95			

a. Predictors: (Constant), lag_SPProv, lag_Growth, lag_T1, lag_Size, lag_T2, lag_NP, Qtr, lag_IPAset

b. Dependent Variable: Excess

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	7.326	1.673		4.379	.000
	Qtr	.018	.009	.331	1.975	.051
	lag_NP	-.094	.171	-.072	-.550	.584
	lag_T1	-.071	.046	-.200	-1.561	.122
	lag_T2	.077	.044	.222	1.754	.083
	lag_Size	-.748	.175	-.631	-4.274	.000
	lag_Growth	.008	.004	.217	1.963	.053
	lag_IPAset	.390	.345	.196	1.131	.261
	lag_SPProv	1.199	.629	.338	1.908	.060

a. Dependent Variable: Excess