

09S2 125361 Seminar in Banking

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# Market Discipline in NZ Registered Banks

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# Research Objective

- Is the NZ Registered Bank (RB) disclosure regime effective in moderating excessive risk taking in RBs?
- Brash (2001), the provision of timely information on individual bank condition should,
  - “allow the market to react to developments affecting a bank’s financial condition – rewarding those banks which are well managed and penalising those which appear to be less well managed.”



# Research Questions

- If disclosure is effective there should be an observable and statistically significant relationship between RB disclosure statements risk indicators, and
  1. the risk premium required of RBs? and or
  2. RB deposit market shares?
- This will be taken as an indication of the effectiveness of New Zealand's disclosure regime in moderating excessive risk taking in RBs



# Sample RBs

- NZ banking system is almost entirely owned by foreign banks.
- Split between banks which are incorporated in NZ and those which operate as a branch of their overseas parent bank.
- RBNZ policy of local incorporation for systemically important banks.
  - banks whose New Zealand liabilities, net of amounts due to related parties, exceed NZ\$15 billion (RBNZ Staff, 2007)



# Sample RBs

- Analysis restricted to systemically important RB's (ANZNat, ASB, BNZ and WBC).
  - comprising over 80% of total bank assets in 2007,
  - all locally incorporated, and
  - extensive retail branch networks.
- Many would also consider the TSB Bank and Kiwi Bank to be systemically important as they are both locally owned and predominately retail in focus.
- For the sake of completeness consideration was also given to including Rabobank NZ Ltd in the sample.



# Difficulties in Including TSB, Kiwi and Rabo

- TSB

- owned by a community trust,
- Tier1 capital of around 15%
- 100% domestic funding

Included  
with  
Dummy

- Kiwi

- new start so financial ratios extreme, for example
  - 2001 Tier 1 capital 558%; 2007, 7.6%
  - 2001 Profit -19%; 2007 0.7%
- NZ Post ownership may infer Govt Guarantee

Excluded

- Rabo

- NZ funding \$1.8B Related Party Deposits \$NZ2.7B
- Rabobank Nederland guarantees all Rabo creditors.

Excluded



# Required Datasets

- Discipline can be applied at different levels by different groups of investors
  - Equity investors
  - Wholesale debt holders
  - Retail depositors
- Risk premium data,
- Deposit level data and
- Risk indicator data



# Focus on Retail Data

- **RB Funding Sept 2007**

- **Retail**

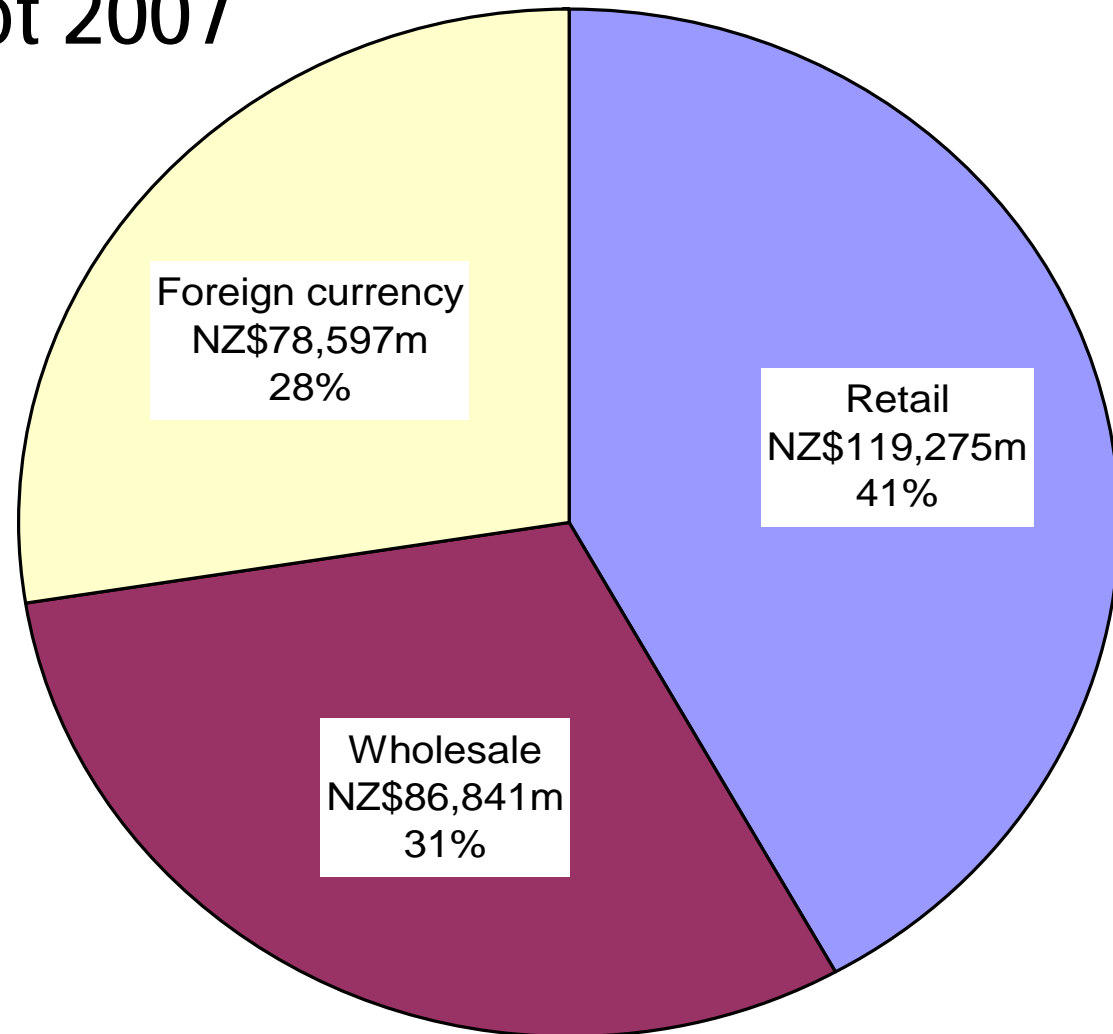
- \$119 B
- 41%

- **Wholesale**

- \$86 B
- 31%

- **Foreign**

- \$78 B
- 28%





# Risk Premium Data

- Hannan and Hanweck (1988) and Flannery and Sorescu (1996)
- IRG database provides retail term-deposit rates for the period June 2001 until June 2006
- 3-month deposit rate used
- RP calculated by subtracting the 3-month bank bill rate
- Mean RP for 3-month deposits -0.79%



# Deposit Level Data

- Hannan and Hanweck (1996; 2002)
  - argue depositors apply market discipline by not making new deposits or by withdrawing deposits from risky banks
- Change in quarterly deposit market share (first difference of deposit share) for each bank
  - $\text{RB Dep from Customers}^* / \text{total bank \$NZ deposits}^{**}$ 
    - \*GDS, \*\*RBNZ SSR data
  - NZ\$ deposits were used as the denominator as it is a finite market in comparison to an infinite international bank deposit market



# Risk Indicator Data

- CAMEL framework using KIS data where possible
  - Capital
  - Asset Quality
  - Management
  - Earnings
  - Liquidity (GDS)



# Capital

- Tier1, -ve
  - offers an alternative repayment source in a crisis,
  - providing a buffer to debt investors
    - Cole and Gunther (1998), Murata and Hori (2006) and Koetter et al. (2007).



# Asset Quality

- **SpecProv,** +ve
  - Indicate doubtful debts and bad debts, with higher levels suggesting low asset quality
    - Cole and Gunther (1998).
- **Growth,** -ve
  - Financial institutions are expected to grow steadily, however, increased lending above the normal level lowers loan quality
    - Clair (1992).
- **LnSize,** -ve
  - Greater diversification lowers risk.
    - Murata & Hori (2006)



# Management

- $\ln\text{Size}$ , -ve
  - Larger banks are expected to be better managed, with personnel of a higher calibre and improved reporting.



# Earnings

- Profit, -ve
  - Higher earnings mean the Bank is more able to make debt repayments.



# Liquidity

- Liquidity -ve

$$\text{Liquidity\%} = \frac{\text{Cash} + \text{Govt Stock} + \text{Bank Bills} + \text{Public Sector Debt}}{\text{Total Assets}}$$

- Higher liquidity indicates the ability to meet obligations
  - Martinez Peria and Schmukler (2001), Murata and Hori (2006) and Urgan et al. (2008).
- However other studies find liquidity does not serve well as an early warning indicator.
  - Martin, (1977)



# Macro-Economic Data

- To guard against regression results being affected by economic factors external to the bank, a vector of macroeconomic variables have been added to the regression analysis to control for a possible bias.
- $\Delta$ GDP,
- $\Delta$ CPI
- NZ\$ TWI
  - Semenova (2007) included control variables for income, inflation, and exchange rates in Russian banks.
  - As both GDP and CPI are announced on a quarterly basis in the middle of the month following quarter end we use the lagged percentage change in our robustness check.
  - TWI is directly observable from foreign exchange markets so there is no need to lag the value.



# Risk Premium Equation

B&F 2009  
MCFS

$$RP_t = C - b_1 \text{Tier1}_t + b_2 \text{SpecProv}_t - b_3 \text{Growth}_t - b_4 \text{LnSize}_t - b_5 \text{Profit}_t - b_6 \text{Liq}_t \\ + b_{Bank} \text{Bank} + b_{GDP} \Delta \text{GDP}_{t-1} + b_{CPI} \Delta \text{CPI}_{t-1} + b_{TWI} \text{TWI}_t + \varepsilon.$$

$$RP_{t-1} = C - b_1 \text{Tier1}_t + b_2 \text{SpecProv}_t - b_3 \text{Growth}_t - b_4 \text{LnSize}_t - b_5 \text{Profit}_t - b_6 \text{Liq}_t \\ + b_{Bank} \text{Bank} + b_{GDP} \Delta \text{GDP}_{t-1} + b_{CPI} \Delta \text{CPI}_{t-1} + b_{TWI} \text{TWI}_t + \varepsilon.$$

$RP_t$  is the risk premium for individual registered banks at disclosure *publication* calculated by subtracting the NZ 90 day bank bill rate 90 day term deposit rate.  $C$  is a constant term,  $\beta_{1-6}$  are regression coefficients for RI's extracted from published disclosure statements,  $\text{Bank}$  is a dummy variable taking the value of (1,0) to indicate individual banks, macroeconomic control variables are change in the lagged gross domestic product ( $\Delta \text{GDP}_{t-1}$ ), the lagged consumer price index ( $\Delta \text{CPI}_{t-1}$ ) and the New Zealand trade weighted index (TWI), and  $\varepsilon$  is an error term.  $RP_{t-1}$  is the risk premium for individual registered banks at disclosure *balance* date.



# Deposit Market Share Equation

B&F 2009

MCFS

$$\Delta DMS_t = C + b_1 \text{Tier1}_t - b_2 \text{SpecProv}_t + b_3 \text{Growth}_t + b_4 \text{LnSize}_t + b_5 \text{Profit}_t + b_6 \text{Liq}_t \\ + b_{Bank} \text{Bank} + b_{GDP} \Delta \text{GDP}_{t-1} + b_{CPI} \Delta \text{CPI}_{t-1} + b_{TWI} \text{TWI}_t + \varepsilon.$$

$$\Delta DMS_{t-1} = C + b_1 \text{Tier1}_t - b_2 \text{SpecProv}_t + b_3 \text{Growth}_t + b_4 \text{LnSize}_t + b_5 \text{Profit}_t + b_6 \text{Liq}_t \\ + b_{Bank} \text{Bank} + b_{GDP} \Delta \text{GDP}_{t-1} + b_{CPI} \Delta \text{CPI}_{t-1} + b_{TWI} \text{TWI}_t + \varepsilon.$$

$\Delta DMS_t$  is the deposit market share for individual registered banks at disclosure *publication* calculated using the figure for deposits from customers in their quarterly GDS over RBNZ total bank deposits extracted from SSR data. C is a constant term,  $\beta_{1-6}$  are regression coefficients for risk indicators extracted from published disclosure statements, Bank is a dummy variable taking the value of (1,0) to indicate individual banks, macroeconomic control variables are change in the lagged gross domestic product ( $\Delta \text{GDP}_{t-1}$ ), the lagged consumer price index ( $\Delta \text{CPI}_{t-1}$ ) and the New Zealand trade weighted index (TWI), and  $\varepsilon$  is an error term.

$\Delta DMS_{t-1}$  is the deposit market share for individual registered banks at disclosure *balance date*

Model
(Constant)
Tier1
2009
MCFS
SpecProv%
Growth%
LnSize
Profit%
Liquidity%
TSB
$\Delta\text{CPI}_{t-1}$
$\Delta\text{GDP}_{t-1}$
TWI
R Square
Adj R Square
F Statistic

Model
(Constant)
Tier1
MCFS
SpecProv%
Growth%
LnSize
Profit%
Liquidity%
TSB
$\Delta\text{CPI}_{t-1}$
$\Delta\text{GDP}_{t-1}$
TWI
Dependent V
R Square
Adj R Square
F Statistic

Model
(Constant)
Tier1
SpecProv%
Growth%
LnSize
Profit%
Liquidity%
TSB
$\Delta\text{CPI}_{t-1}$
$\Delta\text{GDP}_{t-1}$
TWI
Dependent V
R Square
Adj R Square
F Statistic



# Discussion Points

- RP - Significant RI Coefficients
- Relationship stronger at "Balance Date" ????
- Liquidity wrong sign ????
- TSB a significant dummy
- $\Delta\text{CPI}_{t-1}$  a significant Coefficient
- $\Delta\text{DMS}_t$
- What next?



## RP - Significant RI Coefficients

- Pub date RI model - Tier1<sup>\*\*\*</sup>, SpecProv<sup>\*\*\*</sup>, LnSize<sup>\*\*\*</sup>, Profit<sup>\*</sup> & Liquidity<sup>\*\*</sup>
- Bal date RI model - Tier1<sup>\*\*\*</sup>, SpecProv<sup>\*\*\*</sup>, Growth<sup>\*\*\*</sup>LnSize<sup>\*\*\*</sup>, Profit<sup>\*\*\*</sup> & Liquidity<sup>\*\*</sup>
- Liquidity wrong sign to be explained by risk or market discipline!!!!



# Relationship stronger at “Balance Date” ????

- Adjusted R-Squares in models greater at balance date
- Can't be result of market discipline
- Could be result of mgmt action
  - aware of the RI values used in the regression models prior to publication
  - same information used in day to day decision making.
  - Mgmt aware of a deteriorating situation in the bank's accounts would not wait until the accounts are audited and disclosure statements published before taking corrective action.
- Result is “Self-Discipline not “Mkt.-Discipline”



# Liquidity wrong sign ????

$$\text{Liquidity}\% = \frac{\text{Cash} + \text{Govt Stock} + \text{Bank Bills} + \text{Public Sector Debt}}{\text{Total Assets}}$$

- Not consistent with depositor action

*But Consistent with managing liquidity needs of the bank*

- a bank which considers its liquidity to be too high, could reduce deposit rates (lowering the risk premium), as deposit growth falls (or slows); it would consume existing liquid assets in place of deposits.
- and vice versa



# TSB a significant dummy

- Tier1 loses significance
- Dummies for other banks
  - Publication date ANZNat\*, ASB\* & NBNZ\*\*
  - Balance date no significance
- TSB different from other RBs



## $\Delta\text{CPI}_{t-1}$ a significant Coefficient

- macroeconomic variables, resulted in a substantial increase in the explanatory power
- $\text{RP} = 3\text{m Dep Rate} - 3\text{m Bank Bill}$
- Inflation impacts on Bank Bill more than Dep Rate increasing RP
- RBNZ monetary policy  $\Delta\text{CPI}$  2-3%
- RBNZ tool OCR
  - OCR pass through Liu, Margaritis, and Tourani-Rad (2008) and Petro, McDermott, and Tripe (2001)
  - Flannery and James (1984) found retail deposit rates to be *sticky*



## $\Delta DMS_t$

- $\Delta DMS_t$  at publication based solely on disclosure RIs resulted in an adjusted R squares of 0.322.
- Including the TSB (significant at 1% level) and macroeconomic variables (insignificant) lowered the adjusted R square to 0.309.
- Coefficients for Growth% were significant at the 1% level in both publication date models reported, Profit% was significant at the 5% level in Model 6 (pub) and in Model 7 (pub) Liquidity% was significant at a 5% level.
- The original expectation was for RIs coefficients for Growth%, Profit% and Liquidity% to be positive.
- It is not possible to mount a convincing argument for their negative coefficient using a risk framework.



# Conclusions

- Evidence of self-discipline in NZ RBs
- Why?
- Bank directors explicitly responsible for bank safety and soundness.
- Self-discipline more effective than regulator-discipline or market-discipline
  - Management
    - has better information
    - can act more promptly and more directly
    - can back off when problems corrected



## What next?

- Gov't "temporary" guarantee of deposits should be allowed to lapse.
- If the guarantee is to remain it should be priced correctly.