Disclosure of registered banks' market risks

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In their normal course of business banks are exposed to losses as prices in financial markets change. Banks will be required to disclose quantitative indicators of their exposures to interest rate, foreign exchange and equity market risks in accordance with a methodology which has been prescribed by the Reserve Bank. This article discusses the reasons why the particular market risk measurement framework was adopted, explains how each of the market risk exposures is calculated, and offers some guidance on the interpretation of the data which will be disclosed.

I Introduction

From the June quarter of 1996 registered banks will be required to include in their quarterly disclosure statement information on their key market risk exposures. The purpose of the market risk disclosures is to provide users of the statements with simple quantitative indicators of interest rate exposure, foreign currency exposure and equity exposure.

Banks are required to disclose each exposure as a dollar amount, and as a percentage of the bank's equity at the end of each quarter. Banks are also required to disclose their peak exposures within their accounting period if the exposure is materially higher than the end-of-quarter figure.

II A framework for measuring market risk

There are many ways market risks can be defined and measured, and most banks have their own way of doing this for internal risk management purposes. The Reserve Bank, after consultation with registered banks, has established bench-mark models for measuring each exposure which it believes are appropriate for public disclosure purposes, which are relatively simple to produce, and which will allow the exposures faced by different banks to be compared. These models are based on a "standard" model prepared by the Basle Committee on Banking Supervision. While the standard model is used to impose capital charges for market risk under the Basle Capital Accord, New Zealand banks are not required to hold capital above the eight percent minimum to cover their market risks. The disclosure of these risks should provide banks with sufficient incentive to hold additional capital to cover them.

The greater part of the article is devoted to the interest rate exposure measure. For most banks this is the most important market risk that they face, or could potentially face, and it is the most technically complex measure. Some of the issues that are discussed in this context also apply to the other two exposure measures.

Interest rate exposure

The Reserve Bank's interest rate exposure measure provides a "value at risk" measure of interest rate exposure. A value at risk measure captures, in a single dollar value, the potential change in the economic value of the bank when interest rates change in an assumed manner (which has a given probability of occurring), and when the bank responds to the interest rate changes in a particular way.

Value at risk is not the only way that interest rate risk can be measured. For example, many banks also define interest rate risk as the risk that their reported income will be affected by interest rate changes. Because accounting measures of bank income are not the same as the change in the economic value of the bank, the two measures may produce quite different results. The main difference between the two measures is that economic income captures the change in value of all of a bank's financial assets and liabilities when interest rates change, whereas the accounting concept of income often captures only the change in the value of assets and liabilities which are held for trading purposes. Many banks look at both measures of risk and, in addition, conduct stress tests to see how their bank would be affected in particularly adverse market conditions.

While any single measure cannot capture all of the dimensions of risk, for a number of reasons a value at risk measure was thought to be the most appropriate for a disclosure regime. First, it is relatively simple to use because it captures several components of interest rate risk in a single number. This allows the user to see if there has been a material change in a bank's interest rate exposure and, with caution, to do comparative analysis. Secondly, the potential changes in the economic value of the bank is the most relevant concept from a bank creditor's perspective because the level of the bank's net worth provides an important protection for their deposits. Thirdly, the value at risk methodology is increasingly being used as a standard tool for measuring interest rate risk internationally and underpins the interest rate risk measurement framework put together by the Basle Committee on Banking Supervision.

The other conceptual issue that the Bank had to consider was whether to allow banks to report using their own measure of interest rate exposure, providing it was a value at risk measure. There would be some advantages for banks in doing so. First, it would reduce compliance costs because banks could adapt their existing systems, at a relatively low cost, to produce the required data. Secondly, it would mean that banks would be more likely to be reporting the interest rate exposure measure that they were actually targeting.

The problem with this approach is that there is no single, or best, way to produce a value at risk figure. It requires the input of a number of technical assumptions about the volatility of different interest rates and the ways in which they tend to move together - or, in technical terms, how they are correlated. A decision also has to be made about what probability of loss the value at risk figure should be based on. The lower the probability the higher the value at risk figure. Thus, banks facing similar economic circumstances could report quite different levels of interest rate exposure depending on the precise assumptions made. This would make it difficult for users of the report to make comparisons between banks, and might also give banks an incentive to adopt more favourable assumptions so that they would compare better with their peers.

Because of the importance that is likely to be placed on the relative positions of banks it was appropriate to define a benchmark model that would impose a common measuring standard. To ensure that the compliance costs of using this model are not excessive, banks have been given some flexibility in how they produce the required exposure measures. They are allowed to use their own systems provided the measures of exposure which are reported are not materially lower than the figures which would have been produced using the Reserve Bank's standard model. This option is particularly helpful in the reporting of peak exposures. Banks do not have to set up systems which will report the Reserve Bank model figures on a daily basis. Rather, they can adapt their existing systems to allow them to monitor whether their intra-quarter exposures are materially higher than their end-of-quarter figures. Banks may also choose to report on the basis of their exposure limits (rather than their actual exposures) provided those limits are based on value at risk figures and produce results which are not materially lower than the Reserve Bank model.

The Reserve Bank measure of interest rate exposure differs from the Basle standard model in one key respect. While the Basle model is only applied to a bank's trading book (assets and liabilities which are held for the purpose of making short-term trading gains), the Reserve Bank model applies to the whole of a bank's balance sheet. The reason for this wider coverage is that banks can have significant interest rate exposures in their banking books (the part of their balance sheet which includes their deposit and lending operations), and an interest rate exposure measure which left this out would be seriously incomplete.

III Deriving the exposure measures

Interest rate exposure

A bank's aggregate interest rate exposure is derived by first measuring exposures in individual currencies and then aggregating these individual exposures in a prescribed manner. The first step is to allocate the bank's financial assets and liabilities (including off-balance sheet items and derivatives) to a set of time bands in an interest rate repricing schedule according to their maturity or earliest repricing date (the date on which the interest rate can be changed), whichever is the earlier. The reason that financial assets and liabilities are allocated to time bands is that the sensitivity of their value to a change in interest rates increases with maturity. The interest rate repricing schedule is a tool which provides the base information that allows a bank to calculate how the value of the whole portfolio will change in response to a set of interest rate changes of a given magnitude. A simple example which shows how the components of the interest rate exposure measure are calculated is shown in Box 1.

For most assets and liabilities this allocation process is reasonably straightforward. For example, a term deposit which still had three years to maturity would be placed in the two to four year time band. A variable rate mortgage would be placed in a time band which reflected the bank's assessment of the time it would take to adjust the rate in response to a movement in the general level of interest rates. If the bank thought that the lag was about six weeks then variable rate residential mortgages would fall in the one to six month time band.

However, there are some assets and liabilities whose economic characteristics do not closely match their contractual terms. A strict application of the term or repricing date rule mentioned above would not reflect the economic risk faced by the bank. The most important examples of this are zero, or low interest, savings and cheque accounts whose rates of return do not respond to changes in the general level of interest rates. These deposits can typically be accessed immediately by individual depositors, so their contractual maturity is very short. However, in aggregate the amount of funds deposited in these accounts tends to be stable (apart from seasonal variations) and is not sensitive to interest rate changes. This means that the economic value of these deposits changes as interest rates change.

For example, if the wholesale interest rate were eight percent and only three percent interest were paid on the account, then a margin of five percent would be available to meet the costs of operating the account and to contribute to the bank's profits. If, however, the wholesale interest rate were to fall by one percent, and the structure of interest rates indicated that this fall was expected to persist into the future, then the bank would have lost one percentage point of income over the life of the aggregate level of deposits. In other words, the economic value of the liability would have increased and the value of the bank would have fallen. To capture this effect, many banks treat these liabilities as having a notional maturity well beyond the contractual term.

The problem is that banks can have quite different views on how long the notional maturity of these liabilities should be despite the fact that their deposits appear to have similar characteristics to the low interest rate deposits held by other banks. Those assuming a longer maturity point to the historical stability of the aggregate deposit level in response to interest rate changes and assume that this stability will hold a reasonable way into the future. Those using a shorter maturity point to the possibility that in a competitive market individual banking products will be increasingly priced at their economic value regardless of the level of interest rates. The value of the deposits to the bank will not be so sensitive to interest rate changes.

Because of the disparity of treatment by different banks, and the importance of producing disclosures which are broadly comparable as between banks, it was decided to impose a common assumption, reflecting the average practice in the industry, for rate insensitive retail products (RIRPs). They are to be spread evenly over five years of the time bands.

Once a bank's financial instruments are allocated to the appropriate time band, the model measures three components of interest rate exposure. The first, which is called *directional risk*, measures the change in the economic value of assets and liabilities when long and short-term interest rates all move in the same direction. To calculate directional risk the assets and liabilities in each time band are first netted to obtain the net open position. This net open position is then multiplied by a risk weight to derive the directional risk for the time band. The risk weight is calculated by multiplying an assumed interest rate change for the time band by the duration of the time band. The model assumes an interest rate shock of a given size which ranges from 1 percent for short maturities to 0.6 percent for long maturities. These assumed interest rate changes are consistent with the Basle standard model. Duration is a measure of the sensitivity of the asset or liability to a one percentage point change in interest rates. The longer the maturity the higher the sensitivity. In the example in Box 1, a $100 million five year bond is placed in the four to six year time band. As the assumed interest rate change is 0.7 per cent and the duration is 4.3 the risk weight is .03. Thus the directional risk for the time band is $3 million.

The next step is to add the risk weighted open positions in each time band to obtain the total directional risk. In the example, the directional risk is quite low for ABC bank because the model allows two kinds of offsets. First, assets and liabilities in the same time band offset because an interest rate increase will result in a fall in value of both the asset and liability. Secondly, risk weighted net positions with different signs can be offset. By appropriately structuring its balance sheet a bank can report zero directional risk.

The measurement of directional risk is the core of the model because very large interest rate exposures which are of prudential concern are very likely to be generated by a significant mismatch between risk weighted assets and liabilities. The interest rate exposure calculation for XYZ bank illustrates the exposures of a bank which has invested in long assets in the expectation of a gain if interest rates fall.

By itself, however, directional risk will understate interest rate exposure. The reason is that the directional risk measure assumes that interest rates will always behave in the prescribed manner. That is, when short-term interest rates change by one percentage point (or some multiple of this) it is assumed that long-term rates will always change by 60 percent of the change in the short term rate. In technical terms, it assumes that interest rates are perfectly correlated. However, interest rates can change in a variety of ways which can affect the economic value of a bank which has no directional risk. Suppose, for example, that a bank had risk weighted liabilities of $5 million in a short time band and risk weighted assets of $5 million in a long time band and had, therefore, no directional risk. If short-term interest rates went down by one percentage point while long-term rates went up 0.6 of a percentage point (that is, if the yield curve steepened), then the value of the bank's liabilities would increase by $5 million and the value of its assets would fall by $5 million. The value of the bank would fall by $10 million.

The risk that the yield curve will move in other than the prescribed way is called *yield curve risk*. The model accounts for this by calculating what are called "horizontal disallowances". That is, when directional risks have been reduced because there have been offsets between risk weighted positions in different time bands, then part of this offset is "disallowed". The disallowance figures have been set to reflect the statistical properties of yield curves. Short and long interest rates are not highly correlated so there is a large disallowance figure when there are directional risk offsets between these time bands. Offsets between adjacent time bands attract a lower disallowance factor. The sum of the horizontal disallowance figures represents the bank's yield curve risk.

The other reason why the directional risk measure understates risk is that assets and liabilities in the same time band do not always move exactly together so the changes in the value of offsetting asset and liabilities do not precisely match. This risk is called *basis risk*. It is accounted for by multiplying the matched risk adjusted positions in each time band by a "vertical disallowance" factor. This factor is 20 percent when at least one instrument in the matched position is a RIRP, and five percent when they are other financial assets and liabilities. The five percent disallowance factor assumes a high correlation between the assets and liabilities (normally over .99 depending on the structure of the banks balance sheet). A higher disallowance factor is imposed for RIRPs because the way they respond to interest rate changes could change in unexpected ways. The sum of the vertical disallowances in each time band represents the bank's basis risk.

The measures of directional, yield curve and basis risk are given the same sign as the directional risk figure and are then added to produce the value at risk figure for each currency. Some banks which have large option books may also, if the risks are material, add an additional risk figure to account for the relatively small elements of option risk which are not captured by the above methodology. A bank may be long in some currencies (it will lose if interest rates go up) and short in others (it will gain if interest rates go up).

A bank's aggregate exposure to interest rate risk across all currencies is the greater of the absolute value of the sum of all the individual long positions, and the absolute value of the sum of all the short positions. For example, if the bank had long positions $5 million and $6 million in two currencies and short positions of $4 million and $3 million in two others, then the interest rate risk exposure would be $11 million. This methodology will generally give a higher exposure figure than would be generated by a statistical measurement of the overall risk that takes account of the correlations between interest rates in different currencies, which are often in the 0.4 to 0.6 range.

The Reserve Bank model takes only partial account of these correlations. It is not, however, as conservative as the Basle standard model, which requires the long and short positions to be added to give the overall figure. In the above example the interest rate exposure figure under the Basle approach would be $18 million. The Basle model assumes almost the worst of all possible worlds. When the individual currency positions are all of the same sign it assumes that interest rate movements are perfectly correlated and that there are no diversification benefits from being exposed to a number of imperfectly correlated markets. The assumption takes account of the fact that while interest rates might be imperfectly correlated in normal times, very large shocks tend to be felt across many currencies. However, whenever there is a short position in a currency, when a positive correlation would reduce risk, the sign is assumed to be negative. The Reserve Bank model adopts the first assumption but takes some account of positive correlations when there are long and short positions.

The interest rate exposure figure is always reported as a positive number. Thus, it is not possible to tell whether a bank will gain or lose if interest rates go up. The reason is that the number is intended to serve as an indicator of a bank's exposure to interest rate movements rather than to disclose potentially commercially sensitive information about a bank's position.

Foreign currency exposure

The methodology for deriving banks' foreign currency exposure is based on the Basle standard methodology and is similar to the one that banks were using to report foreign currency exposure to the Reserve Bank of New Zealand prior to the new disclosure regime taking effect. The first step is to determine the foreign currency exposure in a single currency. This is the New Zealand dollar value of the total amount of its financial assets in that currency (including off-balance sheet exposures) less the total amount of its liabilities in that currency.

The individual foreign currency exposures are then aggregated using the same rule that was used to aggregate interest rate exposures in different currencies. A bank's aggregate foreign currency open position is the greater of the absolute value of the sum of the long positions and the absolute value of the sum of the short positions.

A scaling factor of 0.08 is applied to convert the open position, which is a measure of the dollar amount that is subject to currency risk, to a measure of how much could be lost. It creates a notional value at risk figure. This ensures that the currency exposure numbers are on a comparable scale to the interest rate exposure figures. Otherwise users of the accounts who were not familiar with the difference between a measure which shows the amount at risk and one that shows the amount that could be lost in certain circumstances, could be misled into thinking that a bank's foreign exchange exposures were much larger than its interest rate exposures. The 0.08 adjustment factor is used because this is the factor that is applied to derive the capital charge for foreign exchange risk under the Basle Capital Accord. As the capital charge for interest rate risk is the interest rate exposure figure, this implies that the Basle approach is based on a rough equivalency of risk between the scaled foreign exchange exposure figure and the interest rate exposure figure.

The foreign exposure figure is always reported as a positive number regardless of whether the bank has a long or short position.

Equity exposure

The methodology for measuring banks' equity exposure is also based on the Basle standard model. The measure mainly captures share investments. Structural positions such as equity investments in associates of the banking group are not included. A bank's equity exposure in a single currency is the aggregate amount of its equity instrument claims or assets (whether on or off balance sheet) less the aggregate amount of its obligations or liabilities. A bank's aggregate equity position is the sum of the absolute value of both its long and short positions in different currencies. The aggregate exposure is expressed as a positive number regardless of whether the bank has a net long or short position. As with foreign currency exposure this number is multiplied by .08 to convert it to a notional value at risk figure.

As few New Zealand banks have equity exposures this is a relatively unimportant part of the market risk disclosure regime.

IV Interpreting the market risk disclosures

Interest rate exposure

The focus of this section is on the interest rate exposure measure as this is the most complex and important of the market risk measures. The first question that is likely to be asked when a bank discloses an interest rate exposure of, say, $15 million, is "What does this figure mean?" Unfortunately it is not possible to provide a precise answer to this question, partially because of the way the Basle standard model is constructed. To see why not, it is helpful to look first at how the results of a value at risk measure which has been derived by feeding historical data into a portfolio model can be interpreted. The statistical analysis will generate a distribution of gains and losses on the portfolio which is dependent on interest rate volatilities and correlations over the chosen historical period. An arbitrary probability figure is then chosen - say, one time out of a hundred. The value at risk is the dollar value figure which separates the highest one percent of losses from the rest of the distribution of returns. Thus if the value at risk figure were, say, $5 million it could be given the following interpretation: providing the markets behave in the same way as they did in the six months when the bank estimated the data for the model, then there is a one percent chance that it could lose $5 million or more on any trading day. The value at risk figure can only be an approximation of the "true" risk that the bank faces because the risk of assets and liabilities change over time, and history may not be a good guide to the actual riskiness of the portfolio.

It is not possible to give such a precise statistically-based interpretation of the Basle based model because it is not directly based on statistical analysis. The interest rate change assumptions which generate the directional risk figures were loosely based on the historical experience of the OECD countries over the last five years and can be, very roughly, interpreted as measuring a one in three year event. However, a number of conservative factors have been wound into the model to account for extreme events. These decrease the probability of a loss of the magnitude of the value at risk figure, but it is not possible to say by how much. On the other hand it is arguable that the interest rate change figures are not as conservative in the New Zealand case as they are for major OECD economies because financial markets in small open economies tend to be more volatile. Overall, a general view of the interest rate exposure figures is that they are indicative of the kinds of losses that could be sustained once in every several years if market conditions are not too abnormal.

It should be noted that the figures only represent a potential for loss. Even if a large adverse interest movement occurs it may be possible for a bank to get out of at least part of its position before the shock has run its course. On the other hand, the exposure figure does not set a ceiling on the possible loss. There is always the possibility of a larger loss if market conditions change radically and a bank is unable to get out of its position because markets have become relatively illiquid.

Another point that users of the disclosure documents might want to understand is how important market risk is compared to credit risk, which is measured by the eight percent capital charge on risk adjusted assets. Some sense of how the risks equate could be useful in making a judgement about the strength of a bank with low credit risk but high market risk compared to one with higher credit risk but lower market risk.

Unfortunately, the credit risk charge and interest rate risk exposure measure are not directly commensurate and are better thought of as indicators of different kinds of risk. The latter is an indicator of the kinds of losses than could occur once in say, every five years. While higher losses are always possible in extreme circumstances the exposure figure is likely to be close to an upper bound because banks can usually reduce their exposure in the face of adverse market conditions. Credit exposures, on the other hand, are generally much less liquid, and may have to be carried over an entire downturn. The credit exposure measure is indicative of the kinds of losses that could be incurred during an extreme recession.

Because of the difficulty in placing a precise meaning on the absolute value of the interest rate exposure figure it is best used for comparative purposes. It can be useful in judging whether a bank's interest rate exposure has changed materially over time and in comparing one bank's exposure with another's. If a bank had been reporting a low interest rate exposure figure of three percent of equity for some time, and then this figure suddenly jumped to, say, fifteen percent of equity, then it is likely that the bank has taken a view on future interest rate movements and that it has positioned its book to take advantage of it. The interest rate exposure figure would be showing that the bank had developed an increased appetite for market risk.

Some caution should, however, be exercised in interpreting relatively small movements in the exposure figure. There could be other explanations for a small increase other than a bank consciously taking a position on the future movements in interest rates. For example, if a bank has a low level of market risk it may choose not to target it exactly all of the time. As the bank's assets and liabilities move about in the normal course of business the interest rate exposure measure will also change. A second reason is that the bank may be targeting its own measure of value at risk which is calibrated differently from the Reserve Bank measure. The Reserve Bank measure may show a small increase when there has been no change in the internal measure. Large changes in the risk position will, however, show up under either measure.

The interest rate exposure figure can be used to assess which banks have relatively large exposures compared to the industry average. Again, not too much should be read into relatively small differences in the exposure figures. For the reasons outlined above these are unlikely to say anything about banks' comparative willingness to accept risk. In addition, banks will have different capacities to hedge their exposures. Purely wholesale banks can, if they wish, reduce their exposure to quite low levels. On the other hand, banks with large retail portfolios are not able to hedge all of their risks because their RIRP liabilities cannot be totally hedged. It is possible to hedge the directional risk but there is nothing that banks can do about the basis risk generated by the RIRPs. A certain level of risk is inevitably associated with this kind of retail banking business and does not necessarily imply a willingness to take a position on interest rate movements. As different banks have different proportions of RIRP liabilities in their portfolios they will report different levels of risk that they cannot hedge.

A further reason why a retail bank may show a higher level of risk than the industry average is that it might take a different view on the appropriate maturity of its RIRP liabilities and choose to manage its interest rate exposure using its own assumption. If it used a longer maturity for RIRPs and hedged that exposure with bonds, then part of the bonds would generate directional risk under the Reserve Bank methodology.

Foreign currency and equity exposures

In some ways the foreign exchange and equity exposure figures are easier to interpret than the interest rate exposure figure. There is no real issue as to what constitutes a foreign exchange or equity position, whereas an interest rate position is defined by the structure of a particular model. Thus it is easier to make judgements on whether a bank's exchange rate and equity exposures have increased over time or whether one bank has a larger exposure than another. However, when it comes to assessing the size of these exposures relative to other market risk exposures and credit exposures, the problems are similar to those that make the interpretation of the absolute size of the interest exposure measure difficult.

V Conclusion

The purpose of the market risk disclosures is to provide users of banks' disclosure statements with a single quantitative measure of banks' interest rate, exchange rate and equity exposures. While it was recognized that all of the dimensions of market risk cannot be captured in one summary measure it was felt that a single indicator would be easier to use. Too much information, in what can be a very complex area, could be difficult for users to interpret. Banks are required to report end-of-quarter and peak intra-quarter exposure figures using either a prescribed benchmark model, which is based on the Basle standard model, or their own model, providing the figures they disclose are not materially lower than those that would have been produced using the prescribed model. The market risk disclosures are not intended to provide an exact measure of the amount of exposures that a bank has at a point of time. Rather they are intended to serve as rough indicators of the bank's potential to incur losses, which can be used mainly to judge whether a bank's exposures have changed over time, and whether it is carrying materially more risk than its peers.

Box 1

Interest rate exposure calculations for two banks

Set out in this box are two simplified examples of interest rate exposure calculations for two banks with different risk management strategies. Both banks have assets of $10,600 million, liabilities of $10,000 million and equity of $600 million. Neither has any off-balance sheet items or any RIRPs. ABC bank has a relatively conservative strategy and has almost completely hedged against directional risk. It is, however, exposed to yield curve risk of $10.5 million because the directional risk generated by its long term assets is hedged by shorter term liabilities. It would be exposed to a loss if short-term rates were to fall and long-term rates were to rise. Its total exposure is 2.9 percent of its equity. XYZ bank has a strong view that long-term interest rates are going to fall and has invested in long-term bonds to take advantage of that move. Its total interest rate exposure figure of $81.6 million (13.6 percent of equity) is dominated by the directional risk figure of $60.6 million. Basis risk is a small component of total risk for both banks.

Calculation of interest rate exposure - ABC Bank

ABC Bank	Zone 1			Zone 2		Zone 3			Risk
Residual maturities	0 to 1	1 to 6	6 to 12	1 to 2	2 to 4	4 to 6	6 to 10	over 10	Amount
	Months			Years					(Abs value)
($000's)									
A Total assets or long positions	3,300	1,500	2,000	3,500	100	100	100	0	
B Total liability or short positions	(3,000)	(1,000)	(2,500)	(3,000)	(500)	0	0	0	
C Net position (A - B)	300	500	(500)	500	(400)	100	100	0	
D Duration weights	0.0	0.3	0.7	1.4	2.5	4.3	5.8	7.3	
E Interest rate change	1.0	1.0	1.0	1.0	0.8	0.7	0.6	0.6	
F Risk weights % (D x E)	0.0	0.3	0.7	1.4	2.0	3.0	3.5	4.4	
G Directional risk (C x F)	0.0	1.5	(3.5)	7.0	(8.0)	3.0	3.5	0.0	3.5
H Basis risk	0.0	0.2	0.7	2.1	0.1	0.0	0.0	0.0	3.1
I Yield curve risk									10.5
Total interest rate risk									17.1

Calculation of interest rate exposure - XYZ Bank

XYZ Bank	Zone 1			Zone 2		Zone 3			Risk
Residual maturities	0 to 1	1 to 6	6 to 12	1 to 2	2 to 4	4 to 6	6 to 10	over 10	Amount
	Months			Years					(Abs value)
($000's)									
A Total assets or long positions	2,700	1,500	2,000	1,000	900	1,000	1,500	0	
B Total liability or short positions	(3,000)	(1,000)	(2,500)	(3,000)	(500)	0	0	0	
C Net position (A - B)	(300)	500	(500)	(2,000)	400	1,000	1,500	0	
D Duration weights	0.0	0.3	0.7	1.4	2.5	4.3	5.8	7.3	
E Interest rate change	1.0	1.0	1.0	1.0	0.8	0.7	0.6	0.6	
F Risk weights % (D x E)	0.0	0.3	0.7	1.4	2.0	3.0	3.5	4.4	
G Directional risk (C x F)	0.0	1.5	(3.5)	(28.0)	8.0	30.0	52.5	0.0	60.5
H Basis risk	0.0	0.2	0.7	0.7	0.5	0.0	0.0	0.0	2.1
I Yield curve risk									19.0
Total interest rate risk									81.6