NEW ZEALAND FINANCE COMPANIES AND RISK PREMIUMS

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Abstract

This paper uses the recent implosion of the finance company sector in New Zealand to examine a number of interesting questions. In the period between the upsurge in the default rate in 2006 and the implementation of a Government Guarantee Scheme in October 2008, we find that the debt risk premiums within the deposit rates of these institutions were grossly inadequate to compensate for default risk, that depositors continued to make significant new deposits, and that the failure of the companies to increase the risk premiums was likely out of concern that this would aggravate perceptions of default risk.

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1. Introduction

Finance companies play a significant role in the New Zealand economy, providing much of the funding for consumer credit, small businesses and development projects (Wilson et al, 2010). Funds generally come from the general public, in the form of fixed-term deposits for terms up to three years. After experiencing very low default rates in the period 2001-2005, the sector was then subject to a wave of defaults in the 2006-2010 period with the default rate reaching 35% in 2008 and aggregate deposits declined from a peak of $9.6b in June 2007 to $3.1b in June 2012 (Reserve Bank, 2012). In the middle of this crisis, in October 2008 and in response to the Australian government having introduced a guarantee scheme (consequent upon the Global Financial Crisis) rather than the peculiar circumstances afflicting the finance companies, the New Zealand Government introduced a deposit guarantee scheme that guaranteed the retail liabilities of some New Zealand financial institutions; the scheme covered many finance companies as well as banks (initially for two years but subsequently extended in a more restricted form till December 2011), thereby largely eliminating the adverse impact of defaults upon retail depositors in many of these finance companies during this period.[1]

This extraordinary sequence of events permits a number of important propositions to be tested. The first of these relates to the risk premiums on the deposit rates of these finance companies. Although they are not market prices, because they are unilaterally set by the companies themselves, they might still be presumed to reflect prevailing default risks, i.e., the high default rates should have induced a significant reassessment of the default risks in the remaining firms because of some similarities in the underlying risks and also because the initial wave of defaults may have significantly reduced the rollover rate for maturing deposits and/or the flow of new deposits thereby raising the default risk amongst those companies whose assets were both illiquid and with a duration that exceeded their liability duration. If so, the finance companies might have been driven to significantly raise their risk premiums during the 2006-2008 period and then, upon the introduction of the Government guarantee in October 2008, significantly reduced them. On the other hand, because the risk premiums on deposit rates are selected by the companies themselves, they also act as a signal to potential depositors about the level of default risk in these institutions; institutions might then have been wary of releasing an adverse

[1] Coverage was not automatic and required companies to apply to the Treasury, who assessed them against various criteria. Some applications from finance companies were declined but 30 were accepted into the scheme and nine of these subsequently failed (Controller and Auditor General, 2011, pp. 11-16).

signal by raising risk premiums on deposit rates during the crises period in which default rates rose sharply. In fact, if the adverse signal from raising the risk premiums was strong enough to reduce deposit levels, raising risk premiums would be utterly counterproductive.

The second issue is whether depositors in finance companies were in general naïve, in the sense of underestimating the risk premiums that were required to compensate them for the default risks in the sector. This view has been expressed by both the Retirement Commission (2010, page 34) and the Commerce Committee inquiry into finance company failures (Commerce Committee, 2011, pp. 10-11), and it is consistent with both the widespread recourse to celebrity endorsements by these companies and proposed legislation to make these celebrities liable to investors for false statements.[2] Testing this naivety question is not necessarily straightforward. If risk premiums rose significantly in response to the default wave, this would be indicative of depositor sophistication. However, if risk premiums did not significantly rise in response to the default wave, it would not follow that depositors were naïve. Instead, the evidence would lie in their reaction to the now inadequate risk premiums. If depositors rolled over most of their maturing deposits and/or made significant new deposits during this period, this would be evidence of naivety; otherwise, it would be evidence of depositor sophistication.

The third issue concerns the cause of the wave of defaults during 2006-2008. Some observers have argued that it was primarily a consequence of poor risk management and/or criminal conduct (Fiennes and O'Connor-Close, 2012, page 10; Commerce Committee, 2011, page 11; Retirement Commission, 2010, page 34). An alternative view is presented by Wilson et al (2010, page 3), who argue that the collapse of five finance companies in the third quarter of 2007 induced a wave of withdrawals (at the maturity dates of their deposits). Some companies were unable to fully accommodate this outflow, because their asset duration exceeded their liability duration and because many of their assets were illiquid, which pushed them into default. This aggravated the loss of confidence in the sector amongst depositors and therefore accelerated the loss of deposits in the surviving firms. Thus a contagion effect akin to a bank-run occurred, which was only brought to an end by the introduction of the Government guarantee in October 2008.

[2] Instant Finance is endorsed by former rugby league player Stacy Jones, Provincial Finance was endorsed by former All Black Colin Meads, and Hanover Finance was endorsed by former newsreader Richard Long.

The final question concerns the extent and implications of information asymmetry between depositors and companies. Some observers have argued that the asymmetry was very significant and arose from poor levels of disclosure and complex firm structures that obscured related-party transactions (Wilson et al, 2010, pp. 13-14; Commerce Committee, 2011, pp. 11-17). One consequence of this would be to aggravate any contagion that was present, i.e., the first significant wave of defaults would prompt a wave of deposit withdrawals from other finance companies because depositors would extrapolate the problems in the first group of companies to all others in the sector even if such extrapolation were unwarranted. A further consequence of asymmetry is that, especially in the presence of depositor naivety, it would discourage firms from raising risk premiums in response to the defaults of other companies because depositors would interpret any rise in the risk premium as a much stronger signal about risks in the sector than the default incidence, leading to a fall in deposits.

We seek to investigate these questions. Section 2 presents a theoretical model that relates the deposit rate to an expected rate of return, the probability of default and the losses conditional upon default. Section 3 describes the data used. Section 4 presents results and interpretation and Section 5 concludes.

2. Theory

Following Fons (1987), consider a financial institution that offers deposits with promised interest rate Y, default probability p, loss proportion in the event of default of L, and expected rate of return k. Per \$1 of deposits the present value of the future payoffs is thus:

$$\$1 = \frac{(1-p)\$1(1+Y) + p\$1(1+Y)(1-L)}{1+k}$$

Solving for the promised interest rate Y_c that compensates for default risk yields the following:

$$Y_c = \frac{k + pL}{1 - Lp} \tag{1}$$

Alternatively, solving for the probability of default p_I implied by the observed deposit rate yields the following:

$$p_I = \frac{Y - k}{L(1+Y)} \tag{2}$$

The expected rate k can be modelled using the standard form of the Capital Asset Pricing Model (Sharpe, 1964; Lintner, 1965; Mossin, 1966):

$$k = R_f + M\beta_d$$

where R_f is the risk-free rate, M is the market risk premium, and β_d is the debt beta. Schaefer and Strebulaev (2008, Table 4) estimate the debt betas for US corporate bonds over the period 1996-2003 at 0.006 to 0.15 for AAA to B grade bonds. At this lowest level of B, with a market risk premium of 5%, the systematic risk component of k would be a non-trivial 0.75%. Very few New Zealand finance companies have ever had credit ratings and, amongst the five that had them at 31 December 2010 (the end of our data series), they ranged from AA to CCC with a median of BB.[3] The situation regarding other finance companies is less clear but, since these credit ratings are from S&P and S&P only provides ratings in response to a request from the firm, those firms without such ratings are likely to be worse risks. In view of the range in ratings, the significant impact on k for low-rated bonds, and the uncertainty about the situation for unrated firms, the most that can be done here is to say that the expected return on these bonds k must be at least the risk free rate R_f. Substitution of this into equations (1) and (2) yields:

$$Y_c \geq \frac{R_f + pL}{1 - Lp} \tag{3}$$

$$p_I \leq \frac{Y - R_f}{L(1+Y)} \tag{4}$$

The usual proxy for the risk free rate is government bonds. However these have superior liquidity to deposits at financial institutions. So, for the present purposes, the better proxy for the risk free rate is that on a bond with minimal default risk and liquidity comparable to deposits

[3] These firms are Asset Finance Limited, Avanti Finance Limited, Broadlands Finance Limited, F&P Finance Limited, and UDC Finance Limited. The current ratings are available from the website of the Reserve Bank (http://www.rbnz.govt.nz/finstab/nbdt/creditratings/3905820.html) and earlier pages were provided by Yvonne Deneys of the Reserve Bank. Their ratings at 31 December 2010 (all from S&P) were B, BB-, B, BB, and AA.

at finance companies. This suggests use of deposit rates at New Zealand banks with an S&P credit rating of at least AA. This is similar to the process adopted in Fons (1987, page 87). Furthermore, Elton et al (2001) show using US data that the probability of an AA rated bond defaulting within one year is zero.

3. Data

Four data sources are employed in this paper. Firstly, in respect of deposit interest rate data, this was obtained weekly for three and twelve month deposits for finance companies and banks over the period 1.7.2001 to 31.12.2010, from JDJL Ltd.[4] For each of three and twelve month deposits, deposit rates are averaged over companies.

Secondly, in respect of finance company failures, the fate of all such companies that departed the deposit rate series referred to above was investigated drawing upon the Companies Registry and news articles (NBR, Business Week, Stuff, etc). The failure date is treated as the earlier of the departure date from the deposit rate series or the date on which an investigation source revealed that failure had occurred. Finance companies that were wound up, merged with another company, or were purchased by another company, resulting in depositors receiving their funds or their deposits being adopted by the new institution, were not classed as failures.

Thirdly, in respect of losses arising from failure, this was obtained from JDJL for the period 2006-2010.[5] JDJL offers loss rates on a range of finance companies for which it does not hold interest rate data and therefore the average loss rate can be calculated for both the entire set of finance companies and the subset for which interest rate data was held. Furthermore the average loss rate can be determined by a simple average or by weighting in accordance with the deposits at the time of failure. The loss rates presented by JDJL are based upon recoveries as a proportion of the amount owing at the date of default, and therefore make no allowance for the time delays in the recovery process. Consequently these loss rates are understated.

Finally, in respect of deposits with finance companies, we draw upon quarterly Reserve Bank (2012) data on aggregate deposit levels for finance companies, and their decomposition by term to maturity.

[4] This company operates the popular New Zealand website www.interest.co.nz.

[5] JDJL does not hold loss rates prior to 2006.

4. Results

4.1 Debt Premiums

We start by examining the debt premiums of the companies. Over the period from 1.7.2001 to 31.12.2010, the JDJL finance companies deposit rate data reveal that there were 108 finance companies operating in New Zealand for part or all of that period and that 36 failed, with all but two of the failures occurring after early 2006. The failures from 2006-2010 and their timing are listed in Table 1. Using a simple average of loss rates presented by JDJL, the average loss rate amongst finance companies in New Zealand in the 2006-2010 period was 0.62 using all finance companies for which JDJL held such information and 0.64 using the subset of these companies for which JDJL held deposit rate data. If a weighted average of loss rates is used, these results become 0.55 and 0.48 respectively. So the band is 0.48 to 0.64. We will consider values across this band. As noted in the previous section, these loss rates are understated by the lack of any allowance for the delay in the recovery process.

Using equation (4) coupled with L = 0.48 and the time-series of values for both finance company average deposit rates Y and average deposit rates for banks with at least an AA credit rating, the resulting maximum implied default probabilities p_I are shown in Figure 1 for three-month deposits and Figure 2 for twelve-month deposits. Unsurprisingly, the implied default probabilities for 12 month deposits exceed those for three month deposits, the implied default probabilities rise after the wave of defaults commencing in mid 2007 and they fall to low levels after the Government Guarantee Scheme was introduced in October 2008.

By contrast, the results from comparing these maximum implied default probabilities with the actual incidence of default in the immediate past are surprising. In respect of the three month maximum implied default probabilities, we compare them with the incidence of default in the preceding three months (the number of failures as a proportion of the number of finance companies at the end of that period) and the results are shown in Figure 1. In respect of the twelve-month maximum implied default probabilities, we compare them with the incidence of default in the preceding twelve months (the number of failures as a proportion of the number of finance companies at the end of that period) and the results are shown in Figure 2. The results in both Figures 1 and 2 are striking. The incidence of defaults rises dramatically from early 2006 to the introduction of the Government guarantee in October 2008, to as much as 34% for the yearly observations and 13% for the quarterly observations (equivalent to 52% on an annual

basis). By contrast, the maximum implied probabilities of default in the finance company deposit rates do not exceed 5% during this period and there is no material increase in these maximum implied probabilities over this period. So, the default probabilities implied by deposit rates fail to reflect the prevailing incidence of default. The results are particularly striking for the twelve month deposits over the period from August 2006 to March 2008, during which the associated incidence of default (over the preceding twelve months) rises from 2% at the beginning of that period to 34% at the end whilst the maximum implied probability of default for the twelve month deposit rate does not move outside the 2-4% band and actually falls during the first half of that period.

These results arise from using a loss rate of 0.48, which is at the lower end of the estimates obtained from the New Zealand data and is also an underestimate. Following equation (4), higher estimates of this loss rate would lower the maximum implied probability of default. Thus, with a higher loss rate, the inconsistency between the actual default rates and those implied by the deposit rates would be even more striking. Accordingly, the results presented above are conservative.

These loss rates are also based upon New Zealand data over the period 2006-2010, and much of the data will therefore have arisen after the implied default probabilities were calculated. Clearly this is unsatisfactory. Since we cannot obtain New Zealand data prior to 2006, we consider foreign data from periods before 2006. Almeida and Philippon (2007, pp. 2566-2567) estimate the loss rate at 0.59 using US data on defaults for speculative-grade bonds over the period 1982-2001. Altman et al (2005) gives a similar average figure for the US over the same period but the annual figures vary from 0.38 to 0.75 and are positively related to the default rate (which does not exceed 10% per year). Since higher annual default rates are observed in most of the New Zealand data during the critical 2006-2008 period, the Altman et al analysis implies a relevant loss rate exceeding 75%. Both this figure and Almeida and Philippon's figure of 59% exceed the figure of 48% used in our analysis. So, again, our results are conservative.

In summary, New Zealand finance companies experienced a dramatic rise in defaults from early 2006 to the introduction of the Government Guarantee Scheme in October 2008, to as much as 34% for the yearly observations and 13% for the quarterly observations (equivalent to 52% on an annual basis). By contrast, the maximum implied probabilities of default in the finance company deposit rates did not exceed 5% during this period and there was no material increase

in these maximum implied probabilities over this period. So, the default probabilities implied by deposit rates completely failed to reflect the prevailing incidence of default in the period from mid 2006 till the introduction of the Government Guarantee Scheme in October 2008.

4.2 Investor Naivety

We turn now to the question of whether depositors were naïve in the sense of underestimating the risk premiums that were required to compensate them for the default risks in the sector. Since risk premiums did not rise to reflect the evident increase in default risk, naivety is tested by examining the reaction of depositors to these inadequate premiums, i.e., the willingness of depositors to roll over deposits and/or place new deposits. Prior to the upsurge in the sector default rate in 2006, no conclusion can be drawn based on the information presented here because the default rate that occurred after 2006 might be a sufficiently rare event as to be compensated by the risk premiums over a much longer period. However, the behaviour of depositors after the upsurge in the sector default rate in 2006, and especially from mid 2007, without a material increase in deposit risk premiums does allow conclusions to be drawn about depositor naivety. If depositors were in general sophisticated, new deposits and/or rollovers would have fallen sharply once the sector default rate significantly increased, leading to a significant reduction in aggregate deposits. By contrast, if depositors were in general naïve, aggregate deposits would not have significantly declined.

These competing propositions are testable using Reserve Bank (2012) data on aggregate deposit levels for finance companies, and their decomposition by term to maturity, over the relevant period as shown in Table 2.[6] As shown in Table 1, the failures essentially started in 2006, with four such cases, followed by nine cases in 2007 (all in the latter half of the year) and a further 14 cases in 2008. So, the situation was clear from late 2007. Consequently we focus upon the period from June 2007, just before the great default wave, to September 2008, just before the Government Guarantee Scheme was introduced. Over this period, 20 companies failed and aggregate deposits fell from $8.9b (the peak) to $7.3b (a decline of 17%). However, some of this decline will have been from payouts or write-offs consequent upon receiverships rather than the withdrawal of deposits. Furthermore, since depositors could not in general withdraw their term deposits until maturity date, the significant statistic here is not the extent of the fall in

[6] The Table omits the figures for small finance companies (assets under $100m), because their deposits are not classified by term to maturity. They represent less than 10% of total deposits in the relevant period. In addition, the 2-90 day category includes deposits for firms in receivership, which are reclassified as such upon receivership (information courtesy of Yvonne Deneys of the Reserve Bank.

deposits but the fall relative to what would have occurred if all maturing and call deposits had been withdrawn. In view of this, we conduct some ancillary tests.

The first of these is to examine the call deposits, which are not constrained by a maturity date and which would have evaporated if depositors were sophisticated. Instead, they increased over the first year of this crisis period, falling only in the last three months, as shown in Table 2. Secondly, we examine the call deposits and those with a maturity of 2-90 days, which potentially could have been withdrawn over the subsequent three months, and express the actual reduction in deposits over that three month period as a proportion of those deposits. For example, consider the three months from June 2007 to September 2007, during which total deposits fell from $8.877b to $8.459b as shown in Table 2 (a reduction of $418m). At the beginning of this period, the total of call deposits and 2-90 day deposits was $2.628b. Thus the reduction in deposits over this quarter was only 16% of what would have occurred if all maturing and call deposits had been withdrawn and no new deposits had been obtained. Table 2 shows the corresponding figures for all quarters up to September 2008. The average of these "drop-off" rates is only 11%. Thus, for every $100 that depositors could have withdrawn during this crisis period, only $11 was actually withdrawn (net of new deposits). However this calculation presumes that all of these deposits could have been withdrawn and this is not true in respect of 2-90 days deposits that arose as a result of a firm entering receivership (upon which all its deposits would have been reclassified as 2-90 day deposits as noted above). Nevertheless, an examination of the 2-90 day deposits as a proportion of total deposits reveals that they were about 20% prior to 2006, when the defaults commenced, and thereafter crept upwards gradually to 40% in September 2008. Even if all of this increase is attributed to receiverships, it is not large enough to explain the low average drop-off ratio of 11%. In particular, redoing the calculations underlying the drop-off rate, with actual 2-90 day deposits replaced by 20% of the total deposits, raises the average drop-off ratio over this period from 11% to only 15%.

Thirdly, we compare deposits with maturities of at least one year and 90 days in September 2007 with those with at least 90 days in September 2008. The deposits with maturities of at least one year and 90 days in September 2007 totalled $2.109b as shown in bold in the second column of Table 2 (but excluding 25% of those in the 1-2 yr group). One year later, in September 2008, some of these deposits would have become deposits with a maturity of at least 90 days with most of the rest becoming 2-90 day deposits through reclassification resulting from receivership. Furthermore, since seven finance companies of the relevant subset (assets of

at least $100m) entered receivership over this period, with aggregate deposits of $1.589b representing 19% of total deposits of $8.459b at September 2007, a reasonable estimate is that 19% of this figure of $2.109b ($400m) must have been reclassified into 2-90 day deposits.[7] This leaves a residue of $1.709m at most that became deposits of at least 90 days in September 2008.[8] Thus, of all deposits in September 2007, up to $1.709b of this remained as deposits of at least 90 days in September 2008. However, in September 2008, the total deposits with a maturity of at least 90 days were $3.821b as shown in bold in the last column of Table 2. So, finance companies must have obtained new deposits (or rollovers of maturing deposits) over that year, with terms to maturity of at least 90 days as at year end, of at least $2.112b. This represents 55% of their total deposits of at least 90 days as at September 2008 and these deposits of at least 90 days in turn represented 52% of total deposits as at September 2008. Thus, at the apex of the crisis in September 2008, a majority of the 90 day or greater deposits with finance companies at that time arose from new deposits or rollovers of maturing deposits over the preceding twelve months, and these 90 day or greater deposits represented a majority of total deposits at September 2008.

All of these tests treat the finance company sector as homogeneous, i.e., depositors could not differentiate (in probability terms) between the companies which would and would not subsequently default. However, if investors could differentiate between these companies, the significant level of new deposits and rollovers during the crisis period from June 2007 to September 2008 might have been restricted to the low risk companies, which could be equated with the firms that did not fail. Alternatively, some of the new deposits and rollovers might have gone to the high risk companies but these companies may have offered higher deposit risk premiums to sufficiently compensate for the higher risk, particularly during the crisis period. In either case, the presence of significant new deposits and rollovers over the same period in which many firms failed would not necessarily be evidence of investor naivety. Table 1 lists the firms that failed, and their deposits at the time of failure.

In respect of the proposition that the new money went to firms that did not fail, unfortunately the Reserve Bank does not disclose data for individual firms. However we can say that there

[7] The seven companies and their deposits were Capital+Merchant ($167m), MFS Pacific ($335m), Lombard Finance ($111m), Dominion Finance ($232m), North South Finance ($100m), St Laurence ($253m), and Strategic Finance ($391m). This data is from the "Deep Freeze List" at http://www.interest.co.nz/saving/deep-freeze-list.

[8] Some of this $1.709m may have been repaid before September 2008 because of special circumstances such as the death of the depositor. Hence, $1.709b is an upper bound on the amount still outstanding at September 2008.

are no clear features that differentiate the firms that failed from those that did not fail. Using the information in Table 1, the average deposits of the failed firms were $168m including South Canterbury Finance (the clear outlier) and $122m excluding this firm. By comparison, in June 2007 (just before the great wave of failures), the aggregate deposits in the sector were $9.6b (Reserve Bank, 2012) and the number of firms in the industry was 71 (see Table 1), implying average deposits of $135m. Thus the firms that failed were typical in size. In addition, as noted earlier, only a small fraction of firms in the industry ever had a credit rating and therefore the survivors are not differentiable from the failures by their credit ratings.[9] In addition, Wilson (2009, Ch. 5) attempted to 'predict' the failures that occurred from 2006 onwards using risk indicators from financial statements (comprising book leverage, the doubtful debts ratio, asset growth, size, return on assets, and the cash ratio), but without success. Wilson (ibid) adds that this is unsurprising in view of the fact that the latest available financial statements are up to 18 months old, many critical elements (such as the value of the loan book) are not audited, and there is no standardised format.

In respect of the proposition that the higher risk companies offered higher deposit risk premiums, particularly during the crisis period, these higher risk companies could be equated with the companies that did fail in the crisis period and these 20 companies are listed in Table 1. We therefore examine the maximum probability of default implicit in their deposit rates in accordance with equation (4) for these 'bad' companies both during the crisis period (June 2007 to September 2008) and prior to it (July 2001 to May 2007). For the 'bad' firms, the maximum implied probability of default averages .049 in the pre-crisis period and .045 during it. By contrast, for the remaining firms, the figures are .030 and .034 respectively. Thus, although the implied probability is slightly higher for the 'bad' firms, and statistically significant, the implied probability was *not* raised during the crisis period.

In summary, during the period from June 2007 to September 2008, depositors largely maintained their call deposits, the reduction in aggregate deposits was only a small part of what could have occurred, and most of the deposits of at least 90 days at September 2008 (constituting a majority of total deposits at that time) were either rollovers of maturing deposits

[9] Amongst the firms in our data set, only four of them had a credit rating during the crisis period (Broadlands Finance, F&P Finance, Asset Finance, and UDC). Using equation (4), the maximum implied probability of default averaged over the crisis period was .104 for Broadlands Finance, .092 for F&P Finance, .064 for Asset Finance and .017 for UDC compared to .036 for all firms. In addition the credit ratings were BB- for Broadlands Finance, BB for F&P Finance, B for Asset Finance and AA- for UDC (source as described in footnote 3). Thus, as the credit rating rises, the implied probability of default falls monotonically. This limited evidence suggests that depositors understood the value of credit ratings in the few cases where they were available.

during the previous year or new deposits obtained during the same period. However, over that same period from June 2007 to September 2008, the incidence of default (measured over the preceding 12 months) started at 23% and then rose to 34% over the next nine months before falling to 12% over the final six months, as shown in Figure 3. By contrast, the maximum implied probability of default ranged from only 3% to 5% over this 15 month period, as shown in Figure 3. Thus, within a 15 month period in which the default rate was vastly in excess of the compensation within the deposit rates, depositors in general continued to act as if the compensation was adequate. In addition there is no evidence that the new deposits and rollovers were concentrated in relatively low risk firms or that relatively high risk firms raised their deposit risk premiums during this period. This is very strong evidence of depositor naivety.

4.3 The Cause of the Crisis

We now turn to the cause of the crisis. As noted earlier, some observers have argued that it was primarily a consequence of poor risk management and/or criminal conduct (Fiennes and O'Connor-Close, 2012, page 10; Commerce Committee, 2011, page 11; Retirement Commission, 2010, page 34). An alternative view is presented by Wilson et al (2010, page 3), who argue that the collapse of five finance companies in the third quarter of 2007 induced a wave of withdrawals (at the maturity dates of their deposits). Some companies were unable to fully accommodate this outflow, because their asset duration exceeded their liability duration and because many of their assets were illiquid, which pushed them into default. This aggravated the loss of confidence in the sector amongst depositors and therefore accelerated the outflow of deposits in the surviving firms. Thus a contagion effect akin to a bank-run occurred, which was only brought to an end by the introduction of the Government guarantee in October 2008.

Contagion would be evidenced by the loss of call deposits and the inability of the companies to obtain new deposits and/or the rollover of a significant proportion of deposits upon their maturity. However the evidence presented in the previous section shows that the companies maintained their call deposits through most of the crisis period, the reduction in aggregate deposits was a small fraction of what could have occurred, and the majority of the deposits of at least 90 days at September 2008 were either rollovers of maturing deposits during the previous year or new deposits obtained during the same (crises) period. This is clear evidence that the sector did not suffer from an overwhelming contagion effect.

4.4 Information Asymmetry

The final question is the implications of information asymmetry between depositors and companies. One consequence of this would be to induce contagion, i.e., the first significant wave of defaults would prompt a wave of deposit withdrawals from other finance companies because depositors would extrapolate the problems in the first group of companies to all others in the sector even if such extrapolation were unwarranted. However, as discussed in the previous section, there was clearly no significant contagion effect here.

A further consequence of asymmetry is that, especially in the presence of depositor naivety, it would discourage firms from raising risk premiums in response to the defaults of other companies because depositors in a firm would interpret any rise in the risk premium as a much stronger signal about risks in that firm than the recent default incidence in the sector, leading to a loss of deposits by that firm. This could explain why the surviving firms elected to leave risk premiums largely unchanged. Clearly this strategy was not successful (in view of the failure rate that did occur) but it may still have been the lesser of two evils for the companies in question. Furthermore, equation (3) allows us to determine what deposit rates would have been required to properly reflect default risks. Focusing upon twelve month deposits, we substitute into equation (3) the observed time-series of values for R_f, the estimate for L of 0.48, and the time-series of estimates for p corresponding to the default incidence in the previous twelve months. This yields a time-series of minimum required deposit rates, which can be compared with the time-series of observed Y values, as shown in Figure 3. The minimum required deposit rate reaches 27% in September 2008 whilst the actual rate is below 10% at that time. Thus, if the companies had raised deposit rates to compensate depositors for the risks involved, rates consistent with the recent default experience in the industry would have to have been as high as 27%. Quite aside from the adverse signal, such rates would likely have undermined the financial viability of any firms that paid them.

In summary, information asymmetry between depositors and companies could be expected to give rise to a contagion effect once the first wave of defaults occurred but, remarkably, this did not occur on a significant scale. Also, information asymmetry could be expected to discourage companies from raising deposit risk premiums for fear of releasing an adverse signal, especially in view of the investor naivety that was evident here. Furthermore, if the companies had raised deposit rates to compensate depositors for the risks involved, rates consistent with the recent

default experience in the industry would have to have been as high as 27% and such rates would likely have undermined the financial viability of the firms. Consistent with this, the firms did not materially increase risk premiums during the crises. In short, the firms seem to have chosen the least worst course of action open to them in the circumstances.

5. Conclusions

This paper has examined a number of interesting questions arising from the wave of defaults experienced by New Zealand finance companies over the period from 2006-2010, and the principal conclusions are as follows.

Firstly, these companies experienced a dramatic rise in defaults from early 2006 to the introduction of the Government guarantee in October 2008, to as much as 34% for the yearly observations and 13% for the quarterly observations (equivalent to 52% on an annual basis). By contrast, the maximum implied probabilities of default in the finance company deposit rates did not exceed 5% during this period and there was no material increase in these maximum implied probabilities over this period. So, the default probabilities implied by deposit rates completely failed to reflect the prevailing incidence of default in the period from mid 2006 till the introduction of the Government Guarantee Scheme in October 2008.

Secondly, during the period from June 2007 to September 2008, depositors largely maintained their call deposits with the companies, the reduction in aggregate deposits was only a fraction of what could have occurred, and most of the deposits of at least 90 days with the companies at September 2008 were rollovers of maturing deposits during the previous year or new deposits obtained during the same period. However, over that same period from June 2007 to September 2008, the incidence of default (measured over the preceding twelve months) started at 23% and then rose to 34% over the next nine months before falling to 12% over the final six months. By contrast, the maximum implied probability of default ranged from only 3% to 5% over this 15 month period. Thus, within a 15 month period in which the default rate was vastly in excess of the compensation within the deposit rates, depositors in general continued to act as if the compensation was adequate. In addition there is no evidence that the new deposits and rollovers were concentrated in relatively low risk firms or that relatively high risk firms raised their deposit risk premiums during this period. This is very strong evidence of depositor naivety.

Thirdly, the fact that the companies were able to maintain their call deposits through most of the crisis period, the reduction in aggregate deposits was only a fraction of what could have occurred, and the majority of the deposits at September 2008 were either rollovers of maturing deposits during the previous year or new deposits obtained during the same (crises) period provides clear evidence that the sector did not suffer from a significant contagion effect.

Finally, information asymmetry between depositors and companies could be expected to give rise to a contagion effect once the first wave of defaults occurred but, remarkably, this did not occur on a significant scale. In addition, information asymmetry could be expected to discourage companies from raising deposit risk premiums for fear of releasing an adverse signal, especially in view of the investor naivety that was evident here. Furthermore, if the companies had raised deposit rates to compensate depositors for the risks involved, rates consistent with the recent default experience in the industry would have to have been as high as 27% and such rates would likely have undermined the financial viability of the firms. Consistent with this, the firms did not materially increase risk premiums during the crises. In short, the firms seem to have chosen the least worst course of action open to them in the circumstances.

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Table 1: Finance Company Failures 2006-2010

Quarter	No. of Coys	Failures	Deposits ($m)
2006 (2)	77	National Finance 2000	25
		Provincial Finance	296
2006 (3)	72	Western Bay Finance	48
2006 (4)	71	Numeria Finance	7
2007(3)	71	Bridgecorp	459
		Nathans Finance	174
		Property Finance	80
		LDC Finance	22
		Five Star Finance	54
		Clegg & Co	15
2007 (4)	64	Geneva Finance	51
		Capital + Merchant	167
		Blue Chip	n/a
2008 (1)	60	MFS Boston	24
		MFS Pacific	335
2008 (2)	55	Lombard Finance	111
		Fairfield	n/a
		Belgrave Finance	20
		St Laurence	253
		North South Finance	100
		Dominion Finance	232
2008 (3)	48	Hanover Finance	465
		Strategic Finance	391
		Mascot Finance	69
2008 (4)	44	St Kilda Finance	7
		Rockeforte Finance	3
		Orange Finance	23
2009 (1)	34	Strata Finance	1
2010 (2)	31	Vision Securities	28
		Viaduct Capital	8
2010 (3)	31	Mutual Finance	9
		Allied Nationwide Finance	130
		South Canterbury Finance	1600
2010 (4)	28	Equitable Mortgages	190

Table 2: Finance Company Deposits

	Jun 2007	Sep 2007	Dec 2007	Mar 2008	Jun 2008	Sep 2008
Call	457	495	547	615	576	319
2-90 days	2171	2454	2462	2530	2632	3235
90 days to 1 yr	2909	2897	2869	2847	2513	**2197**
1-2 yrs	2407	**2017**	1788	1370	918	**748**
2-3 yrs	685	**422**	343	272	452	**440**
3-4 yrs	139	**93**	97	70	108	**124**
4-5 yrs	67	**39**	161	150	282	**270**
Over 5 yrs	42	**42**	39	39	40	**42**
Total	8877	8459	8306	7893	7521	7345
Av Term to Mat	0.95	0.82	0.83	0.75	0.83	0.80
Drop-off Fraction		0.16	0.05	0.15	0.13	0.05
2-90 day Proportion	0.24	0.29	0.30	0.32	0.35	0.44

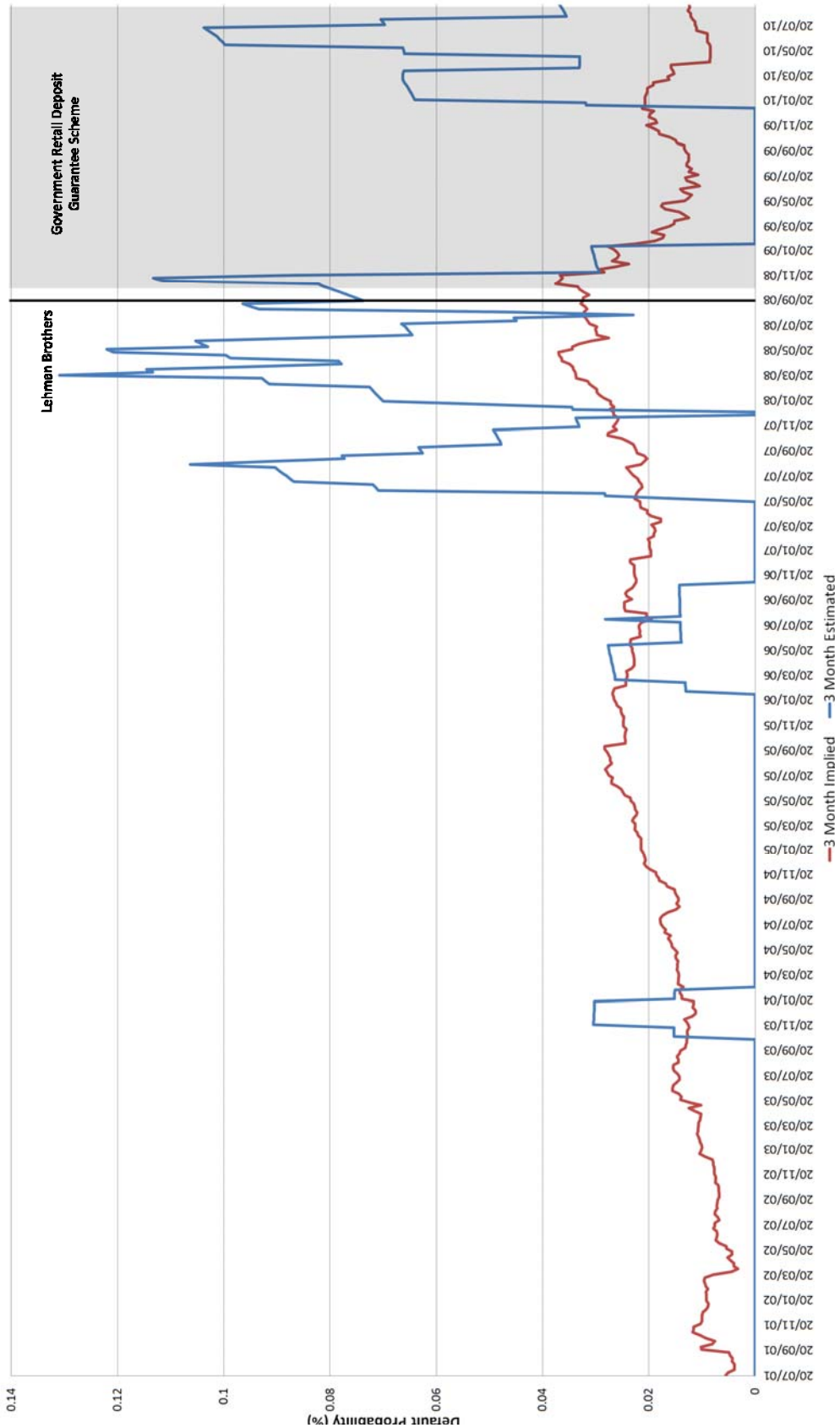

Figure 1: Three Month Implied and Estimated Probabilities of Default

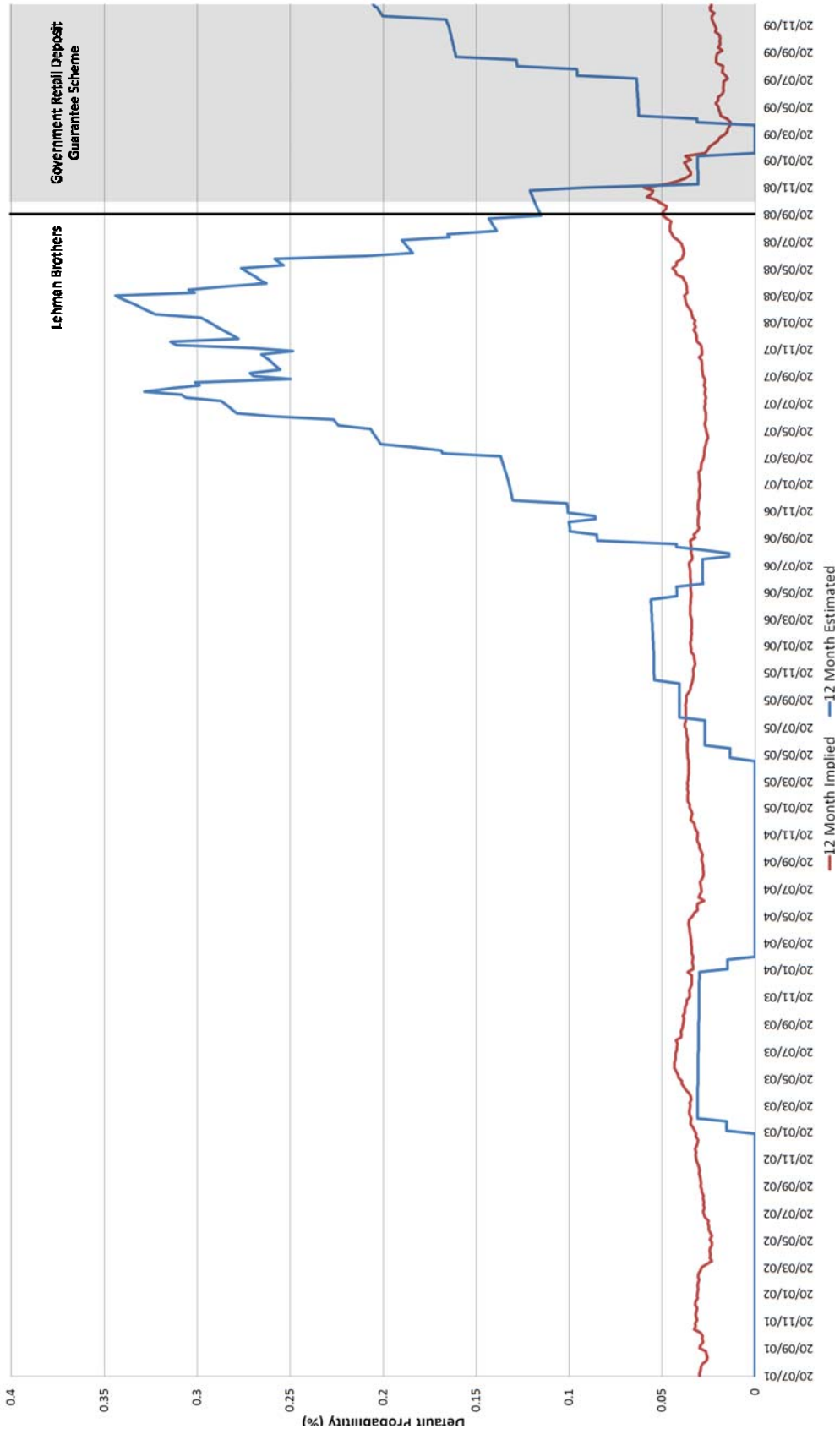

Figure 2: Twelve month Implied and Estimated Probabilities of Default

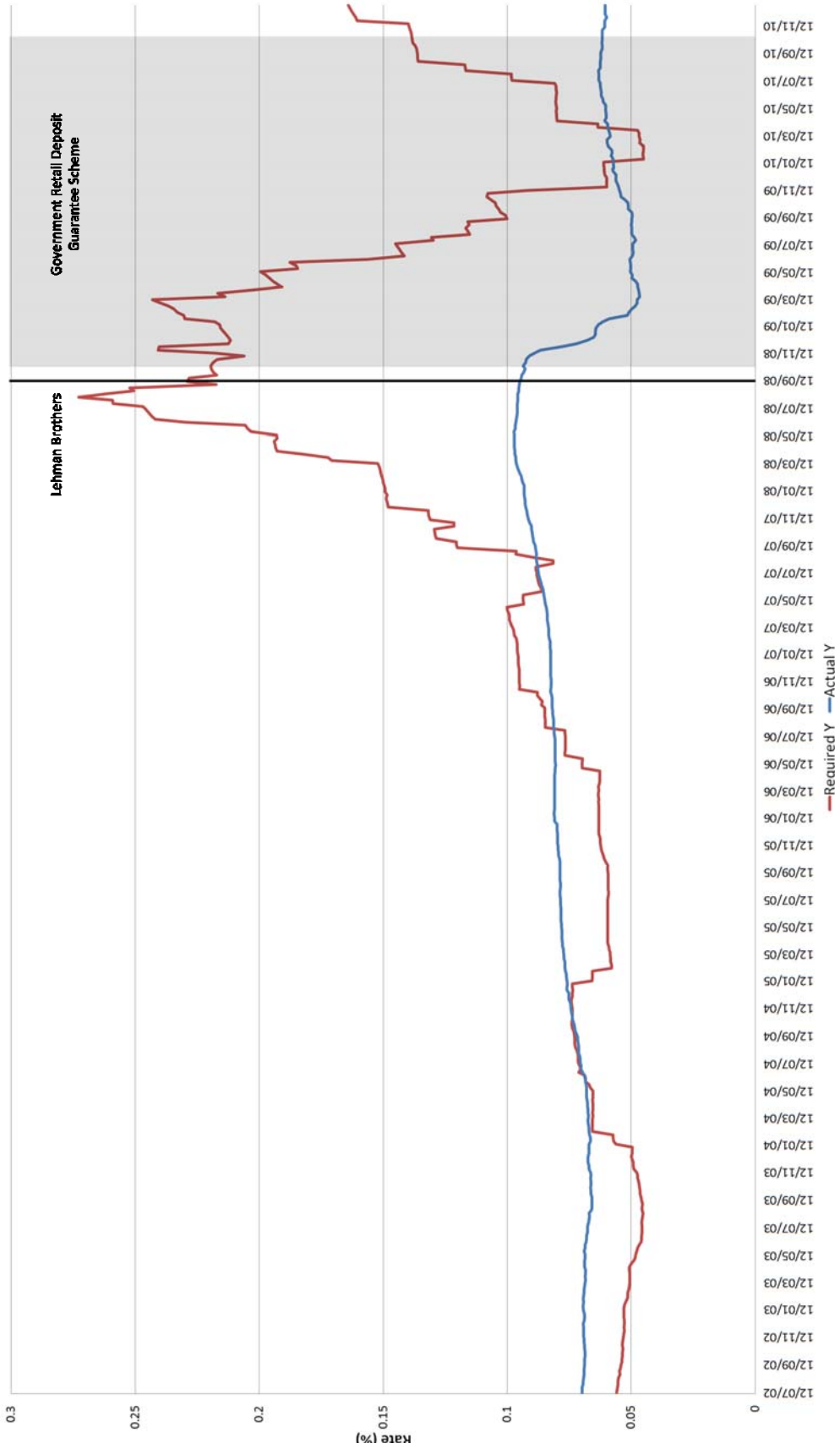

Figure 3: Required and Actual Twelve Month Promised Yields