CREDIT RATINGS AND BORROWER ABNORMAL RETURNS AT BANK LOAN ANNOUNCEMENTS: AN EXTENDED ANALYSIS

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Abstract

Empirical evidence over the past decade has indicated that statistically significant abnormal returns accrue to stockholders of companies at the announcement of bank loans. Recent evidence in the area indicates that there is a significantly positive relationship between borrower abnormal returns and the lender bank's credit rating. In the present study we examine if the borrower abnormal return could be explained by the differences in the credit rating between the lending bank and borrowing firms. For a sample of 192 financing agreements over the eleven-year period of 1985-1995, we present evidence indicating that the difference in credit ratings does not explain the abnormal returns to the borrowing firms stockholders' at the announcement of bank loans.

Credit Ratings and Borrower Abnormal Returns at Bank Loan Announcements: an Extended Analysis

Introduction

In the last two decades, the banking literature has addressed the question of whether banks are "unique" types of financial intermediaries. It is argued that in a world of asymmetric information, a financial intermediary plays a very significant role, and therefore banks' actions are taken as signals by the market. Empirical studies by Mikkelson and Partch (1986), James (1987), Lummer and McConnell (1989), Preece and Mullineaux (1994) and several others report positive abnormal returns to the shareholders of borrowing firms at the announcement of bank loan agreements.

Recent studies in this area by Billet, Flannery and Garfinkel (1995) and Johnson (1997) indicate that there is a positive relationship between borrower abnormal return at the announcement of bank loans and the lender identity, represented by credit ratings. These authors argue and present evidence indicating that lenders credit rating' indicates the quality of the lender's assets and hence a firm securing a loan from a bank or a financial institution with a high credit rating indicates the high quality of the borrowing firm to the market. In the present study we reexamine the relationship between lender credit rating and borrower abnormal returns for two

kinds of borrowing firms -firms with credit rating and firms without credit rating. We test two separate theories for firms with existing credit ratings. The first argues that since the market already knows the quality of the firm, the lender's credit rating would be redundant information. Alternatively if the lender credit rating information were not redundant we test to see if the lower the borrower credit rating is as compared to the bank's credit rating, the greater will be the size of the abnormal return to the borrowing firm's stockholders. Our results indicate that the difference between the lender and borrower credit ratings does not explain the magnitude of borrower abnormal return at the announcement of bank loans. For firms without credit rating, the announcement of a loan from a bank with high credit rating should however be considered new and relevant information.

Data

The analysis above is based on data collected over the period January 1985-December 1995. The date of announcement of a bank loan will be taken as the first date on which it was reported in the *Wall Street Journal.* We first examined the databases on *Newspaper Abstracts of ABI Inform* and *Lexis-Nexis* for the sample period using search strings like 'line of credit', 'revolving line of credit', 'term loan' 'credit facility' 'loan facility' etc., for bank loan announcements. This is consistent with most of the earlier studies. We then discarded transactions that involve anything other than straight debt financing (where the lender is compensated in some way) and transactions where the loan amount is not mentioned. We collected the details of the loan agreement including the type of loan, the value of the loan, the name of the lender bank (or lead bank in case of a syndicate of banks) and other details from the actual announcement in the *Wall Street Journal.* Our search had resulted in a total of 220 loan announcements meeting all the above criteria. The data for the sample corporations' daily stock returns, and market index returns, company's market value at the end of the year preceding the event and the mean market value of all NYSE/AMEX firms for different years were obtained from the *CRSP* tapes. Our sample was further restricted by the lack of sufficient trading data for 28 firms in the above sample on the *CRSP* tapes. For the remaining 192 firms, we collected the data for the credit ratings of lender banks and borrowing firms from the monthly issues of *Moody's Bond Record.* Consistent with the study of Billett et al., (1995) we take the lending bank's (or in most cases, its holding company's) senior unsecured credit rating to be the lender's credit rating. In cases where a syndicate issued the loan, we take the lead bank's senior unsecured credit rating to be the lender's credit rating. We also collect the borrower's senior unsecured credit rating for the study. When the senior unsecured debt is not mentioned exactly in the ratings we take the debt rating of the unsecured debt.

Methodology

The methodology used to calculate borrowing firms' abnormal returns in the study is the market model. For calculation of the regression parameters, we use a 250 day period from $t = -270$ to $t = -21$ where $t = 0$ is the publication date. The daily prediction errors are averaged over all the borrowing firms within a particular group to produce a daily portfolio average prediction error. Consistent with earlier studies in the present study, $t = 0$ is the publication date in the *Wall Street Journal*, $t=-1$ is the date of actual announcement and N is number of firms in the sample. We calculate the prediction errors and the standardized prediction errors for both days 0 and –1 separately. We then calculate the cumulative average standardized prediction error for the two-

day event period. Tests of statistical significance of the average prediction errors and are based on standardized prediction errors. We calculate the significance of the average standardized prediction error for the sample borrowing firms separately for both day t=0, the publication date and t=-1, the date of actual announcement, and also for the cumulative average standardized prediction error for the two-day event window. We regress the cumulative average standardized prediction error as the dependent variable and the credit ratings of the lender bank and the borrowing firm as the explanatory variables. We also have a variable that will reflect the difference in the credit ratings of the lender bank and the borrowing firm. As Moody's credit ratings are used in the study, we assign a number to each credit rating given in table 1 below:

Table 1

Distribution of Lender (BANKRAT) and Borrower Credit Ratings (FIRMRAT)

Credit Ratings from the Sample of 192 Loan Announcements. Moody's Investors Service Credit Ratings of Lending Banks and Borrowing Firms

Moody's Bond Rating	Assigned Value	Number of Banks	Number of Firms
Aaa	19	17	--
Aa1	18	2	1
Aa2	17	11	2
Aa3	16	10	2
A1	15	15	6
A2	14	7	7
A3	13	20	11
Baa1	12	16	2
Baa2	11	14	2
Baa3	10	9	7
Ba1	9	1	3
Ba2	8	3	2
Ba3	7	1	7
B1	6	1	7
B2	5	1	9
B3	4	--	11
Caa	3	--	5
Ca	2	--	--
C	1	--	--
Total Observations		128	83
Mean		13.875	9.05
Standard Deviation		3.19	4.30

The above table gives the details of the credit ratings assigned to the sample companies by Moody's Investors Service. Column 1, gives the credit rating assigned by Moody's and column

2 gives the assigned numerical value given to Moody's credit rating in the present study. Column 3 gives the number of banks with credit ratings, by category and column 4 gives the details of the number of borrowing firms with credit ratings, differentiated by category.

As can be seen from Table 1, 128 banks from the sample of 192, approximately 67% have assigned credit ratings. Billet et al., (1995) report that approximately 60 percent of the sample banks in their study had assigned credit ratings. For borrowing firms, only 83 of the 192, approximately 43% firms have assigned credit ratings. Lending banks in general appear to have a higher credit rating than borrowing firms.

The Empirical Evidence

We first calculated the average standardized prediction error *ASPE,* of the borrowing firms for days t=0 and t=-1. The average standardized prediction error for day t=-1 is 0.0063 and the corresponding t-value is 0.087. The value is not statistically significant at any conventional level. For day t=0, the publication date in the *Wall Street Journal,* the value of the average standardized prediction error *ASPE* is 0.1524 with a t-value of 2.11 significant at 0.05 level. For the two-day event period, the cumulative average standardized prediction error *CASPE,* is 0.1587 with a corresponding t-value of 2.19, significant at 0.05 level. The result for the *two-day* period is consistent with earlier studies.

We first examine the relationship between the cumulative average standardized prediction error (*CASPE* hereafter*)* the dependent variable and the lending institution's credit rating (*BANKRAT* hereafter). In addition to *BANKRAT,* we also include some control variables in the regressions. Most of the control variables are similar to the ones used in the Billet et al. (1995) study mentioned earlier. These are: *SERES*, the standard deviation of the market model prediction error over the estimation period. This was the control variable with the most significant coefficient values in the regressions of Billet et al. (1995), *BETA*, the market model beta from the estimation window and *BIGFIRM*, a binary variable that takes a value of 1 if the borrower's market value of equity exceeds mean market value of equity of NYSE/AMEX firms in the year preceding the event, zero otherwise. The regression has two other control variables. The first of these *MKTVAL*, refers borrowing firm market value at the end of the year preceding the event. This controls for the impact of the size of the borrowing firm. Finally, *UNRATED* is the last control variable. This takes a value of 1 if the borrowing firm has no assigned credit rating, zero otherwise. We expect this variable to have a positively significant coefficient as a bank loan gives an indication to the market as to how good an unrated firm is. The results of the regression are given in Table 2.

Table 2

The Effect of Lender Credit Quality on Borrower Returns

Results of the regressions examining the impact of lender credit quality on borrowing firms' abnormal returns.

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Dependent Variable for all Regressions: Cumulative Average Standardized Prediction
Error for Days t=0 and t=-1 (*CASPE)*

Regression 1: Independent Variable Coefficients and t-values (N=128, R-Square =0.02)
Intercept	-0.035 (-0.036)
BANKRAT	-0.036 (-0.637)
SERES	3.071 (0.334)
BETA	0.211 (0.848)
BIGFIRM	0.438 (0.878)
MKTVAL	0.000 (-0.129)
UNRATED	0.218 (0.545)

Regression 2: Independent Variable Coefficients and t-values (N=128, R-Square= 0.04)
Intercept	-0.231 (-0.393)
HIGHRAT	-0.620 (-1.709*)
SERES	4.119 (0.453)
BETA	0.248 (1.007)
BIGFIRM	0.447 (0.905)
MKTVAL	-0.000 (-0.196)
UNRATED	0.244 (0.616)

Regression 3: Independent Variable Coefficients and t-values (N=128, R-Square=0.02)
Intercept	0.868 (0.441)
Log of BANKRAT	-0.536 (-0.749)
SERES	3.216 (0.350)
BETA	0.208 (0.838)
BIGFIRM	0.437 (0.877)
MKTVAL	-0.000 (-0.163)
UNRATED	0.215 (0.537)

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*indicates t-value significant at 0.10 level.
The t-statistic values are given in parentheses.

Table 2 presents the results of the regressions examining the relationship between *CASPE* and the assigned value of the lending bank's credit rating, *BANKRAT*. Regression 1 shows the relationship between *BANKRAT* and *CASPE*. The results indicate that the variable *BANKRAT* has a coefficient of –0.036 and is insignificantly negative. The coefficient for the variable *UNRATED* is positive and not significant. The same applies to the other control variables in the

regression. We further checked the robustness of the result in Regression 1 by examining if firms that borrowed from lenders with higher rating have higher abnormal returns. We defined *HIGHRAT,* a dummy variable that takes a value of 1 if the lender has a rating of A3 and above, zero otherwise along with the other control variables used in regression 1. The results shown in Regression 2 indicate that the higher the bank rating the lower the magnitude of *CASPE* to the stockholders of the borrowing firm. The parameter value of *HIGHRAT* is –0.620 with a t-value of –1.709, significant at 0.10 level. This is a significantly inverse relationship more pronounced than in Regression 1. As in the case of Regression 1, all the control variables have insignificant coefficient values. We further examine by using the value of the natural log of *BANKRAT* to be the independent variable in Regression 3. The parameter value for the variable log of *BANKRAT* is –0.536 with a t-value of –0.749 and is consistent with the results of the earlier regressions. This confirms the results of Regression 1 that there is a negative relationship between *BANKRAT* and *CASPE* that is statistically not significant. These results are inconsistent with the results of the earlier study by Billet et al (1995).

We next examined the relationship between the assigned value of the credit rating of the borrowing firm, known as *FIRMRAT* and *CASPE*. We also included the control variables *SERES, BETA, BIGFIRM* and *MKTVAL* included in the earlier tests here. The results of the regression are given in Table 3.

Table 3

The Effect of Borrower Credit Quality on Borrower Returns

Results of the regressions examining the impact of borrower credit quality on borrowing firms' abnormal returns

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<u>Dependent Variable for all Regressions</u>: Cumulative Average Standardized Prediction Error for Days t=0 and t=-1 (*CASPE)*

<u>Regression 4: Independent Variable Coefficients and t-values</u> (N=83, R-Square=0.02)

Intercept	0.158 (0.203)
FIRMRAT	0.023 (0.430)
SERES	-13.81 (-0.757)
BETA	0.092 (0.281)
BIGFIRM	0.048 (0.107)
MKTVAL	-0.000 (0.033)

<u>Regression 5: Independent Variable Coefficients and t-values </u>(N=192, R-Square=0.01)

Intercept	-0.381 (-0.909)
UNRATED	0.012 (0.040)
SERES	5.112 (0.729)
BETA	0.219 (1.190)
BIGFIRM	0.217 (0.568)
MKTVAL	-0.000 (0.279)

Regression 6: Independent Variable Coefficients and t-values (N=192, R-Square=0.01)
Intercept   -0.323 (-0.840)
LOWRATED   -0.174 (-0.595)
SERES   4.714 (0.676)
BETA   0.226 (1.227)
BIGFIRM   0.232 (0.646)
MKTVAL   -0.000 (0.220)

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                 The t-statistic values are given in parentheses.

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Regression 4 in Table 3 presents the result of the regression with *CASPE* as the dependent variable and *FIRMRAT* as the independent variable in addition to the control variables. The parameter value of *FIRMRAT* is 0.023 with a t-value of 0.43. The relationship though positive is not statistically significant. We also examined if there are higher abnormal returns for firms with no assigned credit rating by using the variable *UNRATED* mentioned earlier along with the control variables. The results given in Table 3 of the Regression 5 show that *UNRATED* has a parameter estimate of 0.012 with a t-value of 0.040. The value is not significant and nor or the values of any of the control variables. We also examined to see if borrower abnormal returns are higher for firms with ratings below A level. For this we defined a dummy variable, *LOWRATED* that takes a value of 1 if a firm has an assigned rating of Baa1 or below. The resulting analysis is presented in Regression 6 of Table 3. The dummy variable *LOWRATED* has a parameter estimate of –0.174 with a statistically insignificant t-value of –0.595. Thus it appears that there is no significant relationship between borrower credit ratings and abnormal returns.

Having established the relationships between borrower abnormal return and lender and borrower ratings individually, we now proceed to examine the their joint impact on *CASPE*. We first regress *CASPE* with *BANKRAT* and *FIRMRAT* as independent variables along with the control variables *SERES, BETA, BIGFIRM* and *MKTVAL*. The results are given in Table 4 below.

Table 4

The Combined Effect of Lender and Borrower Credit Quality on Borrower Returns

Results of the regression examining the impact of lender and borrower credit quality on borrowing firms' abnormal returns

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Dependent Variable for all Regressions: Cumulative Average Standardized Prediction
                          Error for Days t=0 and t=-1 (*CASPE)*

Regression 7: Independent Variable Coefficients and t-values (N=56, R-square = 0.04)
Intercept   0.169 (0.140)
BANKRAT   -0.004 (-0.070)
FIRMRAT   0.016 (0.244)
SERES   -16.753 (-0.697)
BETA   0.046 (0.131)

BIGFIRM	0.302 (0.602)
MKTVAL	-0.000 (-0.205)

Regression 8: Independent Variable Coefficients and t-values (N=56, R-square = 0.04)

	Intercept	0.309 (0.440)
	BANKRAT-FIRMRAT	-0.010 (-0.202)
SERES	-17.711(-0.775)	
BETA	0.050 (0.143)	
BIGFIRM	0.323 (0.679)	
MKTVAL	-0.000 (-0.202)	

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The t-statistic values are given in parentheses.

Regression 7 in Table 4 confirms the results of the earlier regressions. The variable *BANKRAT* is still negatively related to *CASPE* with a parameter estimate of –0.004 and a t-value of –0.070. *FIRMRAT* is still positively related to *CASPE* with a parameter estimate of 0.051 and a t-value of 1.124 that is not significant at any conventional level of significance. For a more direct examination, we take the difference between *BANKRAT* and *FIRMRAT* and examine the impact of this difference, known as *BANKRAT-FIRMRAT* on the magnitude of abnormal return to the borrowing firm's shareholders. In our study, there were a total of 56 firms which had assigned credit ratings and which borrowed from banks with assigned credit ratings. The results shown in Regression 8 of Table 4 show that the difference between lender and borrower ratings is negatively related to the size of abnormal return to the borrowing firm's shareholders. The parameter estimate of *BANKRAT-FIRMRAT* is –0.010 with a t-value of –0.202 not significant at any conventional level. However this indicates that the higher the difference in credit ratings between the lending and borrowing firms, the lower is the abnormal return. Consistent with the regressions in tables 2 and 3, the control variables in the regressions in table 4 do not have any statistically significant coefficients.

We further examined this issue, as our results are inconsistent with Billet et al (1995). The results of our further analysis are given in Table 5.

Table 5

Tests for the Significance for difference in Means for Subgroups in the Sample

The results of the t-tests examining the differences in the standardized abnormal returns of the various subgroups in the sample

	CASPE Mean	CASPE Variance	t-statistic
1. Low Rated Banks (N=46)	0.46	5.92	
v/s			1.613*
High Rated Banks (N=82)	-0.11	2.43	
2. Unrated Banks (N=64)	0.29	2.23	
v/s			1.57*
High Rated Banks (N=82)	-0.11	2.43	
3. All Rated Banks (N=128)	0.09	3.72	
v/s			-0.73
Unrated Banks (N=64)	0.29	2.23	
4. High Rated Firms (N=28)	0.44	2.99	
v/s			1.11
Low Rated Firms (N=55)	0.04	2.10	
5. Unrated Firms (N=109)	0.15	3.86	
v/s			0.71
High Rated Firms (N=28)	0.44	2.99	
6. Unrated Firms (N=109)	0.15	3.86	
v/s			-0.07
All Rated Firms (N=83)	0.17	2.41	

The above table gives the t-statistic values for the various subgroups. Here *CASPE* Mean refers to the two-day mean of the *Cumulative Average Standardized Prediction Error (CASPE)* for the subgroup and *CASPE* Variance refers to the variance of the *Cumulative Average Standardized Prediction Error* for the subgroup.
*indicates value significant at 0.10 lev

We first divided the sample lenders into banks with a credit rating of A1 and higher (High Rated Banks) and banks with a credit rating of Baa1 or lower (Low Rated Banks). We had a total of 82 lender banks with a credit rating of A1 or above and 46 banks with a credit rating of Baa1 or below. The mean CASPE for the 46 low rated banks' borrowers is 0.46 and is significantly higher at 10% level (t= 1.613) than –0.11, the mean CASPE for the high rated banks' borrowers. We next carried out a t-test to examine the significance of the difference between the CASPE for firms borrowing from unrated banks and firms borrowing from high rated banks. The resulting t-value given in Table 5 indicates that the mean CASPE for the unrated banks is 0.29 and is significantly higher at 10% level (t=1.57) than the mean CASPE for high rated banks. However, there is no significant difference between the mean CASPE of all rated banks and the mean CASPE of all unrated banks. This indicates that lower returns are associated mainly with higher credit rated lenders. This result is different from the earlier result of Billet et al (1995). The other results in table 5 indicate that the t-values for the mean differences between none of these subgroups are significant at any conventional level.

The results of this study are contrary to the results of the Billet et al (1995) study earlier. There are several potential explanations for this. The first is that the change is due to sampling differences. Billet et al (1995) use only the senior unsecured credit ratings for banks in their study while we use both the credit ratings of banks and the borrowing firms in the present study. Contrary to the other study we also use the credit ratings of unsecured debt if the senior unsecured credit rating were unavailable. This describes lender (or borrower) quality in case senior unsecured credit rating is unavailable. An explanation for the significant value of HIGHRAT in regression 2 is that since high quality banks could require higher interest payments that means higher costs and lower returns for borrowing firms' stockholders. More significantly, it could also mean more restrictive covenants since a higher quality bank is likely to restrict a firm from taking decisions that would increase the bank's asset risk. All this could mean that the borrowing firm will have to operate under a more restricted environment than before which could lead to lower equity returns in the long run.

There is much scope for future studies in the area. Thus far, most studies have concentrated on the immediate impact of bank loans on borrower abnormal returns. Future studies can look into the long-term impacts of bank loans and its impact on borrowing firms' wealth. There is also scope for a study where banks lend to firms internationally. Since banks undertake sovereign risk and foreign exchange risk in addition to credit risk in lending to a firm across international borders, a firm receiving a loan from a bank in another country should get higher returns than a firm receiving a loan from a bank in the same country. A comparison of the wealth effects of firms receiving loans from international banks as compared with firms receiving loans from regional/national banks would thus be a very interesting area to study.

Conclusions

The present study investigates if the difference between lender credit rating and borrower credit rating has an impact on the size of the abnormal return to the borrowing company's stockholders at the time of the announcement of bank loans. We present evidence indicating that there is an insignificantly negative relationship between the difference in lender and borrower credit ratings and borrower abnormal returns. Also, very significantly we find evidence that indicates that lender credit ratings are negatively related to borrower abnormal returns at the time of

announcement of the bank loan. This evidence is contrary to the evidence presented earlier by Billet et al (1995) who report a positively significant relationship between lender credit rating and borrower abnormal return. This is the first paper to look at the relationship between lender credit ratings and borrower credit ratings. There is scope for further analysis to examine the impact of differences in lender and borrower credit ratings on the magnitude of borrower abnormal returns.

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