The Valuation Effects of Bank Loan Ratings in the Presence of Multiple Monitors

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Abstract

Studies have shown that when two information providers or outside auditors exist, the value provided by the second one will be decreased by the actions of the first. Capitalizing on the highly similar functions performed by banks and rating agencies, this paper examines the informational value of the credit ratings of bank loans. Further, it provides evidence on whether rating agencies duplicate the certifying and monitoring roles played by banks. The significant market reaction to negative credit rating announcements found suggests that these rating actions convey information to the capital market beyond that provided via the bank loan approval and renewal process.

1. Introduction

The value of the ratings provided by credit rating agencies like Standard and Poor's or Moody's is a topic of continuing debate. This paper uses credit ratings of bank loans to examine two different, but interrelated issues. First, investor reaction to bank loan credit rating announcements is specifically examined to determine if the credit rating itself provides new information to the market. Second, the question of whether credit rating agencies are merely providing duplicate information already available through the bank certification provided by the loan being granted or renewed is addressed.

Credit ratings have been argued to contain no more than publicly available information (Wakeman (1984)) and rating agencies to exist only because of regulatory requirements (Partnoy (1999) and (2002) and White (2001)). Some early empirical studies support the point of view that ratings do not provide any additional information (Weinstein (1977), Wakeman (1978) and Pinches and Singleton (1978)). Other empirical studies find that the capital markets do react to the rating announcements, specifically to news of a deteriorated position (Wansley and Clauretie (1985), Holthausen and Leftwich (1986), Glascock, Davidson, and Henderson (1987), Hand, *Holthausen, and Leftwich (1992), Nayar and Rozeff (1994) and Elayan, Maris, and Young (1996)). Most of the studies use bond ratings or commercial paper ratings, implying that the number of security holders is large. If the costs of collecting information or providing monitoring services are high due to the large number of security holders, as suggested by Wakeman (1984) and Boot and Milbourn (2002), then rating agencies may provide value by reducing these costs.

Theoretical studies of financial intermediaries support the signalling power of banks as information providers, either through certification because of specialized information (Leland and Pyle (1977), Campbell and Kracaw (1980) and Kanatas (1987)) or from monitoring due to an ongoing relationship (Ramakrishnan and Thakor (1984), Diamond (1984) and (1996), and Fama (1985)). Empirical studies in general, support the theoretical points of view and find abnormal market reaction to the initiation or renewal of bank loans (Mikkelson and Partch (1986), James (1987), Lummer and McConnell (1989) and Slovin, Johnson, and Glascock (1992)).

Information about a firm's financial position is signalled to the capital market by banks through announcements of loan initiations and/or renewals. Furthermore, during the life of a bank loan the borrower is also monitored by the bank. A question of interest is whether the subsequent credit rating of a bank loan provides duplicate information and therefore is unlikely to generate market reaction?

Banks and rating agencies have many common functions and operate similarly. These similarities include information collection through access to private information based on their

relationships with clients, certifying client creditworthiness to the capital market and monitoring their clients on an ongoing basis. Evidence in Ederington, Yawitz, and Roberts (1987), Hsueh and Liu (1992) and Best and Zhang (1993) suggests that when more than one information provider exists the initial indication will weaken the power of second one. It is possible therefore, that the value of rating agencies will be reduced because the signalling and monitoring roles are already provided by financial intermediaries. However, Nayar and Rozeff (1994), Stover (1996), and Schweitzer, Szewczky, and Varma (1992), find that rating agencies perform their certifying and monitoring roles in a different way than banks do. In addition, Diamond (1984) and Seward (1990) suggest that the recent trend of securitization that makes (presumably) illiquid bank loans marketable transfers the intermediated contracts into direct contracts. Monitoring by banks may therefore be dampened and transferred to the second auditors, i.e., the rating agencies.

The principal hypothesis tested is that the market will react significantly to announcements of bank loan ratings with either positive or negative implications. An abnormal reaction is found for bad news events only, as in most previous empirical studies. Specifically these announcements are rating placements on the *CreditWatch* list with a negative implication, and rating downgrade actions. The greatest value of rating agencies seems to be conveying information regarding deterioration in financial position, rather than identifying improvements. Further, credit rating agencies and banks do not provide duplicate information since credit rating announcements still generate significant abnormal market returns.

A review of the literature covering the functions of financial intermediaries and rating agencies, as well as the interactive relationship between them, is presented in Section 2. The hypotheses tested and a discussion of announcement effects and control variables used in univariate tests and the multivariate regressions are discussed in Section 3. Data description and the methods of analysis are presented in Section 4. The empirical results of the event study, univariate tests, and multivariate regressions are covered in Section 5. Section 6 presents a summary and conclusions.

2. A Review of the Literature

2.1 The Function of Financial Intermediaries

Two important roles of financial intermediaries are those of certification and monitoring. The certification role indicates that the lending activity by a bank signals a firm's quality and its creditworthiness. This theory suggests that banks have access to inside information that is not available to the market, giving them a competitive advantage in evaluating firm value. Campbell and Kracaw (1980) state that in a market with asymmetric information where direct signals by the

owners of assets are difficult to convey, the purchase of those assets can produce information about their value, which serve as a signal to the capital market. Kanatas (1987) notes that corporations often procure a loan commitment just before selling dealer-placed commercial paper. He explains that obtaining a loan commitment can reduce the borrowing costs because it reveals the bank's private information about the issuing company's credit risk to the commercial paper market.

The other source of signalling power comes from a bank's monitoring role, based on its continuing relationship and interaction with its corporate clients. Ramakrishnan and Thakor (1984) discuss the roles of information production and internal monitoring of financial intermediaries. Diamond (1984, 1996) develops the delegated monitoring model that diversification within an intermediation minimizes the cost of monitoring information and solves the incentive problem between borrowers and lenders. Fama (1985) contends that the ongoing history of a borrower as a depositor gives banks inside information and a comparative advantage in initiating and monitoring the loans at lower costs, especially the repeated short-term ones. Furthermore, signals from short-term bank loans about firm creditworthiness avoid the duplication of information costs and lower the costs from other sources. Rajan and Winton (1995) further suggest that both covenants and collateral can be used for structuring the loan contracts to increase the banks' incentive to monitor. Finally, Diamond (1991) makes the case that because of information asymmetry and moral hazard a new borrower will seek a loan from financial intermediaries first, and after gaining a reputation through monitoring, switches to directly-placed debt.

Mikkelson and Partch (1986) and James (1987) find significant market reaction to new bank loan agreements. These results are consistent with the theories of financial intermediation and attest to the uniqueness of bank loans. However, Lummer and McConnell (1989) differentiate the announcements into new loans versus loan renewals and find significantly positive reaction only to renewals. Their result for loan renewals is consistent with Fama's (1985) theory that information is transmitted through the continuing lending relationship with a company, not in making the initial lending decision.

Slovin, Sushka and Hudson (1990) examine the market reaction to announcements of seasoned stock offerings in the presence of outside agents and conclude that use of extensive bank financing by the stock-issuing company reflects its willingness to be monitored by a reputable outsider. Slovin, et al. (1992) examine the effect of bank loan announcements by companies with different sizes. The results of their study support the hypothesis that banks have no comparative advantage in monitoring large, well-established firms. They conclude that small firms receive the

greatest benefit from bank certification and monitoring as proposed by Diamond (1991). Johnson (1997) and Krishnaswami, Spindt and Subramaniam (1999) also find evidence of benefits due to bank monitoring. In summary, the issue and renewal of bank loans send signals to the capital market. Obtaining bank loans provide a certification signal to the market about the firms' true creditworthiness and the renewal process provides monitoring benefits.

2.2 Information Effects of Credit Ratings

The function of rating agencies and the value of the information they provide has long been debated and the conclusion remains unclear. Rating agencies may provide an initial low-cost assessment of the creditworthiness of the issuing company by analyzing the company's statements and providing an independent judgment. They may also act to monitor the issuing company over the life of bond. Wakeman (1984) argues that bond rating changes only provide information that is already reflected in the bond price, but investors demand the ratings due to the role played by rating agencies as "reputable auditors". Partnoy (1999, 2002) and White (2001) suggest that regulatory dependence on credit ratings is the explanation for the paradox of credit rating industry, i.e., the continuing usage of credit rating agency services in the face of the declining informational value of ratings. Boot and Milbourn (2002) state that credit ratings serve to coordinate the agencies' monitoring role with regulatory requirements and this function is significant even if the ratings contain little information.

While the theoretical studies generally argue that ratings provide only publicly available information, most empirical studies tend to show that rating agencies provide additional information to the capital market in some way. In general, there are three kinds of rating agency actions, namely rating assignments, placement on the *CreditWatch* list, and rating changes. The following empirical review is presented in that order.

Nayar and Rozeff (1994) provide evidence that the equity market responds favorably to superior rating assignments, but does not respond to those with lower quality ratings. Barron, Clare, and Thomas (1997) find no evidence that assignment of a new long-term rating has a significant impact on stock return volatility or systematic risk for United Kingdom (UK) firms. Conversely, Elayan, Hsu and Meyer (2003) do find significant positive market reaction to credit rating assignments for New Zealand (NZ) firms.

The *CreditWatch* list was introduced by Standard and Poor's to provide timely information indicating the possible direction of future company rating changes. Wansley and Clauretie (1985) find significant (marginally significant) reaction to those *CreditWatch* placement announcements with subsequent rating downgrades (upgrades), while there is no market reaction to those with a

subsequent rating affirmation. Similar results are obtained from bond price reaction, but the bond market does not appear as efficient as the equity market. Holthausen and Leftwich (1986) detect significantly negative abnormal performance for placements with a negative implication, and marginally significant positive abnormal return for placement with a positive indication. Hand et al. (1992) find placements with negative implications cause significantly negative abnormal equity returns, but no significant response to placements with positive implications. Elayan, et al. (1996) develop a similar result for commercial paper. However, Barron et al. (1997) examine *CreditWatch* list placements with negative implications for UK firms and find insignificant market reaction. Elayan, et al. (2003) find a significant negative reaction to placements with negative implications for NZ firms, but unlike previous studies also find a significant positive reaction to placements with positive implications.

Rating changes should not cause any abnormal market reaction if rating agencies can only access publicly available information. Weinstein (1977) examines monthly bond returns, and finds no significant price reaction during the month of the change, six months prior and after the change. Similarly, insignificant price reactions are found by Wakeman (1978) using weekly bond returns and monthly stock returns, and Pinches and Singleton (1978) using monthly stock returns.

In contrast, some empirical studies support the conclusion that rating agencies do provide information to the capital market. For example, Holthausen and Leftwich (1986) find that only announcements of rating downgrades are associated with significantly negative abnormal returns. Glascock et al. (1987) and Hand et al. (1992) find statistically significant negative (insignificant positive) stock returns for rating downgrades (upgrades). Matolcsy and Lianto (1995) use Australian data and Barron et al. (1997) use UK data and confirm that only bond rating downgrades provide additional information to the equity market. Elayan, et al. (2003) find not only negative reaction to downgrades, but also significant positive reaction to upgrades for NZ firms. Dichev and Piotroski (2001) investigate long run returns following bond rating changes, and find significant negative (insignificant positive) reaction to downgrades (upgrades). Nayar and Rozeff (1994), Elayan et al. (1996), Nayar and Rozeff (1996) and Chandra and Nayar (1998) find results for commercial paper that are similar to previous studies of bond ratings, i.e., statistically significant negative stock price reactions to rating downgrades, but not to rating upgrades. These results suggest that rating downgrades convey new valuable information to the market, while upgrades do not.

2.3 The Interaction between Financial Intermediaries and Rating Agencies

Banks and credit rating agencies perform common services and function similarly in many ways. A question is whether these two information sources provide duplicate information to the

capital market. Best and Zhang (1993) examine announcements of bank loan agreements and financial analysts' earnings forecast error percentages. They conclude that if the other source of information is reliable and is provided first, then banks provide little information to the capital market. Ederington et al. (1987) and Hsueh and Liu (1992) similarly conclude that the announcement effect of rating changes depends on the quantity and quality of existing information available in the market.

Nayar and Rozeff (1994) find that companies having both higher credit ratings and letters of credit have significantly greater market reaction than those with lower ratings and no letters of credit. They conclude that the certification role by rating agencies is different from that of banks. They Stover (1996) investigates the interaction between banks and rating agencies by examining standby letters of credit and bond ratings for newly issued tax-exempt bonds. The certification effect of the banks is confirmed as the market reacts positively to employment of the standby letter of credit and to the quality of the banks.

Monitoring is another common role of both rating agencies and banks. Arguing that bank holding companies (BHC) are monitored by both of bank regulators and rating agencies, Schweitzer et al. (1992) use 95 announcements of changes in BHC debt ratings between 1977 and 1987 to examine whether rating agencies still produce additional information. They find that announcements of downgrades (upgrades) are associated with statistically significant negative (marginally significant positive) abnormal returns. There is no evidence that there is any differential market reaction to the rating changes between bank holding companies and unregulated industrial firms. They conclude that rating agencies do provide information to the capital market, and their monitoring service is not dampened by the monitoring activities of bank regulators.

3. Testable Hypotheses

3.1 Rating Announcement Effects

Bank loans being granted or renewed have been both hypothesized to provide new information (cf. Leland and Pyle (1977), Campbell and Kracaw (1980), Fama (1985) and Kanatas (1987), etc.) regarding borrower creditworthiness and empirically shown to generate abnormal market reaction (Mikkelson and Partch (1986), James (1987), and Lummer and McConnell (1989), among others). The limited evidence (e.g. Nayer and Rozeff (1994), Barron et al. (1997) and Elayan et al. (2003)) regarding market reaction to the assignment of a rating to bond or commercial paper issues is mixed as to whether these provide new information. Furthermore, a signal that essentially duplicates an earlier one typically has been shown to have lesser impact, as

in Ederington et al. (1987), Hsueh and Liu (1992) and Best and Zhang (1993). On these bases, credit rating assignments that occur subsequent to a bank loan initiation or renewal may be thought to provide both duplicate and potentially superseded information. This train of thought leads to the first hypothesis tested in this research. Hypothesis 1: *The announcement of a bank loan credit rating assignment is not expected to generate a significantly positive or negative equity market reaction.*

After assigning ratings, rating agencies will examine the client firms regularly, and respond to any events that may influence the companies' financial position, a significant change in financial position may lead to placement on the *CreditWatch* list. This event may or may not then lead to the action of a change in rating. If the loan is held by the issuing bank throughout its life and is already being monitored by the bank, then the rating agency, as the second auditor, may provide a less important signal to the capital market through rating placements or rating action announcements, again as suggested by Ederington et al. (1987), Hsueh and Liu (1992), and Best and Zhang (1993). However, Schweitzer et al. (1992), Nayar and Rozeff (1994) and Stover (1996) suggest that rating agencies provide different services than banks. Thus, placement of bank loans on *CreditWatch* or rating changes would still provide additional information to the capital market. Which effect is likely to dominate is an empirical question. However, given the findings of most previous researchers, there is no particular reason to suspect there will be a significant reaction to anything but news of a deteriorating position, i.e., placements with a negative implication or a ratings downgrade. This logic leads to the following hypothesis regarding *CreditWatch* placements. Hypothesis 2: *The announcement of a CreditWatch placement with a negative (positive) implication for a bank loan rating is expected to be associated with a significantly negative (positive, but insignificant) equity market reaction.*

In like manner, and for essentially the same reasons the third hypothesis in regard to rating actions is developed as follows. Hypothesis 3: *The announcement of a bank loan rating downgrade (upgrade or affirmation) is expected to be associated with significantly negative (positive, but insignificant or insignificant) equity market reaction.*

3.2 Control Variables

The variables discussed below are used in the univariate tests and multivariate regressions. Each sample is split into above-, and below-median groups, for discrete variables or different groups as described for dummy variables. The expected signs for each variable in the multivariate regressions are also discussed in this section.

Information asymmetry is measured by Tobin's Q (TQ), and is calculated as long-term debt plus the market value of equity divided by (book value of) total assets. Higher TQ ratios are taken to indicate greater information asymmetry. Hsueh and Liu (1992) find that rating change announcements have a stronger impact for firms with less information available to the market. Krishnaswami et al. (1999) find the benefits from monitoring accrue more to the firms with greater information asymmetry. In univariate tests the group with higher (above median) TQ ratios are therefore expected to be associated with stronger market reaction, and the difference between above- and below-median groups should be statistically significant. This difference should therefore have a negative (positive) sign for bad (good) news (e.g. *CreditWatch* placements with negative (positive) implications and rating downgrades (upgrades)). In multivariate regressions it is expected that TQ should have a negative (positive) relationship with market reaction for bad (good) news announcements.

Size (SIZE) is a common variable included in the cross-sectional tests in previous studies because of the well-known size effect and it is measured by the log of total assets. Large companies are usually followed by large group of analysts and investors, which will reduce information asymmetry. Therefore the market reaction associated with large firms should be less strong than for smaller ones (Slovin et al., 1992, and Fama, 1985, cited in Dichev and Piotroski, 2001). In the univariate tests the below-median size group should be associated with significantly stronger market reaction and the difference should be positive (negative) for bad (good) news. In multivariate regressions the relationship between market reaction and firm size is expected to be positive (negative) for bad (good) news.

Leverage (LEV) is typically thought to be an important measurement of a firm's financial position. A company with more leverage faces greater financial risk, and this increases the probability of default. Kliger and Sarig (2000) find that the impact of rating information is greater for high-leveraged firms than for low-leveraged ones. LEV is proxied by long-term debt divided by total equity. In the tests the group with above-median leverage is thereby expected to be associated with stronger market reaction. The expected univariate and regression results are therefore the same as described above for TQ.

Interest coverage is one major difference between bank loan ratings and corporate credit ratings (Bailey (1999)). In addition to the evaluations done via corporate credit ratings, bank loan ratings take into account the characteristics of loans, such as collateral, covenants, and term structures. Therefore, bank loan ratings expressly evaluate the flow of earnings or cash that is available to repay the interest on outstanding obligations. Times interest earned (TIE) describes a company's ability to pay interest from operating income and is used to measure coverage in this

study. It is calculated as earnings before interest and taxes (EBIT) divided by total debt interest. A lower TIE ratio suggests a greater probability that a company will fail to meet its obligation to creditors. Thus, the below-median TIE group should be associated with a stronger market reaction, and therefore the expected univariate and regression results are the same as those described above for SIZE.

Liquidity is particularly important in evaluating short-term financial position or short-term security. Usually bank loans are viewed as shorter-term instruments (Preece and Millineaux (1994)). Elayan et al. (1996) find a strong positive relationship between the current ratio (CRATIO) and commercial paper ratings. CRATIO, unlike leverage and TIE ratios measuring long-term debt management, is specifically used to measure a firm's ability to meet its short-term obligations. The CRATIO is calculated as current assets divided by current liabilities. A higher CRATIO indicates greater liquidity, and a smaller probability that the company will fail to meet its obligation to short-term creditors. Here again, the below-median CRATIO should be associated with a stronger market reaction and the expected univariate and regression results are the same as those described above for SIZE.

Profitability ratios show the combined effects of liquidity, asset and debt management. Return on equity (ROE) is used in this study and it is calculated as net income divided by market value of equity. Investors are theorized to be more sensitive to those companies with lower profitability. The below-median ROE group should thereby generate a stronger market reaction and the expected univariate and regression results are the same as those described above for SIZE.

Rating points (RATP) are used for the sample of rating assignments and placements on the *CreditWatch* list. A number is assigned to each rating, from 28 (AAA) to 1 (D). Diamond (1991) suggests that firms with middle or lower ratings are most able to take advantage of acquiring reputational capital from the outside auditors. The below-median RATP group should then be associated with greater market reaction and again the expectations for the univariate and regression tests are the same as those for SIZE.

The change in rating points (ΔRATP) is used for the rating action sample. It is calculated as new rating points minus old rating points. It therefore is negative (positive) for rating downgrades (upgrades), and is zero for affirmations. This variable is found to be significant in Holthausen and Leftwich (1986), Schweitzer et al. (1992), Hand et al. (1992), Matolcsy and

Lianto (1995), Elayan et al. (1996) and Barron et al. (1997). In the tests the group with larger absolute values of ΔRATP should be associated with stronger market reaction.[1]

The lowest rating to qualify as investment grade (INVG) is BBB- by S&P (Baa3 by Moody's). Many institutional investors, pension funds for example, are restricted to investing in above-investment-grade securities. If investment grade is viewed as a benchmark of bank loan credit quality, it can be expected that any creditworthiness announcement effects will be stronger for firms with below-investment-grade ratings (cf. Hand et al., 1992, and Dichev and Piotroski, 2001). In the regressions a dummy variable is set to one if the rating is below-investment and is zero, otherwise. The below-INVG group should be associated with a stronger market reaction so the univariate and regression results are expected to be the same as those described above for SIZE.

Across or within class (CLASS) is a control variable for the sample of rating downgrades and upgrades. Holthausen and Leftwich (1986) detect abnormal negative excess returns only for the sub-sample of downgrade announcements that are across class, but not those within class. This variable is also employed by Hsueh and Liu (1992) and Barron et al. (1997). In the tests the group with rating changes across class are expected to be associated with a stronger market reaction. For the univariate tests the difference between CAARs for rating changes across class, versus within class, are expected to be significantly negative (positive) for bad (good) news announcements. In the multivariate regressions the dummy variable CLASS is set to one for the announcements of across-class changes, and is zero otherwise. It is expected that the relationship between CLASS and market reaction should be negative (positive) for bad (good) news.

Across investment grade (ACINV) is used for rating actions to test whether an upgrade (downgrade) action that moves a bank loan rating into (out of) investment grade is associated with a larger price response (Holthausen and Leftwich (1985)). This variable is also used by Hand et al. (1992) and Matolcsy and Lianto (1995). In univariate tests the group with rating changes across INVG should be associated with a stronger market reaction. The difference (ACINV minus non-ACINV) should be significantly negative (positive) for bad (good) news announcements. In the multivariate regressions, the dummy variable ACINV takes the value one for those rating changes across investment grade, and is zero otherwise. The relationship between ACINV and market reaction is expected to be negative (positive) for bad (good) news.

[1] Technically, the difference in the univariate tests is calculated as the one-point change CAAR minus the two-point change CAAR. A more extreme bad (good) news change should be associated with a larger negative (positive) reaction. Thus the expectations in the univariate and regression tests are the same as those for SIZE discussed above.

4. Data Description and Methods of Analysis

4.1 Data Description

Announcements of bank loan rating assignments, *CreditWatch* placements, and rating actions were collected from 1996 to 2002. The following procedure was employed to compile the final sample. First, a list of bank loan rating announcements was complied from the following sources: 1) *Standard and Poor's Credit Analysis Reference Disc*, 2) Bank loan rating announcements and lists from Standard and Poor's website (www.standardandpoors.com), 3) *Reuters' Business Briefing*, and 4*) Dow Jones Interactive*. Second, daily returns around the announcement date were collected from the University of Chicago's Center for Research in Security Prices (CRSP) daily file. Third, *Dow Jones Interactive* was also used to identify any confounding events[2] around the announcement date, specifically in the three-day window (from one day before, to one day after, the announcement date). Finally, additional accounting information for each company was collected from the *DataStream* database and the EDGAR database on the website of the *U.S. Securities and Exchange Commission* (www.sec.gov).

The primary announcement data satisfies the following requirements. First, the companies having bank loan rating announcements are included in the CRSP database (or, have a CUSIP number). Second, daily returns are available for the period of 240 days before, to 15 days after, the announcement date. Third, no other confounding announcements occurred within the three-day window from one day before, to one day after the announcement date of the bank loan rating. Fourth, no other securities (bonds, commercial papers, preferred stocks, etc.) were rated at the same time as the bank loan rating. The initial sample of 4,442 announcements of bank loan ratings is subjected to the above criteria to produce the final sample of 571 announcements.[3] In the placement subset, for example, contamination effects lead to deletion of more than half the number of those announcements.

Table 1 provides a breakdown of the bank loan rating announcements by year. Most of the assignment announcements occur in 1998 (31%), the majority of placement announcements with a negative implication, which dominate the placement group (32 out of 39), occur in 1999 and 2000 (31% each year). The largest number of announcements of rating downgrades, which dominate the action group (121 out of 267), happen in 2000 (38%). As noted in the table, the sample size is particularly small in 1996 because the rating agencies started to rate bank loans

[2] This paper adopts a restrictive definition of contaminated events, which includes, mergers or acquisitions, dividend payments, security issues, leveraged buyouts, lawsuits, earning announcements, share buybacks, loan repayments or initiations and changes in top management, for example.

[3] Two thousand, three hundred and twenty-three announcements are dropped due to firms being unlisted. Five hundred eight (1040) announcements are dropped for insufficient return data on CRSP during the estimation period and the announcement period (contaminated).

from the middle of 1996 (specifically June 5, 1996 for S&P). The table also shows the extremely large jump in rating-event numbers from 1996 to 1997, matching the trend in volume of collaterized loan and debt obligations.

Insert Table 1 about here.

Table 2 provides a breakdown by ratings[4] of assignment, *CreditWatch* placement and action announcements. Sixty-nine percent of the announcements have ratings assigned below the investment grade (BBB-), while the most are BB- (22%), B+ (18%), and BB (15%). In the largest subset of placement announcements, placements with negative implication, 81% of the announcements have ratings below the investment grade (BBB-), while the most are BB- (22%), BB (19%), and B+ (13%). The breakdown of the action announcements shows that there are 104 downgrades (23% are BB-), 47 upgrades (27% are B+), and 75 rating affirmations [5] (the largest group is BB at 18%).

Insert Table 2 about here.

4.2 Methods of Analysis

There are three types of tests employed in this study. First, a traditional event study method is used to examine whether bank loan credit ratings generate abnormal excess returns. Second, univariate tests are used to determine if there are significant differences between announcement-period returns split on the basis of relevant variables into above- and below-median groups. Third, multivariate regression analysis is used to provide evidence on whether any of the hypothesized control variables offer significant explanatory value for the announcement-period equity returns.

[4] Initially Standard and Poor's used a scale of one through 10, where one was the highest, for the bank loan ratings. The correlation of bank loan ratings with the traditional scale follows. AAA, AA+, AA, AA- = 1; A+, A, A- = 2; BBB+, BBB = 3; BBB-, BB+ = 3 or 4 or 5; BB, BB- = 4 or 5 or 6; B+, B = 5 or 6 or 7; B- = 6 or 7 or 8, CCC+, CCC, CCC- = 8; CC, C = 9; and D = 10 (*Dow Jones Interactive* June 5, 1996).

[5] Note: These numbers do not match the totals in Table 2 for the reasons that follow. In addition to the rating changes, an announcement is also counted (in Table 2) as a downgrade (upgrade) if its outlook is changed when no rating is provided or the rating action is affirmed. There are three outlook types, i.e., negative, positive and stable. There are 17 announcements of an outlook downgrade (5 from positive to stable and 12 from stable to negative) and 21 announcements of an outlook upgrade (10 from stable to positive and 11 from negative to stable).

4.2.1 Event Study Tests for Abnormal Returns

The market model is used to estimate the abnormal security returns associated with bank loan rating assignments, *CreditWatch* placements and action announcements. The intercept and slope coefficients that are used in the market model are estimated over a 150-day period, from day t-240 to day t-91, relative to the announcement day (t=0). The standardized abnormal return approach is used to generate z-test statistics (SCS Z) as in Patell (1976). The generalized sign test (GSIGN Z) is used to test for the fraction of positive and negative average abnormal returns. The null hypothesis for the GSIGN Z is that the fraction of positive returns is the same as in the estimation period. An example of the GSIGN Z is presented by Cowan (1992). Univariate tests are used to test for significant differences in cumulative average abnormal returns (CAAR) between groups split on the basis of the different variables described in the preceding section.

4.2.2 Multivariate Regression Models

Multivariate regressions are used to determine if the control variables described previously offer any ability to explain the cumulative, average abnormal returns for the credit rating announcements. In these regressions the dependent variable is the three-day (day t-1 to day t+1) CAAR. The assignment, placement, and action announcement regression models are as shown below. The expected signs for each variable (or the difference) have been discussed in the last section, and these are shown in the tables depicting the regression (univariate) results. The models for rating assignments and placements, and rating actions, are given in (1) and (2), respectively.

$$\text{CAAR} = \alpha_0 + \alpha_1\text{TQ} + \alpha_2\,\text{SIZE} + \alpha_3\text{LEV}^{6} + \alpha_4\text{TIE} + \alpha_5\text{CRATIO} + \alpha_6\text{ROE}^{7} + \alpha_7\text{RATP} + \alpha_8\text{INVG} + \varepsilon. \quad (1)$$

$$\text{CAAR} = \alpha_0 + \alpha_1\text{TQ} + \alpha_2\,\text{SIZE} + \alpha_3\text{LEV} + \alpha_4\text{TIE} + \alpha_5\text{CRATIO} + \alpha_6\text{ROE} + \alpha_7\Delta\text{RATP} + \alpha_8\text{INVG} + \alpha_9\text{CLASS} + \alpha_{10}\text{ACINV} + \varepsilon. \quad (2)$$

5. Empirical Results

5.1. Market Reaction to Bank Loan Rating Announcements

The event study results for the 265 announcements of bank loan rating assignments are shown in the top section of Table 3. The average abnormal returns (AAR), median abnormal

[6] Alternative leverage proxies (i.e., long-term debt divided by total assets, and total liabilities divided by total assets) are used in the tests and yield results that are not qualitatively different.

[7] An alternative proxy for profitability termed basic earning power (calculated as EBIT divided by total assets) is also employed in the tests and yields results similar to those reported.

returns (MAR), the number of positive versus negative abnormal returns, SCS Z and GSIGN Z are reported from the day before (t-1), to the day after (+1) the announcement date. Cumulative returns are also provided for various windows of interest. The three-day CAAR and cumulative median abnormal returns (CMAR) are –0.25% (-0.45%), with an SCS z-test statistic of -0.763, which is insignificant. The ratio of positive to negative returns is 76:89, and the GSIGN Z is insignificant at -0.254. Further, this nearly even ratio of positive to negative returns suggests that a credit rating assignment is neither a uniformly good news or bad news event. These findings support Hypothesis 1 that the announcement of a bank loan rating assignment provides no new information and it is not associated with a significant abnormal market reaction.

Insert Table 3 about here.

Table 3 also reports a summary of the event study output for the announcements of bank loan rating placements on the *CreditWatch* list. The middle panel reports the results for the 32 placements with a negative implication. The three-day CAAR is –2.79%, which yields a SCS z-test statistic of –2.974 (significant at the 1% level). The ratio of positive to negative returns is 8:24, and the GSIGN Z is –2.714, which is similarly significant. The two-day CAARs are also significant. Therefore, the results support Hypothesis 2 that announcements of bank loan rating placements with a negative implication are expected to be associated with a significant negative abnormal market reaction. This finding is consistent with Barron et al. (1997).

The lower panel reports the output for the 7 placement announcements with a positive implication. The three-day CAAR (CMAR) is 0.36% (1.82%), with a z-test statistic (0.385) that is insignificant. The ratio of positive to negative returns is 4:3, and the GSIGN Z is 0.556. The results for the two-day event window are not significant either. Consistent with previous studies, the results support the relevant part of Hypothesis 2 that these positive placement announcements of bank loan ratings are expected to be associated with a positive but insignificant abnormal market reaction. However, this sample is too small to draw any firm conclusion.

Table 3 (continued) also summarizes the event study output for the bank loan rating action announcements. The top panel reports the results for the 121 announcements of a rating downgrade. The three-day CAAR (CMAR) is –3.07 (-2.41%), with an SCS Z statistic of –5.224, which is statistically significant at the 0.1% level. The ratio of positive to negative returns is 43:78 and the GSIGN Z is –3.022, which is statistically significant at 1% level. The z-test results (GSIGN Z) of the two-day return window are similarly significant at the 0.1% (1.0%) level as well. The results support Hypothesis 3 that announcements of bank loan rating downgrades are

expected to be associated with a significantly negative abnormal market reaction. This result is consistent with previous studies like Holthausen and Leftwich (1986), Glascock et al. (1987), Hand et al. (1992), Nayar and Rozeff (1994), and Elayan et al. (1996).

The middle panel of Table 3 Cont'd. reports the event-study results for the 68 announcements of a rating upgrade. The three-day CAAR is 0.14%, with an insignificant z-test statistic of 0.308. The ratio of positive to negative returns is 34:34, and the GSIGN Z is 0.476, which is also insignificant. The results for the two-day return window are similar and insignificant. The results support Hypothesis 3 that the announcement of bank loan rating upgrades should be associated with a positive, but insignificant abnormal market reaction. These insignificant results for positive action announcements are consistent with previous studies. This finding supports the hypothesis suggested by Schweitzer et al. (1992) that the reputation of rating agencies may depend more on the early recognition of deterioration than the improvement of a company's financial condition.

The bottom panel of Table 3 Cont'd. reports results for the 78 announcements of an affirmed rating. The three-day CAAR is –0.48%, with an insignificant z-test statistic of –0.996. The ratio of positive to negative returns is 35:43, and the GSIGN Z of –0.458 is insignificant. The results of the two-day window are similar and are also insignificant. They support Hypothesis 3 that announcements of bank loan rating affirmations are expected to be associated with an insignificant abnormal market reaction.

5.2. Univariate Tests of Returns based on Control Variables

The left-hand side of Table 4 provides the univariate results for tests of significant differences in the Assignment CAARs split on the basis of the control variables (i.e., TQ, SIZE, LEV, TIE, CRATIO, BEP, RATP and INVG). In these tests the difference between the above-, and below-median groups is significant for LEV, TIE and RATP at the 10% level. The result for LEV is not as expected since firms with above-median leverage were predicted to experience a greater reaction. For TIE since both CAARs are negative the positive difference does accord with expectations that firms having a sub-par interest coverage ratio will experience a more extreme market reaction. The RATP result reflects a more positive reaction from a relatively higher rating assignment as expected.

On the right-hand side of Table 4 the univariate test statistics for *CreditWatch* placements with a negative implication are shown.[8] All of the above- and below-median CAARs are

[8] Univariate and regression tests are not conducted for the placements with positive implications due to small number of observations available.

negative since this is a bad news event. The differences are significant for TQ (10% level), TIE (10%), BEP (1%) and INVG (5%). The below-median TIE and BEP, and non-investment grade groups have a more negative reaction as predicted. Contrary to expectations, the above-median TQ group which is meant to reflect greater information asymmetry has a less negative reaction.

Insert Table 4 about here.

Table 5 depicts the univariate test results for rating action announcements. The left-hand side results for rating downgrades again show all of the grouped CAARs to be negative as expected for a bad news announcement. The differences for SIZE (1% level), LEV (5%), CRATIO (5%), BEP (1%) and ΔRATP (5%) prove to be significant although the sign for SIZE is not as expected. Thus, a rating downgrade is found to generate a more negative reaction for firms that are larger, have greater leverage, are less liquid, are less profitable and have a larger downgrade.

Insert Table 5 about here.

The center section of Table 5 shows the test statistics for rating upgrades. Three variables generate significant differences, namely CRATIO (10% level), CLASS (1%) and ACINV (10%), but only the CRATIO difference has the expected sign. Both the across CLASS and across investment-grade groups generate a negative CAAR which is surprising since these events should be "better" news than their counterparts. Admittedly the ACINV across group only has three observations making any conclusion here suspect.

The univariate results for rating affirmations are shown in the right-hand side of Table 5. Due to the nature of an affirmation significant differences between the groups are not necessarily expected, however two significant differences are observed. The TIE difference z-statistic suggests that firms with above-median TIEs experience a significantly more negative market reaction. The significant z-statistic for the ROE difference may be interpreted as showing that more profitable firms suffer more from a ratings affirmation.

5.3. Regression Tests of Market Reaction to Credit Rating Announcements

Two multivariate regression models[9] that attempt to explain the three-day CAAR during the bank loan rating assignment period are shown in Table 6**.** The LEV parameter estimates turn

[9] For each rating type model 1 includes all of the previously-identified control variables. Model 2 utilizes a

out to be significantly different from zero in both models using both the standard t-test and the White[10] (1980) test statistics and they have the expected negative sign. Additionally, the ROE variable is significant in model 2 based on the White test statistic. Thus, firms with more leverage experience less positive or more negative reaction upon the rating assignment while the opposite is true for firm profitability. The F-test value for model 1 (model 2) is 2.22 (3.08) and is significant at the 5% (1%) level, thus rejecting the hypothesis of no systematic relationship between the dependent and explanatory variables. However, the adjusted R-squares indicate low predictive ability for the overall regressions.

Insert Table 6 about here.

Table 7 provides the results of the two multivariate regressions attempting to explain the three-day CAAR for the negative-implication *CreditWatch* placements. The TQ, LEV and ROE variables are significant based on the White test, however their signs are all opposite to expectations. This result may be interpreted as showing that firms with lower information asymmetry, lower leverage and higher profitability are more adversely impacted by being negatively-placed on the *CreditWatch* list. The F-values for both models are insignificant and the values for the adjusted R-squares suggest the regression models offer little explanatory power for the announcement-period market reaction. These results may be partially due to the rather small number of observations (33) in this group.

Insert Table 7 about here.

Table 8 provides the results for two multivariate regressions that attempt to explain the three-day CAAR bank loan rating downgrades. Two upgrade regression models are also included in the table for the sake of brevity. For downgrades the SIZE variable is marginally significant using both the t-test and White test statistics. However, this variable's sign is expected to be positive. Therefore, this result does not suggest that a rating downgrade generates a more negative response for small firms. In model 2, the ROE variable is also significant (White test) and its sign is positive as expected. The F-values for both models are insignificant although for model 2 it nearly reaches 10% significance. The nearly-zero adjusted R-squares suggest little predictive ability.

more parsimonious specification developed using a step-wise approach that attempts to retain as many meaningful variables as possible while selectively dropping those that do not increase explanatory power.

[10] The White (1980) test is based on a consistent variance/covariance matrix that has been corrected for heteroscedasticity.

The LEV, ΔRATP and CLASS variables are significant for the both Model 1 and 2 upgrade regressions. The significant result of change in rating points indicates the magnitude of good news has impact to the investors. However, investors are less impressed when firms with an upgrade into a higher class are upgraded. The results for LEV can be interpreted as showing that investors find announcements of a rating upgrade to be more informative for less-leveraged firms. Model 2 generates a significant F-test (at the 5% level). The adjusted R-squares in these two regressions are 0.095 and 0.135, respectively. These two regressions suggest the greatest predictive ability of any similar tests conducted in this research.

Insert Table 8 about here.

6. Summary and Conclusions

Credit ratings of bank loans present a unique opportunity to examine whether rating agencies duplicate existing information or convey any additional value to the capital market. This issue arises because of the highly-similar functions of certification and monitoring performed by both financial intermediaries and rating agencies.

Consistent evidence is provided that in spite of bank signals already in place, negative announcements by rating agencies provide useful information to the capital market. This information transmission proves to be significant only for the negative signals implicit in rating downgrades and placements on the *CreditWatch* list with negative implications.

These results suggest that the information provided by rating agencies must be different from that developed by banks. Otherwise, there would be no significant abnormal market reaction to any type of announcement by credit rating agencies regarding loans that are already being monitored or certified by banks. The findings in this study also suggest that the value of rating agencies (a la Schweitzer et al. (1992)) depend most on recognizing the deterioration in the firm's financial position and conveying this news to the market. This conclusion is supported by the finding that the identification of improving fortunes by the credit rating agencies does not generate a significant reaction.

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Table 1
Frequency Distribution of Bank Loan Rating Announcements by Years

The final sample of 571 announcements is collected during the period of 1996 to 2002. The sample size is particularly small in 1996 because the rating agencies started to rate bank loans from the middle of 1996. All are shown with the number (No.) of events by year and their percentage of the total.

Year	Assignment		Placement				Action						Total	
			Negative		*Positive*		*Downgrade*		*Upgrade*		*Affirmed*			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1996	5	1.89	--	--	--	--	--	--	--	--	--	--	5	0.88
1997	76	28.68	--	--	--	--	1	0.83	6	8.82	3	3.85	86	15.06
1998	83	31.32	4	12.50	2	28.57	11	9.09	9	13.24	17	21.79	126	22.07
1999	45	16.98	10	31.25	3	42.86	25	20.66	18	26.47	11	14.10	112	19.61
2000	29	10.94	10	31.25	1	14.29	46	38.02	17	25.00	27	34.62	130	22.77
2001	13	4.91	6	18.75	--	--	24	19.83	13	19.12	15	19.23	71	12.43
2002	14	5.28	2	6.25	1	14.29	14	11.57	5	7.35	5	6.41	41	7.18
Total	265	100.00	32	100.00	7	100.00	121	100.00	68	100.00	78	100.00	571	100.00

Table 2
Frequency Distribution of Announcements of Assignment, *CreditWatch* Placements and Actions by Ratings

The categorization of each rating is based on the format employed by Standard and Poor's. Ratings provided by other agencies are transformed into a Standard and Poor's equivalent. All are shown with the number (No.) of events by ratings and their percentage of the total within each category.

	Assignment		**Placement**				**Actions**					
			Negative		*Positive*		*Downgrade*		*Upgrade*		*Affirmed*	
Rating	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
AA-	--	--	--	--	--	--	--	--	--	--	1	1.28
A+	4	1.51	--	--	--	--	--	--	--	--	--	--
A	11	4.15	--	--	--	--	--	--	2	4.26	5	6.41
A-	8	3.02	--	--	--	--	3	2.88	--	--	5	6.41
BBB+	20	7.55	1	3.13	--	--	5	4.81	--	--	6	7.69
BBB	19	7.17	2	6.25	--	--	8	7.69	--	--	7	8.97
BBB-	21	7.92	3	9.38	--	--	9	8.65	3	6.38	3	3.85
BB+	27	10.19	3	9.38	2	28.57	10	9.62	2	4.26	10	12.82
BB	41	15.47	6	18.75	1	14.29	8	7.69	10	21.28	14	17.95
BB-	59	22.26	7	21.88	2	28.57	24	23.08	10	21.28	11	14.10
B+	49	18.49	4	12.50	2	28.57	17	16.35	13	27.66	9	11.54
B	5	1.89	3	9.38	--	--	13	12.50	3	6.38	6	7.69
B-	1	0.38	2	6.25	--	--	3	2.88	3	6.38	1	1.28
CCC+	--	--	1	3.13	--	--	2	1.92	1	2.13	--	--
CCC	--	--	--	--	--	--	1	0.96	--	--	--	--
CCC-	--	--	--	--	--	--	1	0.96	--	--	--	--
Investment	83	31.32	6	18.75	--	--	25	24.04	5	10.64	27	34.62
Speculative	182	68.68	26	81.25	7	100.00	79	75.96	42	89.36	51	65.38
Total	265	100.00	32	100.00	7	100.00	104	100.00	47	100.00	78	100.00

Table 3
Equity Market Returns Around the Announcement of
Bank Loan Credit Rating Assignments, CreditWatch Placements and Rating Actions

N is the number of observations. AAR is the average abnormal return. MAR is the median abnormal return. Pos: Neg shows how many of the firm returns are positive or negative on a given day. SCS Z is the statistic testing for a significant difference of the average abnormal return from zero. GSIGN Z is the generalized sign Z, which is the non-parametric test statistic for a significant difference from zero that considers the ratio of positive to negative returns. AAR and MAR are from the market model using the standardized residual method. CAAR is the equally weighted cumulative average abnormal return, and CMAR is the median cumulative abnormal return.

Bank Loan Credit Rating Assignments

Day	N	AAR (%)	MAR (%)	Pos: Neg	SCS Z	GSIGN Z
-1	265	-0.17	-0.29	71:94	-1.216	-1.034
0	265	0.06	0.06	86:79	0.454	1.306
1	265	-0.14	-0.15	76:89	-0.519	-0.254
Days	**N**	**CAAR (%)**	**CMAR (%)**	**Pos: Neg**	**SCS Z**	**GSIGN Z**
[-1,+1]	265	-0.25	-0.45	76:89	-0.763	-0.254
[-1,0]	265	-0.11	-0.06	79:86	-0.621	0.214
[0,+1]	265	-0.08	0.12	84:81	-0.038	0.994
[-15,-2]	265	-0.13	-0.66	79:86	0.077	0.214
[+2,+15]	265	0.60	-0.40	78:87	-0.440	0.058
[-15,+15]	265	0.22	-0.83	78:87	-0.487	0.058

Credit*Watch* Placements with Negative Implications

Day	N	AAR (%)	MAR (%)	Pos: Neg	SCS Z	GSIGN Z
-1	32	-1.07	-0.26	13:19	-1.492	-0.945
0	32	-1.72	-1.40	11:21	-2.510*	-1.653$
1	32	-0.62	-1.11	14:18	-0.719	-0.592
Days	**N**	**CAAR (%)**	**CMAR (%)**	**Pos: Neg**	**SCS Z**	**GSIGN Z**
[-1,+1]	32	-2.79	-2.40	8:24	-2.974**	-2.714**
[-1,0]	32	-3.41	-3.29	7:25	-2.976**	-3.067**
[0,+1]	32	-2.34	-2.30	9:23	-2.143*	-2.360*
[-15,-2]	32	-1.72	0.40	17:15	-0.910	0.469
[+2,+15]	32	0.89	0.54	17:15	-0.115	0.469
[-15,+15]	32	-4.24	-10.68	12:20	-1.572	-1.299

Credit*Watch* Placements with Positive Implications

Day	N	AAR (%)	MAR (%)	Pos: Neg	SCS Z	GSIGN Z
-1	7	0.47	0.96	4:3	0.500	0.556
0	7	0.18	-0.74	3:4	0.424	-0.202
1	7	-0.29	0.58	4:3	-0.305	0.556
Days	**N**	**CAAR (%)**	**CMAR (%)**	**Pos: Neg**	**SCS Z**	**GSIGN Z**
[-1,+1]	7	0.36	1.82	4:3	0.385	0.556
[-1,0]	7	0.65	1.13	4:3	0.742	0.556
[0,+1]	7	-0.11	-0.16	3:4	0.162	-0.202
[-15,-2]	7	2.36	6.29	5:2	0.832	1.313
[+2,+15]	7	-2.90	-3.40	3:4	-0.757	-0.202
[-15,+15]	7	-0.17	2.97	4:3	0.167	0.556

***, **, *, and $ indicate significance at the 0.1%, 1%, 5%, and 10% levels, respectively.

Table 3 Cont'd.

Bank Loan Credit Rating Downgrades

Day	N	AAR (%)	MAR (%)	Pos: Neg	SCS Z	GSIGN Z
-1	121	-0.86	-0.62	49:72	-2.419*	-1.931$
0	121	-1.47	-0.85	44:77	-3.597***	-2.840**
1	121	-0.74	-0.96	49:72	-2.107*	-1.931$
Days	**N**	**CAAR (%)**	**CMAR (%)**	**Pos: Neg**	**SCS Z**	**GSIGN Z**
[-1,+1]	121	-3.07	-2.41	43:78	-5.224***	-3.022**
[-1,0]	121	-2.33	-1.57	43:78	-4.291***	-3.022**
[0,+1]	121	-2.21	-1.81	41:80	-4.640***	-3.386***
[-15,-2]	121	-1.43	0.50	63:58	-0.359	0.615
[+2,+15]	121	-0.84	0.04	61:60	0.206	0.251
[-15,+15]	121	-5.35	-1.59	57:64	-1.268	-0.476

Bank Loan Credit Rating Upgrades

Day	N	AAR (%)	MAR (%)	Pos: Neg	SCS Z	GSIGN Z
-1	68	0.46	0.37	40:28	1.091	1.934$
0	68	-0.15	-0.18	30:38	-0.084	-0.496
1	68	-0.17	-0.69	27:41	-0.325	-1.224
Days	**N**	**CAAR (%)**	**CMAR (%)**	**Pos: Neg**	**SCS Z**	**GSIGN Z**
[-1,+1]	68	0.14	0.00	34:34	0.308	0.476
[-1,0]	68	0.31	0.16	38:30	0.691	1.448
[0,+1]	68	-0.32	-0.31	33:35	-0.315	0.233
[-15,-2]	68	0.43	-0.38	34:34	0.256	0.476
[+2,+15]	68	-0.51	-1.46	33:35	0.008	0.233
[-15,+15]	68	0.07	-0.36	32:36	0.285	-0.010

Bank Loan Credit Rating Affirmations

Day	N	AAR (%)	MAR (%)	Pos: Neg	SCS Z	GSIGN Z
-1	78	0.05	-0.58	35:43	-0.171	-0.458
0	78	-0.26	-0.42	33:45	-0.806	-0.912
1	78	-0.27	-0.29	35:43	-0.840	-0.458
Days	**N**	**CAAR (%)**	**CMAR (%)**	**Pos: Neg**	**SCS Z**	**GSIGN Z**
[-1,+1]	78	-0.48	-0.49	35:43	-0.996	-0.458
[-1,0]	78	-0.21	-0.68	35:43	-0.652	-0.458
[0,+1]	78	-0.53	-0.14	37:41	-1.174	-0.005
[-15,-2]	78	3.44	0.32	45:33	1.346	1.809$
[+2,+15]	78	2.16	-0.12	38:40	0.892	0.222
[-15,+15]	78	5.12	1.75	41:37	1.128	0.903

***, **, *, and $ indicate significance at the 0.1%, 1%, 5%, and 10% levels, respectively.

Table 4
Equity Market Reaction of Control Variables to Rating Assignment and *CreditWatch* Placement (with Negative Implication) Announcements

Sign is the expected sign of the difference. N is the number of returns for a given category. CAAR is the three-day (t-1, t+1) cumulative average abnormal return percentage. Z-test is the test statistic testing for a significant difference between the CAAR and zero. TQ is Tobin's Q, which is the sum of total liabilities and market value of equity divided by book value of total assets. SIZE is the log of total assets. LEV is long-term debt divided by total equity. TIE is times interest earned calculated as earnings before interest and taxes divided by long-term debt interest. CRATIO is the current ratio. ROE is return on equity calculated as net income divided by market value of equity. RATP is rating points. INVG is investment grade. Difference is the above median CAAR minus the below median CAAR, or as specified otherwise.

	Bank Loan Credit Rating Assignments				***CreditWatch* Placements with Negative Implications**			
	Sign	**N**	**CAAR**	**Z-test**	**Sign**	**N**	**CAAR**	**Z-test**
TQ								
Above median		132	-0.38	-0.427		16	-2.35	-1.933$
Below median		133	-0.32	-0.874		16	-4.48	-2.280*
Difference	–	--	-0.06	-0.168	–	--	2.13	1.717$
SIZE								
Above median		132	-0.35	-0.394		16	-3.64	-2.255*
Below median		133	-0.32	-0.874		16	-3.19	-1.944$
Difference	+	--	-0.03	-0.083	+	--	-0.45	-0.360
LEV								
Above median		131	-0.02	0.163		16	-2.90	-2.884**
Below median		132	-0.63	-1.352		16	-3.93	-1.877$
Unknown		3	-4.34	-0.613		--	--	--
Difference	–	--	0.61	1.703$	–	--	1.03	0.831
TIE								
Above median		131	-0.02	-0.004		16	-2.34	-1.258
Below median		131	-0.65	-1.217		16	-4.49	-3.851***
Unknown		3	-1.79	-0.512		--	--	--
Difference	+	--	0.63	1.743$	+	--	2.15	1.726$
CRATIO								
Above median		131	-0.33	-0.604		16	-2.91	-1.408
Below median		131	-0.36	-0.689		16	-3.92	-2.718**
Unknown		3	-0.81	-0.088		--	--	--
*Difference	+	--	0.03	0.083	+	--	1.01	0.809
ROE								
Above median		132	-0.11	0.530		16	-2.83	-1.435
Below median		133	-0.60	-1.637		16	-4.00	-3.454***
Difference	+	--	0.49	1.369	+	--	1.17	0.945
RATP								
Above median		110	0.04	-0.099		15	-3.42	-2.004*
Below median		155	-0.63	-1.149		17	-3.41	-2.514*
Difference	+	--	0.67	1.814$	+	--	-0.01	-0.008
INVG								
Investment Grade		83	-0.09	-0.093		6	-0.51	-0.334
Non Invest Grade		182	-0.47	-1.080		26	-4.09	-3.206**
Difference	+	--	0.38	0.103	+	--	3.58	2.239*

***, **, *, and $ indicate significance at the 0.1%, 1%, 5%, and 10% levels, respectively.

Table 5
Equity Market Reaction of Control Variables of Rating Action Announcements

Sign is the expected sign of the difference. N is the number of returns for a given category. CAAR is the percentage, three-day (t-1, t+1) cumulative average abnormal return. Z-test is the test statistic testing for a significant difference between the CAAR and zero. TQ is Tobin's Q, which is the sum of total liabilities and market value of equity divided by book value of total assets. SIZE is the log of total assets. LEV is long-term debt divided by total equity. TIE is times interest earned calculated as earnings before interest and taxes divided by long-term debt interest. CRATIO is the current ratio. Return on equity (ROE) is net income divided by market value of equity. ΔRATP is the change in rating points. INVG is investment grade. Difference is Above median CAAR minus the Below median CAAR, or as specified otherwise. NA means not applicable.

	Downgrades				Upgrades				Affirmations		
	Sign	**N**	**CAAR**	**Z**	**Sign**	**N**	**CAAR**	**Z**	**N**	**CAAR**	**Z**
TQ											
Above		60	-2.84	-3.750***		34	0.78	0.821	39	-0.66	-0.921
Below		61	-3.30	-3.636***		34	-0.50	-0.392	39	-0.30	-0.521
Difference	—	--	0.46	0.584	+	--	1.28	1.599	--	-0.36	-0.503
SIZE											
Above		60	-4.23	-5.200***		34	0.32	0.314	39	-0.64	-0.988
Below		61	-1.93	-2.228*		34	-0.04	0.083	39	0.46	1.062
Difference	+	--	-2.30	-2.918**	—	--	0.36	0.446	--	-1.10	-1.532
LEV											
Above		60	-4.04	-3.883***		34	-0.12	-0.036	39	-0.93	-0.507
Below		61	-2.12	-3.583***		34	0.40	0.484	39	-0.03	-0.865
Difference	—	--	-1.92	-2.438*	+	--	-0.52	-0.647	--	-0.90	-1.246
TIE											
Above		57	-2.53	-4.495***		34	0.21	0.774	39	-1.42	-2.795 **
Below		62	-3.65	-3.100**		34	0.07	-0.374	39	0.46	1.062
unknown		2	0.45	0.158		--	--	--	--	--	--
Difference	+	--	1.12	1.394	—	--	0.14	0.172	--	-1.88	-2.571 *
CRATIO											
Above		60	-2.28	-4.044***		34	-0.62	-0.789	38	-0.39	-0.793
Below		60	-3.88	-3.419***		34	0.91	1.004	39	-0.57	-0.593
unknown		1	-2.41	--		--	--	--	1	-0.59	--
Difference	+	--	1.60	2.027*	—	--	-1.53	-1.912 $	-1	0.18	0.249
ROE											
Above		60	-2.47	-3.857***		34	-0.31	-0.093	39	-1.47	-2.380*
Below		61	-3.60	-3.513***		34	0.59	0.444	39	0.51	0.464
Difference	+	--	1.19	-1.490	—	--	-0.90	-1.119	--	-1.98	-2.745**
ΔRATP											
= 0		19	-1.40	-0.644		21	-0.04	-0.094	NA	NA	NA
= 1		65	-2.63	-3.580***		42	0.03	-0.075	NA	NA	NA
= 2		37	-4.70	-4.344***		5	1.84	3.347 ***	NA	NA	NA
Difference	+	--	2.07	2.269*	—	--	-1.81	-1.120	NA	NA	NA
INVG											
INVG		18	-2.13	-2.777**		8	1.47	0.987	27	-1.13	-2.383*
Non-INVG		103	-3.23	-4.613***		60	-0.04	-0.288	51	-0.14	0.484
Difference	+	--	1.10	0.985	—	--	1.51	1.201	--	-0.99	-1.281
CLASS											
Across		54	-2.59	-3.302 ***		17	-1.74	-1.535	NA	NA	NA
Within		67	-3.46	-4.025 ***		51	0.77	1.264	NA	NA	NA
Difference	—	--	0.87	1.101	+	--	-2.51	-2.711 **	NA	NA	NA
ACINV											
Across		11	-3.46	-2.056 *		3	-3.36	-1.789 $	NA	NA	NA
Not across		110	-3.03	-4.803 ***		65	0.30	0.757	NA	NA	NA
Difference	—	--	-0.43	-0.314	+	--	-3.66	-1.867 $	NA	NA	NA

***, **, *, and $ indicate significance at the 0.1%, 1%, 5%, and 10% levels, respectively.

Table 6
Cross-sectional Multivariate Regression Results for Assignment Announcement Day Returns

The dependent variable is the cumulative average abnormal return (CAAR) during the three-day (day t-1, day t+1) assignment announcement period. Ind. Var. is the independent variable. Exp. Sign is the expected sign of each independent variable. Par. Est. refers to the parameter estimate. T-stat is the t-statistic testing whether the parameter estimate is significantly different from zero. Adj R^2 is the adjusted coefficient of determination, squared. N is the number of announcements in a given category. TQ is Tobin's Q, which is the sum of total liabilities and market value of equity divided by book value of total assets. SIZE is the log of total assets. LEV is long-term debt divided by total equity. TIE is times interest earned calculated as earnings before interest and taxes divided by long-term debt interest. CRATIO is the current ratio. Return on equity (ROE) is net income divided by market value of equity. RATP is rating points. INVG is investment grade. NA indicates not applicable.

		MODEL 1			MODEL 2		
Ind. Var.	**Exp. Sign**	**Par. Est.**	**T-stat**	**White test**	**Par. Est.**	**T-stat**	**White test**
Intercept	NA	-0.069	-1.30	-1.53	-0.019	-0.83	-0.92
TQ	-	-0.004	-1.35	-1.35	-0.003	-1.07	-1.16
SIZE	+	-0.001	-0.36	-0.32	—	—	—
LEV	-	-0.001	-2.10 *	-2.71**	-0.001	-2.63 **	-4.39 ***
TIE	+	0.000	0.67	0.79	—	—	—
CRATIO	+	-0.001	-0.44	-0.37	-0.001	-0.22	-0.20
ROE	+	0.016	1.20	1.70	0.016	1.27	1.92 *
RATP	+	0.004	1.59	1.67	0.001	1.12	1.33
INVG	+	0.016	1.18	1.37	-0.019	-0.83	-0.92
F Value		2.22 *			3.08 **		
R^2		0.0657			0.0568		
Adj. R^2		0.0361			0.0384		
N		261			261		

***, **, *, and $ indicate significance at the 0.1%, 1%, 5%, and 10% levels, respectively.

Table 7
Cross-sectional Multivariate Regression Results for *CreditWatch* Placements with Negative Implication Announcement Day Returns

The dependent variable is the cumulative average abnormal return (CAAR) during the three-day period (day t-1, day t+1) for placement announcements with negative implication. Ind. Var. is independent variable. Exp. Sign is expected sign of each independent variable. Par. Est. refers to parameter estimate. and Adj R^2 refers to adjusted R^2. N is the number of announcement in a given category. TQ is Tobin's Q, which is the sum of total liabilities and market value of equity divided by book value of total assets. SIZE is the log of total assets. LEV is long-term debt divided by total equity. TIE is times interest earned calculated as earnings before interest and taxes divided by long-term debt interest. CRATIO is the current ratio. Return on equity (ROE) is net income divided by market value of equity. RATP is rating points. INVG is dummy variable that equals to one if the rating is below investment grade, and zero otherwise. NA indicates not applicable.

		MODEL 1			MODEL 2		
Ind. Var.	**Exp. Sign**	**Par. Est.**	**T-stat**	**White test**	**Par. Est.**	**T-stat**	**White test**
Intercept	NA	-0.075	-0.48	-0.56	-0.077	-1.63	-1.68
TQ	-	0.044	1.43	1.99 $	0.039	1.60	2.16*
SIZE	+	-0.003	-0.26	-0.41	—	—	—
LEV	-	0.000	0.50	3.14 **	0.000	0.51	3.81 **
TIE	+	-0.001	-0.19	-0.27	—	—	—
CRATIO	+	0.011	0.69	0.75	0.012	0.82	0.90
ROE	+	-0.011	-1.05	-3.16 **	-0.011	-1.18	-2..93 **
RATP	+	0.001	0.10	0.10	—	—	—
INVG	+	-0.026	-0.56	-0.57	-0.028	-0.96	-0.96
F Value		0.64			1.13		
R^2		0.1832			0.1790		
Adj. R^2		-0.1009			0.0211		
N		33			33		

***, **, *, and $ indicate significance at the 0.1%, 1%, 5%, and 10% levels, respectively.

Table 8
Cross-sectional Multivariate Regression Results for Rating Downgrade and Upgrade Action Announcements Day Returns

The dependent variable is the cumulative average abnormal return (CAAR) during the three-day period (day t-1, day t+1) for action announcements. Ind. Var. is the independent variable. Sign is the expected sign of each independent variable. Par. Est. is the parameter estimate. Adj R^2 refers to adjusted R^2. N is the number of announcement in a given category. TQ is Tobin's Q, which is the sum of total liabilities and market value of equity divided by book value of total assets. SIZE is the log of total assets. LEV is long-term debt divided by total equity. TIE is times interest earned calculated as earnings before interest and taxes divided by long-term debt interest. CRATIO is the current ratio. Return on equity (ROE) is net income divided by market value of equity. ΔRATP is the change in rating points. INVG is a dummy variable that equals one if the pre-change rating is below investment grade, and is zero otherwise. CLASS is a dummy variable that equals one if the rating action is across class. ACINV is a dummy variable that equals one if the rating action is across investment grade. NA indicates not applicable.

		Downgrade Model 1			Downgrade Model 2			Upgrade Model 1				Upgrade Model 2		
Ind. Var.	**Sign**	**Par. Est.**	**T-stat**	**White test**	**Par. Est.**	**T-stat**	**White test**	**Sign**	**Par. Est.**	**T-stat**	**White test**	**Par. Est.**	**T-stat**	**White test**
Intercept	NA	0.066	0.96	1.12	0.047	0.99	1.11	NA	0.037	0.73	0.79	0.011	0.81	0.82
TQ	-	0.000	-0.02	-0.02	—	—	—	+	0.005	0.73	0.67	0.002	0.33	0.29
SIZE	+	-0.012	-1.66 $	-1.82 $	-0.011	-1.66 $	-1.89 $	-	-0.003	-0.60	-0.68	—	—	—
LEV	-	0.000	-0.58	-0.37	0.000	-0.64	-0.40	+	-0.002	-1.84 $	-3.36 **	-0.002	-1.97 *	-3.43 **
TIE	+	0.002	0.80	1.28	0.003	1.24	1.91	-	-0.001	-0.90	-0.83	—	—	—
CRATIO	+	0.003	0.38	0.48	—	—	—	-	-0.007	-1.38	-1.67	-0.008	-1.59	-1.78
ROE	+	0.001	1.13	2.24	0.001	1.07	2.08 *	-	0.006	0.72	0.75	—	—	—
ΔRATP	+	0.010	1.20	1.29	0.009	1.23	1.40	+	0.017	1.65 $	2.06 *	0.014	1.55	1.94 $
INVG	+	-0.018	-0.83	-1.23	—	—	—	-	-0.006	-0.36	-0.38	—	—	—
CLASS	-	0.022	1.32	1.42	0.018	1.16	1.28	+	-0.033	-2.17 *	-2.06 *	-0.026	-2.03 *	-1.89 $
ACINV	-	-0.009	-0.32	-0.42	0.047	0.99	1.11	+	-0.016	-0.60	-0.92	-0.025	-1.03	-1.44
F Value		1.11			1.73				1.70			2.74 *		
R^2		0.0931			0.0850				0.2301			0.2122		
Adj. R^2		0.0092			0.0360				0.0951			0.1347		
N		119			119				68			68		

***, **, *, and $ indicates significance at the 0.1%, 1%, 5%, and 10% level, respectively.