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Ratings, Commercial Paper, and Equity Returns

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ABSTRACT

We present the first evidence that initial ratings of commercial paper influence common stock returns. Highly-rated industrial issues of commercial paper, unaccompanied by bank letters of credit, are associated with significantly positive abnormal returns; lower-rated issues are not. The stock price effects of changes in commercial paper ratings also demonstrate the relevance of ratings to the financing of firms. Rating downgrades, especially those that imply an exit from the commercial paper market, produce significantly negative abnormal returns; upgrades have no effects. Initial commercial paper ratings and subsequent reratings appear to help investors sort firms by their future prospects.

IF CREDIT RATING *CHANGES* convey information to investors and influence stock prices, then, by the same token, so should *initial* ratings.[1] Wakeman (1984) hypothesizes that initial ratings attest to the accuracy of the firm's financial statements, reduce investor uncertainty, and enable the new issue to command a higher price. However, Mikkelson and Partch (1986) and Shyam-Sunder (1991) do not find that the common stock's reaction to a new debt issue is related to the issue's rating; and Slovin, Sushka, and Hudson (1988) conclude that stock prices are insensitive to credit ratings carried by new issues of commercial paper.

We reexamine the relation between credit ratings and stock prices. The first part of this article examines the stock price response to announcements of new, rated commercial paper (CP) programs and reports the first evidence that initial debt ratings influence stock prices. We find that highly rated CP issues are associated with positive stock price effects, even when they do not carry bank letters of credit. Lower-rated issues do not experience positive abnormal returns. The evidence suggests that rating agencies certify the future prospects of firms entering the short-term debt market. The second part of the article presents the first evidence that CP rating *changes* influ-

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[1]For evidence that bond rating *changes* influence stock prices, see Griffin and Sanvincente (1982), Holthausen and Leftwich (1986), and Hand, Holthausen, and Leftwich (1992).

ence common stock prices. CP rating reductions produce negative stock returns, while upgrades have no effect. Negative effects are most severe when the downgrade impedes marketing of the firm's paper and when the company's long-term debt ratio is high. This evidence complements Crabbe and Post (1994), who find that downgrades in bank holding company paper reduce the volume of paper outstanding. It also extends studies of bond rating changes to short-term debt rating changes (Holthausen and Leftwich (1986) and Hand, Holthausen, and Leftwich (1992)) and confirms the role of rating agencies in the marketing of new CP issues.

We also study the certification role of banks when CP is issued. Bank certification of firms' prospects has been documented for *bank credit* agreements (Mikkelson and Partch (1986), James (1987), and Lummer and McConnell (1989)) and for short-term debt by Slovin, Sushka, and Hudson (1988), who find that only those announcements of new CP programs that have formal bank backstop letters of credit in the Eurocredit market have significant positive effects on shareholder wealth. However, Euromarket issues need not have the same stock price impact as domestic issues.[2] To provide new evidence on the role of banks in the capital issuing process, we examine new, domestic CP programs with and without letters of credit. Although the influence of bank letters of credit is difficult to separate from ratings, our evidence suggests that bank letters of credit are associated with positive effects on stock prices.

The article proceeds as follows. Section I provides institutional background and analysis of variables that influence stock returns during CP events. Sections II and III examine the market reaction to announcements of new CP programs and to CP rating revisions respectively. The article concludes in Section IV.

I. Background and Analysis

A. Institutional Characteristics

The CP market is a large source of corporate short-term funds.[3] CP typically has maturities of 270 days or less. The notes are usually unsecured and negotiable, although some CP is privately placed. Typically, CP is exempt from Securities and Exchange Commission registration requirements under either (1) Section 3(a)(3) of the Securities Act of 1933, which exempts notes whose proceeds are to be used for current transactions and that have maturities less than nine months, (2) Section 3(a)(6), which exempts securities issued by common or contract carriers, or (3) Section 4(2), which exempts private placements made to a small number of investors and not to the public

[2] See Kim and Stulz (1988).

[3] Abken (1981) reports that the number of firms issuing CP rose from over 300 in 1965 to about 1,000 in 1981. Rose (1985) estimates that the volume of CP outstanding grew from $124.4 billion in 1980 to $245.3 billion in 1985. According to the Federal Reserve Bank of New York, CP outstanding in December of 1991 amounted to $528 billion.

at large. These issues need not be associated with current transactions, that is, they can be used for purposes other than working capital.

Issuers of CP seek ratings for their paper from rating agencies.[4] The CP ratings fall into several quality categories. Standard & Poor's (S&P) higher ratings are A1 + and A1, while Moody's highest rating is Prime-1, or P1. The next lower ratings are A2 and Prime-2, or P2. The lowest-rated issues are designated A3, P3, or Not Prime. By and large, issuers with the lowest ratings find that they cannot issue CP in quantity.[5]

CP issuers typically maintain bank lines of credit geared to the size and rating of the CP issue. Higher-rated issues tend to have a line of credit equivalent to half the size of the CP issue, and lower-rated issues have a line equivalent to 100 percent of the size of the issue. Lines of credit can be used in varying amounts at the discretion of the company. However, the presence of material-adverse-change clauses in lines of credit implies that they do not guarantee payment at maturity.[6] A virtual guarantee of payment is obtained through the support of a bank standby letter of credit, which specifies that the bank will pay off the issue if the borrower cannot (see Stigum (1983), p. 642). CP issues with letters of credit are nearly always highly rated, carrying the bank's rating, since the guarantor banks have impeccable financial credentials. CP ratings and bank letters of credit reduce the borrowers' perceptions of the risk of default and broaden the market for CP to firms that otherwise would be excluded.[7]

B. Analysis

Holthausen and Leftwich (1986) contrast two views of rating agencies. The first view is that rating agencies use only publicly available information. This

[4]We focus on ratings from the two major rating firms, Standard and Poor Corporation and Moody's Investors Service.

[5]Hurley (1982) says: "Unrated or lower-rated paper is not easily sold, and only the paper with the highest ratings by Moody's or Standard & Poor's is readily accepted." Stigum (1983, p. 637) says that CP "rated A3 and P3 is salable only to very few investors." Rose (1985, p. 395) writes: "Any issue rated below P2, A-2,... usually sells poorly." Abken (1981) notes that for all rating services, as of mid-1980, the average distribution of outstanding commercial paper for the three quality gradations was about 75 percent for grade 1, 24 percent for grade 2, and 1 percent for grade 3. This implies that poorly rated firms are not able to continue issuing CP.

[6]See Post (1992): "With a revolving line, an issuer has a contractual agreement from the banks, in exchange for a fee, that the banks will lend up to the stated amount of money when needed. Nonetheless, most contractual backup commitments also contain a so-called material-adverse-change (MAC) clause, which permits the bank to terminate its commitment if the financial condition of the would-be borrower deteriorates sufficiently to jeopardize repayment to the lending institution."

[7]According to Hurley (1982): "One factor that has facilitated growth in paper issuance by nonfinancial firms has been the increasing use of letters of credit and related devices to assure payment at maturity... dealers began to interest new issuers, particularly lower-rated firms, in letters of credit. In such circumstances, rating agencies usually assign the rating of the bank or guarantor to the paper rather than the lower rating of the issuer. Thus the issuer avoids payment of a very high premium in interest rates and in some instances gains entrance to the market that might otherwise have been denied."

implies that investors and researchers can replicate bond raters (see Kaplan and Urwitz (1979)) and, therefore, that asset prices are unresponsive to initial ratings and ratings changes. Wakeman (1984) argues, however, that even though rating agencies use publicly available information, companies desire to have their bonds rated to reassure investors of the companies' prospects, because rating agencies have a reputation for analyzing public information that influences investors and asset prices. How, under this theory, rating agencies develop reputations is not addressed. The second view is that rating agencies obtain private information. Holthausen and Leftwich (1986) note that management communicates extensively with bond raters during the rating process and imparts private information to the raters. Both views suggest that rating agencies play a certification role that influences market expectations.

The fact that the amount outstanding of unrated CP is small suggests that ratings are crucial when a firm uses the public market for short-term debt. CP is commonly regarded as a substitution of publicly issued debt for bank debt. Bypassing bank debt raises several problems for the issuer. (1) Information supplied to the public market requires costly verification or costly signaling. (2) Firms are reluctant to expose information publicly that they would provide confidentially to bankers. (3) The market may view the firm as attempting to bypass the monitoring role provided by banks. These problems can be resolved through the rating agency and the bank letter of credit. The rating agency trades upon its reputation for verifying publicly available information and paves the way for marketing the debt issue in a manner that keeps sensitive information from being made public. The bank letter of credit can be interpreted as assuring the market that the firm is not bypassing bank monitoring altogether. Ratings agencies have an incentive to keep information confidential in order to establish repeat business with the firms and to prevent competing rating agencies from learning the information. In sum, ratings provide believable information to the market that permits the firm to bypass banks and allows the sorting of firms by future prospects.

Firms have a monetary incentive to issue CP, namely, to bypass banks and lower their short-term financing costs. Hence, it is plausible that a new CP program informs the market that a lower cost of capital is available to the firm for a greater proportion of its capital requirements. If interest savings are the dominant message of a new CP issue, then all announcing firms should have positive abnormal returns.

Another view of CP or, more broadly, short-term debt financing is that they are passive components of a firm's working capital management, used to smooth transitory fluctuations in the demand for funds. That is, short-term debt financing is a trivial element in the overall valuation of the firm. This view predicts no stock price effects when firms initiate CP programs or when short-term debt ratings are altered.

Still another hypothesis is that issuing debt of any maturity has negative valuation implications. The Miller and Rock (1985) model implies that unpre-

dicted debt issues of all maturities have negative equity price effects, since debt issues imply lower cash flows than what the market expects. This hypothesis rationalizes the observed equity price effects of many corporate financing events.

It is important to examine whether CP issuance is a substitution of short-term debt for long-term debt, because asymmetric information models suggest that short-term debt financing conveys favorable information when the issuing firm substitutes short-term for long-term debt (Flannery (1986), Robbins and Schatzberg (1986), and Diamond (1989)). Similarly, Myers (1977), Barnea, Haugen, and Senbet (1980), and James (1987) suggest that issuing short-term debt, in place of long-term debt, helps reduce the agency costs of debt. These models could explain announcement effects of CP issues if CP were being substituted for long-term debt.

II. New Commercial Paper Issues

A. Data and Sample

Starting in November 1981, Standard and Poor Corporation's *CreditWeek* (SPCC) provides *initial* ratings of new CP issues in the "New Ratings" section.[8] *Moody's Bond Survey* (MBS), published weekly, classifies new CP issues in its "New Issuers" section. A check of earlier issues of *Moody's Bond Record* indicates that the "New Issuers" are indeed virgins in the CP market. The S&P "New Ratings" group consists of a mixture of virgin issuers and firms that have issued CP sometime before and are reentering the market after an absence with a new issue and a fresh rating.[9] New ratings and details of the issues are published in SPCC and MBS. Due to its definiteness, we designate the publication day of these documents as day [0]. However, there is a reason to believe that day [0] is not the earliest date when the rating information is communicated to the market. Conversations with representatives of S&P indicate that the firm disseminates ratings by wire one or a few days before publication; however, the extent of such dissemination and precise wire dates during the sample period are unavailable. Hence, we examine several event windows, including $[-2, -1]$, $[-1]$, and $[-1, 0]$. Using these dates and the *Wall Street Journal Index*, we also searched for any earlier mentions of the CP issue by firms that are listed on either the New York Stock Exchange (NYSE), or American Stock Exchange (AMEX). If no earlier date was found than that in SPCC and MBS, we designate the publication date of SPCC or MBS as day [0]. The CP ratings fall into two main categories: superior ratings are A1+, A1, or P1, while inferior ratings are A2, P2, or lower. A sample of informationally clean observations is

[8] Entries associated with corporate name changes are ignored since these do not involve new CP issues.

[9] Including some firms for which entry into the CP market contains little or no surprise acts against our finding significant results.

defined by those firms having no news announcements appearing in the *Wall Street Journal Index* over the 5-trading-day interval [−3, +1].

Table I describes the samples of new CP issues by event and year. A total of 220 events occurs in the five years, which is reduced to 140 events by the criterion of using informationally clean events. We use 132 events in the analysis, losing eight observations that do not have sufficient return data. The subdivisions of these events are shown in Table I. There are 36 utilities and 96 industrials; 100 events (76 percent) were given the superior ratings and 32 (24 percent) were given the inferior ratings. These percentages are in keeping with the proportions in the population (see footnote 5). Our sample includes 36 private placements, of which 29 are highly rated and 7 are lower rated. Empirically, the private placements behave no differently than the other firms in the sample. Table II provides descriptive statistics for the 132 firms used in the stock price reaction analysis.

To see if CP issuance involves a substitution of short-term debt for long-term debt, we examine a variety of short-term and long-term debt ratios of the industrial firms (and the entire sample) for five years surrounding the announcement year. For both higher- and lower-rated industrials, there is no significant change in the ratio of short-term debt to total assets in the year following the new CP issue rating. For example, the ratios of short-term debt to total assets or to the market value of equity are stable. With year 0 as the event year, the short-term debt to total assets ratio has a median of 0.0281, 0.0263, 0.0255, 0.0311, and 0.0290 in years −2, −1, 0, +1, and +2, respectively. The ratios of long-term debt to total assets and to market value of

Table I

Distribution of Sample of New Commercial Paper Issues

The sample spans the period from October 1981 to December 1985 and was obtained from *Moody's Bond Survey* and Standard and Poor's Corporation's *CreditWeek*. The earlier of the dates from these two sources or the *Wall Street Journal* is taken to be the event date. Announcements are informationally clean, i.e., there were no other firm-specific announcements over trading days [−3, +1] in event time where the event day is day 0.

Sample	Description	No. Used in Analysis
1	All announcements	132
2	Only utility firms	36
3	Only industrial firms	96
4	Only industrial firms rated A1+, A1, or P1	72
5	Only industrial firms rated A2, P2, or lower	24
6	Only industrial firms without letter of credit and rated A1+, A1, or P1	50
7	Only industrial firms without letter of credit and rated A2, P2, or lower	23
8	Only industrial firms with a letter of credit and rated A1+, A1, or P1	22

Table II

Descriptive Statistics for the Sample of New Commercial Paper Issues

The data below applies to the 132 firms used in the stock price reaction analysis (see Sample 1 of Table I).

Item	Mean	Median	Standard Deviation
Sales ($millions)	2,362.2	1,468.1	3,235.5
Total assets ($millions)	2,462.3	1,348.6	3,210.0
Market value of equity 14 days prior to event date ($millions)	1,387.8	742.7	1,883.3
Ratio of the sum of current liabilities and long-term debt to total assets	0.456	0.454	0.113
Change in the ratio of interest expense to sales from the year prior to the event to the year after	0.0006	0.0002	0.0156

equity are similarly stable and do not decline. For example, the median ratio of long-term debt to total assets is 0.1616 in the event year and 0.1804 in the following year. The lack of evidence that CP substitutes for long-term debt indicates that asymmetric information models (see Flannery (1986), Robbins and Schatzberg (1986), and Diamond (1989)) are not applicable in explaining the announcement effects of CP issuances.

B. Stock Price Reaction Analysis

The event study methodology reports parametric tests based upon standardized abnormal returns (see Mikkelson and Partch (1986)) and a nonparametric generalized sign test that compares the ratio of positive to negative abnormal returns in the event window with the corresponding ratio in the estimation period (Sprent (1989)). The market model is estimated over a 255-day period starting on day $+61$.[10] Table III presents summary results for subsamples. For each subsample, the absolute value of the average abnormal return is greater in interval $[-1]$ and in interval $[-2, -1]$ than in interval $[-1, 0]$. This suggests that the days preceding publication of SPCC and MBS are the days of maximum market response to the CP rating, that is, that the market's response to the rating occurs primarily when the rating appears on the wire rather than in publication form. We focus discussion on day $[-1]$; however, the inferences using the interval $[-2, -1]$ are essentially the same, including the cross-sectional tests.

[10] We use a postannouncement estimation period, because good news events preceding the event may have allowed the firm to enter the CP market. However, announcement period effects are marginally stronger when a pre-event estimation period is used. The CRSP value-weighted and equally weighted indexes are used as market proxies in the estimation and similar results are obtained for each.

Table III

Stock Price Effects for Various Subsamples of New Commercial Paper Issues

The sample spans the period from October 1981 to December 1985 and was obtained from *Moody's Bond Survey* and Standard and Poor Corporation's *CreditWeek*. The earlier of the dates from these two sources or the *Wall Street Journal* is taken to be day 0, the event date. Market model parameters are estimated over a 255-day period starting on day +61 in event time.

	Subsample Analyzed and No. of Firms Used in Parentheses	Cumulative Abnormal Returns over Various Windows in Event Time, *Z*-Statistics in Parentheses[a] Followed by No. of Positive to Negative Abnormal Returns[b]				
		[−40, −3]	[−2, −1]	[−1]	[−1, 0]	[+1, +40]
1	All CP issues (132)	0.18% (0.47) 71:61	0.30% (1.61) 78:54‡	0.39% (2.92)*** 80:52‡	0.30% (1.37) 72:60	1.09% (0.97) 68:64
2	Issues by utilities (36)	−0.50% (−0.08) 17:19	0.25% (0.85) 22:14	0.24% (1.14) 21:15	0.19% (0.33) 17:19	2.81% (2.09)** 23:13
3	Issues by industrials (96)	0.44% (0.60) 54:42	0.32% (1.37) 56:40	0.44% (2.73)*** 59:37‡	0.34% (1.41) 55:41	0.44% (−0.14) 45:51
4	Issues by industrials rated A1+, A1, or P1 (72)	1.19% (1.15) 42:30	0.71% (2.49)** 47:25‡	0.79% (4.01)**** 48:24‡	0.57% (2.03)** 44:28†	0.52% (−0.26) 34:38
5	Issues by industrials rated A2, P2, or lower (24)	−1.79% (−0.80) 12:12	−0.83% (−1.58) 9:15	−0.57% (−1.50) 11:13	−0.35% (−0.70) 11:13	0.20% (0.16) 11:13
6	Issues of industrial firms without LOC rated A1+, A1, or P1 (50)	1.53% (1.29) 29:21	0.60% (2.15)** 34:16‡	0.67% (3.18)*** 34:16‡	0.53% (1.69)* 32:18†	−0.81% (−0.97) 20:30
7	Issues of industrial firms without LOC rated A2, P2, or lower (23)	−1.73% (−0.74) 12:11	−0.97% (−1.84)* 8:15	−0.53% (−1.31) 11:12	−0.25% (−0.45) 11:12	−0.22% (−0.07) 10:13
8	Issues of industrial firms with LOC and rated A1+, A1, or P1 (22)	0.88% (0.39) 13:9	1.02% (1.39) 13:9	1.00% (2.34)** 14:8	0.85% (1.54) 13:9	3.96% (1.16) 15:7

[a]The *Z*-statistic is unit normally distributed under the null hypothesis of zero abnormal return.

[b]The generalized sign test is used to test whether the ratio of positive to negative abnormal returns is different from that in the estimation period.

*,**,***,****Significantly different from zero in a two-tailed test at the 0.1, 0.05, 0.01, and 0.001 levels, respectively.

†,‡Significantly larger number of positive to negative abnormal returns than in the estimation period at the 0.05 and 0.01 levels, respectively.

The informationally clean sample of 132 events displays significantly positive announcement period returns of approximately 0.39 percent on day −1 (see row 1 of Table III). In this sample, 80 firms have positive abnormal returns and 52 have negative abnormal returns on day −1; the null hypothesis that the sample proportion is the same as that in the estimation period is rejected at the 1 percent level. Hence, the overall sample shows a small but significantly positive announcement effect, which suggests that the new CP event is not perfectly anticipated by the market. The positive announcement effect is inconsistent with Miller and Rock (1985), which predicts that issuance of debt has negative implications, and is inconsistent with the view that short-term financing is a passive component of working capital.

Evidence that utility regulation results in diminished information asymmetries for utilities and/or security financings are more predictable for utilities appears in Asquith and Mullins (1986) and Masulis and Korwar (1986), who find that announcement effects of stock equity issues are lower for utilities than for industrial firms. For this reason, we divide the 132 events into 36 utilities and 96 industrials. The announcement effects, although positive for utilities, are not significantly different from zero (see row 2 of Table III). The subsample of 96 industrial firms (row 3) has announcement period returns that are significant at the 1 percent level for day [−1]. In one event window, [−1, 0], the nonparametric test for the hypothesis that the abnormal returns of industrial firms exceed those of utility firms has a p-value of 0.05. In other event windows, neither parametric nor nonparametric tests show a significant difference in industrial and utility abnormal returns. Henceforth, we report results primarily for the industrial firms since the utility subsample appears to add noise. However, all of the conclusions (albeit weaker) are valid for the larger subsamples that include utilities.

To examine the roles of ratings and bank letters of credit, we first subdivide the industrial firms *by rating* (ignoring letter of credit), using the two categories defined above as superior (A1 + , A1, or P1) and inferior (A2, P2, or lower). The 72 superior-rated firms (see row 4 of Table III) have significant announcement period effects of 0.79 percent on day −1, while the inferior-rated subsample of 24 industrial firms (see row 5) has negative returns that are not significantly different from zero. The difference between the returns of the higher- and lower-rated industrial is also statistically significant at the 1 percent level. The findings are similar using the [−2, −1] announcement period. In sum, ignoring letters of credit, the initial CP rating influences the market's assessment of the firm's stock value.

Next, we examine only firms *without letters of credit*. There are 50 high-rated and 23 low-rated industrials that issued CP without a letter of credit. The 50 high-rated firms have a significantly positive day [−1] average abnormal return of 0.67 percent (see row 6 of Table III), while the 23 lower-rated industrials without a letter of credit have day [−1] abnormal returns that are negative and insignificant (−0.53 percent), on average (see row 7). Moreover, the abnormal return over days [−2, −1] for the lower-rated industrials is negative (−0.97 percent), and the Z-statistic indicates that it is

marginally significant at the 10 percent level in a two-tail test. The difference between the day [−1] average abnormal returns of the two subsamples is statistically significant using both parametric ($t = 2.95$) and Wilcoxon test statistics. The evidence confirms that, in the absence of letters of credit, the initial CP rating has information content. The significantly positive announcement effect for high-rated CP *without letters of credit* and the significantly higher announcement effect for higher-rated CP than lower-rated CP (both without letters of credit) indicate that the CP rating *per se* has information content.

To examine the role of letters of credit, we compare the 22 highly rated industrials (row 8 of Table III) that do have letters of credit with the 50 highly rated industrials without letters of credit (row 6). The issues with letters of credit have a significantly positive day [−1] abnormal return of 1.00 percent, which exceeds the average abnormal return of 0.67 percent of the 50 issues without letters of credit. While the direction of this difference supports information content for the letters of credit, the difference is not statistically significant. This test assumes that the 22 firms with the letters of credit would have received the high CP rating in the absence of the letter of credit. Since it is likely that the rating depends upon the presence of the letter of credit, the test is not unambiguous. An alternative assumption is that the 22 firms obtained the higher ratings because of the presence of the letters of credit (see footnote 7). Under this assumption, we compare the high-rated CP issues with letters of credit (row 8) to low-rated issues without letters of credit (row 7). The mean difference in average abnormal return is 1.53 percent, which is statistically significant at the 5 percent level. Together, the two tests for the effect of letter of credit suggest that obtaining a bank letter of credit and then entering the CP market is a credible certification of future prospects of the issuing firm. This suggests that banks have private information about firms, consistent with James (1987), Lummer and McConnell (1989), and Slovin, Sushka, and Hudson (1988).

C. Cross-Sectional Regression Analysis

The results in Table III suggest that we should be able to explain part of the cross-sectional variation in individual abnormal returns with variables measuring the rating, the presence of a letter of credit, and the interest cost savings from the new CP issue. We report weighted least squares cross-sectional regressions to explain the day [−1] abnormal returns of the sample of 95 industrials with clean announcements.[11] Observations are weighted by the reciprocal of the estimated standard deviation of the abnormal return on day [−1], which depends primarily upon the estimated residual standard deviation in the estimation period (see Mikkelson and Partch (1985)).

[11] One firm is dropped because regression diagnostics identify it as an outlier. However, similar results are obtained with the entire sample of 96 industrials and with the sample of 132 industrials and utilities. Ordinary least squares produces similar inferences.

We define a ratings class variable for each firm, j, called RTG_j, which is 1 if the rating is A1 + , A1, or Prime-1 and 0 otherwise. We define a letter of credit variable for each firm called LOC_j which is 1 if the CP issue has a letter of credit and 0 if it does not. To measure the size of corporate interest expense, from the COMPUSTAT database we obtain interest expense as a fraction of sales in the year of the CP rating initiation (year t) and the previous year (year $t - 1$).[12] The change in interest per dollar of sales, called $DINT_j$, is the year t ratios minus the year $t - 1$ ratio. Smaller values of $DINT_j$ indicate a decline in the interest cost ratio or lower interest costs. We expect lower $DINT_j$ to be associated with larger abnormal returns.[13]

Table IV shows the regression results. The rating variable is significant at the 1 percent level by itself or in the presence of the remaining variables. The higher ratings are associated with significantly higher announcement period returns of 1.1 to 1.2 percent. The $[-2, -1]$ interval produces the same inference with significance at the 1 percent level; the significance level declines to the 7 percent level when the $[-1, 0]$ interval is used. The interest cost variable, $DINT_j$, enters the regression with a negative sign, as predicted, but is not significant. The coefficient of the letter of credit variable, LOC_j, is statistically insignificant in explaining the stock price reaction. We also try two other variables in the cross-sectional regression. First, we use a dummy variable for whether the issue is a private placement, that is, a 4(2) CP program. This is because private placements of equity (see Wruck (1989)) and convertible debt (see Fields and Mais (1991)) have been shown to be associated with positive stock price effects. The other variable is a dummy variable depending on whether the long-term debt of the firm is investment grade or not. This is included to capture whether the firm's CP would have been rated high in any case, i.e., with or without a letter of credit. Neither of these variables has a significant coefficient in the cross-sectional models.

In a prior article addressing the relation between CP ratings and equity valuation, Slovin, Sushka, and Hudson (1988) find that announcements of CP programs without bank backstop facilities do not influence stock returns and that CP credit ratings play no role in market reaction to new CP issues. We attribute the difference between their study and ours to the likelihood that their announcement dates, which are taken from tombstones appearing in the *Wall Street Journal*, do not correspond to the times when the market actually learned about the CP program.[14]

[12] Sales is a typical deflator in the "common size" method of ratio analysis. However, deflation by total assets and market value of equity produce similar results.

[13] Controlling for the level of interest rates does not change the reported results.

[14] For the announcements in our sample, tombstones typically appear many weeks after the SPCC or MBS announcement dates. For example, Rolls-Royce Capital's CP issue is announced in *Moody's Bond Survey* on December 14, 1981, while the tombstone appears in the *Wall Street Journal* on January 12, 1982. Conversations with representatives at two different CP dealers confirm that tombstone advertisements appear at the tail end of the process of initiating a CP program.

Table IV

Cross-Sectional Regression Results for New Commercial Paper Issues

The dependent variable, CAR_j, is the cumulative abnormal return for firm j on the day before the announcement is published. The sample used in these regressions consists of 95 announcements of new commercial paper program issues in the period October 1981 to December 1985 by industrial firms. One influential observation was deleted from the original 96 industrials. The variable RTG_j takes on the value of 1 if the rating assigned is A1+ , A1, or P1 and 0 if it is A2, P2, or lower. The variable $DINT_j$ is the change in the ratio of interest expense to sales from the fiscal year end prior to the event to the fiscal year end after the event. The variable LOC_j is an indicator variable that takes on the value of 1 if the issue was backed by a bank letter of credit and 0 otherwise. Regressions are conducted using weighted least squares and take the general form shown below:

$$CAR_j = \alpha_0 + \alpha_1 RTG_j + \alpha_2 LOC_j + \alpha_3 DINT_j$$

	Regression Coefficients[a]				
Row	Intercept (α_0)	RTG_j (α_1)	LOC_j (α_2)	$DINT_j$ (α_3)	Adjusted R^2 [b]
1	−0.0041	0.0109			0.0750
	(−1.260)	(2.936)**			(8.622)**
2	0.0039		0.0015		−0.0096
	(2.080)*		(0.329)		(0.108)
3	0.0042			−0.0922	−0.0081
	(2.464)*			(−0.495)	(0.245)
4	−0.0040	0.0111	−0.0009	−0.0022	0.0551
	(−1.191)	(2.857)**	(−0.192)	(−0.012)	(2.826)*

[a] t-statistics appear in parentheses below the coefficient estimates.

[b] F-statistic for significance of overall regression in parentheses.

*,**Significantly different from zero in a two-tailed test at the 0.05 level and 0.01 level, respectively.

III. Commercial Paper Rating Changes

No existing study, to our knowledge, examines the effect on stock prices of changing *short-term* debt ratings.[15] Casual empiricism suggests that there are many instances in which downgrades from one CP category to a lower one signal financial problems, especially when exit from the CP market is involved. For example, on March 6, 1992, the *Wall Street Journal* reported that Olympia and York

> "...said it will retire two of its three commercial paper programs. Buying interest in the company's commercial paper dried up after Dominion Bond Rating Service Ltd. downgraded its rating on the paper last month."

[15] See Pinches and Singleton (1977), Wansley and Clauretie (1985), and Holthausen and Leftwich (1986) for studies of the effects of bond rating changes on stock prices. Stickel (1986) provides evidence for preferred stock.

Shortly thereafter, Olympia and York entered bankruptcy proceedings. Similarly, on November 6, 1992, the *Wall Street Journal*, reported that

> "Westinghouse Electric Corp., continuing to be hurt by problems in its credit unit, is turning to banks to replace more than $3 billion in funding that the commercial paper market is rejecting."

This action by Westinghouse occurred less than a month after a CP ratings downgrade from A1 to A2 created difficulty for Westinghouse in placing its CP.

Crabbe and Post (1994) show that rating downgrades of bank holding company paper lead to CP runoffs and exits from the market. Their evidence is consistent with the hypothesis that rating changes influence the market's perceived probability of continued issuance of CP, especially if the downgrade is to a lower rating class. Given the evidence that the stature of the initial rating helps the market sort firms by their future prospects, downgrades that imply an exit from the CP market are likely to lead investors to a more negative assessment of the firm's future cash flows. In this market, CP rated P1 or P2 is highly marketable while CP rated P3 or Not Prime has narrow markets. Accordingly, the announcement that a firm has been downgraded from P2 to P3 indicates that the CP program is likely to be terminated or severely curtailed. Hence, the announcement effects of downgradings, especially to P3 or worse, are predicted to be negative. Although one expects CP rating upgrades to have positive equity price effects, they do not, nor have studies of bond and preferred stock rating changes found this (Holthausen and Leftwich (1986); Stickel (1986)).[16]

A. Data and Sample

The data on CP ratings changes were obtained from weekly issues of MBS beginning in 1977 and ending in December 1985. An excerpt from a typical announcement in MBS (August 9, 1982) reads as follows:

> "Effective August 4, Moody's lowered Tenneco's commercial paper rating to Prime-2 from Prime-1 affecting about $400 million in outstanding notes. The company's senior debentures are still rated A2, and the preferred stock ratings are also unchanged..."

In the above example, the tentative announcement date is August 4, 1982. We then examined several sources including the *Wall Street Journal Index*, S&P *Fixed Income Investor*, and SPCC for an earlier possible date. The announcement date is the earliest date mentioning the rating change, designated as day [0]. To assure that the CP ratings changes are pure, we excluded instances where there were concurrent rating changes of other debt securities of the firm, cases where other securities of the firm were placed under review, and all events involving bank actions, such as upgrades from obtaining a letter of credit or a loan commitment from a bank, or cases in which the bank itself had a rating change. We included only firms either on the NYSE or

[16] See De (1991) for an explanation based on asymmetric information.

Table V

Distribution of Commercial Paper Rating Change Sample

The sample spans the period from January 1, 1977 to December 31, 1985 and was collected from *Moody's Bond Survey*. The sample excludes firms that have contemporaneous news announcements and also those that have rating changes on other securities concurrently.

Panel A: Temporal Distribution of Events

Year	No. of Upgrades	No. of Downgrades
1977	7	7
1978	2	7
1979	5	3
1980	3	8
1981	3	7
1982	1	5
1983	4	3
1984	3	2
1985	1	2
Total	29	44

Panel B: Distribution of Changes in Rating Levels

Upgrades			Downgrades		
Rating[a] Before	Rating After	No. of Events	Rating Before	Rating After	No. of Events
P2	P1	25	P1	P2	25
P3	P2	4	P2	P3	18
			P3	NP	1
Total		29			44

[a]The rating levels P1, P2, P3, and NP denote Prime-1, Prime-2, Prime-3, and Not Prime, respectively.

AMEX for which there are sufficient return data. We scanned the *Wall Street Journal Index* and deleted observations with contemporaneous news releases in the 5-trading-day interval $[-3, +1]$.

Table V provides information on the sample size, the temporal distribution of events, and the distribution of rating changes. In all, there are 29 upgrades and 44 downgrades of CP, spread over nine years. The vast majority of upgrades (25 of 29) are from the already high level of P2 to the top rating of P1. The downgrades are more evenly divided, with 25 from P1 to P2 and 19 from P2 or P3 to lower grades.

B. Results for Stock Price Reaction to Rating Revisions

Results are shown in Table VI.[17] Similar to studies of bond ratings, we detect no significant stock price effects for rating upgrades (see Panel A).

[17]The event study methodology is the same as that used earlier. One firm in the upgrade sample is eliminated due to inadequate return data, resulting in a sample size of 28.

Table VI

Stock Price Effects for Sample of Commercial Paper Rating Changes

The sample spans the period from January 1, 1977 to December 31, 1985 and was collected from *Moody's Bond Survey*. The *Z*-statistic tests the cumulative average abnormal return over the event window. Significance levels for the generalized sign test are reported in the last column listing the number of positive to negative abnormal returns.

Event Period in Event Time	Cumulative Average Abnormal Return (%)		*Z*-Statistic	No. of Positive to Negative Cumulative Average Abnormal Returns
	Equally Weighted	Standardized		
	Panel A: Commercial Paper Upgrades (Sample Size = 28 Events)[a]			
[−40, −20]	0.68	0.64	0.50	17:11
[−20, −3]	−0.13	−0.30	−0.25	12:16
[−2, 0]	0.27	0.18	0.38	16:12
[−1, 0]	−0.06	−0.08	−0.20	14:14
[−1, 1]	0.53	0.42	0.87	15:13
[0, 1]	0.62	0.54	1.35	17:11
[5, 40]	−1.52	−1.31	−0.77	12:16
	Panel B: Commercial Paper Downgrades (Sample Size = 44 Events)			
[−40, −20]	−0.40	−0.37	−0.33	20:24
[−20, −3]	−1.70	−1.10	−1.04	21:23
[−2, 0]	−1.26	−1.15	−2.67***	15:29†
[−1, 0]	−0.84	−0.76	−2.17**	14:30‡
[−1, 1]	−0.97	−0.96	−2.21**	15:29†
[0, 1]	−0.59	−0.60	−1.69*	14:30‡
[5, 40]	−2.95	−2.36	−1.57	17:27

[a]The sample size differs from that in Table V because of inadequate daily return data for a firm.

*,**,***The cumulative average abnormal return is different from zero at the 0.10, 0.05, and 0.01 levels, respectively.

†,‡The number of positive to negative abnormal returns is less than that in the estimation period at the 0.10 and 0.05 levels, respectively.

Rating downgrades have a significantly negative effect (Panel B). In the two-day announcement period window [−1, 0], for example, the equity price decline averages −0.84 percent, which is significantly different from zero at the 5 percent level. In this interval, 30 of the 44 stocks have negative abnormal returns. The negative equity price effects of CP downgrades underscore the critical role that the rating agencies play in the CP market.

C. Cross-Section Regression Analysis

We use cross-sectional regressions to explain further the variation in the stock price response to rating downgrades. In these regressions, the abnormal

stock price reaction to the rating downgrade is the dependent variable. Since downgrades to P3 or worse (Not Prime) limit the marketability of CP and come closer to proxying for discontinuance of a CP program than the downgrade from P1 to P2, the equity price reaction associated with a downgrading to P3 should be more negative than a downgrading to P2. To test this hypothesis, we define for each firm, j, in the downgrade sample a variable, DEG_j, to measure the degree of the downgrade: $DEG_j = 0$ if the rating change is from P1 to P2, and $DEG_j = 1$ if the rating change is from P2 to P3 or P3 to Not Prime. There are 25 firms with $DEG_j = 0$, the less severe downgrade group, and 19 firms with $DEG_j = 1$, the more severe downgrade group. Support for the hypothesis occurs if the coefficient of DEG_j is significantly negative.

Line 1 of Table VII indicates that the equity price reactions are significantly more negative for the firms in the more severe downgrade group. The intercept estimate of -0.36 percent, which represents the impact of a less severe downgrade from P1 to P2, is insignificantly different from 0. That is,

Table VII

Cross-Sectional Regression Results for the Commercial Paper Downgrade Sample

The dependent variable CAR_j is the cumulative abnormal return for firm j from 2 days before the downgrade to the day of the downgrade. The sample used in these regressions consists of 43 downgrades of commercial paper in the period 1977 to 1985.[a] The variable DEG_j takes on the value of 0 if the downgrade goes from P1 to P2 and 1 if the downgrade goes from P2 to P3 or NP.[b] Variables $STDCL_j$ and LTD_j are the amounts of short-term debt in current liabilities and long-term debt, respectively, after scaling by the level of total assets at the fiscal year end immediately prior to the rating change announcement date. Regressions take the general form shown below:

$$CAR_j = \alpha_0 + \alpha_1 DEG_j + \alpha_2 LTD_j + \alpha_3 STDCL_j$$

	Regression Coefficients[c]					
Row	Intercept (α_0)	DEG_j (α_1)	LTD_j (α_2)	$STDCL_j$ (α_3)	Adjusted R^2	F-Statistic
1	−0.0036	−0.0198			0.0907	5.188**
	(−0.629)	(−2.278)**				
2	0.0014		−0.0655		0.0439	2.929*
	(0.151)		(−1.712)*			
3	−0.0111			−0.0212	−0.0216	0.113
	(−1.893)*			(−0.336)		
4	0.0134	−0.0198	−0.0722	−0.0314	0.1275	3.046**
	(1.242)	(−2.310)**	(−1.928)*	(−0.521)		

[a]The sample size is less than the number used in the event study because financial statement data was unavailable on one firm.

[b]The rating levels P1, P2, P3, and NP denote Prime-1, Prime-2, Prime-3, and Not Prime, respectively.

[c]The associated t-statistics appear in parentheses below the coefficient estimates.

*,**Significantly different from zero in a two-tailed test at the 0.1 and 0.05 levels, respectively.

equity prices decline only marginally in the less severe downgrade group. The differential price decline in the more severe downgrade group is −1.98 percent. In other words, downgrades to P3 or lower ratings, which are associated with the prospect of exit from the CP market, are associated with the most negative share price reactions.

CP rating downgrades affect interest costs by increasing the cost of borrowing short-term funds in the CP market. If short-term debt levels are high, the higher costs of borrowing should have a more negative impact on cash flows and on equity abnormal returns. To measure this effect, we include in the regressions the amount of short-term debt in current liabilities scaled by the total amount of assets at the fiscal year end immediately prior to the date of the CP rating downgrade. This variable is denoted $STDCL_j$ for firm j. Support for the interest costs hypothesis occurs if the coefficient of $STDCL_j$ is negative.

Cases like Penn Central and Olympia and York, in which companies no longer can issue CP and enter bankruptcy, suggest that CP rating downgrades cause investors to revise upwards the probability of bankruptcy. An upward revision is more likely when the amount of long-term debt is higher. Hence, we use the amount of long-term debt as a proxy for revision in the probability of bankruptcy. We expect the stock price reaction of a CP downgrade to be more negative for firms with greater amounts of long-term debt. To measure the impact of long-term debt, we use the variable LTD_j, computed as the ratio of long-term debt to total assets at the fiscal year end immediately prior to the date of the CP downgrade.

Lines 2 to 4 of Table VII give the test results involving the debt variables. Higher long-term debt levels (rows 2 and 4) are associated with significantly more negative equity abnormal returns, while short-term debt levels (rows 3 and 4) are unrelated to the announcement period abnormal returns. This suggests that the higher interest costs associated with a downgrade are not central to the equity market response. The significance of the long-term debt variable suggests that revisions in bankruptcy probability play a role in determining the equity market response to a CP rating downgrade.

IV. Summary and Conclusions

This article develops evidence that rating agencies play a significant role in the issuing of commercial paper. Prior studies show that bond rating changes influence asset prices. We show that initial ratings of new commercial paper issues have significant capital market effects. Specifically, the equity prices of industrial firms respond favorably if the commercial paper carries superior ratings and do not respond if the ratings are less than superior. The fact that differential price responses by quality of rating occur in the absence of bank letters of credit suggests clearly that rating agencies help the market sort firms by their future prospects. In this respect, rating agencies play a

certification role similar to and apparently independent of banks (James (1987) and Lummer and McConnell (1989)).

We also develop evidence that the bank certification process is at work in the commercial paper market through bank letters of credit. Given that firms have high commercial paper ratings, those with letters of credit have a more positive, though insignificantly higher, stock price response than those without letters of credit. Firms with higher ratings and letters of credit have significantly higher announcement period stock returns than firms with lower ratings and no letters of credit. Assuming that the letters of credit have enabled the firms to receive the higher ratings, this is evidence that letters of credit play a certification role in the commercial paper market.

We extend the evidence on the importance of ratings by examining the effects of changes in commercial paper ratings only, i.e., unaccompanied by concurrent rating changes of long-term securities of the firm. We find that commercial paper rating downgrades have negative information content while upgrades have no equity price effects, similar to the effects of rating changes of long-term debt. More importantly, the severity of a commercial paper downgrade, when the new lower rating implies exit from the commercial paper market, has a major impact on the stock price. In this respect, the results round out those of Crabbe and Post (1994) who show that downgrades of bank holding company paper tend to result in decreased volume of commercial paper outstanding. The firm's level of long-term debt significantly affects the stock price reaction to a commercial paper downgrade. This suggests that commercial paper downgrades lead the market to reassess the probability of bankruptcy.

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