The Economics of Rating Watchlists: Evidence from Rating Changes

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Abstract

This paper contributes to the growing literature on the economics of credit rating agencies. Generally, information provision has been identified as the major economic function of rating agencies. We analyze whether the introduction of the "watchlist" period by Moody's on October 1, 1991 has extended the role that agencies play on the market, as proposed by Boot, Milbourn, and Schmeits (2006). Do rating agencies enter into a dialogue with firms and thereby influence the default risk of issuers? Using a data set of rating history between 1982 and 2004, we find that the overall information content of rating action has increased since the introduction of watchlist procedure, even after controlling for sample composition and time trend.

Keywords: Credit Rating Agencies; Watchlist; Market Reactions; Event Study

JEL: G14, G29, G33

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1 Introduction

On October 1, 1991, Moody's, one of the largest credit rating agencies worldwide, significantly altered its rating process. Additionally to the usual rating process, a so-called watchlist was formally added to its arsenal of rating instruments. The watchlist implies a public announcement of rating investigation. It is usually triggered by a sudden event that is likely to affect the issuer's future credit quality and therefore makes an ongoing monitoring process necessary. Resolution from the watchlist requires a formal rating action, which implies either an upgrade, a downgrade, or a rating confirmation. On average, watchlist periods last for 103 days (Keenan, Fons, and Carty (1998)). Prior to the introduction of the watchlist, rating evaluations were not announced, and only the outcome of the appraisal was published. Via the institutionalization of the watchlist, investors thus obtain an additional type of information. By formally announcing that an investigation is under way, the market receives a first signal, allowing it to make an assessment of the likely outcome. The end result of the watchlist procedure then delivers a second signal via the rating.

As a reason for the institutional implementation of a watchlist procedure, Moody's hinted at agency ratings' relatively slow speed of adjustment to new information as compared to price-related estimates of corporate default risk such as, e.g., KMV's expected default frequency measure.[1] By announcing a rating investigation immediately after an unexpected event, rating agencies are able to demonstrate timely action, without compromising the quality of their analysis. A number of empirical studies over the last years have indeed shown that agency ratings are significantly slower in reflecting new information as compared to market-based indicators (Vassalou and Xing (2005); Robbe and Mahieu (2005)). Market prices respond prior to rating events, effectively anticipating the event. In contrast, agency ratings supposedly reflect a rating action only "when it is unlikely to be reversed within a relatively short period of time" (Cantor (2004)). Compared to market-based indicators, rating changes therefore need more time (are slower), and are

[1] This market-based risk measure was introduced by KMV in 1989, shortly before Moody's started to institutionalize the watchlist procedure.

less pronounced (are smaller). As Cantor and Mann (2003) and Löffler (2004), among others, have shown, the often quoted "rating through the cycle", or "long-term" rating may be interpreted as the smoothing of rating assignments over time.

Against this background, the introduction of the watchlist may have aimed at creating a higher level of transparency. Although the rating action itself will not be faster than before, the market observes an uninformed signal about the start of rating action that allows a first reaction to the announcement of the appraisal, thereby alleviating the conflict between timeliness and accuracy that has worried the industry for a long time. Still, the question remains what exactly the objectives for introducing a watchlist were from the agencies' point of view. The paper is concerned with exactly this question.

As a first hypothesis we consider that by introducing a watchlist, the rating agency may try to "buy time", so that only those borrowers are down- or upgraded directly for which the agency believes the change in credit quality to be significantly large (either negative or positive) and long-lasting. The "uncertain" cases, in contrast, are placed on the watchlist so that the agency has more time to either actively collect more information about their credit quality or to passively observe the borrowers' further development. In this respect, the introduction of the watchlist may be seen as an instrument to separate the "easier" from the "more difficult to analyze" borrowers, where the difficulty may be that these cases may not have fully unfolded yet, especially regarding whether the change in risk is permanent or just temporary (Keenan, Fons, and Carty (1998)). If this first hypothesis is correct, the market should not react any differently to direct rating changes than to watchlist resolutions after the introduction of this additional rating instrument, as they both contain the same "amount" or "depth" of information.

As an alternative hypothesis, we may, however, consider that via the watchlist the rating agency engages in an implicit contract with the borrowers, thereby influencing their future credit quality. This argument relies on Boot, Milbourn, and Schmeits (2006), who emphasize the ongoing monitoring role of rating agencies via the watchlist procedure that may induce firms to "undertake specific actions to mitigate the possible deterioration of its credit standing". Based on this hypothesis, a rating change following a credit watch

would imply a much more informative signal than a rating change without watchlist. For the case of downgrades, for instance, a downgrade from the watchlist would not only indicate an increase in default probability but would also imply a lack of either ability or willingness of the firm to prevent the rating change. Therefore, the market should react in a more pronounced way to watchlist resolutions than to direct rating changes.

Interestingly, both hypotheses allow for different conjectures with regard to rating agencies' objective functions. In this respect, if the first hypothesis holds, then obviously an agency's main objective is simply to maximize reputation by announcing ratings that reflect a borrowers credit quality as precisely as possible. In this sense, the agency's objective function may be seen as exogenous within the market structure of borrowers, investors and credit rating agency. Investors make use of rating announcements because they are informative and help them to individually make "best" investment decisions. Due to the second hypothesis, in contrast, an agency's objective function is endogenously based on the market structure. It concurs with the borrower's objective of reducing credit costs, which, in turn, depend on lenders' beliefs with regard to the firm's creditworthiness. In this respect, reputation is a necessary means but it is not the main objective of a credit rating agency. Rather, the rating information allows for a coordinating effect among borrowers that allows the rating agency to use the watchlist as an implicit contract and influence the borrowers' credit quality. Proving this second hypothesis true would therefore imply that an agency's objective function is strongly intertwined with the market structure among lenders and borrowers and their respective incentives. This allows for an economic role of credit rating agencies additional to their role as information providers.

The general strategy that we follow in this paper is to test whether or not the introduction of the watchlist procedure on October 1, 1991 has had an impact on the overall informational content of rating changes. For that purpose we first test - on the complete history of Moody's estimated senior unsecured ratings between April 26, 1982 and December 31, 2004 - for a 1991-break in the time series, following the methodology by Jorion, Liu, and Shi (2005). Comparing the pre-watchlist period (April 26, 1982 to September 30, 1991) with the post-watchlist period (October 1, 1991 to December 31, 2004) we find

that the informational content of ratings has significantly increased since 1991, after controlling for market risk and other potential explanatory factors. This result underlines the relevance of the institutional change implicit in the watchlist procedure for rating agencies to leverage their economic role.

Secondly, we test whether after the introduction of the watchlist the market reacted any differently to direct downgrades than to downgrades after a watchlist period. We focus on downgrades, since for this negative rating action results may be expected to be strongest (Boot, Milbourn, and Schmeits (2006); Vassalou and Xing (2005)). We find this hardly to be the case. However, since we focus only on the market reaction to the watchlist resolution and do not measure the response to the action of placing a borrower "on watchlist", we tend to underestimate the reaction to watchlist downgrades. Therefore, our results may at least be seen as indicative of the first line of argument rather than the second, implying that rating agencies do put a strong emphasis on maximizing their reputation by disclosing as precise ratings as possible.

The rest of the paper proceeds as follows. Section 2 gives a brief overview on related and earlier studies on the economic role of rating agencies in general and on the effects of watchlists in particular. Section 3 contains a short description of the watchlist procedure and presents the hypotheses to be tested in Sections 5 and 6. Section 4 describes our data set and lays out its main characteristics, while Sections 5 and 6 finally contain the empirical results from both a univariate and multivariate analysis. Section 7 concludes.

2 Related Literature

Our empirical study examines stock market reactions following rating changes. Generally, a negative abnormal return has been found for downgrades but no positive abnormal return for rating upgrades (Cantor (2004)). There are two remarkable exceptions, though: Jorion, Liu, and Shi (2005) find a significant positive abnormal return following upgrades after the introduction of the Regulation Fair Disclosure on October 23, 2000 by the SEC. This regulatory change prohibits U.S. public companies from making selective, non-public

disclosures to favored investment professionals. However, rating agencies are exempted from this rule. Second, Goh and Ederington (1993) show that the significant negative abnormal return following downgrades depends on the reason given by the rating agency. They divide their sample into three groups depending on the reason for the rating change.[2] A negative cumulative abnormal return is reported for the group experiencing a downgrade due to a deteriorating financial performance of the firm. However, they find no significant effect for the "change in leverage" group.

Very few studies have yet investigated the market reaction to watchlist events. Using Standard and Poor's Credit Watch data with 253 observations of which 38 are upgrades in the period 1981 to 1983, Hand, Holthausen, and Leftwich (1992) find no significant effect for the overall sample. After partitioning the sample into expected and unexpected additions to the watchlist, however, they report a negative abnormal return for those borrowers that were unexpectedly put on the watchlist with designation downgrade. However, they do not follow the credit watch additions to the ultimate watchlist resolution, so that an important piece of information is not taken into account in their study.

3 The Watchlist-Procedure: Stylized Facts, Theory and Hypotheses

Generally, rating assignments differ with respect to their meaning. While Moody's sees ratings as an opinion on expected loss, Standard and Poor's interprets them as a measure of probability of default. In 1975, the SEC assigned the first two rating agencies, Moody's, and Standard and Poor's, the status of Nationally Recognized Statistical Rating Organizations (NRSROs). Their ratings were officially eligible to be used for regulatory purposes.

The major rating agencies use an ordinal scale to indicate their assessment of credit quality. Each whole letter grading (AAA, AA, etc. for Standard and Poor's, respectively Aaa, Aa, etc. for Moody's) is known as a rating class. On April 26, 1982 Moody's started

[2]They differentiate between change in financial performance, change in leverage, and other reasons.

to use numeric modifiers, e.g. Aa1, Aa2, Aa2, to indicate the relative position of the rating within a rating class. Today, all rating agencies use these finer rating partitions, referred to as rating notches. Note that the boundary between Baa3 and Ba1, respectively BBB- and BB+ is of particular importance. Whereas the upper interval is referred to as the so-called investment-grade interval, the lower one is referred to as the junk-bond status. Again, this distinction is important for regulatory reasons as several institutions such as banks are generally not allowed to invest into non-investment grade products. Finally, note that ratings may refer both to the credit quality of the borrower (issuer ratings) and to the credit risk of a financial product (issue ratings). The latter in particular takes into account issue-specific features of security and seniority.

With regard to the rating process, all major rating actions are undertaken by a rating committee that usually consists of several analysts and specialists. Rating actions are based both on publicly available information as well as on information provided by the firm on a confidential basis.

In 1985, Moody's started to publish a watchlist of ratings under review. However, the watchlist has only been considered as a formal rating action, in which a rating committee formally decides on placing an issuer or a product on watch and chooses the eventual rating assignment, from October 1, 1991 on. According to Moody's, the watchlist procedure intends to evaluate the potential effect of an unexpected event on the future credit quality of the issuer or product. Ratings are put on the watchlist with designation downgrade, unchanged or upgrade. The designation gives the likely direction of the rating change.

During the watchlist interval the rating agency requests information from the firm thereby entering into a dialogue. The watchlist period ends with the announcement of the rating decision (downgrade, upgrade, or confirmation). If the firm is placed on watchlist with designation downgrade, the watchlist resolution will commonly be either a downgrade or no change at all (a confirmation). An upgrade as a consequence of the watchlist process is very rare in this case. Keenan, Fons, and Carty (1998) report that less than 1% of watchlist resolutions are such reversals. The ratio between rating change and confirmation depends on the placement direction: in the downgrade (upgrade) case its roughly 65%

(75%) changes and 25% (15%) confirmations.[3] There is actually less than one reversal in one thousand rating actions, implying that the initial watchlist designation puts a strong prior on the eventual rating action.

The length of the watchlist is set on a case-by-case basis. Keenan, Fons, and Carty (1998) report that on average a watchlist takes 103 days to be completed. The 10% (90%) quantile is 22 (95) days for firms that are placed on watchlist with designation downgrade. For firms entering the watchlist with designation upgrade the mean is 115 days with 21 (218) as the 10% (90%) quantile.

Table 1 reports all Moody's issuer rating events over the period April 26, 1982 to December 31, 2004. Rating events are either direct rating downgrades or upgrades, i.e. rating actions without a preceding watchlist, or watchlist placements. The data set consists of more than 25.000 events.

The number of watchlist placements per year is reported in Column 3 (4) for direction downgrade (upgrade). As can be seen from the table, designated downgrades are roughly twice as frequent as upgrades. Over time, the number of watchlist events fluctuates, although one can distinguish two subperiods. The first one comprises the early years of watchlist build-up (1991 to 1997), until in 1998 a stable number of roughly 1000 events per year has been reached.

The number of direct rating events is presented in Columns 6 and 7 for downgrades and upgrades, respectively. Upgrades are fairly stable across time, reaching a peak in 2004. The picture looks somewhat different for downgrades. They seem to display a much stronger dependency on the business cycle,[4] with a peak in the 1999-2001 period. More recently, the upgrades exceed downgrades. Comparing Columns 2 and 5, we see that over the 2000 to 2004 interval, more than 50% of rating action is conducted via the watchlist.

In the following, we will lay out the hypotheses that we intend to test. Our main focus is on analyzing the "economics" behind the watchlist as a relatively new rating

[3]Values do not add up to 100%, because ratings could also be withdrawn or continue to be on watchlist.

[4]Using the NBER classification for recession we have three recession periods in our sample period: April 1982 to November 1982, July 1990 to March 1991, and March 2001 to November 2001.

instrument and its implications with regard to the objectives of the credit rating agency. Generally, we examine the effects that rating downgrades may have on the equity value of a borrower. We hence focus on the combination of three characteristic elements: *(i)* on issuer ratings that were *(ii)* downgraded in the observation period and their impact on *(iii)* market prices.

In a first step, we test for a break in the effects of rating downgrades on the value of firm equity before and after the formal introduction of the watchlist on October 1, 1991. Disregarding any differences between direct downgrades and watchlist downgrades (i.e. watchlist resolutions leading to a downgrade) in the post-watchlist period, we should expect a larger market effect in the post-watchlist era. This may be due to two different lines of argument. If we assume, first, that the watchlist has been introduced to "buy time" for investigating those firms with a seemingly uncertain development in credit quality more closely, while a direct downgrade will occur if the agency is sufficiently confident that the change in credit quality has been sufficiently strong and long-lasting, then any downgrade in the post-watchlist era will contain a stronger informational content than in the pre-watchlist period.

If, instead, we assume the "implicit contracting" argument as proposed by Boot, Milbourn, and Schmeits (2006) to hold, then again downgrades in the post-watchlist era should lead to more pronounced market effects. In this case, the agency will put only those borrowers on the watchlist for which she has hope of recovery provided that the firm exerts sufficient effort which it will monitor via the watchlist process. Putting an issuer on the watchlist rather than downgrading him directly no longer relies on the distinction between "certain deterioration" and "uncertain deterioration", i.e. along an ex-post verification dimension, but rather on the differentiation between "hopeless recovery" and "potential recovery", i.e. seen from an ex-ante viewpoint.

Both arguments hence lead us to test the following Hypothesis:

Hypothesis 1 *The effect of downgrade announcements on the value of firm equity is stronger in the post-watchlist era, as compared to the era before the introduction of the*

watchlist procedure.

However, even if Hypothesis 1 can be confirmed there may be other reasons at work. These additional factors will be taken into account in testing the second Hypothesis. First, Blume, Lim, and MacKinlay (1998), for instance, suggested that rating standards applied by credit rating agencies may have hardened over time. If true, this implies that for a given firm quality (measured in terms of observable financial variables and ratios), over time agencies tend to assign lower rating notches. Blume, Lim, and MacKinlay (1998) confirm this hypothesis over the period of the eighties and early nineties.

Second, even if rating standards remained the same, the average price reaction to rating announcements may have risen due to a composition effect. If the effect of a downgrade differs across rating notches and the sample population is not stationary with respect to the distribution across rating notches, the cumulative abnormal return may rise even if there is no effective change in rating policy. Table 2 reports the mean number of rated companies as well as the mean rating for a given year in the sample period. As can be seen, the mean rating has declined monotonically over the period. This is consistent with the observation in Blume, Lim, and MacKinlay (1998). However, the rating universe has changed considerably throughout our observation period. The mean number of rated issuer increases monotonically, having increased roughly tenfold from 1982. An alternative explanation to the observed rating deterioration could therefore be that the underlying pool of firms has become more risky. Our empirical test should take both aspects into account.

The second Hypothesis therefore controls for these two additional effects:

Hypothesis 2 *The watchlist effect on a firm's market value of equity is not explained by a change in rating standards nor by a sample composition effect.*

Finally, Hypothesis 3 considers the difference in the already mentioned two arguments underlying rating agencies' motivation in setting up watchlists. Due to the first line of arguments, rating agencies employ watchlist procedures to "buy time" in order to increase

the precision of their rating from an ex-post viewpoint. Consequently, there should not be any difference in market reaction to a direct downgrade relative to a watchlist downgrade in the post-watchlist era. According to the second argument, in contrast, rating agencies take into account that the watchlist allows them to exert influence on the borrower's credit quality. Therefore, the watchlist is used to increase rating precision from an ex-ante viewpoint as rating agencies may only have an incentive-compatible effect on the borrower's behavior as long as investors follow the informational content of the rating. As a consequence, investors will react more strongly to a downgrade following a watchlist procedure than to a direct downgrade because the former implies that the firm did not or could not comply with the agency's requests for an avoidance of rating change.

We formulate Hypothesis 3 such that confirmation would be support for the first line of argument while rejection would support the second.

Hypothesis 3 *The effect of a direct downgrade announcements on the value of firm equity is not stronger than the effect of a downgrade after watchlist procedure.*

4 Data selection and descriptive statistics

Our data comprises the complete history of Moody's estimated senior unsecured ratings and rating changes. Since Moody's started to add numerical modifiers to its whole letter rating in April 26, 1982, we chose to exclude all rating information prior to this date. Note that estimated senior unsecured ratings are usually calculated as issuer ratings, rarely as issue ratings. Using this type of rating has the advantage that we avoid the problem of multiple ratings for one issuer which facilitates comparability across firms and also over time.[5]

As has already been mentioned, we focus solely on rating downgrades. For the pre-watchlist period we simply take into account all direct downgrades, for the post-watchlist

[5]In case of multiple ratings, the watchlist decision cannot be attributed to a particular issue rating. Therefore, we assume that it affects all outstanding ratings of this firm. For a detailed description of the respective algorithm employed by Moody's to calculate the issuer rating, see Hamilton (2005).

period we include all direct downgrades and downgrades following a watchlist procedure with designation downgrade. We hence exclude all watchlist downgrades that have been placed on the watchlist with designation unchanged or even upgrade. This deletion of data is uncritical, however, since it refers to only very few data points.[6]

Using standard event study methodology we calculate the cumulative abnormal return in response to a rating downgrade over a short window surrounding the event date. The event window spans 3 days beginning at -1 and ending at +1, with the event being the direct downgrade or downgrade as a watchlist resolution. Our estimation window spans the time period -120 to -20. Stock price information is taken from CRSP daily tapes. The market model is calculated using the value-weighted index in CRSP. Events with insufficient stock market data in the estimation or event window are excluded from our analysis.[7]

Given the watchlist procedure, there are effectively two dates that may produce announcement effects, namely the on-watchlist day and the off-watchlist day. One way of dealing with these two events is to sum the cumulative abnormal returns of the two events. Since firms are supposedly put on the watchlist only when their credit quality changes unexpectedly, on-watchlist events may be expected to be superposed with other unique and value-relevant events (Keenan, Fons, and Carty (1998)). In such cases, an abnormal return captures both factors at the same time, the corporate event and the rating announcement. In order to get a "clean" return, we therefore abstract from the on-watchlist returns altogether, thereby biasing our results against finding any pre/post-era watchlist effect if the initial on-watchlist decision causes an abnormal return that captures the entire expected effect of the watchlist period.

Table 3 provides the distribution and the mean size of rating downgrades in the sample period. Note that the distribution of downgrades is not stationary. Rather we find

[6]Taken together, we lose six observations due to these eliminations.

[7]We lose roughly 50% of the original sample because of insufficient stock price information. The original sample contains 2389 direct downgrades pre-watchlist, 2773 direct downgrades post-watchlist, and 1687 downgrades preceded by a watchlist.

it to be dependent on the general business conditions. Using the NBER-classification of recessions, we find more downgrades in the recession periods July 1990 to March 1991 and March 2001 to November 2001.

With respect to the time series dimension, we have considerably more data points in the post-watchlist era as compared to the pre-watchlist era (2435 downgrades altogether versus 1216). The proportion of direct to watchlist-driven downgrades in the post-watchlist period is roughly 60:40. This again confirms the perception that the watchlist has become an important tool for the rating agency. Table 4 provides a summary of the absolute magnitude of rating changes. By notches, rating revisions are larger during the pre-watchlist period. Thus, in the pre-watchlist period roughly 50% of downgrades are revised 2-4 notches down compared to 40% in the post-watchlist period. There are also more single notch downgrades in the latter half of our time series than in the first half, which may, however, at least partly be a consequence of the favorable economic conditions prevailing during most the 90s, given that the number of downgrades is positively correlated with recessions.

5 Univariate Results

The univariate analysis is based on an event study around the date of the rating action. Table 5 displays the result with respect to cumulative abnormal returns (CARs)[8] following rating downgrades both in the pre- and post-watchlist period (Panel A) and differentiating between direct and watchlist downgrades in the post-watchlist era (Panel B). Overall, our results are consistent with previous research. In particular, we find statistically significant negative CARs following downgrades. Furthermore, the market reaction seems to be stronger in the post-watchlist era with a CAR of -3.7% than in the pre-watchlist period with only -2.89%. However, the difference is significant at the 5% level. This result offers support for our Hypothesis 1 that ratings have become more informative after

[8]Using different methods of calculating CARs, for instance by Boehmer, Masumeci, and Poulsen (1991) does not change our results.

the introduction of the watchlist, thereby increasing the price reaction to a given rating change.

It should be kept in mind, however, that in these calculations we considered only the "off-watchlist" events. This underestimates the true stock market reaction to downgrades, because the anticipatory effect implicit in the price reaction to the on-watchlist announcement, i.e. at the beginning of the watchlist period, has been neglected completely. In our sample, given a firm is placed on the watchlist with designation downgrade, the probability of a downgrade is 0.64. The market will anticipate this and react accordingly. Therefore, not including the on-watchlist effect underestimates the true market reaction. If we compare CARs for direct rating changes only the difference is 1.53% (-2.89% -(-4.42%)) which is statistically significant at the 1% level.

Within Panel B, direct downgrades lead to significantly higher CARs than off-watchlist events. Again, this should not come as a surprise, given that the on-watchlist effects have been excluded in our analysis.

6 Multivariate Results

6.1 Basic Model

The univariate results of the last section seem to support Hypothesis 1. We now proceed to test this Hypothesis in a multivariate framework using the following model, which we label Model 1,

$$\begin{aligned} CAR_j = {} & \beta_0 + \beta_1 RCHANGE_j + \beta_2 IGRADE_j + \beta_3 DAYS_j \\ & + \beta_4 POST1991^* RCHANGE_j + \beta_5 POST1991^* IGRADE_j \\ & + \beta_6 POST1991^* DAYS_j + \epsilon_j. \end{aligned} \tag{1}$$

The independent variable in this regression is the CAR of firm j from the event study in the previous section, which contained downgrades only. In line with Holthausen and Leftwich (1986) and Jorion, Liu, and Shi (2005), we include the extent of the rating change (in

number of notches, RCHANGE), the crossing of the investment grade boundary (a dummy variable, IGRADE), and finally the number of days since the previous rating action[9] (DAYS), into our model. To test our first Hypothesis, namely that the informational content in the era after the introduction of the watchlist differs significantly from the pre-watchlist era, we create a dummy variable (POST1991) equal to 1 if the rating event falls into the post-watchlist era, and 0 otherwise. The variable enters our model as an interaction term with the other control variables.[10]

We expect to find a negative sign for the variable RCHANGE. Ratings are proxies for default risk. To the extent that a rating change conveys new information to the market, the future debt refinancing costs of the firm will rise thereby lowering the firm's net worth. This effect increases in the size of the rating change. Note that the probability of default rises exponentially with decreasing rating notches, so that a downgrade by two notches has an effect on the firm's net worth more than twice as large as a one-notch rating action.

The variable IGRADE is expected to have a negative sign as well. This follows from the fact that large investors, pension funds in particular, are often not allowed to hold non-investment grade bonds. For instance, Landesbanken in Germany are not allowed to hold junk bonds. When passing the boundary to junk bonds, portfolio managers are forced to sell. Thus, the markets for investment grade bonds may differ substantially in terms of participants, volume, and risk preferences from the neighboring market for junk bonds leading to a jump in the announcement effect. However, as we use issuer ratings (senior unsecured ratings), this effect is likely to be weaker than if we employed the respective issue ratings.

For the variable DAYS we expect a positive sign. The longer the period between subsequent rating actions, the more likely it is that the rating becomes stale. Thus, a rating downgrade does not convey new information to the market (Jorion, Liu, and Shi (2005)).

The key variable of this section is the interaction of the RCHANGE variable with the

[9]Our results are virtually unchanged if we use the on-watchlist date instead of the off-watchlist date.
[10]Using the dummy POST1991 as an explanatory variable does not change our results.

POST1991-dummy. If this variable turns out to be significantly negative, this will confirm Hypothesis 1 that the introduction of the watchlist has changed the informational content of rating events. We also include interaction variables with the IGRADE and DAYS variables. However, we cannot offer clear predictions with regard to the signs of these two variables and include them mainly for consistency.

The results of Model 1 are presented in Table 6, Column 2. For our key variable, POST1991*RCHANGE, we find a significant and negative coefficient which indicates that the informational content of a given rating downgrade has risen in the post-1991 era, i.e. after the introduction of the watchlist. This is consistent with Hypothesis 1.

All other coefficients display the predicted signs. However, there are two exceptions. First, the variable IGRADE turns out to be economically and statistically significant positive. One explanation for the positive sign of the IGRADE coefficient could be the high degree of activity in the junk bond market during the eighties. This is supported by the negative but insignificant POST1991*IGRADE dummy, indicating that after the breakdown of the junk bond market a downgrade from investment grade to speculative grade is negative information. Note that the combined effect is negative, as expected, but is not statistically significant. Second, the variable DAYS turns out to be significantly negative. This is consistent with the notion that the longer the intervals between two consecutive rating events the more new information the rating downgrade conveys to the market. The DAYS variable, when interacted with the POST1991 dummy, yields a statistically significant and positive coefficient. This coefficient overcompensates the direct effect of DAYS on CAR, implying that the length of time between two rating changes has become less relevant for CAR after the watchlist introduction. While this result seems to contradict our idea of an increased informational content of rating downgrades, it could be a consequence of not including on-watchlist effects into the regression.

6.2 Robustness Test - Time Trend

So far, we have confirmed Hypothesis 1 on the changing nature of rating appraisal after the introduction of the watchlist procedure on October 1, 1991. However, there are alternative explanations for our findings which are summarized in Hypothesis 2. This section addresses the first alternative explanation, namely that there is a time trend in some of our variables that explains the different coefficients for the pre-watchlist and post-watchlist period. A time trend over the entire period would produce a similar pattern of coefficients we have found. We test this conjecture using two alternative specifications for time trend. First, following Blume, Lim, and MacKinlay (1998), we include a set of (n-1) year dummies into the regression equation of Model 1. These dummies capture a linear time trend. This constitutes our second Model.

$$\begin{aligned} CAR_j = {} & \beta_0 + \beta_1 RCHANGE_j + \beta_2 IGRADE_j + \beta_3 DAYS_j \\ & + \beta_4 POST1991^* RCHANGE_j + \beta_5 POST1991^* IGRADE_j \\ & + \beta_6 POST1991^* DAYS_j \\ & + \sum_{n=1982}^{2003} \beta_n Year\ Dummy_n + \epsilon_j \ . \end{aligned} \tag{2}$$

The results are presented in Table 6, Column 3. Note that the year dummies are omitted.

As can be seen from the table, the introduction of the time trend has virtually no effect on the economic and statistic significance of our key variable POST1991*RCHANGE, although its significance decreases but is still significant at the 1% level. The variable IGRADE turns out to be statistically significant at the 10% level. This again strengthens the view that the positive sign in Model 1 is time dependent. Note that the POST1991*IGRADE variable is virtually unchanged in value but is statistically insignificant.

The time series of coefficients may nevertheless follow a reasonable pattern. For instance, it may reflect a macroeconomic cycle. According to the NBER criterion there were three recessions in our sample period, April 1982 to November 1982, July 1990 to March 1991, and March 2001 to November 2001. As a second test of a time trend in our data, we therefore included a business cycle dummy, labelled BCYCLE, into Model 1, that equals

one if the observation is from a NBER recession period, and 0 otherwise. This is our Model 3.

$$\begin{aligned} CAR_j = {} & \beta_0 + \beta_1 RCHANGE_j + \beta_2 IGRADE_j + \beta_3 DAYS_j \\ & + \beta_4 POST1991^* RCHANGE_j + \beta_5 POST1991^* IGRADE_j \\ & + \beta_6 POST1991^* DAYS_j + \beta_7 BCYCLE_j + \epsilon_j \ . \end{aligned} \tag{3}$$

Results are given in Table 6, Column 4. We find the sign for the business cycle dummy to be positive, but not statistically significant. Compared to Model 1, the remaining results are unchanged. Overall the tests performed in this section lend support for Hypothesis 2. Although we find evidence of a time dependence in our data, this cannot explain the different abnormal returns in the two subperiods.

6.3 Robustness Test - Sample Composition

A second robustness check concerns the dynamics of corporate financial risk over our sample period. Again we test the influence of this risk using two distinct approaches. The first approach directly addresses the capital structure of the firms in our sample, while the second addresses the sample composition effect, which is relevant here because the mapping of rating notches into the probability space is non-linear.

In order to control for changes in the capital structure of the rated firms, which by itself may explain the increasing response of stock prices to a given rating in the post-watchlist era, we include two measures of leverage into Model 1, the ratio of short-term debt to total assets (SHORT), and the ratio of long-term debt to total assets (LONG).[11] Since the marginal costs of a rating change are directly proportional to the volume of debt financing, in particular short-term debt financing, we expect the coefficients to be

[11] Our results do not change if we use total debt scaled by market value of the firm.

negative for both variables.

$$\begin{aligned} CAR_j = \beta_0 + \beta_1 RCHANGE_j + \beta_2 IGRADE_j + \beta_3 DAYS_j \\ +\beta_4 POST1991^* RCHANGE_j + \beta_5 POST1991^* IGRADE_j \\ +\beta_6 POST1991^* DAYS_j + \beta_7 SHORT_j + \beta_8 LONG_j + \epsilon_j \ . \end{aligned} \tag{4}$$

The results are reported in Table 6, Column 5. Again, the inclusion of these additional variables does not alter the sign nor the significance level of the regressors of Model 1. Due to limited availability of balance sheet data (they are available only after 1985), the number of observations decreases from 3651 to 3228 observations. Adjusted R^2 of the extended specification rises from 3,05% to 3,74 %. The leverage variables have the expected sign and come out roughly identical in terms of economic significance. The short term debt variable has a negative coefficient, suggesting that shareholders of firms with more short term debt will experience the consequences of a downgrade earlier than shareholders of firms with longer term (perhaps fixed term) financing contracts.

Since all other variables of the original model are largely unaffected, we conclude that the increased leverage in the post-watchlist era affects CARs but is unable to explain all variation in the two samples.[12]

A second alternative explanation concentrates on the exponential relation between rating notch and probability of default. By using RCHANGE as a dependent variable in the basic model, we have implicitly assumed that the distribution of firms across rating notches has been stationary over the entire period. If, however, the composition of our sample shifts over time to lower rating categories, as consistent with Table 2, and in these lower rating categories a one notch rating change implies a larger increase in default probability, then a sheer sample composition effect may just as well yield the result that we have found. An improvement of the rating by one notch, say from Baa3 to Ba1 raises the probability of default from 0.52% to 0.81%. However, a rating change from Ba3 to B1, which is also one notch, raises the default probability from 2.69% to 4.04%, i.e. four times

[12]Using a POST1991 dummy instead of the POST-1991*RCHANGE variable does not materially effect our results.

as much as in the first case (Keenan, Hamilton, and Berthault (2000)). The exponential rise in default probability is particularly pronounced in the non-investment grade area of the rating scale. To capture these effects, we include dummy variables into Model 1 for each whole letter rating class (i.e. AA, A, BAA, BA, B), where the dummy variable equals 1 if the rating of the firm before the event falls into this rating category, and 0 otherwise. This is Model 5.

$$\begin{aligned} CAR_j = {} & \beta_0 + \beta_1\, RCHANGE_j + \beta_2\, IGRADE_j + \beta_3\, DAYS_j \\ & + \beta_4\, POST1991^{*} RCHANGE_j + \beta_5\, POST1991^{*} IGRADE_j \\ & + \beta_6\, POST1991^{*} DAYS_j + \beta_7\, AA + \beta_8\, A \\ & \beta_9\, BAA + \beta_{10}\, BA + \beta_{11}\, B + \epsilon_j \ . \end{aligned} \tag{5}$$

As can be seen from Table 6, Column 6, the dummies are both statistically and economically significant. The inclusion does not change the significance nor the sign of the coefficients of Model 1,[13] but the absolute size of the coefficients (the economic significance) is altered. The effect of POST1991*RCHANGE decrease compared to the basic regression. We interpret this finding as evidence that indeed there is a sample composition effect which partly explains the increased strength of the announcement effect in the post-watchlist era. However, we are left with an unexplained part, which we attribute to the enhanced informational value of the observed rating action. In summary, we find evidence for Hypothesis 2.

6.4 Testing Hypothesis 3

We now turn to test Hypothesis 3, addressing the question whether the cumulative abnormal return for events seeing a rating downgrade after a watchlist period differs significantly from those for direct downgrades.

When testing Hypothesis 3 we face a potential methodological problem. The rating agency may preselect firms that are placed on watchlist thereby making the decision

[13]The exception is the variable POST1991*IGRADE that becomes statistically significant at the 5% level.

watchlist versus direct downgrade endogenous. This view is supported by the model of Boot, Milbourn, and Schmeits (2006). In their model firms experience a negative shock in credit quality, from which they may recover by exerting sufficient effort. The decision of the rating agency to place firms on watchlist is based on the likelihood that the recovery effort of the firm is successful. If the likelihood of success is low, the firm will be directly downgraded. Otherwise, the firm will be placed on watchlist.[14] To capture the decision of the rating agency, we proceed in two steps. First we use a logit regression modelling the decision of the rating agency. Secondly, we test Hypothesis 3, including all variables found significant in the first step as control variables.

We start our sample selection process by using all events with either a watchlist commencement with designation downgrade or with a direct downgrade in the period starting October 1, 1991 and ending December 31, 2004. We exclude events with insufficient balance sheet information. In line with earlier work on capital structure (e.g. Flannery and Rangan (2006)) we exclude financial (SIC 6000-6999) and regulated (SIC 4900-4999) firms from the regression, since their capital structure differs markedly from those of other companies. This leads to a total sample of 4351 observations.

To perform the logit regression, we create a dummy variable WATCHLIST PLACEMENT equal to 1 if the firm is placed on watchlist with direction downgrade, and 0 otherwise. Independent variables are likely determinants of watchlist placement, as suggested in the paper by Boot, Milbourn, and Schmeits (2006). These variables refer to the firm's ability to react to the requirements set forth by the rating agency. This adaptability can refer to financial flexibility as well as technological flexibility. Our measure of financial flexibility is cashflow divided by total assets (CASHFLOW). The more financial slack the firm has at hand (as measured by CASHFLOW), the more the firm is able to e.g. retire debt. We therefore expect CASHFLOW to have a positive effect on watchlist placement. We follow MacKay and Phillips (2005) in using CAPITAL INTENSITY (fixed

[14]This holds only for a certain level of success probability. Firms with a very high likelihood of success (above a threshold) will neither be downgraded nor placed on watchlist. We abstract from these cases in our empirical specification.

assets over number of employees) as a proxy for technological flexibility. The higher the capital intensity of the production technology used by the firm the more difficult recovery effort becomes. Therefore, we expect a negative sign.

The likelihood of being placed on watchlist will also be positively correlated with the quality of the management. Following Boot, Milbourn, and Schmeits (2006), we proxy quality of management using SIZE, calculated as the log of book value of assets. We include two variables for capital structure in our regression. LEVERAGE is measured as the book value of total debt over the market value of the firm whereas SHORT gives the proportion of debt due in 1 year to total debt. We include LEVERAGE because we expect firms with more LEVERAGE to be more willing to comply with the agency's request because a likely rating change (which is followed by an increase in borrowing costs) will be more expensive for these types of firms. Thus, we would expect a positive sign. The portion of short term debt should have a positive sign as well since these liabilities expire within the next year, therefore making a rating change more severe.

We also include the degree of competition in the industry (COMPETITION), which should be positively correlated with the willingness to engage in recovery effort. On the other hand, ability to exert recovery effort may be negatively related to competition in the industry because firms in highly competitive markets are more likely to have smaller financial slack. We have therefore no clear prior for the sign of this variable. The degree of competition is calculated as the number of firms in Compustat in given year operating in the industry where each industry is given by its 4-digit SIC code.

As a last variable we also include a measure of risk which is used in MacKay and Phillips (2005). This variable, labelled RISK, is calculated as the standard deviation of cashflow to total assets using a minimum of 4 annual observations. We expect firms with a higher variability of cashflow to be less able to engage in recovery effort.[15]

[15]We also included the number of issue ratings outstanding in an earlier version of the paper. We abstain from including the variable for two reasons. First, due to limited data availability we lose roughly 50% of our sample. Second, the results for the other variables are virtually the same.

Thus, the regression modelling the watchlist decision is given by

$$\begin{aligned} WATCHLIST\ PLACEMENT_j &= \beta_0 + \beta_1\, SIZE_j + \beta_2\, LEVERAGE_j \\ &+\beta_3\, CASHFLOW_j + \beta_4\, SHORT_j + \beta_5\, CAPITAL\ INTENSITY_j \\ &+\beta_6\, COMPETITION_j + \beta_7\, RISK_j + \epsilon_j\ . \end{aligned} \tag{6}$$

All variables are evaluated at, or immediately before, the announcement date.[16] The results are reported in Table 7. All but the two capital structure variables have the expected sign. The first three explanatory variables come out highly significant, while CAPITAL INTENSITY, COMPETITION, and RISK are insignificant. The variable SHORT turns out to be weakly significant. Nevertheless, the regression has a pseudo R^2 of only 7.9%, i.e. it is rather low.

We now turn to test our Hypothesis 3 using the following Model,

$$\begin{aligned} CAR_j &= \beta_0 + \beta_1\, RCHANGE_j + \beta_2\, IGRADE_j + \beta_3\, DAYS_j \\ &+\beta_4\, WATCHLIST^* RCHANGE_j + \beta_5\, WATCHLIST^* IGRADE_j \\ &+\beta_6\, WATCHLIST^* DAYS_j + \beta_7\, SIZE_j + \beta_8\, LEVERAGE_j \\ &\beta_9\, CASHFLOW_j + \epsilon_j\ . \end{aligned} \tag{7}$$

where the dependent variable is the cumulative abnormal return for firm j, RCHANGE, IGRADE, and DAYS are the same as in Model 1, and the control variables SIZE, LEVERAGE, and CASHFLOW are the same as in the logit regression. We exclude SHORT because the variable only weakly influences the watchlist versus direct downgrade decision. WATCHLIST is a dummy variable equal to one, if the firm is downgraded after a preceding watchlist, and 0 otherwise. Our key variable is the interaction between WATCHLIST and RCHANGE. An insignificant coefficient would support Hypothesis 3, that the watchlist was introduced to "buy time" for investigating firms with uncertain development, while a significantly positive coefficient would support the notion of implicit contracting between the rating agency and the firm during the watchlist episode.

[16] Here announcement refers to either the date the firm is placed on watchlist with direction downgrade or the date of the direct downgrade.

The results are reported in Table 8. The RCHANGE and DAYS variables turn out to be statistically significant. This confirms our previous result that there is a strong influence of these two variables on the abnormal return. The coefficients of the other control variables correspond to our overall findings in the logit regression. An exception is the SIZE variable, which is insignificant, meaning that the difference in abnormal return is not correlated with firms size.

Our key variable WATCHLIST*RCHANGE turns out to be negative but only weakly statistically significant. Therefore we cannot reject the hypothesis of equivalent stock market reactions for the two downgrade categories. Note, however, that we only use off-watchlist events. This could, at least, explain our findings here. This result is consistent with the view that the watchlist was introduced to "buy time" for investigating those firms with a uncertain development in credit quality.

7 Conclusion

Our study examined whether the formal introduction of the watchlist procedure by Moody's in 1991 influenced the informational content of credit ratings and possibly extended the economic role that agencies play on financial markets. We find that indeed in the period after the institutionalization of the watchlist process, ratings trigger stronger market reactions than in the pre-watchlist period. Furthermore, our empirical study lends support to the hypothesis that the watchlist procedure has been introduced to reduce the critical tradeoff between rating precision and timeliness that has worried both the industry and financial markets for a long time and that has led to the introduction of additional market-based measures of default risk.

However, since we focus only on the market effects following watchlist resolutions rather than the combined effect from on- and off-watchlist events, we cannot make any further statements on whether or not ratings agencies possibly try to influence a firm's credit quality by entering into an implicit contract with the firm via the watchlist. This interesting question, that will lead to further, more detailed conjectures with regard to

rating agencies' objective functions will be dealt with in a separate study.

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8 Tables

Table 1: History of Moody's ratings 1982-2004: total number of events

The table reports the rating history of Moody's issuer ratings for the period between April 26, 1982 and December 31, 2004. The first column gives the year, the second column presents the number of watchlist placement events, columns 3 (4) report the number of watchlist placements for direction downgrade (upgrade) for a given year. The total number of direct rating events is reported in column 5. Finally, the number of direct rating events are presented in column 6 (7) for downgrades (upgrades), respectively. Consistent with the existing literature, ratings are transformed into a variable measured on a 21 point scale where 1 is equivalent to Aaa, 2 is equivalent to Aa1, and 21 is equivalent to C.

Year	Watchlist Events (direction)			Direct Rating Events		
	All	Down	Up	All	Downgrade	Upgrade
1982	-	-	-	235	177	58
1983	-	-	-	282	161	121
1984	-	-	-	394	193	201
1985	-	-	-	448	272	176
1986	-	-	-	576	401	175
1987	-	-	-	455	293	162
1988	-	-	-	537	355	182
1989	-	-	-	603	431	172
1990	-	-	-	752	618	134
1991	0	0	0	705	544	161
1992	162	135	27	649	464	185
1993	323	218	105	439	253	186
1994	340	195	145	338	158	180
1995	516	263	253	459	221	238
1996	527	271	256	478	177	301
1997	709	449	260	651	302	349
1998	1420	1026	394	936	627	309
1999	1040	641	399	1354	1049	305
2000	1013	563	450	846	505	341
2001	1266	916	350	1198	884	314
2002	1405	1197	208	1051	788	263
2003	1122	742	380	728	453	275
2004	1028	451	577	720	295	425
Total	10871	7067	3804	14834	9621	5213

Table 2: History of Moody's ratings 1982-2004: mean number and average rating

The table reports the rating history of Moody's issuer ratings for the period between April 26, 1982 and December 31, 2004. The first column gives the year, the second the mean number of rated firms in the respective year. The third column reports the mean rating of all rated firms in the given year. Consistent with the existing literature, ratings are transformed into a variable measured on a 21 point scale where 1 is equivalent to Aaa, 2 is equivalent to Aa1, and 21 is equivalent to C.

Year	Mean #	Mean Rating
1982	1277	8.07
1983	1429	8.16
1984	1575	8.16
1985	1902	8.20
1986	2241	8.58
1987	2612	8.88
1988	2861	8.98
1989	3131	9.06
1990	3349	9.13
1991	3534	9.18
1992	3815	9.15
1993	4229	9.23
1994	4756	9.34
1995	5187	9.37
1996	5691	9.45
1997	6333	9.56
1998	7119	9.87
1999	7691	10.06
2000	8111	10.14
2001	8467	10.20
2002	8849	10.33
2003	9198	10.48
2004	9681	10.50

Table 3: Distribution and size of rating downgrades by year

The table contains the distribution and the mean size of rating downgrades for the sample. The sample period after October 1, 1991 includes direct downgrades as well as downgrades following watchlist placements. The sample consists of 3651 downgrades in the period between April 26, 1982 and December 31, 2004. Ratings are issuer ratings provided by Moody's. Consistent with the existing literature, ratings are transformed into a variable measured on a 21 point scale where 1 is equivalent to Aaa, 2 is equivalent to Aa1, and 21 is equivalent to C. Rating change is the absolute value of rating change in notches. Size reports the mean over all rating changes in a given year.

Year	Direct Downgrades		Downgrades Following Watchlist	
	#	Size	#	Size
1982	94	1.79	-	-
1983	73	1.52	-	-
1984	77	1.78	-	-
1985	95	1.81	-	-
1986	155	2.11	-	-
1987	106	2.03	-	-
1988	123	2.13	-	-
1989	156	1.89	-	-
1990	225	1.66	-	-
1991	112	1.57	-	-
1992	78	1.38	7	1.14
1993	87	1.54	30	1.5
1994	85	1.41	29	1.57
1995	103	1.52	35	1.42
1996	99	1.49	34	1.59
1997	98	1.43	36	1.44
1998	206	1.63	70	1.81
1999	244	1.68	85	1.6
2000	267	1.67	97	1.69
2001	398	1.76	139	1.83
2002	399	1.7	192	1.79
2003	229	1.58	132	1.58
2004	142	1.34	81	1.34
PRE1991	1216	1.84	-	-
POST1991	2435	1.61	967	1.65
Total	3651	1.69	967	1.65

Table 4: Summary of rating downgrades by absolute magnitude

The table presents the number as well as the proportion of all 3651 rating downgrades in our sample by absolute magnitude of the rating change. The sample is split into two periods: The pre-watchlist period from April 26, 1982 to September 30, 1991 (PRE1991) and the post-watchlist period from October 1, 1991 to December 31, 2004 (POST1991). Rating change is the absolute value of rating change in notches.

	PRE1991		POST1991			
			All		From Watchlist	
Rating Change	#	%	#	%	#	%
1	597	49.1	1414	58.07	560	57.91
2	385	31.66	703	28.87	266	27.51
3	147	12.09	218	8.95	89	9.2
4	53	4.36	66	2.71	33	3.41
5	11	0.9	22	0.9	13	1.34
6	11	0.9	7	0.29	4	0.41
7	7	0.58	2	0.08	-	-
8	2	0.16	1	0.04	-	-
9	1	0.08	2	0.08	2	0.21
10	1	0.08	-	-	-	-
11	-	-	-	-	-	-
12	1	0.08	-	-	-	-
Total	1216	100	2435	100	967	100

Table 5: Stock market response to downgrades PRE1991/POST1991

The table provides the cumulative abnormal returns following downgrades. The sample consists of 3651 downgrades in the period between April 26, 1982 and December 31, 2004. In Panel A the sample is split into two periods: The pre-watchlist period from April 26, 1982 to September 30, 1991 (PRE1991) and the post-watchlist period from October 1, 1991 to December 31, 2004 (POST1991). In Panel B only the post-watchlist period from October 1, 1991 to December 31, 2004 is considered. The sample is split into direct downgrades (direct) and downgrades following a watchlist (from watchlist). The cumulative abnormal return (CAR) is calculated over a three-day event window (-1,+1) around the date the rating change becomes effective. The CAR is the cumulative abnormal stock return minus the return of the market portfolio, where the market portfolio is given by the value-weighted portfolio from CRSP. Wilcoxon T values are given below the median and t-values below the mean. ***, **, and * indicate significance at the 1%, 5%, and 10% level. Mean and median values are tested using one-sided t-test and Wilcoxon T test, respectively.

	Mean	Median	$CAR < 0$ (%)
Panel A: All observations			
PRE1991	-2.89	-1.01	58.6
	(-8.56)***	(-8.82)***	
POST1991	-3.7	-1.01	60.73
	(-11.61)***	(-11.30)***	
Difference	-0.81	0	2.13
(POST1991-PRE1991)	(-1.75)**	(-0.44)	
Panel B: POST1991 Period			
Direct	-4.42	-1.6	60.66
	(-10.61)***	(-10.26)***	
From Watchlist	-2.61	-0.41	55.02
	(-5.29)***	(-5.00)***	
Difference	1.81	1.19	-5.64
(From Watchlist-Direct)	(2.81)***	(3.40)***	

Table 6: The effect of watchlist introduction on the stock market reaction to rating downgrades

The sample consists of 3651 downgrades in the period between April 26, 1982 and December 31, 2004. Ratings are issuer ratings provided by Moody's. The sample period after 1991 includes direct downgrades as well as downgrades following watchlist placements. Consistent with the existing literature, ratings are transformed into a variable measured on a 21 point scale where 1 is equivalent to Aaa, 2 is equivalent to Aa1, and 21 is equivalent to C. ***, **, and * indicate significance at the 1%, 5%, and 10% level. t-values are given in parenthesis. All results are obtained accounting for clustering in the sample.

The dependent variable is the cumulative abnormal return. The explanatory variables are defined as follows: RCHANGE is the absolute value of rating change in notches; IGRADE is a dummy variable equal to 1 if the rating downgrade crosses the investment grade boundary, and 0 otherwise; DAYS is the log of the number of days since the last rating change (downgrades as well as upgrades); POST1991 is a dummy variable equal to 1 if the observation is from the watchlist period (October 1, 1991 to December 31, 2004), and 0 otherwise; BCYCLE is a dummy variable equal to 1 if the rating change is from a time period defined as recession by NBER, and 0 otherwise; SHORT is calculated as short-term debt (Compustat item #34)/book value of total assets (#6); LONG is calculated as long-term debt (#9)/book value of total assets (#6). AA, A, BAA, BA, and B are dummy variables equal to 1 if the rating of the observation before the rating change is within the respective rating class, and 0 otherwise. Note, that AA also includes rating changes coming from AAA. Rating categories CAA and below serves as the reference category.

Explanatory variables	Model 1	Model 2	Model 3	Model 4	Model 5
INTERCEPT	-0.008	0.021	-0.008	0.020**	-0.063***
	(-1.38)	(0.837)	(-1.40)	(2.25)	(-4.38)
RCHANGE	-0.009***	-0.009**	-0.009***	-0.009***	-0.011***
	(-2.75)	(-2.48)	(-2.74)	(-2.75)	(-3.52)
IGRADE	0.019**	0.018*	0.019**	0.020*	0.017
	(2.00)	(1.82)	(2.01)	(1.70)	(1.65)
DAYS	-0.001*	0	-0.001*	-0.001	-0.001
	(-1.79)	(-0.77)	(-1.81)	(-0.99)	(-1.36)
POST1991*RCHANGE	-0.019***	-0.017***	-0.019***	-0.017***	-0.012***
	(-4.32)	(-2.63)***	(-4.32)	(-3.61)	(-2.69)
POST1991*IGRADE	-0.022	-0.019	-0.022	-0.028*	-0.033**
	(-1.46)	(-1.32)	(-1.46)	(-1.66)	(-2.25)
POST1991*DAYS	0.006***	0.004***	0.006***	0.005***	0.005***
	(4.87)	(3.66)	(4.88)	(3.77)	(4.30)
BCYCLE			0.009		
			(0.46)		
SHORT				-0.049***	
				(-4.13)	
LONG				-0.056***	
				(-3.61)	
AA (or above)					0.082***
					(6.25)
A					0.077
					(5.93)
BAA					0.062***
					(4.73)
BA					0.062***
					(4.73)
B					0.026*
					(1.87)
Year Dummies	no	yes	no	no	no
$Adj.R^2$(%)	3.05	4.08	3.05	3.74	5.69
F	8.30***	3.44***	7.15***	10.34***	13.33***
Observations	3651	3651	3651	3228	3651
Clusters	1614	1614	1614	1494	1614

Table 7: Which firms are put on watchlist?

The sample consists of 4351 direct downgrades and watchlist placements with direction downgrade in the watchlist period between October 1, 1991 and December 31 2004, respectively. Ratings are issuer ratings provided by Moody's. *** ,** , and * indicate significance at the 1%, 5%, and 10% level. z-values are given in parenthesis.

The dependent variable is a dummy variable equal to 1 if the observation is placed on watchlist with designation downgrade, and 0 otherwise. The explanatory variables are defined as follows: SIZE is calculated as log of book value of total assets (Compustat item #6); LEVERAGE is calculated as total debt (#9 + #34)/(total debt (#9 + #34) + market value of equity (#199)); CASHFLOW is calculated as earnings before depreciation (#18) / book value of total assets (#6); SHORT is calculated as short-term debt(#34)/total debt (#9 + #34); CAPITAL INTENSITY is calculated as property, plant, and equipment (#8)/ number of employees(#29); COMPETITION is the number of firms in a given industry in a given year reported by Compustat, where industry is defined by the 4-digit SIC code; finally, RISK is calculated as the standard deviation of the CASHFLOW variable defined above.

Explanatory Variables	Coefficient (z-statistic)
INTERCEPT	-2.252***
	(-10.16)
SIZE	0.254***
	(10.52)
LEVERAGE	-1.477***
	(-9.46)
CASHFLOW	1.989***
	(5.74)
SHORT	-0.334*
	(-1.84)
CAPITAL INTENSITY	-0.016
	(-0.43)
COMPETITION	0
	(0.17)
RISK	-0.273
	(-0.92)
$PseudoR^2(\%)$	7.9
LR χ^2	417.71***
Observations	4351

Table 8: CAR for firms coming from watchlist vs. direct downgrades

The sample consists of 2353 downgrades in the watchlist speriod between October 1, 1991 and December 31, 2004. Ratings are issuer ratings provided by Moody's. The sample includes direct downgrades as well as downgrades following watchlist placements. Consistent with the existing literature, ratings are transformed into a variable measured on a 21 point scale where 1 is equivalent to Aaa, 2 is equivalent to Aa1, and 21 is equivalent to C. ***, **, and * indicate significance at the 1%, 5%, and 10% level. t-values are given in parenthesis. All results are obtained accounting for clustering in the sample.

The dependent variable is the cumulative abnormal return. The explanatory variables are defined as follows: RCHANGE is the absolute value of rating change in notches; IGRADE is a dummy variable equal to 1 if the rating downgrade crosses the investment grade boundary, and 0 otherwise; DAYS is the log of the number of days since the last rating change (downgrades as well as upgrades); WATCHLIST is a dummy variable equal to 1 if the rating change follows a watchlist placement, and 0 otherwise; SIZE is calculated as log book value of total assets (Compustat item #6); LEVERAGE is calculated as total debt (#9 + #34)/(total debt (#9 + #34) + market value of equity (#199)); finally CASHFLOW is calculated as earnings before depreciation (#18) / book value of total assets (#6).

Explanatory Variables	Coefficient (t-statistic)
INTERCEPT	0.016
	(0.58)
RCHANGE	-0.024***
	(-3.27)
IGRADE	-0.001
	(-0.16)
DAYS	0.005***
	(4.25)
WATCHLIST*RCHANGE	-0.014*
	(1.72)
WATCHLIST*IGRADE	-0.014
	(-1.24)
WATCHLIST*DAYS	-0.001
	(-0.64)
SIZE	0
	(0.30)
LEVERAGE	-0.055***
	(-2.99)
CASHFLOW	0.109**
	(-2.47)
$Adj.R^2(\%)$	7.54
F	5.74***
Observations	2353
Clusters	1157