View metadata, citation and similar papers at core.ac.uk
brought to you by CORE
provided by Hochschulschriftenserver - Universität Frankfurt am Main

CENTER FOR FINANCIAL STUDIES

No. 2008/02

The Economics of Rating Watchlists: Evidence from Rating Changes

Christian Hirsch and Christina E. Bannier

Center for Financial Studies
an der Universität Frankfurt ▪ Mertonstraße 17-21 ▪ D-60325 Frankfurt am Main
Telefon: +49 (0)69 798-30050
Fax: +49 (0)69 798-30077 ▪ http://www.ifk-cfs.de ▪ E-Mail: info@ifk-cfs.de

Center for Financial Studies

The *Center for Financial Studies* is a nonprofit research organization, supported by an association of more than 120 banks, insurance companies, industrial corporations and public institutions. Established in 1968 and closely affiliated with the University of Frankfurt, it provides a strong link between the financial community and academia.

The CFS Working Paper Series presents the result of scientific research on selected topics in the field of money, banking and finance. The authors were either participants in the Center´s Research Fellow Program or members of one of the Center´s Research Projects.

If you would like to know more about the *Center for Financial Studies*, please let us know of your interest.

Prof. Dr. Jan Pieter Krahnen

Prof. Volker Wieland, Ph.D.

Center for Financial Studies
an der Universität Frankfurt ▪ Mertonstraße 17-21 ▪ D-60325 Frankfurt am Main
Telefon: +49 (0)69 798-30050
Fax: +49 (0)69 798-30077 ▪ http://www.ifk-cfs.de ▪ E-Mail: info@ifk-cfs.de

CFS Working Paper No. 2008/02

The Economics of Rating Watchlists: Evidence from Rating Changes*

Christian Hirsch[1] and Christina E. Bannier[2]

December 12, 2007

Abstract:
Generally, information provision and certification have been identified as the major economic functions of rating agencies. This paper analyzes whether the “watchlist" (rating review) instrument has extended the agencies' role towards a monitoring position, as proposed by Boot, Milbourn, and Schmeits (2006). Using a data set of Moody's rating history between 1982 and 2004, we find that the overall information content of rating action has indeed increased since the introduction of the watchlist procedure. Our findings suggest that rating reviews help to establish implicit monitoring contracts between agencies and borrowers and as such enable a finer partition of rating information, thereby contributing to a higher information quality.

JEL Classification: G14, G29, G33

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

* The authors would like to thank Moody's Investor Service, especially Richard Cantor, for providing the data and for commenting on a first draft of the paper. We are also grateful to Jan Pieter Krahnen, Conrad Zimmer, Karl-Hermann Fischer, Christian Schlag, Nicole Branger, Ralf Elsas, Marcel Tyrell, Gunter LÃo²er, Paula Hill and Reint Gropp for valuable comments and suggestions. Any remaining errors are our own responsibility

1 Goethe-University Frankfurt, Department of Economics and Business Administration, Mertonstr. 17, Uni-Pf 88, D-60054 Frankfurt am Main, Germany. Phone: +49 69 798 23907, Fax: +49 69 798 28951, E-mail: hirsch@finance.uni-frankfurt.de

2 Commerzbank Professor of Corporate Finance / SME Finance, Frankfurt School of Finance and Management, Sonnemannstr. 9-11, 60314 Frankfurt, Germany. Phone: +49 69 154008 755, Fax: +49 69 154008 4755, E-mail: c.bannier@frankfurt-school.de

1 Introduction

Credit rating agencies (CRAs) such as Standard and Poor's (S&P), Moody's Investors Service or Fitch, Inc., provide opinions on the creditworthiness of entities and their financial obligations. While the specific meaning of a credit rating varies slightly within the agencies,[1] ratings generally offer quality assessments on a debt issuer or a specific debt obligation. Recent years have seen an expanding use of credit ratings, mostly due to the globalization of financial markets, the growing complexity of financial products and, generally, an increasing usage of ratings in financial regulation and contracting (Frost, 2006).

Additional to the widespread use of credit ratings is the complexity of rating information itself. Most credit rating agencies do not only offer a simple rating for a company issuing securities and for the individual financial products issued, but complement their service by offering additional information via rating outlooks and rating reviews ("watchlists").[2] The proportion of ratings on watch, e.g., has strongly risen in recent years. While until 1998 on average about 10% of bond issuers were under review at Moody's, this percentage has increased to more than 50% between 2000 and 2004 (Hamilton and Cantor, 2004). Obviously, the additional rating instruments have grown into heavily used tools for rating agencies to transmit information to financial markets.

While it has generally been argued that rating agencies mainly provide information to market participants, thereby fulfilling a certification role, their function of facilitating financial contracting and regulation has also been recognized. In a recent study, Boot, Milbourn, and Schmeits (2006) have additionally pointed out the agencies' monitoring role, that, via an implicit contract between agency and corporate borrower, endogenously influences the company's credit quality and allows ratings to be even "more informative".

[1] Moody's ratings are "opinions about expected credit loss, which is composed of a default probability component and a default severity component" (Hamilton and Cantor, 2004). S&P ratings, in contrast, refer to relative default probabilities.

[2] Moody's report ratings currently under review on their "Watchlist". S&P refer to the "CreditWatch". In the following, we use the notions of rating watchlists and rating reviews interchangeably.

Particularly against this background, the question why rating agencies introduced additional information services such as rating watchlists and outlooks remains unresolved. In this paper we intend to scrutinize these additional services, taking rating reviews as an example. Additionally to describing the watchlist as a relatively recent rating instrument, we analyze its influence on financial markets and, hence, on the rated entities themselves, in order to hint at its economic role.

As potential reasons for the implementation of rating reviews, two arguments are particularly compelling. First, agency ratings typically adjust more slowly to new information than market-based measures of coporate default risk such as, e.g., KMV's distance-to-default measure (Löffler, 2004a; Vassalou and Xing, 2005; Robbe and Mahieu, 2005).[3] However, while market prices respond prior to rating events, they tend to react by more than is warranted ex-post. Agency ratings, in contrast, are supposed to reflect changes in credit quality only when they are "unlikely to be reversed within a relatively short period of time" (Cantor, 2001).[4] Watchlists may thus have helped the agencies to alleviate the traditional conflict between rating timeliness and accuracy. By creating an additional, more lengthy rating process, agencies effectively "buy time" for assessing the entities at question and are hence able to demonstrate timely action without compromising the long-term character of their rating assessments (Altman and Rijken, 2005). The introduction of a formal rating review process may therefore have been the agency's reaction to a heightened demand of timely credit risk information from financial markets.

Second, by putting a rating on watch, rating agencies may also try to influence the entity's future credit quality. Boot, Milbourn, and Schmeits (2006) argue that specific market structures allow credit ratings to coordinate investor behavior. Institutional investors, for instance, are forced by regulatory reasons to invest large parts of their portfolios only in "investment-grade" rated debt instruments. Watchlist procedures, that imply rating

[3] Interestingly, the KMV measure of credit risk was introduced in 1989, i.e. only shortly before Moody's released its institutionalized watchlist.

[4] Löffler (2005) provides empirical proof of agency-ratings' stability and analyzes why rating reversals may be harmful. Löffler (2004b) examines the tradeoff between rating timeliness and accuracy against the background of portfolio governance rules.

changes with subsequent regulatory-forced investor action, hence strengthen the monitoring role that credit rating agencies may play and lead to an implicit contract between agency and borrower. Rating watchlists with designation downgrade, in particular, may induce firms to "undertake specific actions to mitigate the possible deterioration of its credit standing" (Boot et al., 2006). In February 2006, for instance, S&P placed E.ON's debt on credit watch with negative implications. In August 2006, S&P commented: "Given the perceived incremental weakening of E.ONs business position, we now expect that a ratio of FFO to adjusted net debt of above 20% would be *required to maintain* an A-category long-term credit rating ." (emphasis added)

According to these arguments, rating reviews provide agencies with the opportunity to fulfill their traditional role as an information provider in a more complex way. As such, it stands to reason whether rating watchlists improve the informational content of the rating process. In a first step, we hence test - on the complete history of Moody's estimated senior unsecured ratings between 1982 and 2004 - for a time-series break in companies' cumulative abnormal stock returns following rating announcements, due to the institutional implementation of the watchlist on October 1, 1991. Comparing the pre-watchlist period (Apr 26, 1982 - Sep 1991) with the post-watchlist period (Oct 1991 - Dec 2004) and focussing on rating downgrades, we find that the informational content of ratings - measured by cumulative abnormal returns - has significantly increased. This result continues to hold even when we control for additional explanatory factors such as business-cycle or sample-composition effects and, consequently, underlines the relevance of the institutional change implicit in the watchlist procedure. In a second step, we ask which factors influence an agency's decision to put an issuer under review. We find that management quality and financial flexibility seem to be the main criteria for watchlist addition versus direct rating change. Controlling for these selecting factors, we show that within the watchlist period, i.e. post-1991, the informational content of direct downgrades is much stronger than that of review-preceded downgrades. This finding supports the "implicit contracting" hypothesis according to which rating agencies actively monitor the rated entity's *willingness* to repay debt via the watchlist procedure, while direct rating action informs on the issuer's *capability* to do so. Various robustness tests come to the same conclusion.

While, in line with earlier studies, we hardly find any significant market reaction to upgrades, interesting additional findings can be derived for downgrades. For instance, a downgrade from investment-grade to junk-bond status triggers a negative market reaction only after the introduction of the watchlist. Before 1991, however, crossing of the investment-grade boundary led to a positive market reaction. Likewise, the more time elapsed since the last rating change, the more positive is the market reaction to a rating downgrade post-1991, while the effect is negative prior to the watchlist introduction. These slightly counterintuitive results complement the findings by Hill and Faff (2007) that downgrades (upgrades) that are preceded by a credit watch lead to positive (negative) market returns. Taken together, they hint at the special role that rating reviews seem to play.

The rest of the paper proceeds as follows. Section 2 gives a brief overview on related studies on market reactions to rating changes and, particularly, on watchlist effects. Section 3 contains a brief description of the watchlist procedure and presents the hypotheses to be tested in sections 5 - 7. Section 4 describes our data set and lays out its main characteristics, while sections 5, 6 and 7 contain both univariate and multivariate analyses. Section 8 concludes.

2 Related Literature

Several studies have recently examined the effect of rating changes on market returns. With respect to stock market returns, negative effects are usually reported for downgrades while significant returns are rarely found for upgrades (Cantor, 2004; Vassalou and Xing, 2005). 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. Rating agencies, however, are exempted from this rule, which seems to improve the ratings' informational content. Second, Goh and Ederington (1993) find a significant negative abnormal return only for downgrades associated with a deterioration of the firm's expected financial performance but not for those attributed to a reorganization or an increase in financial leverage. Regarding cross-sectional aspects, stronger market effects are generally found for downgrades to and within the sub-investment-grade rating category (Goh and Ederington, 1999).

With respect to bond price reactions, Hand, Holthausen, and Leftwich (1992) report significant abnormal bond returns following rating changes, while Wansley, Glascock, and Clauretie (1992) confirm a significant (negative) effect only for downgrades. Likewise, Hite and Warga (1997) find the strongest market reaction for downgrades to and within the junk-bond grade class. Comparing stock market and bond price effects following rating changes, Wansley and Clauretie (1985) report that the bond market appears to be less efficient in the sense that relative bond prices tend to react as long as seven months after a rating change.

Very few studies have yet examined 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 credit watch additions to their ultimate watchlist resolution, so that an important piece of information is not taken into account in their study. The same caveat holds for the study by Wansley and Clauretie (1985). Focussing on the same sample of S&P's watchlist additions between 1981 and 1983, they find a significant abnormal market reaction only for watchlist downgrades as compared to firms that were directly re-rated within the same time period (without review listing).

Purda (2006) examines the stock market reaction to expected and unexpected rating changes in a sample ranging from 1991 to 2002. Rating reviews in this study serve as one ingredient to rating change expectations. She finds that, while upgrades again do not lead to significant effects, stock market reactions are roughly the same for predicted and unpredicted rating downgrades. Hill and Faff (2007), to the best of our knowledge, are the first to directly compare the market effects of rating changes that were preceded by watchlist procedures with those that were not. However, they do not analyze corporate borrowers' ratings but focus on sovereign ratings. By using rating information from Moody's, S&P and Fitch, they are able to comment on the relative information content reflected in different rating actions. Again, they find that positive rating events (i.e. direct upgrades or reviews with direction upgrade) are non-informative in that they do not lead to significant market reactions. As their main result, they conclude that watch-preceded rating downgrades do not trigger any stronger market reaction than direct downgrades. This finding is also supported by Hull, Predescu, and White (2004) who confirm that while additions to the watchlist (with designation downgrade) are informative, the eventual rating downgrades themselves are not. Interestingly, Hill and Faff (2007) also report that prior to a watch-preceded downgrade the market seems to anticipate the event by displaying significant negative returns but reacts significantly positive after the downgrade.

Our work differs from the aforementioned studies in several respects. Most importantly, we study the full development of the watchlist instrument both in a time-series dimension and cross-sectionally. Apart from a comprehensive analysis of this relatively new rating instrument, we intend to question the motivation behind setting up this additional rating procedure. By focussing on stock market reactions to watchlist resolutions and comparing them to direct rating action, we try to test between the "buying time" hypothesis and the "implicit contracting" argument. Finally, we complement our study by briefly examining the market effects of the review listing itself, i.e. the "on-watch" effects, as well. These, however, are likely to deliver contaminated results as market reactions tend to be additionally influenced by the events that triggered the watchlist placement in the first place. Our main results regarding the watchlist's economic rationale are therefore based on the "ex-post" effects, i.e. on watchlist resolutions.

3 The Watchlist-Procedure: Theory and Hypotheses

Our empirical study is based on the complete history of Moody's ratings. On October 1, 1991, Moody's significantly altered its rating process. Additionally to the usual rating procedures, a so-called watchlist was formally added to its arsenal of rating instruments. Generally, review listings are "designed to inform investors of Moody's opinion that the credit quality of an obligation or obligor may be changing"(Keenan et al., 1998) and as such imply a public announcement of rating investigation. Interestingly, such rating reviews existed as early as 1985 and were published from the beginning. However, watchlist assignments were only considered formal rating actions from 1991 on. From this time, both the decision to put an issuer or issue "on watch" and the subsequent watchlist resolution, i.e. the final rating action, had to be made by a rating committee.

Review listings are usually triggered by sudden events that are likely to affect an issuer's future credit quality, i.e. his willingness and / or ability to repay debt. Among the most common causes are the announcements of a merger or of other corporate changes. A rating may be put on review for possible downgrade or upgrade or with direction uncertain. Resolution from the watchlist hence implies either an upgrade, a downgrade, or a rating confirmation. During the watchlist interval - an average period of 103 days (Keenan, Fons, and Carty, 1998)[5] - the rating agency typically requests additional information from the firm, thereby entering into a dialogue between rating analysts and lead management. The watchlist period ends with the announcement of the rating decision.

If a 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 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%)

[5] In the study by Keenan, Fons, and Carty (1998), 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.

changes and 25% (15%) confirmations.[6] The initial watchlist designation hence puts a strong prior on the eventual rating action.[7]

Several questions may be raised with respect to the economic rationale behind the watchlist procedure. As a first step, we are interested in whether or not the introduction of the watchlist instrument generally influenced the informational content of ratings. We therefore test for a time-break in the effects of rating changes on the value of firm equity, i.e. on the cumulative abnormal stock return, before and after the formal introduction of the watchlist on October 1, 1991. In our analysis, we focus mainly on rating downgrades, since upgrades very rarely deliver any significant results. If relevant, however, we also comment on the implications of positive rating changes.[8] Disregarding any differences between direct downgrades and watch-preceded downgrades (i.e. watchlist resolutions leading to a downgrade) in the post-watchlist period (i.e. from October 1, 1991, on), we should expect a larger market effect in the post-watchlist era. This leads to our first hypothesis:

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

Apart from the above mentioned argument, a confirmation of hypothesis 1 could also be due to simple time trends or reasons of sample composition. Blume, Lim, and MacKinlay (1998), for instance, suggest 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) agencies tend to assign lower rating notches over time. Blume, Lim, and MacKinlay (1998) confirm this hypothesis for the 1980s and early 90s. Even if rating standards remained the same, however, the

[6]Values do not add up to 100%, because ratings could also be withdrawn or continue to be on watchlist (Keenan, Fons, and Carty (1998)).

[7]However, any “on watch” effect will very likely be superposed with the event triggering the watchlist designation in the first place.

[8]If not displayed in the paper, the results from rating upgrades are available upon request.

average market reaction to rating announcements may have been affected by a sample-composition effect. If the reaction to a downgrade differs across rating notches and the sample population is not stationary with respect to the distribution of firms across rating notches, the cumulative abnormal return may be affected even if there is no effective change in rating policy.

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 the sample composition.*

Finally, hypothesis 3 considers the economic rationale underlying rating agencies' decision to set up an institutionalized rating review process. Two different arguments may be distinguished: First, a review listing may be seen as a rating agency's means to "buy time" before a final judgement on a change in a borrower's credit quality has to be made. In this respect, an agency would choose to directly change a rating if she is certain that the change in the borrower's credit quality is sufficiently strong and long-lasting and would put him under review otherwise. Over the watchlist period, the rating agency would either actively collect additional information about the borrower's repayment capability or passively wait for new information to arrive exogenously. In either case, the watchlist procedure would be terminated as soon as a sufficient certainty about the change in the borrower's credit quality is obtained. Ex-post, therefore, a direct downgrade and a watchlist downgrade would imply the same informational content. The decision to add the rating to the watchlist, in contrast, would be an uninformative event according to this hypothesis.

Second, following the argument in Boot et al. (2006), the watchlist may also be interpreted as an agency's means of entering into an "implicit contract" with the borrowing firm. This argument is particularly compelling for the case of a negative watchlist, i.e. for placements with direction downgrade. In this case, a rating agency would decide on a direct downgrade if she is again sufficiently certain that the firm is not capable of improving its credit quality in order to sustain its earlier rating. Firms with - from the agency's point of view - potential to maintain their credit quality but with questionable willingness to do so, in contrast, will be put under review. Resolution of the watchlist, according to this argument, makes a statement on the borrower's *willingness* to hold up his earlier rating. Consequently, watchlist downgrades should reflect only relatively small changes in credit quality due to insufficient effort, while direct rating downgrades should be associated with exogenously triggered and therefore presumably larger deteriorations of credit quality. In this respect, direct rating changes may be more informative regarding the change in the borrower's creditworthiness than watch-preceded rating downgrades. Note that due to the implicit contracting argument, watchlist additions should be informative events. The "on watch" effect would then contain the market's reaction to the agency's statement that the borrower is *capable* to sustain his initial rating, while the "off watch" effect would refer to the information of whether or not the borrower is *willing* to do so.

We phrase hypothesis 3 such that confirmation would be support for the "buying time" argument, while rejection would subscribe to the "implicit contracting" reasoning:

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

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 ratings 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. By using this type of rating we avoid the problem of multiple ratings for one issuer, which facilitates comparability across firms and also over time.[9]

[9]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).

To give a first overview, table 1 reports the number of rated companies as well as the mean rating for a given year in the sample period. Consistent with the existing literature, Moody's letter ratings have been converted into a numerical scale, where 1 is equivalent to Aaa, 2 is equivalent to Aa1,..., and 21 is equivalent to C. As can be seen, the mean rating has declined monotonically over time. This is in line with Blume, Lim, and MacKinlay (1998). However, the rating universe has also changed considerably throughout our observation period. The number of rated issuers has increased almost tenfold from 1982 to 2004. The observed rating deterioration may therefore have been caused by a rise in riskiness of the underlying pool of firms - an argument that gives bite to the test of hypothesis 2.

Table 2 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 with subsequent resolution. The total 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 watchlist downgrades are roughly twice as frequent as upgrades. Over time, the number of watchlist events fluctuates, although two subperiods can be distinguished. The first one comprises the early years of watchlist build-up (1991 to 1997), until in 1998 a relatively stable number of more than 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,[10] with a peak in the 1999-2001 period. More recently, the number of upgrades exceeds downgrades. Comparing columns 2 and 5, we see that over the interval 2000 to 2004, more than 50% of overall rating action is conducted via the watchlist.

Table 3 (4) provides the distribution of the number and the mean size of direct

[10] 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.

and watchlist-preceded downgrades (upgrades) per year. Note that table 2 referred to watchlist *entries* while tables 3 and 4 report information on watchlist *resolutions*.[11] With respect to the time series dimension, we dispose of considerably more data points in the post-watchlist era as compared to the pre-watchlist era (2435 downgrades altogether versus 1216, and 1273 upgrades versus 446). The proportion of direct to watchlist-driven downgrades in the post-watchlist period is roughly 60:40, for upgrades it is 70:30. This again confirms the perception that the watchlist has become an important tool for rating agencies. Comparing the average size of rating changes, we can also see that watchlist changes on average tend to be larger than direct rating changes, with the effect being more pronounced for upgrades than for downgrades. Over time, however, downgrades (upgrades) seem to have decreased (slightly increased) with respect to the size of the rating change.

A summary of the size distribution of downgrades (upgrades) is given in table 5 (6). During the pre-watchlist era, we find a higher proportion of more-than-1-notch rating downgrades as compared to both the post-watchlist period in general and watchlist-downgrades in particular. In contrast, whereas 49.1% of all downgrades in the pre-watchlist period are a change by one notch, this proportion rises to 58.07% in the post-watchlist era. This may, however, at least partly be also a consequence of the favorable economic conditions prevailing during most of the 1990s, given that the number of downgrades is positively correlated with recessions. In the post-watchlist period, watch-preceded downgrades seem to be slightly larger than direct downgrades (the proportion of rating changes larger than 2 notches is a bit higher). Similar results are obtained with respect to upgrades: in particular, we find that watch-preceded upgrades tend to be larger than direct upgrades.

Using standard event study methodology (MacKinlay (1997)) we calculate the cumulative abnormal stock return in response to a rating event over a short window surrounding the event date. The cumulative abnormal return (CAR) is calculated as the cumulative

[11] As we match rating information with firm-specific data later on, we also restrict the reported database to include only those firms' ratings for which stock price information is available. This considerably reduces our database.

stock return over the event window minus the return of the market portfolio. The event window spans 3 days, beginning at -1 and ending at +1, with the event being the direct rating change or watchlist rating change. 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.

Both in the univariate and in the multivariate analysis to be described in the following sections, we used several further refinements on our data. First, we decided to delete all watchlist entries that led to rating reversals (e.g., additions to the watchlist with direction upgrade that were downgraded subsequently). This deletion of data is uncritical as we lose only six observations altogether. Second, we control for contaminated data, i.e. all rating events that were tied to obvious events such as corporate mergers etc. (Jorion, Liu, and Shi, 2005). An observation is considered as contaminated if any firm-specific, price-relevant information appears in the Wall Street Journal within a three-day window surrounding the event day of rating change. With respect to downgrades, for instance, our dataset is thereby reduced from 3651 to 3180.

Given the watchlist procedure, there are effectively two dates that may produce announcement effects, namely the on-watchlist day and the off-watchlist day. Since firms are supposedly put on the watchlist only when their credit quality changes unexpectedly, "on-watch" events may be expected to be superposed with other unique and value-relevant events (Keenans, Fons, and Carty, 1998; Linciano, 2004). In such cases, an abnormal return captures both factors at the same time, the corporate event and the rating announcement. Even controlling for "contaminated" data may not completely solve this problem. Furthermore, we know that the watchlist designation puts a strong prior on the expected final resolution. In order to get a "clean" return, we therefore abstract from the on-watchlist effects in our main analysis, thereby biasing our results against finding any pre/post watchlist-era effect. We will, however, at least briefly comment on potential on-watch effects in the univariate analysis to assess the magnitude of these impacts. As an additional test, we also use an event window spanning over the total watchlist period.

5 Informational Content of Credit Watches

Hypothesis 1 claims that ratings have become more informative since the watchlist has been institutionalized. The results of a univariate test of this hypothesis are displayed in table 7. It shows the simple effects of rating changes on cumulative abnormal stock returns, differentiating between market reactions before and after the introduction of the watchlist procedure.

Overall, our results are consistent with previous research. In particular, we find statistically significant negative CARs following downgrades. Furthermore, the general market reaction to downgrades (both direct and watch-preceded) seems to be stronger in the post-watchlist era with a CAR of -3.26% than in the pre-watchlist period with only -2.16%. The difference is both statistically and economically significant. This result lends support to hypothesis 1 as it states that ratings have indeed become more informative after the introduction of the watchlist, thereby increasing the negative stock price reaction to a rating downgrade. For upgrades, in contrast, we find no significant market reaction.[12]

Univariate results hence seem to support hypothesis 1. We now proceed to a test in a multivariate framework. As the univariate analysis indicated insignificant CAR effects from upgrades, we focus solely on downgrades in the following, using model 1,

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

In line with Holthausen and Leftwich (1986) and Jorion, Liu, and Shi (2005), we test the influence of the size 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[13] (DAYS) on the cumulative abnormal return of firm j. In order to test hypothesis 1, we create a dummy variable (POST1991) equal to 1

[12] Note that our results do not change if we use different methods of calculating CARs. As an alternative, e.g., we used the method by Boehmer, Masumeci, and Poulsen (1991).

[13] Our results are virtually unchanged if we use the on-watchlist date instead of the off-watchlist date.

if the rating event falls into the post-watchlist era, and 0 otherwise. This dummy variable enters our model as an interaction term with the other control variables.

Focussing on the effects of rating downgrades, we expect to find a negative coefficient for RCHANGE. Ratings are proxies for default risk. To the extent that a rating change conveys new information to the market, a downgrade should raise the firm's future debt refinancing costs and, hence, lower the firm's market value. This negative effect should increase 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 change.

The variable IGRADE is expected to display a negative coefficient as well. Large investors, pension funds in particular, are usually not allowed to hold non-investment grade rated products.[14] When bonds pass the boundary to junk status, portfolio managers are often forced to sell. Thus, the market for investment-grade bonds may differ substantially in terms of participants, volume, and risk preferences from the market for junk bonds, leading to a downward jump in the CAR due to a crossing of the investment-grade boundary. However, as we use issuer ratings (senior unsecured ratings), this effect may be weaker than for issue ratings.

With respect to regressor DAYS, both a positive and a negative coefficient may be conceivable. On the one hand, the longer the time period between two sequential ratings, the stronger may be the informational novelty of a downgrade, leading to a strongly negative effect on CAR. On the other hand, the more time passes, the more likely it becomes that the market has already updated its belief with respect to the creditworthiness of the borrower based on other pieces of private and public information. In this case, a rating change does no longer convey new information to the market (Jorion, Liu, and Shi, 2005). A downgrade may even lead to a positive market reaction if it is less pronounced than the hitherto unconfirmed market pessimism.

Our key variable in model 1 is the interaction of RCHANGE with the POST1991-dummy. If this variable turns out to be significantly negative, this should confirm hypoth-

[14] For an overview of rating-related regulation of investment decisions, see Partnoy (2002).

esis 1 that the introduction of the watchlist has increased 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 8, column 2.While variable RCHANGE displays the expected negative sign and is highly significant, regressor IGRADE turns out to be economically and statistically significantly positive. One explanation for this could be the high degree of activity in the junk bond market during the 1980s. This may be 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 perceived as negative information. However, the combined effect is not statistically significant. Variable DAYS turns out to be insignificant. When interacted with the POST1991 dummy, however, the DAYS regressor yields a statistically highly significant and positive coefficient. For our key variable, POST1991*RCHANGE, we find indeed a significantly negative coefficient. Given that the economic effect of this regressor is much stronger than that of the simple RCHANGE variable (-0.017 versus -0.006), the informational content of rating downgrades seems to have strongly risen due to the introduction of the watchlist. This is consistent with hypothesis 1.

6 Time Trends and Sample Composition

6.1 Robustness Test I - Time Trend

So far, our results tend to confirm hypothesis 1 on the changing informational content of rating changes 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 time trend in some of our variables as explanatory factor for the observed pattern of regression coefficients. 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 in order to capture a linear time trend. This constitutes model 2. The results are presented in table 8, column 3. Note that the year dummies' coefficients are not displayed.

As can be seen from the table, the introduction of the time trend hardly changes the earlier results. In particular, is has no effect on the economic and statistic significance of our key variable POST1991*RCHANGE, even though the coefficient increases slightly from -0.017 to -0.014. Variable IGRADE loses weakly in statistical significance. This again strengthens the view that the positive sign in model 1 is time dependent. Note that the POST1991*IGRADE variable is almost unchanged in value but remains statistically insignificant.

In order to allow for the time series of coefficients to follow a macroeconomic cycle, we also included a business cycle dummy, labeled BCYCLE, to constitute model 3. It equals one if the observation is from an NBER recession period, and 0 otherwise. 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. Results are given in table 8, column 4. We find the business cycle dummy to have a positive, but statistically insignificant effect. Compared to model 1, the remaining results are unchanged. Overall, the tests performed in this section lend support to hypothesis 2. Although we find evidence of a time dependence in our data, this cannot explain the different abnormal returns in the two subperiods.

6.2 Robustness Test II - Sample Composition

A second robustness check concerns the development of corporate financial risk over our sample period. Again, we use two distinct approaches. The first directly addresses the capital structure of the firms in our sample, while the second refers to 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 to obtain model 4: the ratio of short-term debt to total assets (SHORT), and the ratio of long-term debt to total assets (LONG).[15] 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 negative for both variables.

The results are reported in table 8, column 5. Again, the inclusion of the additional capital structure variables does not alter the sign nor the significance of the regressors of model 1. Adjusted R^2 of the extended specification rises from 2.52% in model 1 to 4.18 %. The leverage variables have the expected sign and turn out roughly identical in terms of economic significance. Since all other variables of the original model 1 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.

A second, alternative test concentrates on the exponential relation between rating notches 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 is stationary over the entire period. If, however, the composition of our sample shifts over time to lower rating categories, as is consistent with table 1, 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 results that we have found. From earlier studies, we know that a rating improvement 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 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 sector of the rating scale.[16] 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

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

[16]This line of argument is consistent with Jorion and Zhang (2007).

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.

As can be seen from table 8, column 6, the dummies are both statistically and economically significant. However, their inclusion does not change the significance nor the sign of the coefficients of model 1,[17] but the absolute size of the coefficients (the economic significance) is altered. The effect of POST1991*RCHANGE decreases compared to the basic regression. We may interpret this as evidence that there is indeed a sample composition effect, which partly explains the increased strength of the announcement effect in the post-watchlist era.[18] However, we are left with an unexplained part, that we attribute to the enhanced informational value of the observed rating action. In sum, we find evidence for hypothesis 2.

7 Watchlists' Economic Rationale

7.1 Univariate Results

We now turn to test hypothesis 3 on the economic rationale behind the introduction of the watchlist procedure as an institutionalized rating instrument. Again, we start with a univariate approach. Table 9 displays the CARs following from direct and watch-preceded rating changes in the post-watchlist period. We find that direct rating downgrades trigger a much stronger market reaction (-3.99%) than watch-preceded downgrades (-2.14%). The difference is also highly significant (at the 1%-level) and as such hints at the implicit contracting argument as a motivating factor for setting up the watchlist procedure. For upgrades, no significant effects can be found.

It should be kept in mind, however, that the results so far considered only the "off-watch" effects. This procedure tends to underestimate the true stock market reaction to

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

[18] This result is strengthened by the fact that R^2 increases strongly from 2.52% in model 1 to 5.35% in model 5.

rating changes, 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. Table 10 at least gives an indication with respect to the omitted anticipation effects. As can be seen, the market reacts strongly negative to a watchlist addition with designation downgrade, but significantly positive to watchlist additions with direction uncertain and upgrade. Given the strong dependence between the initial watchlist designation and the final resolution,[19] an analysis of review listings with direction uncertain seems to be the most fruitful exercise as it should allow the least biased results. The positive market reaction in this case tends to be supportive for the implicit contracting argument. While under the "buying time" hypothesis, the announcement of a watchlist addition should not be informative at all, the implicit contracting argument sees a review listing as a (relatively) positive signal with respect to the borrower's credit quality: while it is not yet certain that he is willing to do so, at least he is capable of sustaining his creditworthiness. This should warrant the observed increase in CAR following the neutral watchlist addition.

In order to reconcile the results of tables 9 and 10, we conducted an additional, univariate robustness test. Table 11 displays the market reaction to direct and watch-preceded downgrades, where CARs have been measured using an event window starting one day before the watchlist announcement and ending one day after the watchlist resolution.[20] To facilitate comparability we use the mean length of the watchlist period in our sample as the length of the event window for direct rating changes. As can be seen, our former result is confirmed: the market reacts much more strongly to direct rating downgrades than to watch-preceded downgrades, with a strongly significant difference. Again, this supports the implicit contracting argument.

[19] In our sample, for instance, the probability of a downgrade, given the firm is placed on watchlist with designation downgrade, is 0.64.

[20] In our sample, the watchlist spans a time period between 13 and 266 days. The median length is 79 days.

7.2 Multivariate Results

When testing hypothesis 3 in a multivariate approach, we face a potential methodological problem, though: As rating agencies should be expected to preselect firms for addition to the watchlist, the difference in effects from direct rating action versus watch-preceded rating action becomes endogenous.

In order to account for this preselection, we extend our empirical model towards a two-step regression. The first regression contains the agency's decision to put a firm on the watchlist, while the second captures the relation between the rating change and the market's reaction to it. Note that these two equations constitute a sequential equation model: the watchlist placement influences the observed cumulative abnormal returns but not vice versa. Such recursive equation models can be estimated consistently using OLS, provided that the error terms of the two equations are uncorrelated. We hence proceed as follows: First we use a logit regression, modelling the watchlist-addition decision of the rating agency. Second, we test hypothesis 3, including all variables found significant in the first step as control variables.

We commence our sample selection process by using all events with either a watchlist assignment with designation downgrade or with a direct downgrade in the post-watchlist period (October 1, 1991, to 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 rating is placed on watchlist with direction downgrade, and 0 otherwise. Independent variables referring to the firm's ability to react to the requirements set forth by the rating agency during the course of the watchlist period are likely determinants of review placement. Obvious candidates in this respect should be measures of financial and technological flexibility. We measure financial flexibility as 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 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. Thus, we expect a negative impact of this variable on the watchlist placement decision.

The likelihood of being placed on review should also be positively correlated with management quality. Following Boot, Milbourn, and Schmeits (2006), we proxy quality of management using SIZE, calculated as the logarithm of book value of assets. We furthermore 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 within one year to total debt. We include LEVERAGE because we expect firms with higher leverage to be more exposed to an increase in the cost of debt caused by a rating deterioration. This should, in turn, increase the firm's willingness to comply with the agency's request. Thus, we expect a positive sign for the LEVERAGE variable. Likewise, the proportion of short term debt should have a positive sign, since these liabilities expire within the next year, therefore making the consequences of a rating change more severe.

We also include the degree of competition in the industry (COMPETITION), even though we cannot offer a clear prediction with regard to this regressor's sign. While competition may be positively correlated with the willingness to engage in recovery effort, highly competitive markets may also lead to less financial slack, which reduces a firm's ability to exert recovery effort. The degree of competition is calculated as the number of firms per year from Compustat operating in the industry where each industry is given by its 4-digit SIC code. Finally, we also follow MacKay and Phillips (2005) and consider the variable RISK, 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.[21]

Thus, the first regression model with respect to the watchlist decision is given by

$$\begin{aligned} WATCHLIST\,PLACEMENT_j &= \beta_0 + \beta_1\,SIZE_j + \beta_2\,LEVERAGE_j \\ &+\beta_3\,CASHFLOW_j + \beta_4\,SHORT_j + \beta_5\,CAPITAL\,INTENSITY_j \\ &+\beta_6\,COMPETITION_j + \beta_7\,RISK_j + \epsilon_j\ . \end{aligned} \tag{2}$$

All variables are evaluated at, or immediately before, the announcement date.[22] Results are reported in Table 12. All variables have the expected sign. Only the two capital structure variables, LEVERAGE and SHORT, display a negative instead of the expected positive sign.[23] Financial flexibility (CASHFLOW), management quality (SIZE) and capital structure (LEVERAGE) moreover turn out to be highly significant, while capital intensity, competition, and risk are insignificant. Nevertheless, the regression has a pseudo R^2 of only 7.9%, i.e. it is rather low.

We now turn to test hypothesis 3 using the following model,

$$\begin{aligned} CAR_j &= \beta_0 + \beta_1\,RCHANGE_j + \beta_2\,IGRADE_j + \beta_3\,DAYS_j \\ &+\beta_4\,WATCHLIST^{*}RCHANGE_j + \beta_5\,WATCHLIST^{*}IGRADE_j \\ &+\beta_6\,WATCHLIST^{*}DAYS_j + \beta_7\,SIZE_j + \beta_8\,LEVERAGE_j \\ &\beta_9\,CASHFLOW_j + \epsilon_j\ . \end{aligned} \tag{3}$$

Here, 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, LEVER-

[21] In an earlier version of the paper, we also included the value of rated debt outstanding. Yet, as results stay virtually the same, we decided to abstain from considering this additional regressor.

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

[23] Obviously, therefore, rating agencies perceive these capital structure variables to be more important in influencing a firm's capability rather than its willingness to uphold the initial rating. This may be taken as additional support for our assumption that proof of lacking effort to sustain credit quality (i.e. a watchlist downgrade) leads to a smaller market reaction than proof of lacking ability to do so (i.e. a direct downgrade).

AGE, 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.

Results are displayed in table 13, column 2. RCHANGE and DAYS turn out to be statistically significant. This confirms our previous result that there is a strong influence of these two variables on the cumulative 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, implying that the difference in abnormal return is not correlated with firm size, respectively with management quality.

Our key variable WATCHLIST*RCHANGE turns out to be positive and statistically significant at the 1% level. This implies that watch-preceded downgrades lead to a less negative CAR reaction than direct downgrades. Therefore we can reject hypothesis 3 of equivalent stock market reactions for direct and watch-preceded downgrades.

There is, however, a severe line of criticism that could potentially invalidate our interpretation of the watchlist as an "implicit contract": the assumption of uncorrelated error terms of the two equations may be incorrect. Due to the rather low R^2, correlation could be simply caused by omitted variables in the watchlist placement equation. Such a simultaneous equation problem would have to be estimated by two-stage least squares procedures.

In order to validate our results, we therefore use an instrumental variable approach. Valid instruments have to be *(i)* uncorrelated with the error term of the second equation on the stock market reaction, *(ii)* should be correlated with the watchlist placement decision of the rating agency and *(iii)* may not be included as an explanatory variable in the CAR-equation (Murray (2006)). For choosing an instrument we follow Boot, Milbourn, and

Schmeits (2006). They propose the quality of management - approximated by size - as an important factor for watchlist placements. The better the quality of the management, the higher is the likelihood that the firm will be placed on watch. In the watchlist placement decision regression displayed in table 12, we find indeed a significantly positive relationship between watchlist placement and size, implying that size is correlated with the watchlist decision even after controlling for other potential explanatory variables. Additionally, due to the relatively large size of rated entities in general, we expect no significant correlation between a specific company's size and the market reaction to rating changes. This is also supported by earlier studies by Jorion, Liu, and Shi (2005) or Faulkender and Petersen (2006).

The results from an instrumental variable approach using SIZE as instrument are reported in 13, column 3.[24] While the economic significance of variables is reduced, statistical significance is unchanged. The variable WATCHLIST in particular turns out to be positive and highly significant, implying, again, that watch-preceded downgrades lead to less negative CARs than direct downgrades.[25] This corroborates our earlier conclusion that the introduction of the watchlist instrument seems to be driven by "implicit contracting" rather than by arguments to "buy time".

8 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 rating agencies play on financial markets. We find that indeed after institutionalizing the watchlist process, rating downgrades trigger stronger

[24]Performing the same regression using the CARs including both the "on-watchlist" as well as the "off-watchlist" event confirms the results of table 13.

[25]As Jorion, Liu, and Shi (2005) find that SIZE and CARs are correlated after the introduction of regulation FD in October 2000, we re-estimated our regression using only observations before the introduction of regulation Fd in October 2000. This roughly cuts our sample in half. However, coefficients turn out to be not affected by this procedure.

market reactions than in the pre-watchlist period. Furthermore, our empirical study lends support to the hypothesis that the watchlist procedure allows rating agencies to enter into an implicit contract with the rated firms, as has been suggested by Boot, Milbourn, and Schmeits (2006). Consequently, rating reviews add a "finer" piece of information to financial markets: whereas direct rating downgrades make a statement on borrowers' (lack of) capability to sustain their credit quality, watchlist downgrades inform market participants of borrowers' willingness to do so.

Note that our results coincide with a second interpretation of the rating review instrument: instead of promoting an "active" monitoring process via the watchlist, our findings may as well speak for rating reviews - and possibly also rating outlooks - being (passively) used as simply another rating classification refinement. Instead of adding yet more numerical modifiers to the traditional, broad rating classes, the agencies may have started to use these additional rating instruments to transfer information of a finer granularity.[26] Observation of this finer type of rating information should then lead to a smaller market reaction than observation of a coarser direct rating change, provided that market participants correctly account for this new type of information. Our empirical results may hence also be seen as indicative of this mutual understanding between rating agencies and market participants. Yet, given numerous anecdotal evidence, the rating agencies' business model seems to contain a vivid monitoring element, advocating the agencies' special role as an active information intermediary and corroborating our results.

[26]This line of argument is supported also by Altman and Rijken (2005), who find that credit risk information provided by rating agencies is improved by announcing "issuer ratings adjusted by their outlook ratings".

References

Altman, Edward I., and Herbert A. Rijken, 2005, Are Outlooks and Rating Reviews capable to bridge the gap between the agencies through-the-cycle and short-term point-in-time perspectives?, mimeo.

Blume, Marshall E., Felix Lim, and A. Craig MacKinlay, 1998, The declining credit quality of U.S. corporate debt: Myth or reality?, *Journal of Finance* 53, 1389–1413.

Boehmer, Ekkehart, Jim Masumeci, and Anette B. Poulsen, 1991, Event-study methodology under conditions of event-induced variance, *Journal of Financial Economics* 30, 253–272.

Boot, Arnoud W. A., Todd. T. Milbourn, and Anjolein Schmeits, 2006, Credit ratings as coordination mechanism, *Review of Financial Studies* 19, 81–118.

Cantor, Richard, 2004, An introduction to recent research on credit ratings, *Journal of Banking and Finance* 28, 2565–2573.

Faulkender, Michael, and Mitchell A. Petersen, 2006, Does the Source of Capital Affect Capital Structure?, *Review of Financial Studies* 19, 45–79.

Flannery, Mark J., and Kasturi P. Rangan, 2006, Partial adjustment toward target capital structures, *Journal of Financial Economics* 79, 469–506.

Frost, Carol Ann, 2006, Credit Rating Agencies in Capital Markets: A Review of Research Evidence on Selected Criticisms of the Agencies, mimeo.

Goh, J., and H. Ederington, 1999, Cross-Sectional Variation in the Stock Market Reaction to Bond Rating Changes, *Quarterly Review of Economics and Finance* 39, 101–112.

Goh, Jeremy, and Louis Ederington, 1993, Is a bond rating downgrade bad news, good news, or no news for stockholders?, *Journal of Finance* 48, 2001–2008.

Hamilton, David T., 2005, Moody‘s senior rating algorithm and estimated senior ratings, *Moody‘s Investors Service.*

Hamilton, David T., and Richard Cantor, 2004, Rating Transitions and Defaults Conditional on Watchlist, Outlook and Rating History, *Moody's Investor Service, Special Comment.*

Hand, John R. M., Robert W. Holthausen, and Richard W. Leftwich, 1992, *Journal of Finance*47, 733–752.

Hill, Paula, and Robert Faff, 2007, Do Credit Watch Procedures Affect the Information Content of Sovereign Credit Rating Changes?, Mimeo.

Hite, G., and A. Warga, 1997, The Effect of Bond-Rating Changes on Bond Price Performance, *Financial Analysts Journal* pp. 35–51.

Holthausen, Robert W., and Richard W. Leftwich, 1986, The effect of bond rating changes on common stock prices, *Journal of Financial Economics* 17, 57–89.

Hull, J., M. Predescu, and A. White, 2004, The Relationship Between Credit Default Swap Spreads, Bond Yields, and Credit Rating Announcements, *Journal of Banking and Finance* 28, 2789–2811.

Jorion, Philippe, Zhu Liu, and Charles Shi, 2005, Informational effects of regulation FD: evidence from rating changes, *Journal of Financial Economics* 76, 309–330.

Jorion, Phillippe, and Gaiyan Zhang, 2007, Information Effects of Bond Rating Changes: The Role of the Rating Prior to the Announcement, *Journal of Fixed Income* 16, 45–59.

Keenan, Sean C., Jerome S. Fons, and Lea V. Carty, 1998, An historical analysis of Moody‘s watchlist, *Moody‘s Investors Service.*

Keenan, Sean C., David T. Hamilton, and Alexandra Berthault, 2000, Historical default rates of corporate bond issuers, 1920-1999, *Moody‘s Investors Service.*

Löffler, Gunter, 2004a, An anatomy of rating through the cycle, *Journal of Banking and Finance* 28, 695–720.

Löffler, Gunter, 2004b, Ratings versus market-based measures of default risk in portfolio governance, *Journal of Banking and Finance* 28, 2715–2746.

Löffler, Gunter, 2005, Avoiding the rating bounce: Why rating agencies are slow to react to new information, *Journal of Economic Behavior and Organization* 56, 365–381.

Linciano, Nadia, 2004, The Reaction of Stock Prices to Rating Changes, mimeo.

MacKay, Peter, and Gordon M. Phillips, 2005, How does industry affect firm financial structure?, *Review of Financial Studies* 18, 1433–1466.

MacKinlay, A.Craig, 1997, Event studies in Economics and Finance, *Journal of Economic Literature* 35, 13–39.

Murray, Michael P., 2006, Avoiding Invalid Instruments and Coping with Weak Instruments, *Journal of Economic Perspectives* 20, 111–132.

Partnoy, Frank, 2002, The Paradox of Credit Ratings, in Richard M. Levich, Giovanni Majnoni, and Carmen M. Reinhart, eds.: *Ratings, Rating Agencies, and the Global Financial System* (Kluwer Academic Publishers, Norwell, Mass.).

Purda, Lynnette D., 2006, Stock Market Reaction to Anticipated Versus Surprise Rating Changes, mimeo.

Robbe, Paul, and Roland Mahieu, 2005, Are the standards too poor? An empirical analysis of the timeliness and predictability of credit rating changes, Working Paper.

Vassalou, Maria, and Yuhang Xing, 2005, Abnormal equity returns following downgrades, Working Paper.

Wansley, J., J. Glascock, and T. Clauretie, 1992, Institutional Bond Pricing and Information Arrival: The Case of Bond Rating Changes, *Journal of Business Finance & Accounting* 19, 733–750.

Wansley, James W., and Terrence M. Clauretie, 1985, The impact of creditwatch placement on equity returns and bond prices, *The Journal of Financial Research* 8, 31–42.

9 Tables

Table 1: History of Moody's ratings 1982-2004: total number and average rating

The table reports the aggregate 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 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 have been 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 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 2: History of Moody's ratings 1982-2004: total number of direct rating events and watchlist events

The table reports the total number of Moody's watchlist entries and direct issuer ratings for a given year between April 26, 1982 and December 31, 2004.

year	watchlist events (direction)			direct rating events		
	all	downgrade	upgrade	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 3: Distribution and size of rating changes by year - downgrades

The table contains number and mean size of rating downgrades for each year of the sample. The sample period after October 1, 1991, includes direct changes as well as watchlist-preceded rating changes. Size reports the mean of all rating changes (in notches) in a given year. Note that numbers have been corrected (as compared to table 2) in order to allow for a matching with necessary firm data later on.

year	all downgrades		watch-preceded downgrades	
	#	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: Distribution and size of rating changes by year - upgrades

The table contains number and mean size of rating upgrades for each year of the sample. The sample period after October 1, 1991, includes direct changes as well as watchlist-preceded rating changes. Size reports the mean of all rating changes (in notches) in a given year. Note that numbers have been corrected (as compared to table 2) in order to allow for a matching with necessary firm data later on.

year	all downgrades		watch-preceded downgrades	
	#	size	#	size
1982	18	1.44	-	-
1983	47	1.68	-	-
1984	42	1.45	-	-
1985	54	1.53	-	-
1986	48	1.47	-	-
1987	46	1.82	-	-
1988	60	1.8	-	-
1989	46	1.39	-	-
1990	34	1.47	-	-
1991	25	1.56	-	-
1992	48	1.41	6	1.66
1993	84	1.51	23	1.43
1994	92	1.32	25	1.56
1995	79	1.32	20	1.65
1996	127	1.25	29	1.2
1997	102	1.18	18	1.33
1998	107	1.37	31	1.61
1999	89	1.22	25	1.36
2000	92	1.67	39	2.28
2001	81	1.27	25	1.56
2002	60	1.23	19	1.26
2003	97	1.17	46	1.19
2004	133	1.26	56	1.37
PRE1991	420	1.58	-	-
POST1991	1191	1.24	362	1.49
Total	1611	1.38	362	

Table 5: 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 6: Summary of rating upgrades by absolute magnitude

The table presents the number as well as the proportion of all 1719 rating upgrades in our sample by absolute magnitude of the rating change. The sample is split into two periods: The pre-watchlist period from April 26, 198,2 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	260	61.9	952	79.93	263	72.65
2	115	27.38	180	15.11	66	18.23
3	26	6.19	26	2.18	15	4.14
4	10	2.38	14	1.18	9	2.49
5	4	0.95	9	0.76	4	1.1
6	2	0.48	4	0.34	1	0.28
7	2	0.48	2	0.17	1	0.28
8	-	-	-	-	-	-
9	-	-	2	0.17	1	0.28
10	-	-	1	0.08	1	0.28
11	1	0.24	-	-	-	-
12	-	-	-	-	-	-
13	-	-	-	-	-	-
14	-	-	1	0.08	1	0.28
Total	420	100	1191	100	362	100

Table 7: Stock market response to rating changes: PRE1991/POST1991

The table provides the cumulative abnormal returns for both direct and watch-preceded upgrades and downgrades. The sample consists of only uncontaminated rating events in the period between April 26, 1982, and December 31, 2004. PRE1991 is used with reference to the pre-watchlist period from April 26, 1982, to September 30, 1991, while POST1991 denotes the post-watchlist era from October 1, 1991 to December 31, 2004. Panel A refers to downgrades, Panel B to upgrades. 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.

Panel A: Downgrades			
	Mean	Median	$CAR < 0(\%)$
PRE1991	-2.16	-0.71	58.74
	(-6.68)***	(-6.74)***	
POST1991	-3.26	-0.91	58.27
	(-10.84)***	(-10.09)***	
Difference	-1.1	-0.2	-0.47
(POST1991-PRE1991)	(-2.50)**	(-1.44)	
Panel B: Upgrades			
	Mean	Median	$CAR < 0(\%)$
PRE1991	1.14	-0.41	48.81%
	(0.64)	(-0.08)	
POST1991	0.001	-0.68	49.03%
	(0.11)	(-0.59)	
Difference	-1.139	0.27	0.22%
(POST1991-PRE1991)	(-0.44)	(-0.153)	

Table 8: The effect of watchlist introduction on the stock market reaction to rating downgrades

The sample consists of 3180 non-contaminated downgrades in the period between April 26, 1982 and December 31, 2004. The dependent variable is the cumulative abnormal return (CAR). 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. ***, **, 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.

explanatory variables	model 1	model 2	model 3	model 4	model 5
INTERCEPT	-0.009*	0.034	-0.01*	0.019**	-0.068***
	(-1.67)	(0.28)	(-1.68)	(2.36)	(-4.30)
RCHANGE	-0.006*	-0.008*	-0.006*	-0.004	-0.008**
	(-1.82)	(-2.08)	(-1.81)	(-1.58)	(-2.48)
IGRADE	0.017**	0.017*	0.017*	0.015	0.014
	(1.97)	(1.93)	(1.96)	(1.45)	(1.51)
DAYS	-0.001	0	0	-0.003	0
	(-1.02)	(-0.59)	(-1.05)	(-0.32)	(-0.77)
POST1991*RCHANGE	-0.017***	-0.014**	-0.017***	-0.017***	-0.010**
	(-3.97)	(-2.08)	(-3.98)	(-3.66)	(-2.29)
POST1991*IGRADE	-0.009	-0.008	-0.009	-0.014	-0.021
	(-0.69)	(-0.62)	(-0.68)	(-0.79)	(-1.62)
POST1991*DAYS	0.004***	0.004***	0.004***	0.003***	0.004***
	(3.73)	(3.39)	(3.75)	(2.78)	(3.32)
BCYCLE			0.013		
			(0.73)		
SHORT				-0.051***	
				(-4.48)	
LONG				-0.057***	
				(-3.73)	
AA (or above)					0.082***
					(5.68)
A					0.077
					(5.43)
BAA					0.065***
					(4.55)
BA					0.06***
					(4.718)
B					0.033**
					(2.26)
year dummies	no	yes	no	no	no
$Adj.R^2(\%)$	2.52	3.48	2.53	4.18	5.35
F	5.64***	2.89***	4.92***	12.61***	11.35***
observations	3180	3180	3180	2849	3180
clusters	1532	1532	1532	1442	1532

Table 9: Stock market response to rating changes: direct / watchlist ratings

The table provides the cumulative abnormal returns following upgrades and downgrades. The sample consists of only uncontaminated rating events in the post-watchlist period from October 1, 1991, to December 31, 2004. 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.

Panel A: Downgrades			
	Mean	Median	$CAR < 0(\%)$
Direct	-3.99	-1.49	60.27
	(-9.44)***	(-9.05)***	
From Watchlist	-2.14	-0.4	55.22
	(-5.38)***	(-4.57)***	
Difference	1.85	1.09	-5.05
(From Watchlist-Direct)	(3.18)***	(3.06)***	
Panel B: Upgrades			
	Mean	Median	$CAR < 0(\%)$
Direct	0	0	49.40
	(-0.37)	(-0.53)	
From Watchlist	0.18	-0.09	47.51
	(0.76)	(-0.19)	
Difference	0.18	-0.09	-1.89
(From Watchlist-Direct)	(0.84)	(-0.15)	

Table 10: Stock market response to watchlist additions

The table provides the cumulative abnormal returns following a watchlist addition. We differentiate between watchlist additions with direction downgrade, uncertain and upgrade. The cumulative abnormal return (CAR) is calculated over a three-day event window (-1,+1) around the date the watchlist addition is announced. 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. P-values are given below the mean. ***, **, and* indicate significance at the 1%, 5%, and 10% level.

	#	Mean	Median	$CAR < 0$ (%)
down	1083	-3.41	-0.86	58.26
		(-8.18)***	(-7.65)***	
uncertain	56	1.88	0.48	58.78
		(2.40)**	(0.32)	
up	560	1.62	0.21	53.93
		(4.43)***	(2.20)**	

Table 11: Stock market response to rating changes: direct / watchlist ratings

The table provides the cumulative abnormal returns following downgrades. The sample consists of only uncontaminated rating events in the post-watchlist period from October 1, 1991, to December 31, 2004. The cumulative abnormal return (CAR) is calculated over a event window beginning one day before watchlist placement and ending one day after watchlist resolution for firms coming from watchlist. For direct downgrades the event window is set as the the median length of the watchlist period in our sample. 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.

Direct	-13.09	-8.92	0.59
	(-12.05)***	(-7.53)***	
From Watchlist	-0.67	-1.41	0.52
	(-0.52)	(-1.97)**	
Difference	12.42	7.51	-0.07
	(-5.33)***	(-4.119)	
(From Watchlist-Direct)			

Table 12: 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. The dependent variable is a dummy variable equal to 1 if the observation is placed on watchlist with designation downgrade, and 0 otherwise. 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. *** ,** , and * indicate significance at the 1%, 5%, and 10% level. z-values are given in parenthesis.

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 13: CAR for firms coming from watchlist vs. direct downgrades

The sample consists of 2353 downgrades in the watchlist period 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. The results in colum 2 (3) are obtained using the OLS (IV) estimation methods, where the IV approach uses SIZE as the instrument. The dependent variable is the cumulative abnormal return. 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). ***, **, and * indicate significance at the 1%, 5%, and 10% level. t-values are given in parenthesis.

explanatory variables	OLS	IV
INTERCEPT	0	-0.030***
	(0.03)	(-2.80)
RCHANGE	-0.031***	-0.0256***
	(-7.21)	(-7.43)
IGRADE	-0.007	0.007
	(-0.38)	(0.75)
DAYS	0.004***	0.002***
	(3.52)	(2.86)
WATCHLIST		0.064***
		(2.90)
WATCHLIST*RCHANGE	0.013***	
	(2.80)	
WATCHLIST*IGRADE	-0.002	
	(-0.07)	
WATCHLIST*DAYS	-0.002	
	(-1.18)	
SIZE	0.001	
	(0.84)	
LEVERAGE	-0.041***	
	(-3.01)	
CASHFLOW	0.075***	
	(3.58)	
year dummies	yes	
$Adj.R^2(\%)$	6.12	4.86
F	7.24***	17.79***
method	OLS	IV
observations	2353	2142

CFS Working Paper Series:

No.	Author(s)	Title
2008/01	**Sumit Agarwal** **Chunlin Liu** **Nicholas Souleles**	The Reaction of Consumer Spending and Debt Tax Rebates – Evidence from Consumer Credit Data
2007/34	**Todd Sinai** **Nicholas Souleles**	Net Worth and Housing Equity in Retirement
2007/33	**Annamaria Lusardi** **Olivia S. Mitchell**	Financial Literacy and Retirement Planning: New Evidence from the Rand American Life Panel
2007/32	**Giuseppe Bertola** **Stefan Hochguertel**	Household Debt and Credit: Economic Issues and Data Problems
2007/31	**Giuseppe Bertola**	Finance and Welfare States in Globalizing Markets
2007/30	**Tulli Jappelli** **Mario Padula**	Households' Saving and Debt in Italy
2007/29	**Tullio Jappelli** **Mario Padula** **Luigi Pistaferri**	A Direct Test of the Buffer-Stock Model of Saving
2007/28	**Annamaria Lusardi**	Household Saving Behavior: The Role of Literacy, Information and Financial Education Programs
2007/27	**Maarten van Rooij** **Annamaria Lusardi** **Rob J. M. Alessie**	Financial Literacy and Stock Market Participation
2007/26	**Franklin Allen** **Elena Carletti** **Robert Marquez**	Stakeholder Capitalism, Corporate Governance and Firm Value

Copies of working papers can be downloaded at http://www.ifk-cfs.de