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Effect of credit rating changes on Australian stock returns

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Abstract

We study the impact credit rating revisions have on stock returns of Australian firms rated by Standard & Poor's and Moody's. Our evidence is consistent with that documented in the USA showing that only downgrades contain price-relevant information. The reaction is most significant when the downgrade: (i) is unanticipated; (ii) is for an unregulated firm; and (iii) reduces the firm's rating by more than one category.

Key words: Credit ratings; Event study

JEL classification: G20, G32

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1. Introduction

A corporate credit rating is an independent evaluation of a firm's ability to make debt payments in a timely fashion. In addition, credit ratings can also act as a signal of the quality of a particular debt issue. Therefore, the rating may be specific to an issue or it may indicate the general credit worthiness of the firm. Studies on rating trends demonstrate that there is a clear correlation between credit ratings and the likelihood of subsequent default. That is, the higher the initial rating, the lower the probability of default and vice versa. Over the past 15 years in the USA, the cumulative percentage of defaults for issues initially rated by Standard & Poor's (S&P) at AAA was 0.52 per cent. In contrast, the probability of default for issuers initially rated by S&P at CCC was 54.38 per cent (John *et al*., 2001). Credit ratings also influence the yield spreads of corporate bonds. A higher credit rating implies that the issue is of lower default risk, which generally

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translates into a lower bond yield and a higher bond price. This all implies that credit ratings are empirically relevant and economically important.

Credit ratings are formulated on the basis of publicly available information (such as audited financial statements) and non-public information (such as internal reports, budget forecasts, details of investment strategies, an assessment of the quality of management and a view about industry prospects and the firm's position within that industry). Once a rating is assigned, it is subject to an ongoing review and might be changed in response to a change in economic and financial conditions. A rating agency may announce a re-rating of a firm or a particular issue, or the agency may first take the intermediate step of placing the firm or issue on a 'credit watch list'. If a firm is placed on the credit watch list, a comprehensive analysis of the firm is undertaken, including meeting with management (if necessary), before a decision is made to change or affirm the rating. A rating action might take the form of an upgrade, a downgrade, affirmation or withdrawal.

A change to a credit rating can signal to the market that the creditworthiness of the company has changed. The importance assigned by the market and the firm to this signal of quality is such that a credit rating downgrade can provoke a strong reaction from the aggrieved firm.[1] Furthermore, a recent survey of chief financial officers (CFO) found that consideration of credit ratings is the second most important factor (closely following the related issue of the need to preserve financial flexibility) in the decision to issue more debt, with 57 per cent of CFOs considering the firm's assigned credit rating as very important (Graham and Harvey, 2001).

The impact of rating change announcements can be inferred from the market's reaction to the announcement. In general, significant stock price reactions occur in response to the release of news. Therefore, a significant reaction to the announcement of a credit rating change will only occur if the market perceives that the announcement contains information that cannot be obtained from other sources. This is traditionally studied by examining whether bond prices (or yield spreads) and stock prices change in response to such announcements.

The evidence in the extant published literature is mixed. Early studies by Weinstein (1977), Wakeman (1981) and Pinches and Singleton (1978) conclude that rating changes do not have price-relevant information. They find that bond prices do not change significantly on the announcement of a credit rating change. In contrast, more recent studies have been more successful in documenting the price relevance of credit ratings. For instance, Kliger and Sarig (2000) study price reactions to information specifically related to rating information by using the finer rating classification (numerical modifications to coarse rating categories) that was introduced by Moody's in 1982. This finer classification, which was

[1] A case in point is the Coles Myer CEO's reaction to a downgrade in 2003 by S&P as outlined in 'Coles chief attacks S&P ratings' *Australian Financial Review*, 27 June 2003.

not 'accompanied by any fundamental change in the issuer's risks', provided Kliger and Sarig (2000) with a setting to isolate the impact of rating changes on security prices and allowed them to conclude that credit ratings incorporate inside information that is available to the ratings agency before it is publicly disclosed.

A criticism of the early studies on the impact of rating changes is the inability to assess the reaction to these events in isolation from all other relevant information being released to the market around the rating change announcement date. The evidence on the impact of rating revisions on stock prices is more conclusive when daily data are used to minimize the problems surrounding concurrent information releases. Holthausen and Leftwich (1986) and Hand *et al*. (1992) document a significant price reaction to downgrades but not upgrades. Hand *et al*. (1992) investigate daily excess bond and stock returns associated with: (i) the announcement that the stock has been added to Standard & Poor's Credit Watch list; and (ii) the announcement of a rating change by Moody's or S&P. They classify rating changes as expected or unexpected on the basis of market data on yield to maturity. If the yield to maturity of the bond of interest is greater than a benchmark (comparable rating and maturity), they argue that investors believe that the bond has greater default risk than comparable bonds. Therefore, a downgrade is viewed as expected. They also examine whether the credit rating announcement occurs simultaneously with news disclosures from sources such as the *Wall Street Journal*. Where a credit rating announcement occurs at the same time as another value-relevant announcement, the observation is deemed to be 'contaminated'. They report a small negative reaction of −0.79 per cent for their full sample of additions to the credit watch list. The reaction for additions that are unexpected is −1.78 per cent, and for additions that are both unexpected and uncontaminated the reaction is −2.14 per cent. This implies that some, but not all, of the information contained in credit rating changes is available from other sources. Furthermore, approximately 20 per cent of the additions to the credit watch list were both unexpected and uncontaminated, in which case the information contained in the rating action was not available elsewhere.

Ederington and Goh (1993) contend that the market's reaction to a rating change could be related to the underlying reason for the change. In particular, they distinguish between downgrades related to changes in financial leverage and those related to deterioration in earnings, cash flows or financial prospects of the firm. They find that downgrades attributed to deterioration in the company's financial prospects cause an unfavourable stock price response (−1.18 per cent), but that there is no reaction to downgrades related to a change in financial leverage.

Another common finding in this literature is the asymmetric response of the market to a ratings announcement: there is a significant negative reaction to downgrades, whereas there are no abnormal returns associated with upgrades. For example, Holthausen and Leftwich (1986), Hand *et al*. (1992) and Ederington

and Goh (1993) all report significant stock price reactions to rating downgrades in the order of −1 to −3 per cent, but fail to find any significant reaction to rating upgrades.

Jorion *et al*. (2005) examine the market reaction to credit rating changes in the USA before and after the Securities and Exchange Commission's Fair Disclosure Regulation (Reg FD) that was introduced in October 2000. This regulation requires firms to make any information release to the entire market. It prevents firms from pre-releasing any information to analysts, brokers or institutions. The only exception to Reg FD is that firms are allowed to reveal private commercially sensitive information to credit rating agencies. Therefore, credit ratings might be seen to contain relatively better information post-Reg FD. Consistent with previous work, Jorion *et al*. report that prior to Reg FD, downgrades are associated with significant negative abnormal returns and that there is no such reaction to upgrades. They also document that after the introduction of Reg FD, the reaction to downgrades strengthens (from −3.06 to −4.85 per cent) and that there is a significant positive reaction to upgrades (1.17 per cent). There is no disclosure regulation of this type in the Australian market.

An abundance of US literature supports the view that credit ratings in general, and downgrades in particular, have an information content effect on security prices. The aim of the present study is to investigate whether there are significant price reactions associated with the announcement of credit rating changes for Australian firms. In the Australian setting, Matolcsy and Lianto (1995) find that bond rating revisions do have significant information content. They study the impact of rating changes on abnormal performance (stock return less market return) after controlling for accounting information (such as earnings surprises). Their approach, however, is to use credit ratings and accounting information to explain abnormal returns using cross-sectional regression techniques. They do not examine the immediate stock price reaction to announcements of credit rating changes. In a contemporaneous study, Creighton *et al*. (2004) examine the reaction of bond yields and equity prices to credit rating changes.[2] Their results indicate that the reactions are relatively small. They show that stock prices tend to fall before a downgrade and that the stock price reaction is greater for small firms, re-ratings from investment to speculative grade and where agencies have not indicated that the rating is under review.

In the present study, we extend the existing published Australian literature in a number of ways. First, we examine the most recent period using the relatively large dataset that is now available. Second, we focus on the immediate price reaction of credit rating changes rather than their effect on abnormal returns over a longer period. Third, we control for the impact of concurrent financial information around rating change announcements and document the dampening effect that regulation might have on rating downgrades. Fourth, we separately

[2] We thank a referee for bringing this paper to our attention.

examine the effects of upgrades and downgrades. Fifth, we analyse the extent to which the market's reaction differs according to the magnitude of the rating change. We also document strong reactions to downgrades that are unanticipated and for those firms that belong to industries that are classified as non-regulated.

The remainder of this paper is organized as follows. Section 2 describes the data and methodology. The results are discussed in Section 3, and Section 4 provides some concluding remarks.

2. Data and methodology

2.1. Data

Our sample consists of rating changes for all Australian domiciled companies rated by Moody's and S&P for the period 1989–2003. A breakdown of our sample is presented in Panel A of Table 1. The ratings and official rating dates were supplied directly by Moody's and S&P. The initial sample comprised of all rating announcements by the two agencies with Moody's and S&P providing 84 and 53 rating announcements, respectively, over the period. The final sample consisted of all firms that met the following criteria: (i) the company whose rating was revised must have been listed on the Australian Stock Exchange for at least 1 year before the rating change; and (ii) rating actions had to be rating upgrades or downgrades. Observations that were classified as rating affirmations, new ratings[3] and withdrawals of ratings were removed.

The above criteria resulted in a final sample of 127 rating changes for 63 firms. In results not reported in the present paper, we find some evidence of clustering of rating changes around March, June, September and December, which coincides with the announcement of earnings by companies. A large proportion of the final sample is constituted by companies in the materials sector (24 per cent) and food, beverage and tobacco sector (13 per cent).

In Panel B of Table 1, we present a transition matrix of rating changes for both Moody's and S&P combined. The diagonal relates to within-class rating changes (e.g. A to A–). The off-diagonal terms relate to rating changes across classes (e.g. A to BBB or A– to BBB+). Consistent with previous evidence, we find that there are more across-class downgrades (49) than upgrades (20).

2.2. Methodology

Because the focus of this paper is to study the market's reaction to rating change announcements, we use the standard event study methodology. We

[3] If the company is rated for the first time, the 'new rating' action announcement date is removed, unless the company has a subsequent rating change (upgrade or downgrade) during the sample period.

Table 1
Description of the sample

Panel A: This panel presents a breakdown of our sample. Rating information for Australian firms were obtained from Moody's and Standard & Poor's for the period 1989–2003

Sample	Upgrades	Downgrades
Final sample	33	94
Single-step change	28	62
Multiple-step change	5	32
Contaminated ratings	8	20
Non-contaminated ratings	25	74
Regulated industries	14	10
Non-regulated industries	19	84

Panel B: Transition matrix of rating changes. We use the Standard & Poor's classification scheme to document rating changes for the period 1989–2003

Previous rating	Revised rating										
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D	Total
AAA											
AA		7	11								18
A		6	25	16							47
BBB			7	15	10	1					33
BB				4	5	3	1				13
B					2	4	4			1	11
CCC						1	1	2			4
CC										1	1
C											
D											
Total		13	43	35	17	9	6	2		2	127

measure abnormal returns, AR_{it}, using the market-adjusted returns model discussed in Shevlin (1981) and Brown and Warner (1985):

$$AR_{it} = R_{it} - R_{mt},$$

where AR_{it} is the abnormal return for observations on day t, R_{it} is the daily return calculated using stock price data and dilution factors obtained from the Securitics Industry Research Centre of Asia-Pacific database, and R_{mt} is the daily return on the All Ordinaries Index. We study the impact of rating change announcements on stock prices using both average abnormal returns (AAR) and cumulative abnormal returns (CAR) using various windows surrounding the event/announcement date (day 0), pre-announcement and post-announcement date including (−10, +10), (−5, +5) and (−1, +1). The event date is defined to

be the day of announcement of a rating change by the rating agencies. If there are rating change announcements by both agencies about the same firm in a 30 day period, we select only the first rating change announcement.

Rating agencies frequently review their rating assessment in response to new information, both public and non-public. Such information might include earnings announcements, capital restructuring, new debt or equity issues, and internal reports or forecasts. Any information that signals a potential change in a company's future prospects will attract the attention of rating agencies and might also initiate a market reaction. The extent to which the stock price reaction is attributed to the rating revision announcement and not to a confounding effect is addressed by using several control procedures, such as the exclusion of concurrent earnings announcements and other contemporaneous news releases that could contaminate the rating revision announcement. In this respect, we follow the approach of Holthausen and Leftwich (1986) and Hand *et al*. (1992).

To minimize the impact of other relevant information influencing our findings, we identify concurrent information releases by searching *The Australian Financial Review* and noting any stories that appear during the 2 trading days before and after the official announcement day. If a news story in this 4 day window describes the rating change, we read that story to determine whether it contains information from a source other than the rating agency. If this information is from a source other than the rating agency, the observation is classified as contaminated.[4] In addition, observations are also classified as contaminated if there are other stories about the firm in *The Australian Financial Review* during the 4 day window and also if there was an earnings announcement 10 days before the rating change announcement date. Rating announcements in our sample are contaminated for a variety of reasons, including asset divestments, earnings announcements and an increase in leverage.[5] Out of the full sample of 127 rating changes, 28 are classified as 'contaminated', comprising of 8 upgrades and 20 downgrades. The remainder are classified as 'non-contaminated'.

3. Empirical results

The results on the impact of upgrades and downgrades on stock returns around the rating change announcement are presented in Panel A of Table 2. Consistent with previous studies, there is no evidence of an economically or statistically significant response to an announcement of an upgrade. For example,

[4] Our approach is susceptible to the criticism that subjective judgement would be exercised in the classification of announcements. To mitigate such concerns, two individuals were used to code the stories independently. Where disagreements occurred, the observations were classified as contaminated. Holthausen and Leftwich (1986) use a similar approach with three individuals in their study.

[5] Another way to classify the sample is according to whether the firm is placed on the credit watch list. These data are unavailable to us.

Table 2
The stock price response to rating downgrades and upgrades

Panel A: This panel reports the average cumulative abnormal returns for various announcement windows

Announcement window	Upgrades	Downgrades
10 to −1	1.13%	−3.32%
	(0.40, 0.92)	(2.44**, −2.24**)
−1 to 0	1.04%	−3.16%
	(0.83, 1.77*)	(5.18****, −2.58**)
0	0.70%	−1.56%
	(0.78, 0.92)	(3.62****, − 0.14)
0 to +1	1.35%	−1.39%
	(1.07, 0.92)	(2.28**, 0.00)
−5 to +5	2.31%	−6.29%
	(0.78, 1.34)	(4.40**, −2.47**)
−10 to +10	2.61%	−3.36%
	(0.64, 1.77*)	(1.70*, −2.24**)

Day 0 is the date of announcement of a rating change. The total number of observations for upgrades and downgrades on the announcement day (day 0) are 22 and 65, respectively. The rating changes are for the period 1989–2003. The figures in parentheses are the *t*-statistic and the *generalized sign statistic*, respectively. ****, ***, ** and * denote significance at the 0.1, 1, 5 and 10 per cent levels, respectively.

Panel B: This panel presents average cumulative abnormal returns for both upgrades and downgrades partitioned by the magnitude of the rating change (single-step vs multiple step change)

Announcement window	Single-step upgrades	Single-step downgrades	Multiple-step downgrades
10 to −1	1.86%	−0.85%	−7.35%
	(1.59, 1.40)	(0.65, −1.17)	(2.52**, −2.13**)
−1 to 0	1.22%	−1.41%	−6.30%
	(2.32**, 1.85*)	(2.43**, −2.26**)	(4.83****, −1.28)
0	0.73%	−0.87%	−2.82%
	(1.98**, 0.95)	(2.12**, −1.22)	(3.06***, 1.40)
0 to +1	1.17%	−1.41%	−1.35%
	(2.23**, 0.95)	(−2.43**, 0.019)	(1.04, −0.02)
−5 to +5	1.81%	−4.43%	−9.32%
	(1.47, 0.95)	(−3.26***, −1.78*)	(3.05***, −1.74*)
−10 to +10	3.23%	−2.40%	−4.92%
	(1.90*, 1.85*)	(1.28, −1.48)	(1.17, −1.74*)

The total number of observations for single upgrades (downgrades) and multiple-step downgrades on the announcement day (day 0) are 20 (42) and 23, respectively. We do not report the results for multiple-step upgrades because of the small sample size (2) over which cumulative abnormal returns were estimated. The figures in parentheses are the *t*-statistic and the *generalized sign statistic*, respectively. ****, ***, ** and * denote significance at the 0.1 per cent, 1 per cent, 5 per cent and 10 per cent levels, respectively.

in the sample of 33 upgrades, we find that the mean CAR is 1.35 per cent and statistically insignificant in the announcement period of day 0 to +1.[6] This result also holds for other return windows. For downgrades, there is evidence of statistically significant negative abnormal returns in the pre-announcement period, particularly in the 2 days leading up to the downgrade. The AAR on these 2 trading days is −1.89 per cent and −1.65 per cent, both significant at the 0.1 per cent level. On the announcement day, the AAR for downgraded companies is a statistically significant negative price reaction of −1.56 per cent. The CAR for the announcement period of (0, +1) is −1.39 per cent, which is also significant.[7]

In line with Holthausen and Leftwich (1986), we contend that the market's reaction to rating changes will depend on the magnitude of the rating change. A change of multiple steps conveys a stronger signal to the market than a rating change of just a single step. Therefore, we study the differential impact of rating changes that involve multiple steps or gradations (e.g. AAA to AA–) against those that involve a single-step change (e.g. BB to BB–). This also leads to the related proposition that companies that fall below investment grade (BBB or below) will experience greater significant negative abnormal returns. The market reaction is expected to be more pronounced for a rating downgrade, especially if it results in the company losing investment grade status. The implications of losing investment grade status can be translated into significant economic losses. Companies below investment grade might suffer a downturn in future business and face borrowing constraints and a higher cost of capital as financial regulators prevent banks and other financial institutions from holding securities that have a rating below investment grade. It is also possible that rating announcements are anticipated by the market and market reaction to unanticipated changes could be significantly larger than for those that were anticipated. One way to address this issue is to divide the sample into those rating changes where the CAR for the window (−10, −1) is positive or insignificantly negative (unanticipated) and where the CAR is significantly negative (anticipated), and examine their CARs for the event window of (0, +1). In contrast to our expectation, we find that the abnormal return for anticipated downgrades in the (0, +1) window is much larger than the unanticipated case (−2.38 *vs* −0.11 per cent).

Although we do not find a significant market reaction for all upgrades, when the sample is broken down based on whether it is a single- or multiple-step change we do find a significant positive reaction. These results are reported in Panel B of Table 2. For the subsample of upgraded companies, the CAR for the

[6] The number of observations reported in the tables differs from that of final sample, as rating observations for which there are no returns on the announcement day are eliminated.

[7] We also calculate abnormal performance relative to the market model and the results in terms of the average prediction error and the window average pricing error is similar. For brevity we do not report these results.

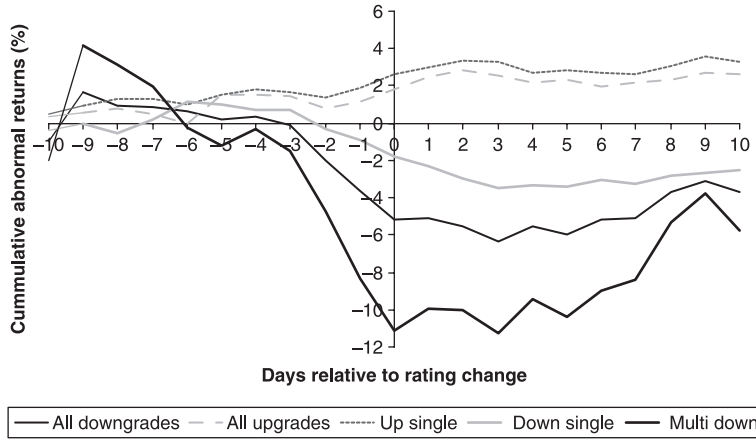

Figure 1 Stock market reaction to rating change announcements.

window (−1, +1) is 1.65 per cent (significant at the 1 per cent level). In line with Holthausen and Leftwich (1986), we find that most of the reaction is limited to the 2 days surrounding the announcement day. Not surprisingly, companies that have their rating downgraded by multiple steps show a stronger price reaction than those companies that have their rating downgraded by a single step. In the 3 day window surrounding the announcement day, companies with a single-step rating downgrade experience significant negative abnormal returns, which are small in magnitude in comparison with firms that experience a multiple-step downgrade. The CAR, for multiple-step downgrades, over the announcement window of −1 to +1 is −4.50 per cent, which is also strongly significant. There is no significant abnormal returns post-announcement day for all upgrade subsamples. The CARs for the window −10 to +10 for single-step and multiple-step changes to ratings are presented in Figure 1. In results not reported in the present paper, we find that downgraded firms have significantly negative abnormal returns regardless of whether they fall below investment grade or not. Those firms that fall from investment to below investment grade (11 observations) have significantly negative returns of −1.97 per cent around the announcement day. Furthermore, the fall to junk bond status elicits a significant reaction (−4.58 per cent) in the days leading up to the announcement (−10, −1), an indication that the impending change was not a surprise.

To further disentangle the market reaction to rating change announcements, we allow for the possibility that the market is also reacting to other firm-specific announcements around a rating change date. We address this concern by controlling for other contemporaneous announcements around the announcement day date by classifying the observations as being ‘contaminated’, if there are other firm-specific announcements in the day before and/or after the event day, and ‘non-contaminated’ otherwise. These results are presented in Table 3. We

Table 3
The stock price response to contaminated and non-contaminated rating changes

Announcement window	Contaminated upgrades	Non-contaminated upgrades	Contaminated downgrades	Non-contaminated downgrades
10 to −1	2.04%	0.79%	−9.54%	−1.51%
	(1.06, 0.77)	(0.21, 0.61)	(2.53**, −1.65)	(1.00, 1.65*)
−1 to 0	1.18%	0.99%	−2.36%	−3.41%
	(1.37, 0.77)	(0.58, 1.61)	(1.40, −1.65)	(5.05****, −2.03***)
0	0.12%	0.92%	−1.45%	−1.59%
	(0.19, 0.77)	(0.76, 0.61)	(1.22, 1.14)	(3.34****, 0.49)
0 to +1	0.14%	1.81%	−3.08	−0.86
	(0.16, −0.87)	(1.05, 1.61)	(1.83*, 0.36)	(1.28, −0.20)
−5 to +5	3.92%	1.71%	−9.85%	−5.26%
	(1.94*, 0.77)	(0.43, 1.11)	(2.49**, −1.65)	(3.32****, −1.92*)
−10 to +10	4.47%	1.92%	−8.57%	−1.85%
	(1.60, 1.58)	(0.34, 1.11)	(1.57, 1.65)	(0.84, −1.65*)

This table reports the average cumulative abnormal returns for various announcement windows. Day 0 is the date of an announcement of a rating change. The total number of observations on the announcement day (day 0) for contaminated upgrades (downgrades) and non-contaminated upgrades (downgrades) are 6 (16) and 16 (49), respectively. The rating changes are for the period 1989–2003. The figures in parentheses are the *t*-statistic and the *generalized sign statistic*, respectively. ****, ***, ** and * denote significance at the 0.1, 1, 5 and 10 per cent levels, respectively.

document significant abnormal returns only by the downgrade sample. For contaminated downgrades, most of the reaction is in the days leading up to the announcement, with significant reaction (−9.54 per cent) documented for the window (−10, −1). In contrast, for non-contaminated downgrades there is no significant reaction in the 9 days leading to the announcement day, but the biggest reaction is recorded in the day leading to and the day of the announcement. The CAR for this window is a significant −3.41 per cent. Interestingly, we find that the sample exhibits positive, but insignificant returns (0.65 per cent) in the day following the downgrade announcement. A possible reason for this is that the available information regarding the downgrade indicates that it might not necessarily be bad news for shareholders and, furthermore, these downgrades are not a surprise. For instance, Goh and Ederington (1993) find that when the reason for a downgrade is an increase in leverage, the market's reaction tends to be positive. Once again, for both subsamples of upgraded firms the market reaction is subdued.

Information efficiency varies across industries with those that are heavily regulated producing significant amounts of publicly available information. The transparency and detail of the regulatory process generates large amounts of information that is not available in unregulated industries. For this reason, it is more likely that credit rating changes will simply convey information that is

Table 4
The stock price response to rating changes of firms in regulated and non-regulated industries

Announcement window	Regulated upgrades	Non-regulated upgrades	Non-regulated downgrades
10 to −1	1.35%	0.97%	−3.42%
	(0.95, 0.96)	(0.22, 0.39)	(2.54**, −2.26**)
−1 to 0	0.79%	1.22%	−3.27%
	(1.24, 0.96)	(0.60, 1.50)	(5.24****, −2.86***)
0	0.60%	0.77%	−1.58%
	(1.33, 0.96)	(0.54, 0.39)	(3.59****, −0.26)
0 to +1	0.78%	1.74%	−1.42%
	(1.24, 0.30)	(0.86, 0.95)	(2.27**, −0.11)
−5 to +5	1.41%	2.94%	−6.46%
	(0.95, 0.30)	(0.61, 1.50)	(4.41****, −2.50**)
−10 to +10	3.21%	2.20%	−3.43%
	(1.56, 2.30*)	(0.34, 0.39)	(1.70*, − 2.02**)

This table presents the average cumulative abnormal returns for various announcement windows. Day 0 is the date of an announcement of a rating change. The total number of observations on the announcement day (day 0) for regulated upgrades and non-regulated upgrades (downgrades) are 9 and 13 (64), respectively. We do not report the results for regulated downgrades because of the small sample size (1) over which cumulative abnormal returns were estimated. The figures in parentheses are the *t*-statistic and the *generalized sign statistic*, respectively. ****, ***, ** and * denote significance at the 0.1, 1, 5 and 10 per cent levels, respectively.

already known to the market when the firm of interest operates in a heavily regulated industry. Moreover, firms in regulated industries are likely to have lower earnings variability as regulation buffers the firm against the effects of cost and demand shocks.[8] This implies a lower degree of stock price reaction for a company that experiences a credit rating change if it is in an industry that is regulated. We capture this by comparing the differential market reaction to rating announcements of companies in regulated industries (financials and utilities) to those in unregulated industries. In accordance with Shepherd (1999), we take regulation to include control over pricing levels, pricing structures and industry entry.

In accordance with earlier results, Table 4 reports that upgrades are not associated with abnormal returns whether the firm is regulated or not. However, for downgraded firms statistically significant abnormal returns are observed only for unregulated firms. On the announcement day, these companies experience a significantly negative price reaction of −1.58 per cent. The AAR for these

[8] There is also anecdotal evidence to suggest that rating agencies incorporate the impact of regulation. For example, Australian Gas and Light was downgraded in October 2001, because it expanded away from regulated industries and into competitive markets.

Table 5
Announcement effects of a rating change

	Downgrades	Upgrades
Constant	0.0134 (0.60)	–0.01611 (0.45)
Number of Grades	–0.0190 (0.22)	0.0240 (0.20)
Inv Grade	0.0015 (0.96)	0.0318 (0.05)
R^2	0.02	0.23
F-statistic	0.75	2.76
N	64	21

The rating changes are for the period 1989–2003. The explanatory variables are the following: *Number of Grades* is the difference between the new rating and the old rating, and *Inv Grade*, which takes the value of 1 if the downgrade (upgrade) results in a change to its investment grade status.

2 days is −1.71 and −1.58 per cent, both statistically significant at 0.1 per cent. Consistent with the other downgraded subsamples in this study, the post-announcement day period does not exhibit a significant price response. In contrast, there is no significant stock price reaction to downgrades for regulated firms over the pre-announcement or post-announcement period. This is consistent with the view that credit rating changes are relatively less informative in regulated industries because of the additional information that is made available as part of the regulatory process.[9]

We also use multivariate regressions, for upgrades and downgrades separately, to study the cross-sectional variation in abnormal returns for the event window (0, +1). These results are presented in Table 5. The explanatory variables include *Number of Grades* and *Inv Grade*. *Number of Grades*, which is calculated as new rating minus the old rating, should have a negative (positive) relationship with abnormal returns for downgrades (upgrades). *Inv Grade*, which captures downgrades (upgrades) resulting in firms falling to junk bond status (rising to investment grade status), should be associated negatively (positively) with abnormal returns. Although the relationship between abnormal returns and the upgrade sample is as hypothesized, neither of the variables is significant, which is in line with the findings of Holthausen and Leftwich (1986). Surprisingly, for downgrades we document no significant relationship between returns and the variables and the regression has no explanatory power. This conclusion also holds when we classify downgrades according to whether they are contaminated or not.

[9] We also compare the differential impact of rating changes on stock prices of resources and industrial firms. For rating upgrades, industrial or resource companies do not exhibit significant abnormal returns. In contrast, both categories of downgraded firms show significantly negative AAR on the announcement day and, also, the evidence suggests that the market anticipates the downgrade a few days before the date of the rating change.

4. Conclusion

A sound credit rating is viewed as a sign of quality, creditworthiness and financial strength. Any revision to the credit rating can signal a change in the firm's financial fortunes. We study the information content of credit ratings by examining the market's reaction to upgrades and downgrades of Australian firms by S&P. Consistent with the evidence documented for US firms, only downgrades elicit a significant market reaction. The lack of impact of an upgrade is in line with the idea that firms are more prompt in releasing favourable or positive information and this is factored into the price. However, this result should be tempered with the observation that the sample size of rating upgrades is small. In contrast, there is a significant reaction to downgrades, especially those that involve credit ratings being downgraded over multiple categories. We also document that the market reaction is much greater if the firm belongs to an industry that is not regulated. The regulatory process appears to serve as an alternative source of information. In contrast, downgraded firms suffer a significant decline in prices whether or not they release financial information or are the subject of press reports around the date of the rating change. This suggests that credit ratings contain information beyond that which is contained in those sources.

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