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The Information Content of Ratings: An Analysis of Australian Credit Default Swap Spreads

We examine the information content of Australian credit rating announcements by measuring the abnormal changes in credit default swap (CDS) spreads. CDS spreads provide a direct view of credit quality and thus should impound information quickly when investors receive new credit risk related information via a rating event. Using an event study methodology, we show that watch downs and rating upgrades contain valuable information even after controlling for sources of contamination. We find that watch downs elicit statistically significant market reactions, while subsequent downgrades are anticipated. Upgrades are associated with a significant but small abnormal reduction in CDS spreads, whereas watch ups appear to contain no new information.

Key words: Credit default swaps; Credit ratings; Emerging market; Event study; Market reaction.

Credit ratings issued by major rating agencies play a vital role in the financial markets by informing investors of the likelihood of default of a security. Increasingly, policy makers, particularly in the United States, have extended their use as part of the regulatory requirements for banks and other financial institutions. While regulators have advocated regulatory roles for external credit ratings, there has been opposition from some market commentators. Their criticism of the timeliness and accuracy of credit ratings is not completely unfounded. For instance, Hill (2005) noted that Enron's debt was still rated as investment grade four days before bankruptcy. After the collapses of Enron, WorldCom, and the ensuing criticism in the 2000s, the reputation of credit rating agencies was once again tarnished by the failure of highly rated structured instruments during the subprime crisis. While the debacle has provided impetus for industry reform, the value of agency ratings has been a subject of academic research for many years. In this article, we measure the abnormal changes in credit default swap (CDS) spreads across five types of corporate rating announcements, namely, upgrades, downgrades, watch ups, watch downs, and affirmations, to answer the question: do Australian credit rating announcements contain new information?

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Despite a wealth of literature investigating the value of rating events by their impact on bond and equity prices, given the inherent shortcomings present in these markets, we revisit the question using the CDS market. Firstly, bond yields are likely to be affected by features relating to a particular debt issue, such as embedded options, guarantees, covenants, and maturity. Secondly, deriving bond spreads requires an adjustment by an appropriate risk-free rate (Ericsson *et al*., 2009). Thirdly, early studies using the bond data are constrained by liquidity, particularly in the Australian corporate bond market where daily prices are not widely available (Creighton *et al*., 2007).

Measuring the impact of rating changes using equity can also produce spurious results if rating changes have ambiguous implications to the stockholders (Goh and Ederington, 1993). For example, when management borrows to 'gamble for redemption', shareholders benefit at the expense of bondholders. Likewise, Maxwell and Stephens (2003) find that due to wealth transfer effects during open market share repurchases, share and bond returns are negatively correlated, and bond ratings are more frequently downgraded following large repurchases.

By contrast, credit spreads of CDS contracts reflect the premia protection buyers are willing to pay to the underwriters for protection against default by the reference entity. Duffie (1999) shows that, under the no-arbitrage condition, the CDS premium is equivalent to the difference between a risk-free floating-rate note and a risky par floating-rate note, and thus it is already quoted as a spread. As Longstaff *et al*. (2005), and Ericsson *et al*. (2009) have argued, CDS spreads provide a clearer indication of the firm's default risk compared to either stocks or bonds. CDS contracts also offer more liquidity than bonds due to the large scale entry of hedge funds within the last decade (Mengle, 2007). Moreover, Blanco *et al*. (2005) find that in those firms where CDS spreads and bond spreads form a valid equilibrium relationship, the CDS market contributes around 80% of price discovery. Even in the few cases where CDS spreads and bond spreads do not form a valid equilibrium relationship, Blanco *et al*. (2005) find that CDS spreads are still more likely to Granger-cause bond spread changes than the reverse.

We focus on Australian corporate ratings for a number of reasons. Firstly, the Australian non-government debt market has grown rapidly during the past decade and currently stands at 94% of GDP, which places it ahead of Japan, Canada, and Germany (Debelle, 2011). We anticipate that increases in the outstanding corporate debt will add to the relevance of credit ratings as investors will look to them for guidance. Secondly, Australia is structurally different, with regulations and debt contracts relying less extensively on credit ratings than in the U.S. Creighton *et al*. (2007) noted that in 2002, only 15% of large Australian firms had rating triggers written into debt contracts. According to the Australian Securities and Investments Commission (ASIC, 2008), credit rating agencies' ratings do not form part of any regulatory definitions and are not mandatory in a prospectus for debt issues. Therefore, as contended by Creighton *et al*. (2007), the true extent of ratings' information content may be shrouded in studies that have emanated from regimes where ratings play a significant role in their regulations. Thirdly, our research contributes to a very scant literature on the emerging CDS market for Australian corporate entities. A deeper understanding of this market would be of interest to both investors and policy makers.

Our event study methodology broadly follows that of Hull *et al*. (2004) and Norden and Weber (2004). In addition to unconditional credit rating announcements, we pay close attention to rating changes and affirmations conditional on prior credit watch placements. To ensure robust results we control for liquidity, account for contamination in rating announcements, and provide two methods of calculating abnormal market reactions.

LITERATURE REVIEW AND HYPOTHESES

Information Content of Credit Rating Announcements

There are two views on the incremental informational value of credit rating announcements. Numerous studies claim that credit rating announcements contain incremental information. For example, Danos *et al*. (1984) argue that by accessing companies' internal forecasts, credit analysts reveal new information to the market. Indeed, under the U.S. Regulation Fair Disclosure ruling, credit rating agencies are exempt from the selective disclosure restriction. Similarly, under the current Australian disclosure regime, information can be withheld from investors but given to third parties, provided that the entity retains control of its use and that confidentiality is not lost (ASX, 2003). Ederington and Yawitz (1986) contend that rating agencies can gather and disseminate credit risk related information more efficiently than any individual investor due to their economies of scale and staff expertise. Kliger and Sarig (2000) maintain that corporations pay to get rated because rating agencies can incorporate inside information into ratings without the risk of exposing sensitive information to the public. Empirical studies by Wansley *et al*. (1992) at the weekly frequency and Hand *et al*. (1992) at the daily frequency, both show that rating downgrades contain new information.

The opposing view questions the incremental information revealed by credit rating announcements. Wakeman (1981) argues that credit ratings do not affect the market's assessment of risk, but simply mirror it, with the value of ratings resting solely on the rating agencies' comparative advantage in gathering, analyzing, and summarizing the data. Micu *et al*. (2006) document that the majority of rating downgrades are related to previously released 'stale' information. This view is supported by studies such as that of Kaplan and Urwitz (1979), who find that models using publicly available information can predict rating changes with high accuracy.

In light of the debate, we test the incremental value of credit ratings through abnormal CDS market reactions. If credit rating announcements contain incremental information, they should be accompanied by abnormal CDS spread changes. However, if ratings simply aggregate existing information, then rating announcements will not contain additional information and should not affect the spreads. Our first null hypothesis is as follows:

H1: Credit rating announcements (upgrades, downgrades, watch ups, and watch downs) do not contain additional information.

Asymmetric Market Reaction

Holthausen and Leftwich (1986) conjecture that rating agencies face an asymmetric loss function, with the consequences of failing to downgrade a firm when it should be downgraded being far more severe than those of failing to upgrade a firm when it should be upgraded. Accordingly, as more resources are allocated to uncover negative information, negative rating events (downgrades and watch downs) should contain more information than positive events (upgrades and watch ups). Holthausen and Leftwich (1986) further argue that since a company's management tends to withhold bad news, negative announcements have greater information content. Additionally, investor optimism or pessimism may also trigger an asymmetric reaction between positive and negative news. To test asymmetry between positive and negative credit rating announcements we structure our second null hypothesis as follows:

H2: Abnormal spread changes given positive and negative rating events are symmetric.

Information Content of Conditional Rating Events

Perhaps in response to the criticisms on timeliness, rating agencies have introduced signalling mechanisms, known as watch ups, downs, or developing credit watches, to express opinions about an entity's existing credit rating.[1] A credit watch does not imply imminent rating change and neither does a rating change have to follow a credit watch. A watch up indicates an improvement in the entity's condition and signals a possible upgrade, while a watch down points to a possible downgrade. A developing watch implies that the potential impact of an event is unclear. To resolve a watch, a rating agency can either change or affirm the rating. We question the information content of affirmations following watch downs by measuring abnormal CDS spread changes.[2] If affirmations carry additional information, the CDS market should react accordingly. Our third null hypothesis is as follows:

H3: Rating affirmations of watch downs contain no additional information.

Wansley *et al*. (1992) hypothesize that if credit watches are regarded as precursors of credit rating changes, then rating changes preceded by credit watches should not contain additional information nor surprise the market. We test this by comparing the abnormal CDS market reaction to rating changes with prior watches against rating changes without prior watches. The final null hypothesis is given by:

H4: Rating changes preceded by credit watches contain an equal amount of information as rating changes not preceded by credit watches.

[1] They are known as CreditWatch by S&P, Watchlist by Moody's, and Rating Watch by Fitch. We refer to them as credit watch or watch.

[2] There are insufficient affirmations as resolutions to watch ups to analyze them separately.

DATA

CDS Data

Our sample contains Australian reference entities that constitute the Australian iTraxx CDS index series. The index comprises the most liquid CDS contracts according to half-yearly liquidity polls submitted by market makers. The reference entities are listed in Appendix A. Our sample begins from the introduction of the iTraxx Australia index on 3 September 2004, and ends on 30 June 2011. For each firm within the index we gather CDS mid quotes from Markit Partners. However, since Markit spreads exhibit fluctuations correlated to the number of contributors we complement the data in 2005 with quotes obtained from CMA. In line with previous research, we select five year contracts as they exhibit most liquidity.

Credit Ratings Data

Credit rating announcements made by Moody's, Standard & Poor's, and Fitch are obtained from Bloomberg. The data contains the announcement date, agency name, the type of rating (e.g., long-term issuer or long-term debt rating), and the rating action (e.g., upgrade, watch down, or affirmation). Issuer ratings reflect the overall financial health of the issuer and its capacity to meet long-term debt obligation, whereas debt ratings pertain to a specific debt obligation. As not all reference entities have an issuer rating, we follow Hull *et al*. (2004) and select the type of rating that best reflects the issuers' overall credit quality in the following order: long-term issuer, long-term debt, long-term local currency issuer, and long-term local currency debt. Announcements made by the three credit rating agencies are aggregated, as we believe that similar information is contained in the announcements regardless of the disseminator.

Table 1 summarizes 185 rating events between September 2004 and June 2011. The sample includes a cluster of upgrades caused by the re-rating of four major commercial banks in 2007. Negative announcements outnumber positive announcements during the financial crisis, reflecting the deteriorating economic outlook on Australian firms. The number of watch downs exceeds actual downgrades in every year within the sample period. This is consistent with Chung *et al*. (2012), who document that Moody's use of watches relative to rating changes has increased from 28% between 1992–96 to 47% between 2002–05. Nevertheless, our sample contains more upgrades than watch ups.

Table 2 presents a transition matrix using S&P's modified rating categories. The main diagonal captures credit watches, and the off-diagonal elements represent actual changes. Most ratings move by a single notch and nearly half of the ratings are within the A^+ to BBB^+ range. As the sample only contains 14 multiple-notch rating changes (five downgrades and nine upgrades), they are not analyzed separately. We implicitly assume that single-notch and multiple-notch rating changes contain similar information.

Panel A of Table 3 shows credit rating changes (off diagonal elements in Table 2), conditioned on whether they are preceded by watches. It shows that while 75% of credit downgrades are preceded by watch downs, only 44% of credit upgrades are

Table 1

SUMMARY OF RATING EVENTS BY YEAR

Year	Downgrade	Upgrade	Watch Down	Watch Up	Affirmation	Total
2004	0	1	0	0	0	1
2005	7	3	8	1	1	20
2006	7	4	10	7	7	35
2007	9	13	12	5	2	41
2008	4	6	7	4	4	25
2009	6	5	8	3	6	28
2010	2	5	8	0	6	21
2011	5	2	7	0	0	14
Total	40	39	60	20	26	185

The total number of rating events by action type from September 2004 to June 2011. Affirmations may be issued periodically without preceding credit watches. Only affirmations that are resolutions to credit watches are included in the sample.

Table 2

TRANSITION MATRIX

Old rating	New rating										Total
	AA+	AA	AA−	A+	A	A−	BBB+	BBB	BBB−	BB+	
AA+	4	4									8
AA	1										1
AA−	4	5	5								14
A+		3	1	11	3	1	2				21
A				6	9	4	2				21
A−					4	11	6				21
BBB+						5	21	12			38
BBB						2	6	15	5		28
BBB−								2	4	1	7
BB+											
Total	9	12	6	17	16	23	37	29	9	1	159

Rating events by all three rating agencies aggregated and presented using the modified rating categories of S&P. The main diagonal elements represent credit watch announcements. Elements to the right of the main diagonal depict rating downgrades while those to the left represent rating upgrades.

preceded by watch ups. This suggests that rating agencies are much more proactive in signalling deterioration in the issuer's credit quality than improvement.

Panel B of Table 3 reports 60 watch downs and 20 watch ups (diagonal items in Table 2) partitioned according to their resolutions. Only 45% of watch downs result

Table 3

CREDIT RATINGS, WATCH PLACEMENTS AND RESOLUTIONS

Panel A: Rating changes conditional on prior watches

	With prior watch	Without prior watch	Total
Downgrade	30 (75%)	10 (25%)	40
Upgrade	17 (44%)	22 (56%)	39

Panel B: Rating watches partitioned according to subsequent action

	Affirmed	Migrated	Reversed	Unresolved	Withdrawn	Total
Watch down	24 (40%)	27 (45%)	2	4	3	60
Watch up	2 (10%)	17 (85%)	1	0	0	20

Panel A shows the frequency of downgrade and upgrade announcements conditional on credit watches. 'With prior watch' refers to rating changes that are preceded by credit watches indicating the same direction of change. Panel B shows the frequency of watch ups and watch downs partitioned based on subsequent actions. 'Reversed' refers to credit watches that have been replaced by credit watches or rating changes in the opposite direction. 'Unresolved' refers to watch announcements that remain on watch at the end of the sample period.

in credit migration compared to 85% of watch ups. A higher proportion of affirmations for watch downs than watch ups supports the proposition of Boot *et al.* (2006) that a watch down warns the affected firm of adverse developments and allows the firm to take mitigation actions. Conversely, a watch up does not require further action.

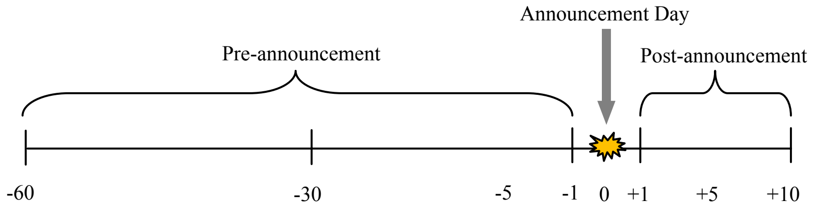
We acknowledge that the small market for the Australian CDS, together with infrequent rating announcements for investment grade firms, remains a limitation of this article. However, strenuous effort has been made to include all observations from the inception of the Australian iTraxx index. In addition, given that the exact day of the event is known, we are able to increase the power of the tests as suggested by Brown and Warner (1980).

METHODOLOGY

We follow the standard event study methodology, partitioning the event window as illustrated in the timeline in Figure 1. The event window includes the announcement day (day 0) and 2 days (–1 to 1) immediately surrounding the event. To observe market anticipation, we divide the pre-announcement period into two time intervals, day –60 to –30 and day –30 to –1, where the cumulative changes are calculated. Market anticipation is of interest not only because it has been widely documented, but because it provides a benchmark for the announcement day effect. A 10-day post-event period provides evidence of market efficiency by observing the speed of adjustment and whether the price adjustment is permanent or merely an overreaction to the announcement.

FIGURE 1

EVENT WINDOW TIMELINE.



Data Filters

The CDS data is firstly passed through a liquidity filter. We do not interpolate missing observations per Hull *et al*. (2004) and Norden and Weber (2004). Interpolation assumes price changes on days with missing observations, which are likely to be caused by illiquidity. Instead, we replace missing data with the last available spread and then use the Lesmond *et al*. (1999) zeros measure to assess liquidity. We remove all events where the proportion of days in the event window with zero returns exceeds 25%.[3] Additionally, we remove events where spreads are missing on the announcement day. The liquidity filter eliminates three affirmations, six upgrades, three watch ups, one downgrade, and one watch down.

We also address confounding effects in the rating events. Events may be contaminated by multiple rating actions from the same rating agency or from competing rating agencies, or by other private or public dissemination of the information. A common approach to reducing contamination caused by clustered rating events is to exclude them from the sample. However, rating events by multiple rating agencies may signal important information, and excluding these events could potentially bias the results. Holthausen and Leftwich (1986), Goh and Ederington (1993) and Wansley *et al*. (1992) control for contamination caused by dissemination of information by searching through the *Wall Street Journal* for news releases close to the announcement day. We see two limitations in using news reports to reduce contamination. Firstly, unlike rating announcements, the exact timing of the economic event is unknown, and the search window is arbitrarily defined. Secondly, the classification of contaminants is subjective. Indeed, Holthausen and Leftwich (1986) admit that such an approach only controls for obvious contaminations.

Without a standard methodology to control for contamination, we report the full sample, as well as three different filtered subsamples where we control for cross-contaminating rating announcements. In the first subsample, we eliminate all rating events accompanied by concurring rating events within a 70 day event window, defined as 60 trading days before and 10 trading days after an announcement. While

[3] The results are not materially affected by changing the cut-off value to 0.2 or 0.3. We find that illiquid series are largely characterized by fewer contributors.

this arguably removes most confounding effects, we exclude potentially significant credit events. Consequently we correct for this underestimation by constructing a second subsample with an identical event window that only captures the initial announcement within a cluster and ignores all subsequent announcements. A cluster is defined as multiple rating announcements on the same firm within a 60 day window. In the third subsample, we shorten the event window and eliminate observations with multiple rating events within ±5 days of the announcement.

Measuring Abnormal Changes

In line with Norden and Weber (2004) and Hull *et al.* (2004), we employ a variant of the market-adjusted model to isolate idiosyncratic effects from broad market movements.[4] The abnormal CDS market performance over the event window is calculated by

$$ASC_{i,t} = (S_{i,t} - S_{i,t-1}) - (M_{i,t} - M_{i,t-1}),$$

where

$ASC_{i,t} \equiv$ adjusted spread change on day t for firm i
$S_{i,t} \equiv$ CDS spread of the event entity on day t for firm i
$M_{i,t} \equiv$ spread of a market index on day t for firm i.

The index is constructed from equally-weighted CDS spreads of firms with the same rating class as the event firm. We assign two broad rating classes—*class A*, comprising AA and A rated firms (20 firms), and *class B*, comprising BBB rated firms (16 firms).[5]

The disadvantage of an absolute change measure is that it does not control for the differences in the level of spreads (Micu *et al.*, 2006), particularly when only two broad indices are formed across a volatile period. We check the robustness of our results by also estimating the adjusted percentage change (APC). APC is defined as

$$APC_{i,t} = \frac{S_{i,t} - S_{i,t-1}}{S_{i,t-1}} - \frac{M_{i,t} - M_{i,t-1}}{M_{i,t-1}},$$

where $S_{i,t}$ and $M_{i,t}$ are the spread and index for firm i at time t, respectively. Finally, the ASCs (APCs) are summed through time to form the cumulative adjusted spread changes (CASCs) and cumulative adjusted percentage changes (CAPCs).

Descriptive Statistics

Table 4 provides selected descriptive statistics of the full sample. We observe that the signs of the average and median ASCs and CASCs are consistent with our

4 Estimating regression coefficients of a standard market model is not feasible given the short history of the CDS market in Australia.

5 Due to a small number of observations in some rating classes, we cannot form indices with finer ratings scales. Admittedly, aggregating multiple rating classes into one index can only control for the average default risk across many ratings. Firms migrate between rating classes and therefore may fall in different classes in different periods.

Table 4

DESCRIPTIVE STATISTICS

ASCs for [0, 0] (bps)	Downgrade	Watch down	Upgrade	Watch up	Affirmation
Mean	4.20	5.17	−1.44	−44.24	−1.92
Median	0.61	2.12	−0.79	−0.14	−0.21
Maximum	80.13	41.14	2.68	39.92	17.86
Minimum	−52.23	−22.63	−12.49	−329.59	−33.92
Std. Dev.	20.29	10.48	2.87	109.46	9.62
Skewness	2.19	1.29	−1.78	−2.43	−1.17
Kurtosis	10.06	3.69	5.68	4.82	5.71
Anderson-Darling	7.43***	4.44***	0.87**	3.53***	1.75***
Observations	39	59	33	17	23
CASCs for [−1, 1] (bps)	**Downgrade**	**Watch down**	**Upgrade**	**Watch up**	**Affirmation**
Mean	6.49	11.36	−2.95	−43.90	−3.12
Median	0.82	6.51	−0.86	−1.69	−0.69
Maximum	130.68	82.59	3.53	74.44	12.88
Minimum	−72.19	−17.86	−25.41	−294.27	−33.69
Std. Dev.	28.62	17.38	5.78	99.94	9.21
Skewness	2.38	2.10	−2.49	−2.05	−1.57
Kurtosis	11.49	5.37	7.25	3.73	5.03
Anderson-Darling	8.11***	4.82***	3.03***	2.48***	1.24***
Observations	39	59	33	17	23

ASCs for the announcement day [0, 0] and the CASCs for the interval [−1, 1] in basis points. The null hypothesis for Anderson-Darling is normal distribution. ***, ** denote statistical significance at 1% and 5%, respectively.

expectation. The standard deviation of abnormal spread changes due to watch ups are high relative to other events, implying a large degree of uncertainty in the market associated with the announcement. The affirmation coefficient is negative, as 22 out of 23 observations are resolutions to watch downs. It is evident that both ASCs and CASCs are non-normal (rejected by the Anderson-Darling test), which invalidates the use of parametric tests. Therefore, we report the medians and use two non-parametric tests: the Wilcoxon signed rank test and the binomial test, which do not require specific assumptions about the population distribution. Both tests have been used extensively in information content literature such as Norden and Weber (2004) and Creighton *et al.* (2007).

RESULTS

Information Content of Unconditional Rating Events

We examine the first hypothesis (H1) that unconditional rating events do not contain additional information. Table 5 displays the adjusted spread changes (ASCs)

TABLE 5

ADJUSTED AND CUMULATIVE ADJUSTED SPREAD CHANGES

Event Day	**Downgrade** (bps) A n = 39	B n = 21	C n = 24	D n = 33	**Upgrade** (bps) A n = 33	B n = 26	C n = 27	D n = 29
–1	–0.069	–0.051	0.034	–0.167	–0.068	–0.012	0.043	–0.068
0	0.613***^^	0.233	0.517**	0.613	–0.793***	–0.847**	–0.793**	–0.902***
1	0.106	0.264	0.488	0.029	–0.417**	–0.422	–0.291	–0.553**
[–60, –30]	1.179**	0.682	0.729	1.033	–3.119***^^^	–0.762**	–1.802**	–2.118***^^
[–30, –1]	1.380	0.568	1.674	1.084	–0.556	–0.321	–0.086	–0.556
[–1, 1]	0.823***^^^	0.949***^^^	1.152***^^^	0.791**^^	–0.860***^^^	–0.759***^^^	–0.658***^^^	–0.860***^^^
[1, 10]	0.509	–0.167	0.809	0.509	–0.687**	–0.422	–0.442	–0.442

Event Day	**Watch Down** (bps) A n = 59	B n = 38	C n = 46	D n = 40	**Watch up** (bps) A n = 17	B n = 10	C n = 11	D n = 15
–1	0.578***^^^	0.460^^	0.460**^^	0.460^^	0.636	0.773	0.910	0.636**
0	2.121***^^^	2.115***^^^	2.137***^^^	1.675***^^^	–0.140	0.040	0.014	–0.011
1	0.391	0.279	0.428	0.388	–0.043	–0.145	–0.246	–0.043
[–60, –30]	–1.441	–1.764	–1.648	–1.648	1.722	1.283	1.321	1.716
[–30, –1]	3.256***^^	2.455	2.911	2.911	–2.596	–0.549	1.498	–2.596
[–1, 1]	6.510***^^^	4.276***^^^	6.302***^^^	4.017***^^^	–1.690	0.472	0.405	–0.520
[1, 10]	0.896	0.839	0.917	0.839	–0.335	–0.778	–1.003	–0.335

Event Day	**Affirmation following watch down** (bps) A n = 22	B n = 13	C n = 14	D n = 17
–1	0.099	0.060	–0.020	0.060
0	–0.120	–0.841	–3.505	–0.778
1	–0.460	–0.234	0.017	–0.234
[–60, –30]	0.899	–4.029	–1.569	0.891
[–30, –1]	–3.969**	–1.439	–1.704	–1.969
[–1, 1]	–0.400	–3.948	–4.942**	–0.693
[1, 10]	–3.560***^^	–3.560	–3.560	–3.560**

Columns A, B, C, and D show, respectively, the results from the full sample, uncontaminated sample with no other events within the [–60, 10] window, sample with the first announcement in a cluster retained, and sample with no other events within the [–5, 5]. The alternative hypothesis under the Wilcoxon signed rank test and binomial test is median ≠ 0. *** (^^^) and ** (^^) denote the Wilcoxon signed rank (Binomial) test statistical significance at 1% and 5%, respectively.

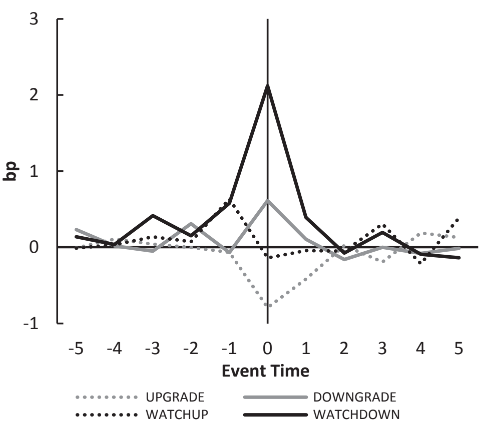
two days around the announcement day as well as the cumulative adjusted spread changes (CASCs) over four intervals covering 60 pre-announcement days and 10 post-announcement days. For each type of announcement, we test the hypothesis across four separate subsamples. In addition to the full sample (column A), we construct a subsample with no other events within the [−60, 10] window (column B), a subsample in which the very first announcement in a cluster is retained (column C), and a subsample with no other events within the [−5, 5] window (column D).

Table 5 shows that, in the full sample, there is a statistically significant announcement day (day 0) effect for downgrades and watch downs using the sign ranked test and binomial test, and for upgrades using the sign ranked test. Market reaction is most pronounced for watch down announcements, where they elicit a 2.121 basis points (bps) increase in the spreads compared to a 0.613 bps increase for downgrades. The magnitude of the spread changes triggered by watch downs are similar across all subsamples and are statistically significant at the 1% level by both tests. For downgrades, not all subsamples are statistically significant, while for upgrades, all subsamples are significant according to the sign rank test. The CDS market's strong reaction to watch downs, compared to downgrades, is consistent with Hull *et al.* (2004) and Norden and Weber (2004). Figures 2 and 3 plot the abnormal market reactions following each type of rating announcement.

The same conclusion can be reached by looking at the [−1, +1] window, as the CASCs for downgrades, watch downs, and upgrades are highly significant across both full and filtered subsamples according to both statistical tests. We do not observe any statistically significant positive abnormal spread changes for watch ups.

FIGURE 2

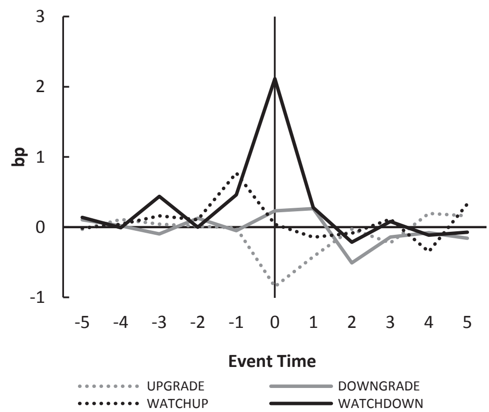
FULL SAMPLE ASC.



Figures 2 and 3 show the ASCs (10 trading days surrounding the event) of the full and filtered (no other events within the [−60, 10] window) samples.

FIGURE 3

FILTERED SAMPLE ASC.



Figures 2 and 3 show the ASCs (10 trading days surrounding the event) of the full and filtered (no other events within the [−60, 10] window) samples.

This is not surprising given that the existing literature involving S&P's CreditWatch listings, such as Elayan *et al*. (1990), Wansley and Clauretie (1985), and Wansley *et al*. (1990) find that both watch up and watch down announcements elicit negative market reactions. Based on these results, we strongly reject our H1 hypothesis for watch downs, downgrades, and upgrades.

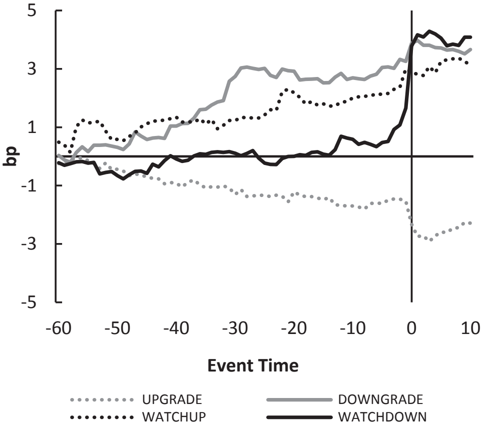
Over a longer period, spreads in the full sample widen by 1.179 bps in the [−60, −30] window prior to downgrades, and widen by 3.256 bps in the [−30, −1] window prior to watch downs. This suggests that the market may be anticipating negative announcements made by the credit rating agencies. However, the effect dissipates after controlling for contamination. Conversely, upgrades are associated with significant run-ups of 3.119 bps in the [−60, −30] window even after controlling for contamination. Watch ups display no anticipation by the market. Figures 4 and 5 depict the anticipation of rating announcements up to 60 days before the announcement day.

In the post-announcement period, neither downgrades, upgrades, nor watch downs show further adjustments after controlling for contamination, confirming that the CDS market quickly impounds rating change information.

Turning to the asymmetry hypothesis (H2), comparing the size and significance of CDS spread changes between downgrades and upgrades across all subsamples reveals stronger CDS market reaction due to upgrades than downgrades. This is at odds with our expectation and with previous findings of asymmetry between positive and negative events such as Norden and Weber (2004), who fail to find any significant market reaction to positive ratings events. However, the CDS spread reaction to

Figure 4

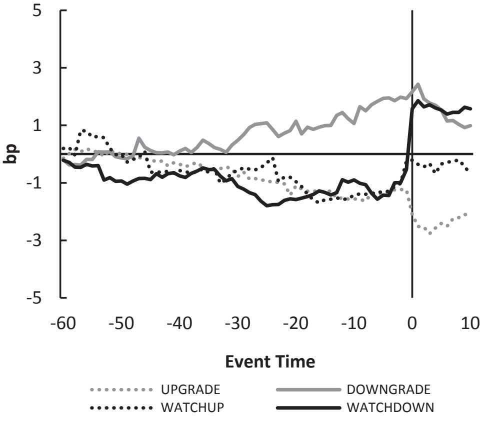
FULL SAMPLE CASC.



Figures 4 and 5 show the CASC (70 trading days surrounding the event) of the full and filtered sample.

Figure 5

FILTERED SAMPLE CASC



Figures 4 and 5 show the CASC (70 trading days surrounding the event) of the full and filtered sample.

watch downs is more pronounced than to watch ups. Evidence on credit watches supports the asymmetric loss function and selective disclosure propositions put forward by Holthausen and Leftwich (1986). The asymmetry between positive and negative credit watches can be seen clearly from Figures 2 and 3. From the results, we reject the H2 hypothesis that spread changes given positive and negative rating events are symmetric.

We propose two explanations for the reported asymmetries. Firstly, watch downs may now play a greater information dissemination role than actual downgrades, so the market no longer sees actual downgrades as significant information events. In contrast, watch ups have not achieved the same level of recognition. We explore this further in the next section.

Secondly, investor pessimism, in the sense that the degree of verification required for gains is greater than that for losses, causes the asymmetry between actual credit rating changes and credit watches. Investors, particularly during a period of market uncertainty, may be sensitive to negative news while being sceptical of positive news. Therefore investors may not necessarily interpret watch ups (potential upgrades) as positive news until verified by an actual upgrade, hence the greater market response to upgrades.

Finally, results for testing the information content of affirmations conditional on prior watch downs (H3) are presented at the end of Table 5. Negative spread changes are observed on the announcement day across all four subsamples, but are statistically not significant. However, in the subsample under column B, the spreads narrow significantly by 4.9 bps over the [–1, 1] window. In the [1, 10] interval, the spreads narrow by 3.5 bps for both the full sample and one of the subsamples. The result tentatively suggests that affirmations contain positive information, rejecting H3.

Information Content of Conditional Rating Events

In this section, we investigate whether rating changes preceded by credit watches contain the same amount of information as rating changes without prior watches (H4 hypothesis). We anticipate a stronger announcement day effect for rating changes without watch placements (hereafter surprise downgrades/upgrades) than for rating changes following credit watches (hereafter expected downgrades/upgrades).

Table 6 provides the adjusted spread changes for each type of rating announcement. Comparing the two categories of downgrades, it is immediately evident that the adjusted spreads for surprise downgrades on the announcement day increase significantly by 1.973 bps, in comparison to the statistically not significant 0.233 bps for expected downgrades. The CASC over [–1, 1] is also much higher for the surprise sample. Consistent with the proposition that expected downgrades do not convey material information, there is no anticipation for surprise downgrades, but statistically significant anticipation for expected downgrades stretching back to –60 days.

To test whether the abnormal performances of the expected and surprise groups are statistically different from each other, we employ the non-parametric Mann-Whitney U test. The test shows that the differences between the two types of

Table 6

RATING CHANGES CONDITIONAL ON CREDIT WATCH

Period	Expected downgrades n = 29 (bps)	Surprise downgrades n = 9 (bps)	Difference
[−60, −30]	$1.179^{**}_{\wedge\wedge}$	−2.825	−4.004
[−30, −1]	2.264**	1.380	−0.884
[−1, 1]	$0.686^{**}_{\wedge\wedge\wedge}$	3.712**	3.026¤¤
[0, 0]	0.233	$1.973^{**}_{\wedge\wedge}$	1.740¤¤
	Expected upgrades n = 16 (bps)	Surprise upgrades n = 17 (bps)	Difference
[−60, −30]	$-6.924^{***}_{\wedge\wedge\wedge}$	−1.647	5.277
[−30, −1]	0.271	−0.678	−0.949
[−1, 1]	−0.636**	$-0.935^{**}_{\wedge\wedge\wedge}$	−0.299
[0, 0]	−1.265**	−0.064	1.201

The abnormal market performance for rating changes conditional on whether a prior watch placement was issued. 'Expected' refers to rating changes with prior watches while 'surprise' refers to rating changes without prior watches. The Mann-Whitney U test compares the medians of the two non-normal groups, with an alternative hypothesis of: Median Expected ≠ Median Surprise. ¤¤ denotes significance at the 5% level. *** (^^^) and ** (^^) denote the Wilcoxon signed rank (Binomial) test statistical significance at 1% and 5% levels, respectively.

downgrades on the announcement day and over the [−1, 1] period are significant at 5%. Comparison of the two types of upgrades yields a different pattern. Expected upgrades appear to convey stronger information than surprise upgrades on the announcement day, but over the [−1, 1] interval, surprise upgrades reveal marginally more information. Despite that, the differences between the two types of upgrades are not statistically significant.

Overall, the results support the H4 hypothesis that, for negative events at least, watch downs convey new information to the public. Subsequent downgrades do not carry material incremental information. As for positive events, the H4 hypothesis cannot be rejected.

Robustness Check with Percentage Changes

For robustness, we repeat the above analysis using adjusted percentage changes (APCs) to control for the levels of spreads. Results reported in Table 7 reveal that inferences based on APC are not materially different to those using ASC. However there are some points worth noting. Firstly, there is a stronger anticipation of downgrades over the [−30, −1] window in three subsamples. Secondly, in line with previous observations, the asymmetry in market reaction between upgrades and downgrades is even more pronounced. Upgrades evoke abnormal change of 2.86% within the

Table 7

ADJUSTED AND CUMULATIVE ADJUSTED PERCENTAGE CHANGES

Event Day	Downgrade (%bps) A n = 39	B n = 21	C n = 24	D n = 33	Upgrade (%bps) A n = 33	B n = 26	C n = 27	D n = 29
–1	–0.30	–0.05	0.02	–0.31	0.23	0.10	0.23	0.10
0	0.76***	0.05	0.46**	0.40**	–1.03**	–1.08	–1.03	–1.14**
1	0.26	0.39	0.48	0.18	–0.74**	–1.09**	–0.88**	–1.31***
[–60, –30]	3.82**^^	0.97	1.05	1.96	–1.81**	–0.62	–0.81	–0.81
[–30, –1]	6.58***^^	0.48	6.38**	6.18**^^	–1.20	–2.02	–1.62	–2.42
[–1, 1]	1.60***^^^	0.66**^^	1.38***^^^	0.59**^^	–2.86***^^^	–2.95***^^^	–2.86***^^^	–3.06***^^^
[1, 10]	0.41	–0.34	–0.19	0.88	–1.79**	–1.18	–1.79**	–1.79

Event Day	Watch Down (%bps) A n = 59	B n = 38	C n = 46	D n = 40	Watch up (%bps) A n = 17	B n = 10	C n = 11	D n = 15
–1	0.90***^^^	0.60	0.79***^^	0.60**^^	2.07	2.48	2.07	2.07
0	4.19***^^^	4.67***^^^	5.05***^^^	3.72***^^^	–1.2	–0.43	–0.67	–0.67
1	0.25	–0.02	0.28	0.10	–2.01	–3.17**	–4.24***	–2.01
[–60, –30]	–3.20	–3.25	–3.36	–3.18	17.84***	6.12	6.59	11.43**
[–30, –1]	3.74***	3.31	3.57	3.57	0.16	–0.23	0.16	0.16
[–1, 1]	7.90***^^^	7.14***^^^	7.66***^^^	6.54***^^^	–3.51	–1.64	–2.25	–3.24
[1, 10]	0.82	0.77	0.77	0.46	–3.64	–8.14	–7.75	–3.64

Event Day	Affirmation following watch down (%bps) A n = 22	B n = 13	C n = 14	D n = 17
–1	0.43	0.43**^^	0.43	0.43**^^
0	–0.78	–3.19**^^	–4.03***^^	–1.24**^^
1	–0.58	–0.88	–0.61	–0.50
[–60, –30]	3.85	3.83	3.85	3.83
[–30, –1]	–9.70***^^	–7.21	–8.46	–9.70**
[–1, 1]	–1.36	–4.04**	–4.04***	–2.55
[1, 10]	–2.64**	–1.94	–2.64	–1.94

Columns A, B, C, and D show, respectively, the results from the full sample, uncontaminated sample with no other events within the [–60, 10] window, sample with the first announcement in a cluster retained, and sample with no other events within the [–5, 5]. The alternative hypothesis under the Wilcoxon signed rank test and binomial test is median ≠ 0. *** (^^^) and ** (^^) denote the Wilcoxon signed rank (Binomial) test statistical significance at 1% and 5%, respectively.

[−1, 1] window, while the effect of downgrade is only 1.60%, the result is consistent across four subsamples. In addition, as with the ASC, we find that upgrades contain more information than watch ups. Lastly, we find significant market response to rating affirmations following watch downs on the announcement day across all subsamples, and the percentage changes are similar to upgrade announcements. This provides further evidence that positive rating affirmations have information content and are seen as good news.

CONCLUSIONS

Motivated by the drawbacks in the bond and equity markets, we examine the information content of Australian credit rating announcements using credit default swaps. The CDS market provides a practical alternative setting to undertake the analysis as it avoids a number of complications associated with using bonds or stocks. Notwithstanding the caveats of data imperfections, we believe that the analysis has captured the CDS market reactions surrounding public releases of credit rating actions made by the major rating agencies. Future studies can no doubt benefit from larger sample sizes and make stronger statistical inferences.

The empirical evidence in this article reveals that watch downs and rating upgrades contain the most information even after controlling for sources of contamination. The findings support the importance of watch downs, as perceived by the market, relative to actual downgrades. Watch downs may have replaced actual downgrades as the leading signal for credit quality deterioration and this function is indeed in line with the monitoring role given to credit watches as noted in Boot *et al.* (2006). Furthermore, the market appears to anticipate rating downgrades that are preceded by watch downs. Despite the emphasis placed on watch downs, the value of watch ups remains meagre, as investors look to actual upgrades as the source of positive signals. We have also shown that affirmations of watch downs send positive signals to the market.

In comparison to the market impact of U.S. and European rating events, we find a significantly lower impact in the Australian market, a similar finding to one made by Creighton *et al.* (2007). With abnormal basis point changes of less than two basis points on the event day, albeit statistically significant, it is fair to question the economic significance attached to these rating announcements. However, the smaller market responses may well be caused by the lower reliance of credit ratings in market regulations and debt contracts.

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APPENDIX A

List of CDS Names on iTraxx Australia Series

Alinta Ltd	National Australia Bank Ltd
Amcor Ltd	QBE Insurance Group Ltd
AMP Ltd	Qantas Airways Ltd
ANZ Banking Group Ltd	Rio Tinto Ltd
BHP Billiton Ltd	Singtel Optus Party Ltd
Coles Group Ltd / Coles Myer Ltd	St George Bank Ltd
CSR Ltd	Suncorp Metway Ltd
Coca Cola Amatil Ltd	Tabcorp Holdings Ltd
Commonwealth Bank of Australia	Telecom Corp New Zealand Ltd
Crown Ltd	Telstra Corp Ltd
Fairfax Media Ltd	Wesfarmers Ltd
Fosters Group Ltd	Westfield Group
GPT Group	Westpac Banking Corp
Lend Lease Corp Ltd	Woodside Petroleum Ltd
Macquarie Bank Ltd	Woolworths Ltd