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Procyclical ratings and market reactions☆

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ABSTRACT

We investigate stock price reactions to credit rating changes during competing economic environments. Prior research has shown that credit rating assignments differ during times of economic expansion and economic contraction. We investigate if equity prices adjust differently to changes in credit quality in different economic environments. Our results show that markets react more strongly to negative ratings news during times of economic contraction. When the economy is expanding, markets also overreact by pushing prices higher than they otherwise would during an economic downturn.

1. Introduction

Ratings standards are procyclical. In other words, the ratings standards are different in times of economic expansion vs economic recession. The result is that firms' ratings are overly pessimistic during times of a struggling economy and overly optimistic during times of economic boom (Auh, 2015). The rationale for this finding is that the risk of default is suppressed during times of economic expansion and the cost of mispricing is reduced. Conversely, firm failures are often associated with times of economic contraction and inaccurate ratings would be costlier. Several studies show how markets react to changes in credit ratings. The effect of a credit rating change has been studied against stock prices (Holthausen & Leftwich, 1986; Avramov, Chordia, Jostova & Philipov, 2009), bond prices (Hand, Holthausen & Leftwich, 1992) and bond spreads (Hull, Predescu & White, 2004). In general, we see markets react negatively to firms with downgrades while the effect is not as pronounced for upgrades.

The goal of this paper is to examine various market reactions to credit rating changes during different economic environments. While the period covered in much of the existing research includes different macroeconomic periods, previous papers have not focused on the differences in market reactions to rating events across these economic environments. We examine whether markets overreact to credit rating downgrades during times of overall market distress and investigate if this response to a credit rating downgrade differs during times of economic expansion. If markets are aware that CRAs are overly pessimistic during times of economic contraction, it should then follow that any new and negative news will provide an excessive shock to a firm's stock price.

Our results show that markets react stronger to rating downgrades during times of economic distress. Using a four-factor model and an equally weighted index, we see the cumulative abnormal return over the time window (0, +1) for firms with a rating decrease during a recession experience excess abnormal return of −1.76%. While the economy is expanding, the abnormal return is still negative, but lower at −1.30%. We see similar results for firms that receive a CreditWatch negative warning. During times of distress, the mean excess return is −2.61% while during an economic expansion, the mean excess return is −1.44%. We also find that

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investment grade firms experience a greater degree of price action during a recession.

We contribute to the current finance literature on credit ratings by extending the findings on market reactions to credit rating changes. Specifically, we provide evidence of the differences in market reactions across different macroeconomic environments for credit rating events. The rest of the paper proceeds as follows. Section 2 discusses the relevant literature. Section 3 discusses our data and methodology. Section 4 presents our results and Section 5 concludes the paper.

2. Literature review

2.1. Credit rating agencies and credit ratings

Pogue and Soldofsky (1969) suggest that bond credit ratings were created as an "independent and reliable judgment about the quality of corporate bonds" at a time when "… accounting theory and practice … and the pressures and requirements for published financial information were primitive or minimal as compared with the present situation." Although access to accounting and market information has improved since the first bond ratings in the early 1900s, bond credit ratings issued by Credit Rating Agencies (CRA) still play an important role in financial markets. One commonly supported theory for the continued existence of CRAs and the use of bond ratings is that an information asymmetry still exists between borrowers and investors and that CRAs continue to reduce that asymmetry.

Another explanation for the prevalence of CRAs is that, over time, their credit ratings have become mandated in a number of settings, e.g., the calculation of bank capital requirements, and highly integrated in other settings. For example, private companies (pension funds, mutual funds, insurance agencies) make extensive use of ratings in their investment decisions (IMF, 2010).

By design, credit ratings measure the risk that an entity will fail to meet its financial commitments, such as interest payments and repayment of principal, on a timely basis. These risks are then used to map the entities' debt into different discrete categories. The idea is that the debt in each category offers similar risk and will allow lenders and market investors to assess the differences in returns given the risk category.

There are three primary rating agencies: Moody's, Standard & Poors, and Fitch. Moody's ratings reflect expected loss while S&P measures the probability that an entity will default on its debt. Fitch uses a combined method and rates issuers using both a probability of default and a measure of expected loss. While the three agencies arrive at their ratings on differing measures there is little difference in the debt they identify as investment-grade. Fitch and S&P categorize debt based on letter grades (AAA, AA, A, BBB, etc). Debt at or above a BBB rating is considered investment-grade credit risk while debt ranked BB to D is considered speculative ("junk bonds"). In addition to the letter grade, both Fitch and S&P modify many of their ratings using plusses and minuses. Although the three CRAs do not explicitly quantify their scales, they do provide ex-post summaries of defaults by rating grades (IMF, 2010).

2.2. Market reactions to rating events

Previous studies have documented statistically significant stock price changes in response to credit rating events. Griffin and Sanvicente (1982) look at rating change announcements from 1960 through 1975. They measure monthly stock price adjustment for firms whose debt received a rating change and compare that change to a control group of firms matched on market β, industry, and key financial variables. They find that the market reacts to rating downgrades as if the rating change provided new information to the market, but the market reacts to rating upgrades as if the rating change provided no information. That is, there is not a significant market reaction to upgrade changes.

Goh and Ederington (1993) investigate rating downgrades between 1984 and 1986. They argue that not all rating downgrades are the same: some are anticipated and result from financial distress while others result from changes that benefit shareholders at the expense of bond holders. To address these alternative sub-types of rating downgrades, they separate downgrade announcements into those due to financial deterioration and those due to leverage increases. When the downgrade is attributed to financial deterioration, they find a negative cumulative abnormal return (CAR) for the borrowers' equity. However, when the downgrade is attributed to a change in leverage (which shifts value from bondholders to stock holders), they find no significant CAR. They interpret their findings as equity markets being able to identify when a bond rating change provides new information related to the possible financial deterioration of a firm, or simply reflects an already observed change in leverage.

Dichev and Piotroski (2001) use both market and accounting measures to match a portfolio of stocks with and without rating changes between 1971 and 1997. They build their portfolios based on matching firm β and market-to-book ratio and look at the long-run performance of the portfolio. For three years after a Moody's bond rating change they measure mean CAR to the portfolio. They find that, relative to the portfolio with no downgrades, downgrades result in a negative mean abnormal long-run return. There was no difference between the no change portfolio and the firms with rating upgrades.

While equity markets tend to have strong and consistent reactions to bond rating changes, studies looking at bond market reactions to rating changes show mixed evidence. One often cited study of bond market reactions is Hand et al. (1992). They look at 250 additions to the S&P watchlist from 1981 to 1983. The watchlist is not a credit rating change but a list maintained by S&P of firms whose rating is likely to change in the next 90 days. Watchlist changes can be either positive or negative. The authors separate watchlist announcements into those that are considered contaminated (i.e, there have been other concurrent disclosures) versus noncontaminated (those without any concurrent disclosures). They then develop a model to classify debt into expected or unexpected based on the difference in bond Yield-to-Maturity (YTM) for bonds that are placed on the watchlist versus the median YTM of other bonds with the same rating prior to the watchlist announcement. They argue that if a bond is downgraded (upgraded) and the YTM

increases (decreases), then it is because the bond has become more (less) risky. Therefore, they label the rating change as unexpected. If the bond's YTM is less than the comparison group, then "a downgrade would be classified as unexpected, while an upgrade would be considered expected" (Hand et al, 1992).

For both contaminated and noncontaminated groups, unexpected credit risk downgrades have significantly negative average excess returns in bond and equity markets. Unexpected watchlist announcements of possible upgrades had a significantly positive average excess return in the bond market, but only for the noncontaminated group. The expectation model they develop allows them to control for prior expectations (i.e., watchlist announcements) when rating changes are announced. Using their expectations model, the authors are able to control for prior expectations and find symmetric reactions in the bond and equity markets for rating announcements.

2.3. The procyclical nature of ratings

The current literature also recognizes that significant macroeconomic cycles affect rating changes. This results in rating standards being characterized as procyclical. In other words, the ratings standards are different in times of economic expansion vs economic recession. The current literature also recognizes that the level of impact differs for downgrades and upgrades and for firms with different ratings (Altman and Kao, 1992; Koopman, Lucas, & Monteiro, 2006). The result is that firms' ratings are overly pessimistic during times of a struggling economy and overly optimistic during times of economic boom (Auh, 2015). However, the literature suggests that issuers of the same rating grade change (migrate) at different rates. This heterogeneity of change persists even after accounting for economic conditions and industry sector (Frydman & Schuermann, 2008).

CRAs are aware of the cyclic nature of their ratings and have attempted to produce stable ratings to satisfy clients who find it costly to frequently alter trading decisions that are based on ratings. However, commonly statistical smoothing approaches to stabilize ratings "through-the-cycle" tend to wait to detect whether the change in rating are both permanent and larger than one notch. This delay in smoothing contributes to the underreaction to rating changes (Figlewski, Frydman & Liang, 2012).

Dang and Partington (2014) attempt to describe the mechanism that lead to the cyclic nature of credit ratings. They show that during times of changing macroeconomic environments, the "through-the-cycle" approach often means that the lagged timing of the downgrade accentuates the already negative movement in credit quality. More specifically, there is an interaction between a bonds rating history and the duration of its current ratings that deteriorates over time. They also show that the deterioration is stronger for downgrades and debt in the speculative versus investment category.

Investment Grade	AAA	19
	AA+	18
	AA	17
	AA-	16
	A+	15
	A	14
	A-	13
	BBB+	12
	BBB+	11
	BBB-	10
Speculative	BB+	9
	BB	8
	BB-	7
	B+	6
	B	5
	B-	4
	CCC+	3
	CCC	2
	CCC-	1

Fig. 1. Ratings Assignments and Coding.

Table 1
Descriptive Statistics.

Event	Number of Useable Returns
Rating Upgrades	*1465*
Rating Upgrades during Economic Expansion	1364
Rating Upgrades during Recession	101
Rating Downgrades	*2257*
Rating Downgrades during Economic Expansion	1755
Rating Downgrades during Recession	502
CreditWatch Negative	*2688*
CreditWatch Negative during Economic Expansion	2162
CreditWatch Negative during Recession	526
CreditWatch Positive	*922*
CreditWatch Positive during Economic Expansion	846
CreditWatch Positive during Recession	76

We examine mean excess stock returns, utilizing an equally weighted index and a four-factor model, for firms that receive an announcement from a credit rating agency. Our sample examines the time window (0, +1), for all firms with a credit rating above CC+ and with a minimum of 300 trading days beginning 61 days after the event.

3. Data and methodology

The goal of this paper is to examine market reactions to credit rating changes during different economic environments. One stream of literature has documented (although piece-meal) the equity and debt market reaction to credit rating events. A different line of literature has recognized that credit ratings are procyclical and has investigated the nature of those cycles. However, aside from Gehrlein and McInish (1985) who only look at bond risk premia, we are unaware of any literature that has focused primarily on the differences in market reactions to rating events across these cyclic economic environments. With the knowledge that rating agencies are overly pessimistic during times of economic struggle, it should follow that negative rating news is unexpected and markets will react more strongly to these events. Therefore, we contribute to the literature by addressing two primary hypotheses:

H1. Markets react more strongly to credit rating downgrades during times of overall market distress.

H2. The response to a credit rating adjustments differ during times of economic expansion.

We restrict our sample to U.S. corporate issuers and gather credit rating information from Standard and Poor's (S&P). We use S&P's rating since their rating adjustments tend to lead other rating agencies' adjustments (Almeida, Cunha, Ferreira, & Restrepo, 2017) and they are also more likely to make ratings revisions. We are interested in the main credit rating events: downgrades and upgrades, along with negative and positive watchlist designations. Ratings information is gathered from Compustat while stock prices are acquired from CRSP. Credit ratings are numbered where AAA = 19, AA+ = 18… (see Fig. 1). We remove firms with ratings below CCC– and all non-rated firms. Firms with ratings below CCC– are either in default or default is perceived as imminent. These firms are too close to bankruptcy and we remove them to protect the integrity of our findings. We employ Eventus to capture abnormal returns, utilizing a four-factor model. Similar to Hand et al. (1992), we apply an equally weighted index and calculate cumulative abnormal returns over a window of (0, +1). We also follow Hand et al. in establishing market model parameters using the 300-day window that begins +61 days after the event date, to acknowledge the theory that negative (positive) stock returns precede ratings adjustments.

Table 1 shows that there were 1465 rating upgrades in our sample period. Most of the upgrades (1364) came during an expansionary period. Our sample also includes 2257 rating downgrades with a little over 20% of them coming during an economic downturn. We also see 2688 negative CreditWatch warning, mostly during positive economic times and 922 positive CreditWatch announcements, with only 76 coming during a recession.

We follow Auh (2015) in establishing the procyclical nature of credit ratings manifested in the median credit risk being lower (higher) during an economic downturn (expansion) for bonds with similar ex ante ratings. See Fig. 2 for our recession dates.

Peak	Trough	Length
July 1990	March 1991	8
March 2001	November 2001	8
December 2007	June 2009	18

Fig. 2. Recession Dates.

Table 2
Credit Rating Changes.

Sample	Mean Cumulative Abnormal Return	N
All Downgrades	−1.40%*** (−13.446)	2257
Downgrades During Recession	−1.76%*** (−6.277)	502
Downgrades During Expansion	−1.30%*** (−13.247)	1755
All Upgrades	0.34%*** (3.755)	1465
Upgrades During Recession	0.82%* (1.752)	101
Upgrades During Expansion	0.31%*** (3.369)	1364

Mean abnormal excess returns over the window of (0, +1) for firms with a credit rating change. We utilize an equally weighted index and consider a four-factor model with factors gathered over a 300-day period beginning 61 days after the event of interest. Events with too few estimation period days are dropped. Additionally, we drop firms without a CUSIP, firms without a credit rating and firms with an initial credit rating below CCC–.
The t-statistics are given in parentheses and are based on portfolio time series. ***, **, * indicate significance at the 0.001, 0.01 and 0.05 levels, respectively.

4. Results

4.1. Credit rating changes

We first confirm prior research results by examining excess stock returns over the (0, +1) window for firms that received a credit rating downgrade. Examining 2,257 events with useable returns, Table 2 shows that firms with a credit rating downgrade experienced a mean excess stock return of −1.40%. We then examine if this return is pronounced during times of economic distress. In line with our hypothesis, for the 502 rating downgrades that occurred during a recession, the excess return over the time window (0, +1) is −1.76%. For the 1755 events that occur during economic expansion, we see excess return of −1.30% over the designated time window. Therefore, markets are overly pessimistic when a rating is downgraded during time of economic uncertainty. Auh (2015) suggests that the rating agencies are overly pessimistic during times of economic contraction. We show that the markets also behave in the same way.

Next, we examine firms that have experienced a rating upgrade. Table 2 shows that for the 1465 firms with useable returns, we see excess return of 0.34% for the (0, +1) time window. Once again, we partition this sample by the economic environment and see that there was a mean excess return of 0.82% for the 101 events with useable returns during the recessionary period. We can surmise that market participants realize that the rating was overly pessimistic and then the new credit rating news confirms that position. For the 1364 events with useable returns during economic expansion, we see excess return of 0.31% for the (0, +1) time window. In this case, the markets are overreacting to the positive news during times of economic contraction, in line with our expectations.

4.1.1. By investment grade

We further explore the rating downgrades and examine if there is a difference between market reactions for investment and non-investment grade status. We also partition our sample to only include those firms with downgrades that pushed the firm across the non-investment grade threshold.

Table 3 shows that all investment grade downgrades experienced a CAR of −0.43% over the (0, +1) time window. This is much lower than the −1.40% overall mean return for all downgraded firms. As hypothesized, the effect is greater during times of economic contraction. During recessions, the CAR for investment grade firms is −1.08% while it is −0.27% during expansions.

Table 3 also shows that all non-investment grade firms see a CAR of −2.32% with a larger effect during economic expansion. This contrasts with our other findings and contrary to our hypotheses. Non-investment grades firms are excessively risky and perhaps avoided during economic contraction. Therefore, there isn't an abundance of sellers in this environment as the securities are not widely held.

In the last part of Table 3, we examine the 'fallen angels,' or the firms with credit rating downgrades that pushed the firm from investment grade to non-investment grade. We see firms that cross this threshold see a CAR of −2.21%. Once again, the effect is pronounced during times of economic contraction.

Table 3 also provides results for firm upgrades separated by investment grade status. We expect that rating upgrades will be accompanied by stronger price reactions during times of economic expansion. Our findings show that all investment grade upgrades experience a CAR of 0.30%. The effect is not significant for the upgrades that occur during a recession, but we do see an effect during times of expansion. The same can be said for the non-investment grade firms.

Table 3 also shows that firms that cross into investment grade status are rewarded more strongly by markets. While this result is not in line with our hypothesis, it does recognize that the few firms that are able to make this adjustment are rewarded appropriately by the markets. Firms that cross from non-investment grade into investment grade during economic contraction are rare and markets react in a manner that recognizes this special case.

Table 3
Credit Rating Changes by Investment Grade standing.

Sample	Mean Cumulative Abnormal Return	N	Sample	Mean Cumulative Abnormal Return	N
All Investment Grade Downgrades	−0.43%*** (−4.058)	1,083	All Investment Grade Upgrades	0.30%** (2.692)	555
Investment Grade Downgrades During Recession	−1.08%*** (−3.292)	217	Investment Grade Upgrades During Recession	0.69% (0.918)	26
Investment Grade Downgrades During Expansion	−0.27%*** (−2.584)	866	Investment Grade Upgrades During Expansion	0.28%** (2.502)	529
All Non-Investment Grade Downgrades	−2.32%*** (−11.067)	899	All Non-Investment Grade Upgrades	0.51%*** (3.419)	745
Non-Investment Grade Downgrades During Recession	−1.78%*** (−3.472)	221	Non-Investment Grade Upgrades During Recession	0.85% (1.275)	61
Non-Investment Grade Downgrades During Expansion	−2.50%*** (−12.191)	678	Non-Investment Grade Upgrades During Expansion	0.48%*** (3.098)	684
All 'Fallen Angel' Downgrades	−2.21%*** (−7.795)	275	All Non-Inv to Inv Upgrades	0.65%*** (2.657)	165
'Fallen Angel' Downgrades During Recession	−3.98%*** (−5.166)	64	Non-Inv to Inv Upgrades During Recession	2.23%* (2.154)	14
'Fallen Angel' Downgrades During Expansion	−1.67%*** (−5.996)	211	Non-Inv to Inv Upgrades During Expansion	0.51%* (2.048)	151

Mean abnormal excess returns over the window of (0, +1) for firms with a credit rating changes. We utilize an equally weighted index and consider a four-factor model with factors gathered over a 300-day period beginning 61 days after the event of interest. Events with too few estimation period days are dropped. Additionally, we drop firms without a CUSIP, firms without a credit rating and firms with an initial credit rating below CCC–. The t-statistics are given in parentheses and are based on portfolio time series. ***, **, * indicate significance at the 0.001, 0.01 and 0.05 levels, respectively.

4.2. CreditWatch

We also examine how markets perceive CreditWatch additions during times of economic distress against times of economic expansion. We first consider firms that have received a 'Watch Negative' warning from S&P. For the 2688 events with useable returns, Table 4 shows mean excess return of −1.67% for all firms that receive a negative warning. Partitioning this sample, we find that for the 526 useable negative events that occur during a recession, the effect is much greater with an average of −2.61%. Conversely, when firms receive a negative warning during times of economic growth, the mean excess return is much lower at −1.44%. Once again, we see markets reacting more strongly to unfavorable rating news during times of economic distress. Market participants know that rating agencies are overly pessimistic during these times. Knowing that CRAs have already assigned overly cautious ratings, participants are right to flee these firms if more bad news arrives.

Considering firms with 'Watch Positive' designations, we find that a mean excess return of 0.57% is produced for the 922 useable events. When firms receive positive CreditWatch news during recessionary times, we can draw no conclusions, mainly due to the smaller sample size. When firms receive positive rating news during expansionary times, the mean excess return is slightly higher at 0.67%. Similar to prior research (Griffin and Sanvicente, 1982; Dichev and Piotroski, 2001), we can conclude that positive rating news is not as valuable to market participants, regardless of whether it's during economic expansion or contraction.

4.3. Regression results

We confirm our results by regressing the mean excess returns onto variables of interest. This approach allows us to improve upon the univariate results shown previously and provides an opportunity to reinforce our results using a multivariate approach. We first

Table 4
CreditWatch List.

Sample	Mean Cumulative Abnormal Return	N
All 'Watch Negative'	−1.67%*** (−16.006)	2688
'Watch Negative' During Recession	−2.61%*** (−7.182)	526
'Watch Negative' During Expansion	−1.44%*** (−15.692)	2162
All 'Watch Positive'	0.57%*** (4.351)	922
'Watch Positive' During Recession	−0.50% (−0.779)	76
'Watch Positive' During Expansion	0.67% (5.180)	846

Mean abnormal excess returns over the window of (0, +1) for firms that have been placed on a CreditWatch list. We utilize an equally weighted index and consider a four-factor model with factors gathered over a 300-day period beginning 61 days after the event of interest. Events with too few estimation period days are dropped. Additionally, we drop firms without a CUSIP, firms without a credit rating and firms with a credit rating below CCC–.
The t-statistics are given in parentheses and are based on portfolio time series. ***, **, * indicate significance at the 0.001, 0.01 and 0.05 levels, respectively.

Table 5
Regression.

Panel A: Dependent variable:CAR (0, +1)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rating change	0.0079***	0.0063***	0.0071				
	(0.001)	(0.001)	(0.001)				
Credit Watch Negative				−0.0253***	−0.0229***		
				(0.003)	(0.003)		
Credit Watch Positive						0.0253***	0.0267***
						(0.003)	(0.003)
Recession		0.0013	−0.0044		−0.0173 (0.012)		−0.0125*
		(0.004)	(0.005)				(0.007)
Ratings change × recession		0.0101*					
		(0.006)					
Credit Watch × recession					−0.0125*		−0.0173
					(0.007)		(0.139)
Fallen Angel			0.0041				
			(0.006)				
Ratings change × recession × fallen angel			0.0200**				
			(0.009)				
R^2	0.0259	0.0316	0.0330	0.0127	0.0151	0.0127	0.0151
F Value	47.01***	19.83***	12.87***	64.70***	23.81***	64.70***	23.81***
N	3722	3722	3722	3610	3610	3610	3610

Panel B: Dependent variable: CAR (0, +30)

Variable	(1)	(2)	(3)
Rating change	0.0027 (0.002)		
Credit Watch Negative		−0.0205*** (0.006)	
Credit Watch Positive			0.0206*** (0.006)
Recession	−0.0044 (0.014)	−0.0249 (0.027)	−0.0258* (0.015)
Ratings change × recession	0.0059 (0.014)		
Credit Watch × recession		−0.0009 (0.030)	0.0009 (0.030)
R^2	0.0013	0.0045	0.0045
F Value	0.90	5.25***	5.25***
N	3722	3610	3610

Mean abnormal excess returns over the window of (0, +1) for firms with a credit rating change or credit watch action regressed onto variables of interest. We utilize an equally weighted index and consider a four-factor model with factors gathered over a 300-day period beginning 61 days after the event of interest. Events with too few estimation period days are dropped. Additionally, we drop firms without a CUSIP, firms without a credit rating and firms with an initial credit rating below CCC–. Credit Watch Negative/Positive is a dummy variable taking a value of 1 if a firm receives a credit watch action. Recession is a dummy variable that takes a value of 1 during NBER recessions and 0 otherwise. Fallen Angel is a dummy variable that takes a value of 1 when a firm's rating change moves the firm from investment grade to non-investment grade status. Standard errors are given in parentheses and clustered at the firm level. ***, **, * indicate significance at the 0.01, 0.05 and 0.10 levels, respectively.

confirm the univariate results and show them in the first column of Table 5. Running an OLS regression with standard errors clustered at the firm level, we see that firm rating changes are positively correlated to mean excess returns. In other words, when there is an upgrade (downgrade), the equity prices of firms show positive (negative) excess return.

We next introduce a recession dummy interacted with our ratings change variable. The second column in Table 5 shows that the results of a ratings change on excess returns are pronounced during a recession. These results echo the results shown in Table 2. The third column of Table 5 examines firms based on their investment grade status, with particular attention paid to 'fallen angel' firms. The results show that firms with a rating change during a recession that pushes them from investment grade status to non-investment grade status experience greater CARs.

We next examine firms that received a credit watch action. Columns (4) and (5) of Table 5 show that firms with a Credit Watch Negative notification experience negative CARs. Additionally, the abnormal return is amplified during recessions. However, while firms that receive a Credit Watch Positive designation experience positive excess returns, recessions don't play a significant role on excess returns. These results are consistent with the findings in Table 4.

It might be argued that our results are based on the notion that the new ratings news is severe and worse than expected. If markets are efficient, investors should see through the original rating agency's pessimism. Therefore, our results could be driven by markets reacting to new news that is worse than expected. To address this concern, we consider a long-window test and examine excess returns over a (0, +30) time window.[1] The results are shown in Panel B of Table 5. We see that the interacted variables of interest are

[1] We thank an anonymous referee for this comment.

not significant. This helps confirm that our prior results were based on the markets' inability to see through the pessimism of the CRAs.

5. Conclusion

We investigate market reactions to changes in credit rating and additions to CreditWatch lists. Adding to previous research, we consider how equity markets react to changes in CRA assignments. Since ratings are procyclical, leading to overly pessimistic ratings during times of economic distress, we expect equity markets to react more strongly to unfavorable CRA actions when the economy is contracting. Our results show that equity markets punish firms more harshly during times of economic contraction than during times of economic expansion.

We also consider how markets treat CreditWatch announcements. We again consider the macroeconomic environment and find that markets react more strongly to negative warnings during times of economic contraction. In short, our findings show that markets behave differently in different macroeconomic environments.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.najef.2018.08.013.

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