Charles University in Prague

Faculty of Social Sciences
Institute of Economic Studies

MASTER THESIS

Does the Role of the Rating Prior to the Announcement Explain Different Influence of Credit Rating Downgrades and Upgrades on Stock Prices?

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Declaration of Authorship

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Prague, May 11, 2015

Signature

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Abstract

The thesis examines whether the role of credit rating prior to the announcement of credit rating change is the neglected factor explaining in large extent the paradox investigated in prior papers that downgrades influence the stock prices of company but upgrades not. It is motivated by the notion that credit rating changes from low credit rating classes influence the stock price of company more distinctively than changes from higher credit rating classes and there is proportionally more downgrades from low credit rating classes than upgrades. The large sample of credit rating changes including proportionally more upgrades from low credit rating classes than downgrades is collected and the results suggesting the influence of downgrades on stock prices of company and any influence of upgrades persist. Furthermore when controlled for credit rating prior to the announcement of credit rating change, magnitude of credit rating change, crossing the investment-speculative barrier, credit rating changes within and across credit rating categories, consecutive credit rating changes in the same direction and industry sector of issuer all the results are consistent with the original conclusions proposing significant stock price reaction to announcements of credit rating downgrades and no stock price response to announcements of upgrades.

JEL Classification	G00, G14, G20, G30, G32, G33
Keywords	credit rating, credit rating change, credit rating downgrade, credit rating upgrade, market response, market efficiency

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Abstrakt

Diplomová práce se zabývá otázkou, zda je původní úvěrový rating před ohlášením změny ratingu nezohledněným faktorem, který z velké části vysvětluje paradox popsaný v literatuře, podle kterého pouze snížení ratingu ovlivňuje ceny akcií společnosti a zvýšení ratingu vliv na ceny akcií nemá. Tato myšlenka je motivována poznatkem, že změna ratingu mezi nižšími ratingovými třídami ovlivňuje ceny akcií společnosti výrazněji než změna ratingu mezi vyššími ratingovými třídami a z nižších tříd probíhá proporcionálně více snížení ratingu než zvýšení. Autorem byl shromážděn velký vzorek ratingových změn, který naopak obsahuje proporcionálně více zvýšení ratingu z nižších ratingových tříd než snížení, a přesto se výsledky nezměnily. Snížení ratingu je doprovázeno reakcí cen akcií a zvýšení ratingu žádnou reakci nevyvolává. Navíc, pokud je při analýze výsledků zohledněn vliv původního ratingu před jeho změnou, vliv velikosti změny, vliv změn mezi investičním a spekulativním ratingovým stupněm, vliv změn uvnitř ratingové kategorie a mezi kategoriemi, vliv po sobě jdoucích ratingových změn ve stejném směru a pokud je zohledněno odvětví hodnoceného emitenta, pak všechny výsledky jsou v souladu s výchozím tvrzením, že ceny akcií společnosti nijak nereagují na zvýšení ratingu, ale reagují na jeho snížení.

Klasifikace	G00, G14, G20, G30, G32, G33
Klíčová slova	Úvěrový rating, změna ratingu, snížení ratingu, zvýšení ratingu, tržní reakce, tržní efektivita

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Acronyms

CAR Cumulated abnormal returns

CRAs Credit rating agencies

ESMA European Securities and Markets Authority

GICS Global Industry Classification Standard

NYSE New York Stock Exchange

S&P Standard & Poor’s Ratings Services

Master Thesis Proposal

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Proposed Topic:

Does the Role of the Rating Prior to the Announcement Explain Differing Influence of Credit Rating Downgrades and Upgrades on Stock Prices?

Topic Characteristics:

Vast literature starting with Holthausen and Leftwich (1986) investigates whether changes in credit ratings from a recognized rating agency contain a significant informational content that influence stock price of company. Later studies particularly focus on questions whether credit rating downgrades have higher impact on stock prices than credit rating upgrades and whether the influence of credit rating change is higher for companies moving between investment rating grade and speculative rating grade. Surprisingly, papers such as Ederington and Goh (1993) suggested that only downgrades affect stock prices of company but not upgrades. Jorion and Zhang (2007) found out that the influence of credit rating change on stock prices grows for lower credit rating classes. Simultaneously they recognized proportionally more downgrades of credit ratings from lower credit rating classes than upgrades in the dataset. If they control for the prior credit rating class then upgrades prove to have an informational content (of half size of informational content of downgrades). The practice of controlling for the class was also supported by high significance of variable representing prior rating for size of cumulative abnormal returns representing change of stock price caused by change of credit rating. Therefore Jorion and Zhang (2007) stated that the puzzling relation was explained in large extent. However their solution implicitly expects that also the datasets used by the other authors exhibit the same distribution of downgrades and upgrades in terms of higher proportion of credit rating downgrades in lower credit rating classes. Since distribution of downgrades and upgrades in dataset is not mentioned in preceding papers it is a motivation for revisiting the results of Jorion and Zhang (2007) with use of new dataset. Furthermore larger dataset is needed because practice of controlling for credit rating prior to the announcement markedly decreases size of subsets and its statistical relevance. The analysis will also include the questions whether the influence of credit rating change is higher (i) in case of crossing investment-speculative barrier, (ii) when the change of higher magnitude appears, (iii) when there are more consecutive changes in the same direction within given period, (iv) in case of change between broad rating class. And the hypothesis if the influence of credit rating downgrades and upgrades on stock prices is comparable across different industries will be tested.

Hypotheses:

1. Credit rating downgrades influence the stock price of company but upgrades not
2. When controlled for the credit rating prior to the announcement, credit rating upgrades influence the stock price of company
3. The influence of credit rating change on stock price of company grows for issuers with lower credit rating prior to the announcement of credit rating change
4. Set of hypotheses concerning the different distribution of downgrades and upgrades in the dataset and its influence on overall results
   - i) The influence of credit rating change on stock price of company is higher when investment-speculative barrier is crossed and there is proportionally more downgrades crossing the barriers than upgrades in the dataset

ii) The influence of credit rating change on stock price of company is higher for credit rating changes of higher magnitude and there is proportionally more downgrades of higher magnitude than upgrades in the dataset
iii) The influence of credit rating change on stock price of company is higher when the credit rating change follows credit rating change in the same direction within one year and there is proportionally more consecutive downgrades than upgrades in the dataset
iv) The influence of credit rating change on stock price of company is higher for credit rating changes across two broad credit rating categories (e.g. from BB- to B+ by S&P) than within one credit rating category (e.g. from BB- to BB by S&P) and there is proportionally more downgrades across two broad credit rating categories than upgrades in the dataset

5. When controlled for the industry the credit rating upgrades influence the stock price of company

Methodology:

The first hypothesis is tested with use of event study methodology. In line with previous research the cumulative abnormal returns in a three-day window around the credit rating change are computed. Separately for credit rating downgrades and upgrades it is tested the hypothesis that there are not any cumulative abnormal returns around the event.

Downgrades and upgrades are divided in the groups concerning their credit rating prior to the announcement of credit rating change. Separately or individual groups of credit rating upgrades and downgrades the hypothesis that there are not any cumulative abnormal returns around the event is tested. Simultaneously cumulative abnormal returns for these groups are compared and the main attention is paid to the question whether the influence of credit rating change on stock price is growing with lowering the credit rating prior to the credit rating announcement.

For testing the set of hypotheses that investigate the possible influencing of the results by different distribution of downgrades and upgrades in the dataset the credit rating downgrades are separated to the several groups (credit rating changes crossing investment-speculative barrier, credit rating changes of different magnitudes, credit rating changes following the credit rating change in the same direction within one year, credit rating changes across and within the category). Influence of credit rating changes from mentioned groups on stock prices is discussed.

The first four hypothesis is also tested with use of regression model where it is observed how the variables representing credit rating prior to the announcement, magnitude of credit rating change and dummy variables standing for crossing the investment-speculative barrier, moving across credit rating categories and consecutive changes explain the cumulative abnormal returns.

Finally credit rating changes are divided in the groups concerning the industry of issuer. Separately for downgrades and upgrades it is again tested if there are not any cumulative abnormal returns around the event for each industry.

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Author **Supervisor**

Introduction

This thesis examines whether the credit rating prior to the announcement of credit rating change is the neglected factor that explain in large extent the different influence of credit rating downgrades and upgrades on stock price of company. The first papers focusing on the influence of credit rating changes on stock market do not divide the credit rating downgrades and upgrades and they examine the informational content of credit rating changes all together. These market efficiency studies investigate if there is any significant stock or bond price adjustment when the credit rating of issue or issuer is changed or if all information is already incorporated in the prices when the credit rating change is announced. This first group of research papers produce rather conflicting results when Weinstein (1977) or Pinches and Singleton (1978) propose no evidence of a price response to credit rating changes while Katz (1974) or Griffin and Sanvicente (1982) find the informational content of credit rating changes that affect the stock and bond prices. Holthausen and Leftwich (1986) argue that the conflicting conclusions are caused by long period over which the price reaction to credit rating change is investigated and that other unrelated events influence the results. Therefore they employ an event study methodology and focus on stock price reactions to credit rating changes in the two-day period beginning with the announcement of credit rating change. With the new methodology Holthausen and Leftwich (1986) find significant stock price reaction to credit rating downgrades, but any reaction to credit rating upgrades. Many following papers confirm their results and broaden the analysis with observing whether further characteristics of credit rating changes as magnitude of credit rating change influence the stock prices of company. Hand, Holthausen and Leftwich (1992), Ederington and Goh (1999) and Dichev and Piotroski (2001) suggest that credit rating downgrades from lower credit rating classes influence the stock price of company more distinctively which motivates Jorion and Zhang (2007) to focus on the role of credit rating prior to the announcement of credit rating change in more detail. They argue that credit rating changes between low credit rating classes are connected with higher change in default probabilities than between high credit rating classes and they conclude that when they control for credit rating prior to the announcement the credit rating upgrades influence the stock price of company as well.

The objective of this thesis is to test whether the role of credit rating prior to the announcement really explain the different influence of credit rating downgrades

and upgrades on stock price of company. Controlling for credit rating prior to the announcement influence the overall results suggesting that credit rating downgrades influence the stock price of company, but upgrades not, only if there is proportionally more credit rating downgrades from lower credit rating classes than upgrades. The sample collected by author exhibit the opposite characteristics (proportionally more credit rating upgrades from low credit rating classes than downgrades) and the results are still consistent with the overall results published in prior papers when credit rating downgrades are connected with 13 times larger cumulated abnormal returns than upgrades and only cumulated abnormal returns around the announcement of credit rating downgrades are statistically significant. The credit rating changes are divided into groups according to their prior credit ratings and the hypotheses whether the credit rating upgrades influence the stock price of company and whether the cumulated abnormal returns and their statistical significance are growing for credit rating changes from lower credit classes are investigated. There not detected any significant cumulated abnormal returns for any group of credit rating upgrades. Simultaneously the results are not supportive to larger influence of credit rating changes from lower credit rating classes. These results are not consistent with Jorion and Zhang (2007) and they are based on analysis of larger groups of credit rating changes since the collected dataset consists of slightly more credit rating downgrades and more than 3 times more credit rating upgrades. Explanation of different influence of credit rating changes on stock price of company proposed by Jorion and Zhang (2007) is based on notion that different distribution of credit rating downgrades and upgrades possibly influence the overall results. Therefore the influence of credit rating changes of higher magnitude, credit rating changes crossing the investment-speculative barrier, credit rating changes within and across credit rating categories and consecutive credit rating changes in the same direction is examined and it is discussed whether different distribution of credit rating changes concerning the mentioned specifications influence the overall results. The credit rating changes of higher magnitude, credit rating changes across credit rating categories and consecutive downgrades prove to influence the stock price of company more distinctively and there is proportionally more credit rating downgrades of higher magnitude, more credit rating downgrades across credit rating categories and more consecutive credit rating downgrades, but even if it is controlled for all of it the results are still clear and consistent with the statement that credit rating downgrades influence the stock price of company and upgrades not. Furthermore larger collected dataset allows to divide the credit rating changes into ten groups concerning the industry classification of issuers. The analysis is run in order to test whether the overall results are not driven by the results exhibited by companies classified in one or few industry sectors and to explore whether there is any sector exhibiting opposite results from the

others. There are not detected any significant cumulated abnormal returns connected to credit rating upgrades for any industry sector and the results across sectors are consistent with the overall results. All together the thesis is consistent with the papers pointing out that credit rating downgrades influence the stock price of company and upgrades not. Any set of controlling for credit rating prior to the announcement of credit rating change, credit rating change magnitude or other specific credit rating changes do not support the notion proposed by Jorion and Zhang (2007) that after excluding selected credit rating changes the credit rating upgrades influence the stock price of company.

The rest of the thesis is structured as follows: Chapter 1 presents the practice of credit rating assessment and the literature focusing on influence of credit rating changes on stock price of company. Chapter 2 introduces the hypotheses investigated in the thesis and the motivation for stating them. Chapter 3 describes the methodology and data collection. Moreover the descriptive statistics are presented and distribution of credit rating downgrades and upgrades is discussed. Chapter 4 summarizes the results and discusses their implications. Chapter 5 is a conclusion.

1 Literature review & Introduction to credit ratings

The goal of this master thesis is to investigate whether the observed empirical regularity that only credit rating downgrades influence stock price of company (but not upgrades) is possible to explain in large extent through counting for credit rating prior to the announcement of credit rating change. To make this effort clear, the introduction to credit ratings is provided and the most influential papers investigating the market response to credit rating changes are presented. The subchapter 1.1 defines the activities of credit rating agencies (CRAs) and describes their practice of credit rating announcement for selected issues and issuers when the main attention is dedicated to credit rating changes. Following subchapter 1.2 introduces the literature focusing on influence of credit rating changes on stock market, especially on question whether credit rating change has any informational content for financial markets. In the subchapter 1.3 the papers engaged in investigating the different influence of credit rating downgrades and credit rating upgrades on stock prices of company are introduced.

1.1 Credit ratings and Credit rating agencies (CRAs)

The first subchapter introduces the basic terms connected to credit ratings and the practice of credit rating assessment. This short overview is focused only on terms that are necessary for the purposes of the thesis, especially on possibility to reassess credit rating by CRAs.

CRAs are companies that publish general-purpose credit ratings (issue and issuer credit ratings), rating opinions and outlooks, currency ratings, different types of special-purpose credit ratings (ratings for capital market transactions or entities, recovery ratings or other ratings limited by the type of credit or transaction structures), etc.. This thesis is focused on general-purpose credit ratings that consists of long-term and short-term credit ratings for both issuer and issue ratings. As it is defined by credit rating agency Standard & Poor's Ratings Services (S&P)[1] issuer credit rating is a

[1] Standard & Poor's Ratings Definitions published by Standard and Poor's Financial Services on 22.6.2012

forward-looking opinion about an obligor's overall creditworthiness in order to pay its financial obligations. Issue credit ratings represent opinion of CRAs about the creditworthiness of an obligor with respect to a specific financial obligation, but it is still closely connected to overall creditworthiness of issuer. Both issuers and issues are classified into credit rating categories. In *Table 1.1.1* rating categories used by three major CRAs (Moody's Investors Service, Standard & Poor's Ratings Services and Fitch Ratings) are introduced. In order to better describe the creditworthiness of issue or issuer, one broad credit rating category (represented by letters) can be divided into three notches with use of numbers or plus and minus signs (for the thesis purposes these further divisions of credit rating categories are always called credit rating classes).

The higher the credit rating class the higher the assessed creditworthiness of issuer or its issue. For practical purposes of further work with the credit rating classes, they are transformed to cardinal scale when the class with the highest assessed creditworthiness is marked as credit rating class 1 and so on.

Table 1.1.1: Long-term credit rating classes

Credit rating classes			
Cardinal Scale	Moody's	Standard & Poor's	Fitch
1	Aaa	AAA	AAA
2	Aa1	AA+	AA+
3	Aa2	AA	AA
4	Aa3	AA-	AA-
5	A1	A+	A+
6	A2	A	A
7	A3	A-	A-
8	Baa1	BBB+	BBB+
9	Baa2	BBB	BBB
10	Baa3	BBB-	BBB-
11	Ba1	BB+	BB+
12	Ba2	BB	BB
13	Ba3	BB-	BB-
14	B1	B+	B+
15	B2	B	B
16	B3	B-	B-
17	Caa1	CCC+	
18	Caa2	CCC	CCC
19	Caa3	CCC-	
20	Ca	CC	CC
21	C	C	C
22		D (SD,R)	D

Source: European Securities and Markets Authority (ESMA)

Issues and issuers with credit rating classified into upper ten credit rating classes are considered to be of an investment grade. Issuers and issues with lower credit ratings are regarded as having significant speculative characteristics and they are considered to be of non-investment or speculative grade. Credit rating changes between credit rating classes of different grades are called as credit rating changes across the investment-speculative barrier. The credit rating category D indicates that issue or issuer is in payment default. As the sample collected for the thesis purposes consists of S&P long-term issuer credit ratings, categories SD and R used exclusively by S&P in case of issuer credit ratings are introduced as well. An issuer rated SD has selectively defaulted on a specific issue or class of obligations, but S&P believes that "issuer will continue to meet its payment obligations on other issues or classes of obligations in a timely manner." An issuer rated R is under regulatory supervision. Detailed definitions of all long-term issue and issuer credit rating classes are available in **Appendix A**.

CRAs have a possibility to change credit rating of issuer or issuer whenever they decide that this action is required. Credit rating is possible to change in both directions, to higher or to lower credit rating class. If the conditions influencing the creditworthiness of issue or issuer sharply change, the CRAs are not limited to change the credit rating of issue or issuer in larger extent. Issue or issuer can be immediately reclassified to any credit rating class that CRAs consider as the most appropriate.

Table 1.1.2 illustrates the distribution of credit rating transitions. With use of data collected by European Securities and Markets Authority[2] (ESMA), transition matrix presenting the average annual credit rating migrations was constructed. The transition matrix is based on data collected from 2000 to 2012 and the overview of credit rating transitions among credit rating categories for each individual year is available in **Appendix B**. Sample consists of all S&P long-term issuer credit ratings without any limitation for specific area or industry. The transition matrix presents only credit rating transitions across credit rating categories. The changes within one credit rating category across credit rating classes (e.g. from BB to BB+) are not recorded and the matrix was adjusted for withdrawn ratings.

[2] European Securities and Markets Authority is an independent EU Authority that aims to contribute to safeguarding the stability of the European Union's financial system. In its CEREP database information on credit ratings issued by the CRAs registered or certified in the EU are provided.

Table 1.1.2: Average adjusted S&P annual broad migration rates

	AAA	AA	A	BBB	BB	B	CCC	CC	SD,D,R
AAA	**81.09**	17.71	0.77	0.00	0.00	0.31	0.12	0.00	**0.00**
AA	0.39	**87.01**	11.68	0.85	0.01	0.04	0.00	0.01	**0.01**
A	0.02	2.02	**91.72**	5.67	0.32	0.08	0.05	0.05	**0.06**
BBB	0.02	0.10	3.81	**91.28**	3.93	0.55	0.09	0.07	**0.14**
BB	0.02	0.07	0.09	5.52	**85.03**	7.95	0.59	0.14	**0.57**
B	0.00	0.03	0.13	0.25	6.98	**84.24**	5.75	0.66	**1.95**
CCC	0.00	0.00	0.00	0.08	0.41	22.90	**63.72**	3.28	**9.61**
CC	0.00	0.00	1.59	0.00	2.04	13.22	20.35	**47.00**	**15.79**
SD,D,R	0.00	0.04	0.04	0.09	0.72	9.68	5.88	0.09	**83.47**

Source: ESMA, CEREP database

Numbers at diagonal that are highlighted with bold font represent the average percentage of long-term issuer credit ratings that start and finish the year in the same credit rating category. For example on the average 85.03% of the issuers with BB credit rating at the beginning of the year is also located in the same credit rating category in the end of the year. It means that on the average 14.97% of issuers experience at least one change of its long-term issuer credit rating. In more detail 5.52% of the issuers starting the year with BB credit rating improve their credit rating to category BBB, 0.09% to category A, 0.07% to category AA and 0.02% to the top category AAA. Contrary 7.95% of the issuers move to lower credit rating category B, 0.59% to category CCC, 0.14% to category CC and 0.57% of companies starting the year in BB credit rating category finish the year in payment default or under the regulatory supervision. The highlighted numbers in the last column that present the average percentage of issuers that finished the year in payment default or under the regulatory supervision are growing for lower credit rating categories. When the information about average percentage of issuers from individual credit rating category finishing the year in the payment default is seen as an indicator providing the information about average probability of default for issuers categorized in particular credit rating category then it is visible that the probability of default is changing more dramatically in case of transitions between lower credit rating categories than in case of transitions between higher credit rating categories. As it is discussed later this notion was the starting motivation for Jorion and Zhang (2007) when they decided to examine whether credit rating changes between lower credit rating categories have bigger impact on stock prices of issuers.

Table 1.1.3 presents the average number of credit rating transitions[3] for individual credit rating categories and average number of withdrawals. The table introduces also the information about the average distribution of S&P long-term issuer credit ratings.

Table 1.1.3: Average number of credit rating transitions and withdrawals

Credit rating category	Number of transitions	Number of withdrawals	Share of withdrawals
AAA	113.46	3.38	2.90%
AA	631.00	35.69	5.35%
A	1,613.38	99.69	5.82%
BBB	1,580.69	127.08	7.44%
BB	904.38	103.46	10.27%
B	911.46	125.38	12.09%
CCC	101.31	38.54	27.56%
CC	8.92	7.85	46.79%
SD,D,R	132.31	53.62	28.84%
Total	**5,996.91**	**594.69**	**9.02%**

Source: ESMA, CEREP database

Table 1.1.3 shows that on average the highest number of issuers is classified into middle credit rating categories A, BBB, BB and B. The distribution resembles the shape of the normal distribution, biased to the higher credit rating categories. The last column represents the average share of issuer credit ratings that is withdrawn during the year and this share is growing for lower rated issuers. These two relationships indicated in the table are subjects of discussion about reliability of credit ratings.

Bolton, Freixas and Shapiro (2012) point out that CRAs face conflicts of interests that possibly influence their decision making about credit rating assessments. They state the question how should CRAs act when their principal source of revenue comes from the firms whose products they are rating. From these perspective CRAs compete with each other in effort to obtain clients and they are motivated to understate risks to attract business. Furthermore the CRAs do not offer only rating services but also large number of other services as consulting and then it is even more costly to them to lose the client.

Plenty of paper such as Becker and Milbourn (2011) investigate whether increased competition among CRAs contribute to or prevent from the understating the risks. On one hand in connection to collapse of financial products with the highest

[3] Please notice that even the cases when credit rating of issuer is the same in the end of the year as in the beginning are included in the *Table 1.1.3* as transitions

credit ratings during the crisis starting in 2007 legislative and regulatory calls for increased competition in the highly concentrated CRAs industry appeared. On the other hand higher competition possibly strengthen the conflicts of interests. The efforts to increase the competition are motivated by belief that higher competition could lead to more accurate credit ratings as CRAs announcing misleading credit ratings risk to be crowded out from the market and thus the threat of crowding out can potentially serves as a protection against understating risks of issuers (potential clients). But for example Becker and Milbourn (2011) conclude that higher competition leads to further understating the risks as it arises from their analysis of credit rating's quality before and after Fitch started to be the third important player in CRAs industry (increased ratings levels, decreased correlation between ratings and market-implied yields and deteriorated ability of ratings to predict defaults).

Beside the literature[4] that investigates the reasons why credit ratings issued by CRAs use to prove to be wrong (usually in term of incorrectly assigned risk of default) there is vast literature concerning with the informativeness of credit ratings in general. While the papers introduced in the end of subchapter 1.1 suggest that CRAs announce inaccurate or even misleading information, the papers introduced in subchapter 1.2 investigates if credit rating announcement of credit rating change contains any information at all.

1.2 Market response to credit rating changes

This subchapter introduces the literature focusing on question whether credit rating change provides any informational content to the market. As the capital market efficiency requires that prices fully reflect all available information, it is tested if there is any significant price adjustment when credit rating of issue or issuer is changed. When the market response is measured in terms of bond or stock price response around the announcement of credit rating change.

Katz (1974) examines the bond market efficiency through observation of the price adjustment process of bonds around the announcement of their credit rating reclassifications. Credit rating reclassification is seen as an event around which reaction to this new information is investigated. Katz (1974) develops regression models to forecast the expected yield to maturity of a bond for both rating classes the old (before the credit rating change) and the new credit rating class (after the credit

[4] For overview of the criticism of the CRAs and quality of their credit rating abilities see for example Frost (2007)

rating change) in each of the eighteen months under author's consideration. Yields are computed for twelve months prior to the change, the month when changed occurred and five months after the credit rating change and then they are compared with actual yield to maturity to observe to what degree a price adjustment has taken place. Katz (1974) states that the empirical results based on observation of 115 S&P credit rating changes (95 downgrades and 20 upgrades) of bonds issued by 66 utility companies indicate that there is not any anticipation prior to a public announcement of reclassification. The price adjustment to rating change occurs only after the reclassification is made and according to Katz (1974) the slight lag exists in the adjustment process when 100% adjustment prevails approximately two months after the credit rating change. Katz (1974) suggests that credit rating change include informational content that express itself after credit rating change announcement.

Weinstein (1977) introduces contradictory results to Katz (1974). He follows the same goal as Katz (1974) as he focuses on behaviour of corporate bond prices during the period surrounding a rating change announcement in order to determine whether or not these rating changes have any information content, but instead of yields he decides to concentrate on monthly holding period returns. Weinstein (1977) does not find any effect of a credit rating change announcement on monthly holding period returns after the credit rating change. In opposition to Katz (1974) there is not any informational content of credit rating changes according to Weinstein (1977) and he emphasizes that the results are consistent with the semi-strong form of the efficient markets hypothesis. Weinstein (1977) explains lack of any effect during the month when the credit rating change is announced with "the well-known predictability of bond rating from publicly available information." Surprisingly Weinstein (1977) does not find any effect of credit rating change even in the six months period prior to the credit rating change announcement, but only weak effect in the period from eighteen months to six months prior to the announcement.

While the first papers focus on effect of credit rating change on bond prices, yields or returns the papers focusing rather on effect of credit rating change on stock returns start to appear. The motivation remains still the same and it is the effort to test the informational content of bond rating change in the capital market efficiency context. Pinches and Singleton (1978) examine the effects of bond rating changes on stock prices with use of the monthly return data. They do not find any evidence indicating that the cumulative abnormal returns (measured as cumulative stock return residuals) of companies occur as the result of credit rating change. According to Pinches and Singleton (1978) the changed financial and operating conditions of the companies are realized by the investment community before the rating is changed by

the credit rating agency. And since the CRAs react to the changing financial conditions after the investors had already understood the changes, the credit rating announcements do not provide any informational value.

Nevertheless, Griffin and Sanvicente (1982) publish the paper proposing the results that are not consistent with Pinches and Singelton (1978). They examine the adjustments in stock price of company during the eleven months preceding the credit rating change and during the month when credit rating change is announced. They employ three different approaches in order to measure the abnormal stock price returns. The first derives stock residual returns from the one-factor market model, the second derives residual returns from the two-factor cross-sectional model and the third derives residual returns from the two-factor model when controlled for nonevent or extraneous factors. Additionally Griffin and Sanvicente (1982) analyze the differences between the returns on a portfolio of firms experiencing bond rating changes and the returns on a portfolio of firms individually matched to firms in the event sample on the basis of expected stock return in order to better identify the real abnormal returns caused by credit rating change (controlled portfolio method). With employing more advanced methodology Griffin and Sanvicente (1982) come to the conclusion that the bond credit rating downgrades convey new information to stockholders. They find significant cumulative abnormal returns connected to credit rating downgrades in the month of credit rating announcement and in the preceding eleven months as well. On the other hand they find significant cumulative abnormal returns in the eleven month preceding the credit rating upgrades, but they are not significant in the month of credit rating upgrade announcement.

The results of Griffin and Sanvicente (1982) suggest that there can be differences in the effect of credit rating downgrades and upgrades on stock price of company. It is opening the space for the new discussion. Previous papers investigate the effect of a credit rating change announcement on stock or bond prices and returns for both downgrades and upgrades together. It is examined whether credit rating downgrades and upgrades influence bond or stock prices, but it is not expected that the influence of credit rating downgrades and upgrades could differ. For example when Weinstein (1977) faces to the problem that credit rating downgrades and upgrades are expected to have the opposite effects on monthly holding period returns he employs the practice of multiplying all unexpected returns connected to credit rating downgrades by ‘-1’ in order to work with all credit rating changes together.

As illustrated, the first wave of research on the information content of bond rating changes produce rather conflicting and incomplete results. Weinstein (1977) and

Pinches with Singleton (1978) propose no evidence of a price response at the time of credit rating change. The opposite results are introduced by Katz (1974), Griffin and Sanvicente (1982) but also by Grier and Katz (1976) that focus on effects on average monthly bond prices or by Ingram, Brooks and Copeland (1983) that focus on effects on monthly changes in bond yields.

Holthausen and Leftwich (1986) point out that the main reason for such conflicting results is hidden in the practice of assessing the price reaction to credit rating change over too long period. Both bond and stock prices reactions are investigated with month or week abnormal returns, changes in yields or changes in prices. Then it is very problematic to assure that price reactions are really connected to credit rating changes and not to other events. Therefore Holthausen and Leftwich (1986) employ an event study methodology and focus on stock prices reactions to credit rating changes in the two-day period beginning with the announcement of credit rating change. Holthausen and Leftwich (1986) analyze the influence of credit rating downgrades and upgrades separately and later their paper is recognized as the first paper fully emphasizing the paradox that the empirical results suggest different influence of credit rating downgrades and upgrades on stock prices. Therefore Holthausen and Leftwich (1986) paper is described in more detail.

Holthausen and Leftwich (1986) paper differs from the previous studies mainly in three respects. Firstly they use daily stock price data, as opposed to monthly or weekly data used in previous research, to examine the stock price effect of credit rating agency announcements. It provides more powerful tests and the use of daily data and a narrow announcement window of two days sharply reduces the likelihood that the effect of other disclosures is included in the measured announcement effects. Secondly they control the announcement window for the other disclosures that could also influence the stock price and the observations that could be contaminated by other information are eliminated. Furthermore they employ cross-section in order to investigate the potential determinants of variation in the price impact for credit rating changes. The investigated variables are magnitude of credit rating change and dummy variables reflecting whether bond's grade status is changed, whether the rating change closely follows change in the same direction announced by the other credit rating agency and whether the rating change is a resolution of Credit Watch[5].

[5] As it is described in Holthausen and Leftwich (1986), the Credit Watch List is a service started by S&P in 1981 that warns of probable future bond rating changes

Holthausen and Leftwich (1986) succeeded to collect 1,014 credit rating changes (639 downgrades and 375 upgrades) of straight debt issues (credit rating changes of different issue such as convertible debts or floating rate notes are excluded). Sample consists of Moody's and S&P's credit rating changes for issues of companies with common stock listed on the New York or American Stock Exchange over the period from 1977 to 1982. Each credit rating change for a company results in one sample observation regardless of the number of bonds affected and if a firm has two or more bond issues which are rated differently, Holthausen and Leftwich (1986) select the old and new rating according to the most common rating of the bonds with revised ratings.

In order to estimate abnormal performance of stocks around the credit rating change announcement, they estimate daily prediction errors for each sample company on each event day. In more detail prediction errors are estimated with use of market model (when market model parameters are estimated over the 300 days period beginning 360 days before credit rating change announcement) and continuously compounded rate of return on the common stock of individual firm on event day and continuously compounded rate of return on the equally weighted New York and American Stock Exchange index on event day. Then the estimate of abnormal performance connected to credit rating change is computed as sum of these prediction errors for the announcement day and the day after the announcement and it is called cumulated abnormal returns (CAR).

Holthausen and Leftwich (1986) comment the results separately not only for downgrades and upgrades but also they distinguish credit rating changes across two credit rating categories (e.g. from BB- to B+ by S&P) and within one credit rating category (e.g. from BB- to BB by S&P). Focusing on computed abnormal returns in the event window they summarize that credit rating downgrades are associated with negative abnormal stock returns, when only the abnormal returns detected for credit rating downgrades across credit rating categories are statistically significant. In contrast there are not any significant abnormal returns associated with credit rating upgrades, even for credit rating upgrades across credit rating categories.

Finally, Holthausen and Leftwich (1986) employ regressions in order to better understand cross-sectional variation in abnormal performance (expressed by CAR) in the credit rating change announcement period. While explanatory variables in the regressions estimated for downgrades explain abnormal returns relatively well (when mainly variable representing magnitude of credit rating change and variable reflecting whether credit rating downgrade crosses the line separating investment grade and

speculative grade are statistically significant and associated with larger market reaction expressed by CAR), the regressions estimated for upgrades do not prove to have any relevant explanatory power.

In conclusion the evidence presented by Holthausen and Leftwich (1986) suggests that downgrades published by CRAs are associated with negative abnormal stock returns and CRAs provide information to the capital market. With use of daily data the interest of researchers is moving from the issue whether credit rating change includes any informational content to the capital market to the issue of different influence of credit rating downgrades and upgrades on stock and bond prices.

1.3 Influence of credit rating downgrades and upgrades on stock prices

The last subchapter of Literature review introduces the papers that follow pioneering paper by Holthausen and Leftwich in investigating the differences in market response to credit rating downgrades and upgrades. The first group of papers broaden the knowledge about response to credit rating downgrades and contribute to understanding of possible causes of differences between credit rating downgrades and upgrades. The next group of papers discusses the role of credit rating prior to the announcement of credit rating change. An the last group of papers accepts the different influence of credit rating downgrades and upgrades on stock prices as a fact and endeavor to discuss the new topics that are connected to credit rating changes.

Cornell, Landsman and Shapiro (1989) with use of dataset including 205 credit rating downgrades and 116 credit rating upgrades affirm the conclusions of Holthausen and Leftwich (1986) that only credit rating downgrades have an informational content to capital market and focus on analysis of regressions exploring cross-sectional variation in abnormal returns connected to credit rating change. Since there are not recognized any abnormal returns connected to upgrades, Cornell, Landsman and Shapiro (1989) are engaged only in the analysis of CAR connected to credit rating downgrades. They conclude that stock price response to the new information provided by a bond rating change is related to its net intangible assets. When they broaden the cross-sectional regression for credit rating downgrades with a variable that measures net intangible assets based on current cost data, the explanatory power of model increases and the variable proves to be statistically significant. As they reflected a more informed estimate of the intangible asset values of a firm and the implicit claims on an

entity by other stakeholders, they regard their results as consistent with the opinion that the credit rating downgrades have an informational content.

Hand, Holthausen and Leftwich (1992) introduce even more comprehensive investigation of market response to credit rating changes. They broaden their interest by exploring both bond and stock prices responses and not only to credit rating changes, but they examine daily excess of bond and stock returns associated with announcements of additions to Standard and Poor's Credit Watch List. They also develop an expectations model in order to distinguish between credit rating changes that are expected and those that are unexpected and simultaneously they divide the additions that are expected and unexpected.

While the authors find out abnormal bond returns for both basic types of additions to Standard and Poor's Credit Watch List (indicated downgrades and indicated upgrades) when an additions are classified by expectations model as unexpected, significant abnormal stock returns are observed only at the time of indicated downgrades but not at the time of indicated upgrades. Focusing on actual realized credit rating changes they discover significant abnormal stock and bond returns at the time of credit rating downgrade and much weaker (statistically insignificant) evidence of abnormal stock and bond returns for the credit rating upgrades. But most importantly, they analyze the credit rating changes of bonds of investment and speculative grade separately and for the first time they express the idea that market response could be higher for downgrades of lower rated bonds. The authors formulate this idea when they discuss the abnormal bond returns for credit rating downgrades, for the first time it is mentioned in the literature that the credit rating prior to the announcement of credit rating change could somehow matter.

In the following years the topic is discussed by many researchers as Hsueh and Liu (1992) who emphasize the role of the quantity of available information about company whose credit rating is changed and about market condition. They identify significant abnormal stock price movements in response to both credit rating downgrades and upgrades when they involved in their analysis only credit rating changes of the firms with less information available in the market or during the time period when market conditions were less certain. But the most influential papers are successively published by Goh and Ederington.

Firstly, Goh and Ederington (1993) introduce the paper in which they admit that credit rating downgrades have an informational content with negative implications for common stock returns of company in general, but they argue that it is not true for all downgrades. Firstly, not all credit rating downgrades are surprising. The authors

suggest that some credit rating changes are anticipated by other market participants. And secondly they argue that in those cases when bonds are downgraded because the CRAs foresee an increase in leverage that will transfer wealth from bondholders to stockholders, then bond prices should fall but equity prices should even rise. For these reasons they divide credit rating downgrades into groups according to announced reasons for downgrades. While they find significant market reaction to credit rating downgrades that resulted from a reevaluation of the financial prospects of bond issuer or industry, they do not find any statistically significant reaction to rating changes for other reasons. Simultaneously they do not find any significant reaction to credit rating upgrades for both groups concerning the reason for credit rating change as it is consistent with previous literature.

In the next paper Ederington and Goh (1998) compare new information that is provided to investors by CRAs and stock analysts. While CRAs provide the new information through credit rating changes when evidence indicates that only credit rating downgrades content informational content, stock analysts provide the new information through publishing earnings forecasts. They focus on timeliness of both kinds of information to the market and they identify Granger causality flowing in the both ways. It means that the bond credit rating downgrades are preceded by declines in actual and forecast earnings and in the same time both actual earnings and forecasts of future earnings tend to fall after announcing downgrades. The authors also examine the relation of earnings forecasts and credit rating upgrades and they identify increased analysts forecasts of future earnings following upgrades, but not any change in actual earnings. Ederington and Goh (1998) argue that it is quite surprising because even if the response of analysts to upgrades is much more muted than the response to downgrades, it still means that contrary to investors on stock market the earnings analysts regard credit rating upgrades as providing some new information.

And the third and the most important paper for the purposes of the thesis by Goh and Ederington (1999) focuses on cross-sectional variation in the stock market reaction to credit rating changes. They argue that since the market reaction to credit rating downgrades depends on both the implications for cash flows and the degree of surprise for individual issuers, they found higher market reaction to bond credit rating downgrades to and within speculative grade categories than within the investment grade categories. Furthermore the reaction is stronger the lower the ratings are within the speculative grade categories. It means that they argue that the credit rating prior to the announcement of credit rating downgrade matters for lower rated credit rating classes. But still they formulate their conclusions only for downgrades and they do not recognize any growing market response for credit rating upgrades with lower credit

ratings prior to the announcement of change. Testing the other variables influencing the extent of cumulated abnormal returns connected to credit rating downgrades, they surprisingly (not consistent with both original Holthausen and Leftwich (1986) and Hand, Holthausen and Leftwich (1992)) do not find any difference between credit rating downgrades of different magnitudes.

Dichev and Piotroski (2001) publish similar results as Goh and Ederington (1999) two years before them, just instead of focusing on cumulated abnormal returns over short period of few days, they investigate long-run stock returns following bond rating changes. They collect much larger dataset than their predecessors including all Moody's bond rating changes from 1970 to 1997 counting 4,700 observations. The abnormal returns are calculated over periods of three months, six months, one year, two years, and three years after credit rating change. Again the results are similar they do not find any significant abnormal returns for stocks whose ratings were upgraded and significant negative abnormal returns for stocks whose ratings were downgraded. Consistently with Goh and Ederington (1999) they discovered higher reaction to credit rating downgrades for low-credit-quality firms.

The preceding two papers inspired Jorion and Zhang (2007) to focus in more detail on differences in stock price response to credit rating change considering the credit ratings of companies prior to the announcement of credit rating change. Surprisingly they do not only confirmed the results proposed by the former authors, but they find significant cumulated abnormal returns connected to credit rating upgrades when they control for credit rating prior to the announcement and they claim that accounting for the role of the rating prior to the announcement explains in large extent the puzzling empirical regularity that stock price reacts to announcement of credit rating downgrades but not upgrades. Disadvantage of proposed explanation is the fact that it explains investigated difference between reaction to credit rating downgrades and upgrades only if there is proportionally more credit rating downgrades than upgrades from lower credit rating classes. Therefore the thesis aims to contribute to discussion through investigation of the role of the rating prior to the announcement with use of different sample. As Jorion and Zhang (2007) paper is crucial for the topics discussed in the thesis, it is introduced in more detail.

Jorion and Zhang (2007) argue that the prior studies that examine the influence of credit rating change on stock prices of company and that do not count for rating prior to the announcement implicitly assume an equal change in default probability for all credit rating changes. But based on comparison of frequency of defaults for different credit rating classes when credit rating changes between lower credit rating classes are

connected with higher change in default probabilities (development of default probabilities for individual credit rating classes is available in *Table 1.1.2*) they presume that this approach is wrong. Together with analysis of a structural Merton model linking the change in default probability to the change in the stock price they argue to find also theoretical support for counting for credit rating prior to the announcement of credit rating change and they continue with empirical analysis.

They succeeded to collect the dataset consisting of 1195 downgrades and 361 upgrades by S&P and Moody's during the period from January 1996 to May 2002. They employ classic event study methodology for computing abnormal stock returns in a three-day window around the credit rating change and when they compare the abnormal returns connected to all credit rating downgrades and upgrades they find highly significant reaction to credit rating downgrades and insignificant reaction to credit rating upgrades. Motivated by the fact that they detected proportionally more downgrades of higher magnitude than upgrades and proportionally more downgrades distributed in lower credit rating classes than upgrades, they decided to include only one-class credit rating changes divided into groups according to rating prior to the announcement in the further analysis. This practice decreases the difference in average abnormal returns corresponding to credit rating downgrades and upgrades from 14 times (computed for all credit rating downgrades and upgrades) to 2 times bigger abnormal returns for downgrades when only credit rating changes between B+ and BB- S&P credit rating classes and CCC+ and B- S&P credit rating classes are included in the analysis. Simultaneously they find statistically significant abnormal returns for upgrades from B+ and CCC+ S&P credit rating classes. In the end they are finding support for practice of controlling for magnitude and credit rating prior to the announcement when the distribution of credit rating downgrades and upgrades differ in cross-section where variables representing credit rating change magnitude and rating prior to the announcement of credit rating change prove to be significant.

To conclude, Jorion and Zhang (2007) claim to explain the observed difference between the informativeness of credit rating downgrades and upgrades by not counting for the different distribution of credit rating downgrades and upgrades in the samples. But this explanation assumes that the samples used by prior authors focusing on the topic exhibit the same characteristics concerning the distribution of credit rating downgrades and upgrades. In the same time the practice of controlling for both the prior classes and the magnitude of credit rating change sharply decreases the number of observations in groups with the same credit rating prior to the announcement. Therefore there is need for examining the results with use of different dataset. And

surprisingly such paper is still missing when following papers accept that downgrades have an informational content to market and upgrades not.

For example Kim and Nabar (2007) seek for causes of the discrepancy in the effects of credit rating downgrades and upgrades. They propose two possible explanations. Firstly they test the hypothesis that credit rating downgrades are timelier than upgrades and secondly they examine the hypothesis that managers voluntary disclose positive news preceding credit rating upgrades but not negative news preceding downgrades. They found that assessed probability of default decreases before credit rating upgrades but not later, while it increases both before and after credit rating downgrades that supports the first hypothesis. And they do not find any evidence that press releases and forecasts voluntary disclosed by companies stand for the investigated discrepancy. The next group of papers representing by Jung, Soderstrom and Yang (2013) focus on discussion whether the different effect of credit rating downgrades and upgrades influence the decision of company's managers to manage earnings in order to avoid credit rating downgrades when incentives to reach credit rating upgrades seem to be smaller than avoid the downgrades. And many recent papers focus on the same topic that is investigated with use of American data but they collect the samples consisting of credit rating changes announced for issuers whose stocks are traded on stock exchanges located in different countries. For example Barron, Clare and Thomas (1997) focus on the effect of credit rating changes on UK stock returns, Elayan, Hsu and Meyer (2003) on New Zealand stock returns or recently Murcia, Murcia and Borba (2014) focus on Brazil stock returns. Mainly in the last years there is a boom of similar papers analyzing the Spanish, Australian, Swedish or Chinese abnormal stock returns connected to credit rating changes. All these papers compare their results with conclusions of papers focused on American data and they accept no stock response to credit rating upgrades as an observed fact. Simultaneously they have to face problems with lower statistical power of their results rising from markedly lower number of observations in their datasets when for example Barron, Clare and Thomas (1997) collected 31 downgrades and 14 upgrades, Elayan, Hsu and Meyer (2003) collected 34 downgrades and 27 upgrades and Murcia, Murcia and Borba (2014) collected 58 downgrades and 103 upgrades.

2 Hypotheses development

The next chapter presents the hypotheses that are examined in the thesis. Following the Literature review the motivation for investigating below described issues is introduced.

2.1 Influence of credit rating downgrades and upgrades on stock price of issuer

The first hypothesis ($H1$) examines the influence of credit rating downgrades and upgrades on stock prices of company. It is a starting hypothesis that was examined by Holthausen and Leftwich (1986) for the first time. Since it was observed repeatedly (as it is documented in Literature review) that credit rating downgrades are connected with the abnormal stock returns around the announcement of credit rating change and upgrades not, the same results are also expected with use of newly collected dataset. The hypothesis is rejected if there are not statistically significant average cumulated abnormal returns in the window around announcement of credit rating downgrades or if there are statistically significant average cumulated abnormal returns in the window around announcement of credit rating upgrades.

$H1$: Credit rating downgrades influence the stock price of company but upgrades not

2.2 The role of credit rating prior to the announcement of credit rating change

The next hypotheses ($H2a$) and ($H2b$) are in the center of the thesis interest. Both of them examine the notion proposed by Jorion and Zhang (2007) that the counting for credit rating prior to the announcement of credit rating change in large extent explains the different influence of credit rating downgrades and upgrades on stock price of company. Not consistently with prior papers Jorion and Zhang (2007) found significant cumulated abnormal returns around the announcement of credit rating upgrade for companies with lower rating prior to the announcement when they controlled for the credit rating change magnitude and credit rating prior to the announcement of credit rating change. The rationale whether the credit rating prior to the announcement of credit rating change could matter is related to different changes

in default probabilities connected to credit rating changes between individual credit rating classes as it is discussed in Literature review in more detail.

The first hypothesis ($H2a$) examines the influence of credit rating upgrades on stock price of company when the practice of controlling is employed. Beside the contribution of testing the hypothesis with different dataset, the results published in the thesis have higher statistical power because of collecting larger dataset. The hypothesis ($H2a$) is rejected if there are not any significant average cumulated abnormal returns around the announcement of credit rating upgrade even if average abnormal reruns are computed for different credit rating changes according to their credit rating prior to the announcement of credit rating change separately.

$H2a$: When controlled for the credit rating prior to the announcement, credit rating upgrades influence the stock price of company

Jorion and Zhang (2007) explain the different influence of credit rating downgrades and upgrades on stock price of company observed by the other authors by two statements. Firstly the influence of credit rating change on stock price of company grows for lower rated issuers and secondly there is proportionally more credit rating downgrades from lower credit rating classes than upgrades. If it is true then the conclusions of papers published before Jorion and Zhang (2007) are possibly consistent with their conclusion. In order to test it, distribution of downgrades and upgrades is discussed and the second hypothesis ($H2b$) is examined. The hypothesis ($H2b$) is rejected if the average CAR and their statistical relevance are not growing for lower credit rating classes for both credit rating upgrades and downgrades when average CAR are computed for groups of credit rating downgrades and upgrades from specific credit rating classes separately. In the same time the statistical significance of variable representing credit rating prior to the announcement of credit rating change is investigated in regression where variation in CAR is explored.

$H2b$: The influence of credit rating change on stock price of company grows for issuers with lower credit rating prior to the announcement of credit rating change

2.3 Set of hypotheses concerning the different distribution of credit rating downgrades and upgrades and its influence on overall results

Because Jorion and Zhang (2007) pointed out that different distribution of credit rating upgrades and downgrades is possibly one of the most important and for long time period ignored cause of the results suggesting different influence of credit

rating downgrades and upgrades on stock prices of issuers, the set of hypotheses ($H3a, H3b, H3c, H3d$) examines the possible influence of further dissimilarities between distribution of credit rating downgrades and upgrades. The goal is to assure that any possible difference in distribution of credit rating downgrades and upgrades does not influence the analysis.

The first hypothesis ($H3a$) concerns with the event of crossing the investment-speculative barrier. Holthausen and Leftwich (1986) find higher influence of credit rating changes crossing the barrier on stock prices of issuers. The rationale for investigating the influence of crossing the investment-speculative barrier is connected to the idea that clienteles for investment grade and speculative grade bonds differ. For example if some investors restrict themselves only to investment-grade bonds, after the downgrade across the barrier they are forced to sell downgraded bonds and if it holds for more investors it can lead to a significant increase in issuer's capital costs that can be reflected by change in its stock price. Therefore it is observed if there is more downgrades than upgrades crossing the barrier and it is checked if the relation described by Holthausen and Leftwich (1986) is valid with use of different dataset. The average CAR for credit rating changes across the investment-speculative barrier are compared with the average CAR of other credit rating changes. Also the significance of dummy variable representing whether the credit rating change is crossing the investment-speculative barrier is investigated in the regression where variation in CAR is explored.

$H3a$: The influence of credit rating change on stock price of company is higher when investment-speculative barrier is crossed

The second hypothesis ($H3b$) focuses on influence of credit rating changes of higher magnitudes. Hand, Holthausen and Leftwich (1992) and many others argue that credit rating changes of higher magnitudes are connected with bigger change in stock price of issuer measured by CAR. Beside the simple thought that the bigger change the higher influence it could have, there is also an idea that credit rating changes of higher magnitude are timelier. Since the change skip the closest credit rating class, it advices that it was difficult to anticipate the change and change is immediate. As proposed by Kim and Nabar (2007) higher timeliness of change connected with lower anticipation of change can lead to more significant reaction of stock price of issuer. Therefore the average CAR for credit rating changes of different magnitudes are compared among each other and proportional distribution of downgrades and upgrades concerning the magnitude of changes is discussed. In the same time the statistical significance of variable representing the magnitude of credit rating change is investigated.

$H3b$: The influence of credit rating change on stock price of company is higher for credit rating changes of higher magnitude

The third hypothesis ($H3c$) focuses on question whether credit rating change between different credit rating categories are connected with higher response in terms of average CAR than credit rating changes within one credit rating category and it is observed whether there are proportionally more credit rating downgrades across two credit rating categories than upgrades. Holthausen and Leftwich (1986) assumed so distinctive difference between credit rating changes within and across credit rating categories that they rather observed the CAR connected to credit rating changes for rating changes within credit rating category and across credit rating categories separately. Their practice was based on the idea that changes across categories are considered by investors as traditional credit rating changes, while credit rating changes between credit rating classes within one credit rating category are perceived in smaller extent since the distinguishing within one credit rating category with use of plus and minus signs was introduced later. The papers following Holthausen and Leftwich (1986) usually investigate average CAR connected to all credit rating downgrades and upgrades without dividing for changes within and across categories, but they usually included the dummy variable representing whether the credit rating change is within or across credit rating categories in regression exploring the variation in CAR[6]. Therefore the average CAR for credit rating changes within and across credit rating categories are compared and proportional distribution of downgrades and upgrades concerning the changes across and within the credit rating category is discussed. And the statistical significance of dummy variable representing whether the credit rating change is within or across credit rating categories in regression exploring the variation in CAR is investigated.

$H3c$: The influence of credit rating change on stock price of company is higher for credit rating changes across two credit rating categories (e.g. from BB- to B+ by S&P) than within one credit rating category (e.g. from BB- to BB by S&P)

[6] Jung, Soderstrom and Yang (2013) in paper focusing on different incentives for managers to manage earnings in order to improve or maintain their credit ratings establish their division of companies exactly on notion about different influence of within and across credit rating changes on stock price of company. Earnings management practice of issuers with prior credit rating in the middle credit rating classes (for example BBB) are compared with earnings management practice of issuers with prior credit rating in the top or bottom end of credit rating category (for example BBB+ and BBB-) that are considered as issuers with larger incentives to manage the earnings.

The last hypothesis ($H3d$) concerns with the idea that the consecutive changes of credit ratings in the same direction within shorter time period (one year) can cause higher reaction of stock prices since the investors can consider the subsequent changes as indicator of further changes that will follow (introducing trend). Papers working with credit rating changes published by more than one credit rating agency usually investigate whether it has any influence on CAR if the announced credit rating change follows in short time period (few days) announcement of credit rating change of the same issuer in the same direction published by other credit rating agency. Since the thesis use dataset consisting of credit rating changes announcements of one credit rating agency (S&P), only the average CAR for consecutive credit rating changes in the same direction are compared with the rest credit rating changes and proportion of such downgrades and upgrades is discussed. In the end the dummy variable representing whether the credit rating change follows credit rating change in the same direction within time period of one year is investigated.

$H3d$: The influence of credit rating change on stock price of company is higher when the credit rating change follows credit rating change in the same direction within one year

2.4 Influence of credit rating changes on stock price of issuers classified in selected industry sectors

Collected dataset enables division of credit rating changes according to industry of issuer and investigating the influence of credit rating downgrades and upgrades on stock price of company for specific industries. The division is motivated by the idea that the results can differ for different industries. Examining the fourth hypothesis ($H4$) assures that the general results are not deviated by the relations in the industries with the highest number of observations included in the dataset and possible differences among industries are detected. The special attention is dedicated to the question if there are any significant average CAR connected to credit rating upgrades for any industry and to discussion of differences in results across industries.

$H4$: When controlled for the industry the credit rating upgrades influence the stock price of company

3 Methodology, data and descriptive statistics

The chapter starts with description of time-consuming practice of collecting sufficiently large dataset. Then the event study methodology employed for obtaining the CAR representing stock price response to announcement of credit rating changes is introduced. The second subchapter describes regressions investigating the variation in CAR around the announcement of credit rating change and introduces the expectations for explanatory variables concerning the stated hypotheses. The last subchapter includes descriptive statistics describing the collected dataset when mainly the differences in distribution of credit rating downgrades and upgrades are discussed.

3.1 Event study methodology and data collection

The data are collected from Thompson Reuters Eikon database that provides profiles of companies including their credit rating history and overview of their stock price development in the last 20 years. In order to gather the largest possible dataset the thesis is focused on domestic S&P long-term issuer credit rating changes announcements of American companies whose stocks are traded on New York Stock Exchange (NYSE). Each credit rating change announcement constitutes one sample observation. Since the data had been collected by author from May to November 2014 and for computing CAR (as discussed later) it is necessary to obtain stock price development for 250 trading days preceding the credit rating change, all domestic S&P long-term issuer credit rating change announcements occurring in the period from 1.1.1996 to 31.12.2013 for American issuers with available information about price development of their NYSE traded stocks are included in the dataset.

In order to assure comparability of individual observations, only domestic long-term issuer credit ratings announced by S&P are included in dataset. While one group of papers (for example Goh and Ederinghton (1999)) use credit ratings announced by one credit rating agency, many others (for example Leftwich and Holthausen (1986)) use credit ratings announced by more CRAs without any dividing among them. But it is questionable if the same credit rating change announced by two different CRAs (possibly with different reputation) has the same impact on stock market and if it is possible to assume that not dividing between credit rating changes announced by

different CRAs is not affecting the overall results[7]. To avoid these concerns only domestic S&P long-term issuer credit ratings are included in the dataset. This choice also assures sufficiently large sample since domestic S&P long-term issuer credit ratings are the most common long-term issuer credit ratings and the most often available credit ratings in Thompson Reuters Eikon database. And in the same time since it is an issuer type credit rating, it is not necessary to proceed any further restrictions (for example, only senior unsecured ratings on American domestic taxable corporate bond, but the restrictions differ a lot across individual papers) as it is common for papers working with issue type credit ratings.

For each company separately, the overview of credit rating changes was downloaded (illustrated in **Appendix C**) from the Thompson Reuters Eikon database and transformed to cardinal scale. Then information of two types are gathered for each credit rating change. Firstly it is the name of issuer with its ticker used on NYSE and for the purposes of the testing the fourth hypothesis it is classification of issuers into ten Global Industry Classification Standard (GICS)[8] sectors (classification structure of GICS is available in **Appendix D**). Secondly it is set of information describing the credit rating change. For each credit rating change is recorded date of credit rating change, credit rating prior and after the announcement of credit rating change, magnitude of credit rating change, information whether it is upgrade or downgrade, whether change is across investment-speculative barrier, whether change is across or within the same credit rating category and whether the change follows the change in the same direction within one year (illustrated in **Appendix E**).

Before introducing the methodology for computing the abnormal stocks returns connected to announcement of credit rating change, two details describing the rules for including the credit rating change in dataset are discussed. Firstly, since Thompson Reuters Eikon database includes only information about date of credit rating change and about new credit rating, it is also necessary to download the information about the credit rating change preceding the credit rating change that is concerned to be involved in the dataset. Therefore information about the last credit rating change preceding the investigated period from 1.1.1996 is also gathered and simultaneously all credit rating

[7] For example Livingston, Wei a Zhou (2010) empirically found out that investors differentiate between the ratings announced by S&P and Moody's, when they assign more weight to the ratings from Moody's that is seen from their perspective as more conservative rating agency.

[8] The GICS is classification system developed by MSCI (leading provider of investment decision support tools) that divides companies into 10 sectors, 24 industry groups, 67 industries and 156 sub-industries.

changes for which the preceding credit rating is unknown are eliminated from the sample. And consistently with Jorion and Zhang (2007) the credit rating downgrades to credit rating classes D (default), SD (selective default) and R (regulatory supervision) are not included in sample because credit rating agency is not bringing any new information that is publicly unknown.

The abnormal returns connected to credit rating change are measured by CAR. This approach was used by Leftwich and Holthausen (1986) for the first time and with small adjustments it is still employed by researchers. CAR are computed over three day event window starting one day before the day of credit rating change announcement that is considered as an event day. Leftwich and Holthausen (1986) used only two days window starting with the day of credit rating change announcement, but the practice used by Goh and Ederington (1999) or Jorion and Zhang (2007) is followed in order not to miss any abnormal return that is already connected to the credit rating change.

Consistently with the prior papers, the CAR are computed as sum of abnormal returns for individual days from event window, when abnormal returns are computed as difference between actual stock returns of company and normal expected stock returns of company that are computed with use of market model.

$$CAR_j = \sum_{t=-1}^{1} \left[R_{jt} - \left(\hat{\alpha}_j + \hat{\beta}_j R_{jmt} \right) \right]$$

R_j represents stock returns of issuer and R_{jm} represents returns of S&P 500 market index[9] that actually occurred in the days in given event window. Parameters α and β are estimated over the period of 201 trading days starting 250 trading days before the credit rating change announcement with use of corresponding stock returns of company and returns of S&P 500 market index.

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \varepsilon_{jt}$$

S&P 500 market index includes 500 leading companies in leading industries of the American economy and companies included in the dataset are American companies

[9] S&P 500 market index is one of the most traditional market index including 500 companies representing the U.S. economy. As it is mentioned by S&P Dow Jones Indices: "Although the S&P 500 focuses on the large -cap segment of the market, with approximately 75% coverage of U.S. equities, it is also an ideal proxy for the total market."

with stocks traded on NYSE therefore index is chosen as the best available proxy for the market situation development. To obtain the firm and time specific estimate of issuer stock returns that would be legitimate to expect in the case that the credit rating change is not announced the parameters are estimated for each single credit rating change included in the dataset. The estimation period is chosen in order to assure the most current and relevant estimates, but in the same time the risk that credit rating change is anticipated and influence the stocks of issuer for longer period before its announcement is considered and therefore the parameters are estimated over the period finishing 50 trading days before the announcement of credit rating change.

As it is discussed in MacKinlay (1997) coefficient of determination (R^2) is computed for each regression in order to control whether parameters α and β adjust the relation between S&P 500 index returns and individual issuer returns in the sufficiently accurate way. Since the stock returns are computed as closing stock price divided by closing stock price on previous trading day both the stock returns and CAR are comparable for credit rating changes of all included companies.

The time-consuming practice of obtaining the CAR is illustrated by example in **Appendix F**. And finally all collected observations are available in short form (presenting only the most important information) in **Appendix G**.

3.2 Regression investigating the variation in CAR

In order to examine the variance in CAR, the cross-section with selected explanatory variables is employed. The thesis is interested in both, explanatory power of all variables explaining the CAR connected to credit rating downgrades and upgrades and individual explanatory power of each variable. The explanatory power of regressions run for upgrades and downgrades is compared and statistical significance of individual variables are discussed for models run for both credit rating downgrades and upgrades.

$$CAR_j = \beta_0 + \beta_1 PRIOR_j + \beta_2 D\_BARRIER_j + \beta_3 MAGNITUDE_j + \beta_4 D\_ACROSS_j + \beta_5 D\_SAMESOON_j + \varepsilon$$

The main attention is focused on variable $PRIOR$ that stands for credit rating prior to the announcement of credit rating change. Prior credit rating is expressed in cardinal measure (see *Table 1.1.1*) therefore number 1 stands for the best quality credit

rating class AAA and number 20 stands for the lowest included S&P long-term issuer credit rating CC. The notion stated by Jorion and Zhang (2007) that influence of credit rating change on stock price of issuer is higher for low-rated issuers is examined. In more detail, coefficient β_1 is expected to be negative for credit rating downgrades and positive for credit rating upgrades. In the same time the statistical significance of variable $PRIOR$ is discussed for both credit rating downgrades and upgrades.

Including the variable $D\_BARRIER$ in the regression follows Holthausen and Leftwich (1986) paper as it is discussed in Hypotheses development chapter. The dummy variable is set to 1 when the credit rating change is across investment-speculative barrier and 0 otherwise. When the cardinal scale is used for credit ratings then the issuers with credit ratings from 1 to 10 are defined to be of investment grade and issuers with lower credit ratings are defined to be of speculative grade. The coefficient β_2 is expected to be positive for credit rating upgrades and negative for credit rating downgrades. Simultaneously the statistical significance of variable $D\_BARRIER$ is discussed for both credit rating downgrades and upgrades

The next variable $MAGNITUDE$ presents the absolute magnitude of credit rating change. The variable is set to 1 if the credit rating change is between two neighboring credit rating classes, the higher magnitudes are expressed by corresponding number when the highest ocurred magnitude of credit rating change in dataset is 9. As it is discussed in Hypotheses development, the change of higher magnitude is expected to have higher informational content and therefore coefficient β_3 is expected to be positive for credit rating upgrades and negative for credit rating downgrades. Again the statistical significance of variable $MAGNITUDE$ is discussed for both credit rating downgrades and upgrades.

The dummy variable D_ACROSS represents whether the change of credit rating is across two credit rating categories (for example from BB+ to BBB-) or within the one credit rating category (for example from BB+ to BB). When the credit rating change is across two credit rating categories then the variable is set to 1, otherwise it is 0. As it is discussed in Hypotheses development, the higher influence of credit rating changes across the credit rating categories on stock price of issuer is expected. Therefore coefficient β_4 is expected to be negative for credit rating downgrades and positive for credit rating upgrades. The statistical significance of variable D_ACROSS is discussed for both credit rating downgrades and upgrades.

The last dummy variable $D\_SAMESOON$ is included in the regression in order to examine whether it has higher influence on the stock price of issuer when credit rating change follows credit rating change in the same direction within one year period. The motivation for this notion is discussed in the Hypotheses development chapter. The coefficient β_5 is expected to be negative for credit rating downgrades and positive for credit rating upgrades. And finally the statistical significance of variable $D\_SAMESOON$ is discussed for both credit rating downgrades and upgrades.

As it is mentioned in the beginning of this subchapter, the overall statistical power of regression is discussed separately for credit rating downgrades and upgrades. In the line with previous research, the coefficient of determination is expected to be higher for credit rating downgrades than for credit rating upgrades. Simultaneously the difference in statistical power of regressions including and not including the variable $PRIOR$ is compared.

3.3 Descriptive statistics and difference in downgrades and upgrades distribution

The final sample collected from Thompson Reuters Eikon database includes 2,541 observations when 1,431 credit rating changes are downgrades and 1,110 credit rating changes are upgrades. Thus the final sample is larger than Holthausen and Leftwich (1986) sample consisting of 639 credit rating downgrades and 375 credit rating upgrades or Jorion and Zhang (2007) sample including 1195 credit rating downgrades and 361 credit rating upgrades and distinctively larger than samples used in recent papers focusing on different countries than the USA. The *Table 3.3.1* introduces the overview of collected observations summarizing the number of credit rating changes representing individual GICS industry sectors.

Table 3.3.1: Sample summary with division by GICS sectors

SECTOR - GICS	Companies in database	Included companies	Observations	Downgrades	Upgrades
CONSUMER DISCRETIONARY	250	113	568	327	241
CONSUMER STAPLES	69	39	113	73	40
ENERGY	234	94	273	139	134
FINANCIALS	350	111	372	220	152
HEALTH CARE	104	50	181	83	98
INDUSTRIALS	249	102	354	190	164

SECTOR - GICS	Companies in database	Included companies	Observations	Downgrades	Upgrades
INFORMATION TECHNOLOGY	154	38	157	82	75
MATERIALS	129	70	292	179	113
TELECOMMUNICATION SERVICES	14	8	39	26	13
UTILITIES	96	60	192	112	80
Total	**1649**	**685**	**2541**	**1431**	**1110**

In total there are 1,649 American companies in Thompson Reuters Eikon database whose stocks are traded on NYSE. But only 685 companies are included in the sample since there were missing some necessary information for the rest of companies. The issuer is not included in the dataset if the information about S&P long-term issuer credit ratings is missing or if issuer's credit rating had not been changed in the investigated time period from 1.1.1996 to 31.12.2013. The issuer is included in the dataset when at least one credit rating change occurred in the investigated period and all necessary information for including the credit rating change in the sample are available. For all 2,541 credit rating changes, the stock price history for the preceding 250 trading days had to be available and simultaneously the preceding credit rating information had to be known. The 'Consumer discretionary' GICS sector is represented by the highest number (568) of credit rating changes and for the purposes of testing the fourth hypothesis (*H*4) it is important that there are more than 100 observations for all GICS sectors with the exception of 'Telecommunication services' sector (39).

As it is presented in **Appendix H**, average company's S&P long-term issuer credit rating was changed 3.71 times in the investigated 18 years long period. On average there were around 5 credit rating changes for companies categorized in 'Consumer discretionary' and 'Telecommunication services' sectors while companies categorized in 'Consumer staples' and 'Energy' sectors exhibited less than 3 credit rating changes over the investigated period. In total 44% of credit rating changes are credit rating upgrades and there is higher share of credit rating upgrades than downgrades only in case of companies classified in 'Health Care' sector (54%).

Table 3.3.2 introduces the distribution of credit rating changes by credit rating prior to the announcement of credit rating change. Because the conclusions of Jorion

and Zhang (2007) are in compliance with the prior paper only if their datasets included proportionally more credit rating downgrades from lower credit rating classes than upgrades, the special attention is dedicated to the distribution of credit rating upgrades and downgrades across credit rating classes.

Table 3.3.2: Distribution of credit rating changes by credit rating prior to the announcement of credit rating change

S&P RATING	CARDINAL SCALE	OBSERVATIONS	%	DOWNGRADES	%	UPGRADES	%
AAA	1	9	0.35	9	0.63	0	0.00
AA+	2	6	0.24	6	0.42	0	0.00
AA	3	29	1.14	27	1.89	2	0.18
AA-	4	57	2.24	50	3.49	7	0.63
A+	5	114	4.49	90	6.29	24	2.16
A	6	160	6.30	117	8.18	43	3.87
A-	7	195	7.67	134	9.36	61	5.50
BBB+	8	238	9.37	168	11.74	70	6.31
BBB	9	280	11.02	166	11.60	114	10.27
BBB-	10	251	9.88	118	8.25	133	11.98
BB+	11	223	8.78	103	7.20	120	10.81
BB	12	227	8.93	115	8.04	112	10.09
BB-	13	263	10.35	127	8.87	136	12.25
B+	14	214	8.42	103	7.20	111	10.00
B	15	131	5.16	49	3.42	82	7.39
B-	16	80	3.15	29	2.03	51	4.59
CCC+	17	40	1.57	15	1.05	25	2.25
CCC	18	17	0.67	4	0.28	13	1.17
CCC-	19	3	0.12	1	0.07	2	0.18
CC	20	4	0.16	0	0.00	4	0.36
Total		**2541**	**100**	**1431**	**100**	**1110**	**100**

The highest number of observations is located in the middle credit rating classes when more than 58% credit rating changes are from six middle credit rating classes (from BBB+ to BB-). For upper and lower credit rating classes the proportion of credit rating changes is decreasing. Surprisingly and contrary to dataset used by Jorion and Zhang (2007) there is proportionally more credit rating downgrades from the upper credit rating classes and proportionally more credit rating upgrades from the lower credit rating classes. Almost 62% of credit rating downgrades is located in the upper ten credit rating classes prior to the announcement of credit rating change while there

is located only incomplete 41% of credit rating upgrades. The *Figure 3.3.1* presents the difference in distribution of credit rating downgrades and upgrades by rating prior to the announcement of credit rating change graphically. There is proportionally more credit rating upgrades with prior rating classified in the lower eleven credit rating classes than credit rating downgrades and proportionally more downgrades from the nine upper credit rating classes than upgrades.

Figure 3.3.1: The difference in distribution of credit rating upgrades and downgrades by prior credit rating

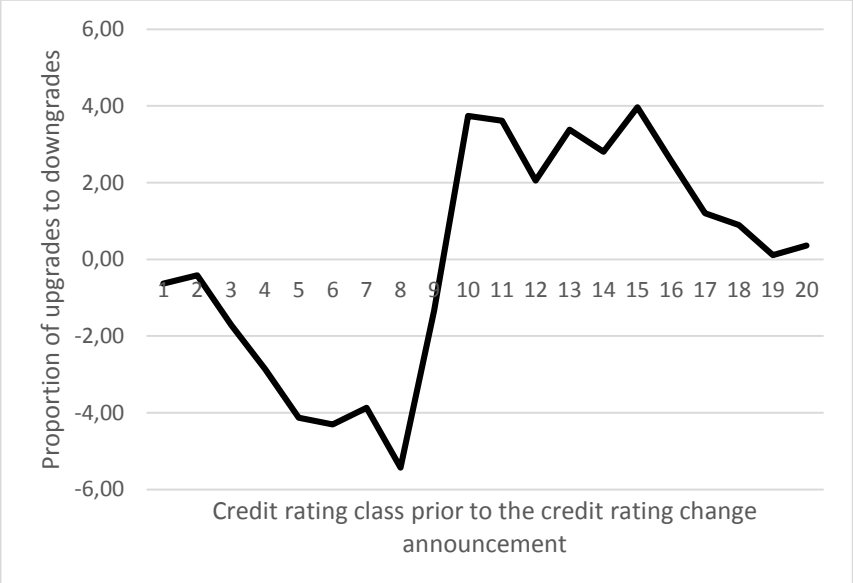


Table 3.3.3 focuses on distribution of credit rating downgrades and upgrades by magnitude of credit rating change. There is proportionally more credit rating downgrades (21.31%) of higher magnitude than upgrades (9.46%). It is consistent with the idea that the negative change in creditworthiness of issuer can be very fast while improving the creditworthiness of issuer takes more time and there is no such need for skipping the neighbouring credit rating class and jumping directly to more distant credit rating class.

Table 3.3.3: Distribution of credit rating changes by magnitude

MAGNITUDE	DOWNGRADES	%	UPGRADES	%
1	1126	78.69	1005	90.54
2	236	16.49	87	7.84
3	44	3.07	11	0.99
4	18	1.26	4	0.36
5	3	0.21	1	0.09

MAGNITUDE	DOWNGRADES	%	UPGRADES	%
6	3	0.21	0	0.00
7	1	0.07	1	0.09
8	0	0.00	0	0.00
9	0	0.00	1	0.09
TOTAL	**1431**	**100**	**1110**	**100**
MEAN	1.2872		1.1252	

The last *Table 3.3.4* introduces the rest of distributions of credit rating downgrades and upgrades that is necessary to discuss in order to test the set of hypotheses $H3$. Firstly the proportion of credit rating downgrades and upgrades crossing the investment-speculative barrier is presented. Secondly the shares of credit rating changes across credit rating categories and within one credit rating category are introduced. And finally the proportion of credit rating changes in the same direction within one year is stated.

Table 3.3.4: Credit rating changes crossing the investment-speculative barrier, credit rating changes across and within category and consecutive credit rating changes

CHANGE	DOWNGRADES	%	UPGRADES	%
WITHIN	872	60.94	719	64.77
ACROSS	559	39.06	391	35.23
INVESTMENT/SPECULATIVE	141	9.85	128	11.53
SAMESOON	409	28.58	116	10.45
TOTAL	**1431**	**100**	**1110**	**100**

There is not any significant difference in proportion of credit rating downgrades and upgrades crossing the investment-speculative barrier when around 10% of credit rating changes is across the barrier. Proportionally there is more credit rating downgrades (39.06%) across credit rating categories than credit rating upgrades (35.23%). Partially it is connected to the discovered higher share of credit rating downgrades that experience the credit rating change of higher magnitude. For example all credit rating changes of higher magnitude than 3 are classified as credit rating changes across credit rating categories and generally it holds that credit rating changes of higher magnitude have higher probability to be across credit rating categories. Finally, there is proportionally almost three times higher percentage of credit rating downgrades (28.58%) following other credit rating downgrade within one year than upgrades (10.45%). It is again connected to the notion that weakening the

creditworthiness of issuer can possibly lead to the further worsening the issuer's situation. On the other hand the descriptive statistics propose that building the creditworthiness is longer lasting process.

Complete descriptive statistics for individual GICS industry sectors that include distribution of credit rating changes by credit rating prior to the announcement of credit rating change, distribution of credit rating changes by magnitude and proportions of credit rating downgrades and upgrades concerning the set of hypotheses $H3$ are presented on enclosed DVD. The summary of enclosed DVD content is available in **Appendix I**.

4 Discussion of results

In the fourth chapter the results are presented and discussed. The first subchapter is focused on overall results describing the influence of credit rating changes on stock price of issuer. The second subchapter introduces the conclusions about the central thesis hypotheses concerning the role of credit rating prior to the announcement of credit rating change. The next subchapter presents the results connected to concerns about further differences in distribution of credit rating downgrades and upgrades in the sample. The last subchapter represents the discussion about differences in influence of credit rating changes on stock prices across selected industry sectors.

4.1 Credit rating downgrades and upgrades influence on stock price of issuer

The first hypothesis ($H1$) is constructed in order to examine the influence of credit rating downgrades and upgrades on stock price of company.

$H1$: Credit rating downgrades influence the stock price of company but upgrades not

Table 4.1.1 presents the computed average CAR connected to all included credit rating downgrades and upgrades. Simultaneously the proportion of positive and negative CAR for both credit rating upgrades and downgrades are introduced and the most importantly t-statistics and p-values expressing whether it is possible to reject that there are not any statistically significant CAR connected to downgrades and upgrades.

Table 4.1.1: CAR around the announcement of credit rating downgrades and upgrades

	DOWNGRADES	%	UPGRADES	%
N	1431		1110	
+	613	42.84	581	52.34
-	818	57.16	529	47.66
MEAN	-1.9586		0.1495	
VARIANCE	148.5421		17.2715	
STANDARD ERROR	12.1878		4.1559	
t-statistic	-6.0790		1.1981	
p-value	1.55E-09		0.2311	

The average CAR around the announcement of downgrades are negative and positive around the announcement of upgrades as expected. Nevertheless average CAR connected with credit rating downgrades (-1.96) are more than 13 times larger than CAR connected with credit rating upgrades (0.15). And mainly while the p-value for downgrades (1.55E-09) is very small and allows to reject the hypothesis that there are not any significant CAR around the announcement of credit rating downgrades, it is not possible to reject the same statement for credit rating upgrades (0.23). Therefore it is not possible to reject the hypothesis $H1$ as it is stated. The results are consistent with the previous literature. For example Jorion and Zhang (2007) detected 14 times larger effect of credit rating downgrades than upgrades. But it is necessary to mention that while the sample used by Jorion and Zhang (2007) included proportionally more credit rating downgrades from the lower credit rating classes than upgrades, the distribution of credit rating downgrades and upgrades in the thesis sample evinces exactly opposite characteristics. From this perspective the very similar results are rather not supporting their conclusions about important role of credit rating prior to the announcement. Nevertheless the role of credit rating prior to the announcement is examined in the subchapter 4.2 in much more detail.

Simultaneously several regressions are run separately for credit rating downgrades and upgrades in order to test the variance in CAR and all results are presented in **Appendix J**. Focusing on p-value (0.64) connected to F-test and coefficient of determination (0.003) it is clearly visible that Model 5 run for credit rating upgrades does not have any statistical power. It is consistent with Holthausen and Leftwich (1986) or Cornell, Landsman and Shapiro (1989) and it supports the conclusions that there are not any significant CAR around the announcement of credit rating upgrades. The coefficient of determination computed for Models 1, 2, 3 and 4 run for credit rating downgrades are rather small (around 0.02), but still the variables explain the variation in CAR at least to some extent. The first model include all variables and in the others the variables with the lowest explanatory power are removed. The statistical significance of individual variables is discussed in corresponding subchapters.

Altogether the first hypothesis ($H1$) is not rejected. When all the credit rating changes are included in the analysis then the results suggest that credit rating downgrades influence the stock price of company and upgrades not.

4.2 The role of credit rating prior to the announcement of credit rating change

The role of credit rating prior to the announcement is examined by testing two hypotheses. The first hypothesis ($H2a$) focuses on notion proposed by Jorion and Zhang (2007) that when controlled for the credit rating prior to the announcement, the CAR around the announcement of credit rating upgrades are positive and statistically significant.

$H2a$: When controlled for the credit rating prior to the announcement, credit rating upgrades influence the stock price of company

The second hypothesis ($H2b$) is interested in the topic whether there exists the relation that the influence of credit rating changes on stock price of company is increasing for issuers with lower credit rating prior to the announcement of credit rating change.

$H2b$: The influence of credit rating change on stock price of company grows for issuers with lower credit rating prior to the announcement of credit rating change

Following the Jorion and Zhang (2007) paper the CAR are computed separately for groups of credit rating upgrades and downgrades according to their prior credit rating. Concerning the notion by Holthausen and Leftwich (1986) that the credit rating changes across credit rating categories could be connected with larger response in stock returns than credit rating changes within the same credit rating categories, Jorion and Zhang (2007) included only credit rating changes across two neighbouring credit rating categories in the analysis. There are not imposed any further limitation on magnitude of credit rating change. *Table 4.2.1* introduces CAR for credit rating upgrades from the credit rating classes stated in the second column to credit rating classes engaged in the corresponding first column and similarly CAR for credit rating downgrades from the credit rating classes stated in the first column to credit rating classes engaged in the corresponding second column.

Table 4.2.1: CAR around the announcement of credit rating downgrades and upgrades when controlled for prior credit rating

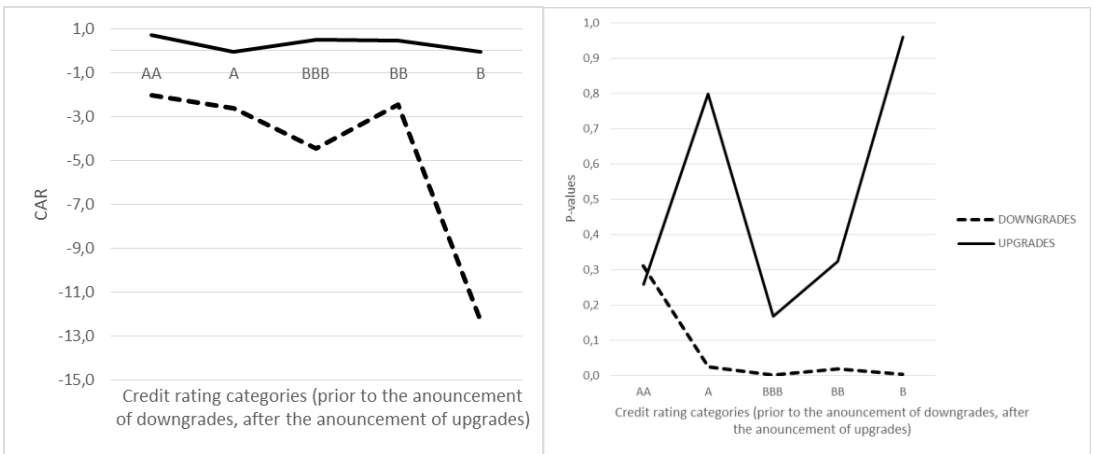
Changes across credit rating categories			DOWNGRADES	%	UPGRADES	%
AAA	A+	N	56	3.91	24	2.16
AA+	A	+	29	51.79	13	54.17
AA	A-	-	27	48.21	11	45.83
AA-		MEAN	-2.0300		0.7052	
		VARIANCE	220.8127		8.8526	
		STANDARD ERROR	14.8598		2.9753	
		t-statistic	-1.0223		1.1612	
		p-value	0.3111		0.2575	
A+	BBB+	N	162	11.32	80	7.21
A	BBB	+	67	41.36	40	50.00
A-	BBB-	-	95	58.64	40	50.00
		MEAN	-2.6272		-0.0603	
		VARIANCE	214.0850		4.4337	
		STANDARD ERROR	14.6316		2.1056	
		t-statistic	-2.2854		-0.2563	
		p-value	0.0236		0.7984	
BBB+	BB+	N	139	9.71	127	11.44
BBB	BB	+	47	33.81	71	55.91
BBB-	BB-	-	92	66.19	56	44.09
		MEAN	-4.4289		0.5250	
		VARIANCE	220.5279		18.1583	
		STANDARD ERROR	14.8502		4.2613	
		t-statistic	-3.5162		1.3884	
		p-value	5.93E-04		0.1675	
BB+	B+	N	150	10.48	127	11.44
BB	B	+	68	45.33	71	55.91
BB-	B-	-	82	54.67	56	44.09
		MEAN	-2.4635		0.4507	
		VARIANCE	160.6696		26.2482	
		STANDARD ERROR	12.6756		5.1233	
		t-statistic	-2.3803		0.9914	
		p-value	0.0186		0.3234	
B+	CCC+	N	44	3.07	31	2.79
B	CCC	+	14	31.82	14	45.16
B-	CCC-	-	30	68.18	17	54.84
	CC	MEAN	-12.3641		-0.0658	
		VARIANCE	709.7459		55.8180	
		STANDARD ERROR	26.6411		7.4712	
		t-statistic	-3.0785		-0.0490	
		p-value	3.62E-03		0.9612	

CAR are not statistically significant for any group of credit rating upgrades. Average CAR are positive for credit rating upgrades from A+, A, A- classes, BB+, BB, BB- classes and B+, B, B- classes, but corresponding p-values do not allow to reject the hypothesis that there are not any CAR in the time of credit rating upgrades. The results introduced in *Table 4.2.1* do not support the hypothesis ($H2a$).

Contrary to credit rating upgrades, CAR around the announcement of credit rating downgrades are negative and statistically significant. Only the downgrades from the highest credit rating classes AAA, AA+, AA and AA- are not connected with significant CAR and it is not possible to reject that there are not any CAR around these credit rating downgrades.

While the average CAR connected to credit rating downgrades from B+, B, B- credit rating classes are larger (-12.36), the statistical significance is similarly high for all groups of credit rating downgrades with only exception to the credit rating downgrades from the highest credit rating classes AAA, AA+, AA, AA-. The results presented in *Table 4.2.1* show that it is caused by concurrently higher variance (709.75) in CAR for the group of credit rating downgrades from the lowest included credit rating classes. *Figure 4.2.1* graphically represents the development of CAR and their statistical significance concerning the credit rating prior to the announcement of credit rating change.

Figure 4.2.1: Development of average CAR and their significance concerning the credit rating prior to the announcement



The first figure represents the average CAR for five groups of credit rating changes divided by their credit rating prior to the announcement. While average CAR connected to credit rating downgrades seem to be larger for low-rated credit rating categories, the average CAR connected to credit rating upgrades are low for all groups of credit rating upgrades. Focusing on p-values representing whether it is possible to

reject that there are not any CAR around the announcement of credit rating change, there is not visible any decreasing tendency for credit rating upgrades. In the same time rather than decreasing tendency for credit rating downgrades there is possible to recognize high statistical significance of the same level for CAR connected to downgrades from all credit rating classes prior to the announcement with the exception for credit rating downgrades from the highest credit rating classes. These results are rather not consistent with the hypothesis ($H2b$) that the influence of credit rating change on stock price of company grows for issuers with lower credit rating prior to the announcement of credit rating change.

Following the Jorion and Zhang (2007) the next analysis focuses only on credit rating changes of the same magnitude. *Table 4.2.2* introduces average CAR for all credit rating changes between neighboring credit rating classes in order to control not only for credit rating prior to the announcement but also for magnitude of credit rating changes. In order to keep the analysis clear, the overview includes only the number of credit rating changes between particular credit rating classes, average CAR and corresponding p-values.

Table 4.2.2: CAR around the announcement of credit rating downgrades and upgrades when controlled for prior credit rating and magnitude

Changes between credit rating classes			DOWNGRADES	%	UPGRADES	%
AA-	A+	N	38	2.66	24	2.16
		MEAN	0.4634		0.7052	
		p-value	0.3998		0.2575	
A+	A	N	71	4.96	43	3.87
		MEAN	-0.5680		0.5194	
		p-value	0.5435		0.3600	
A	A-	N	91	6.36	60	5.41
		MEAN	-0.7907		-0.4404	
		p-value	0.2881		0.1721	
A-	BBB+	N	103	7.20	66	5.95
		MEAN	-0.7735		0.0307	
		p-value	0.2073		0.9109	
BBB+	BBB	N	143	9.99	105	9.46
		MEAN	-0.7957		0.0492	
		p-value	0.1704		0.8358	
BBB	BBB-	N	148	10.34	127	11.44
		MEAN	-1.0559		0.0024	
		p-value	0.0561		0.9920	

Changes between credit rating classes			DOWNGRADES	%	UPGRADES	%
BBB-	BB+	N	86	6.01	109	9.82
		MEAN	-2.3255		0.4045	
		p-value	6.24E-03		0.3044	
BB+	BB	N	73	5.10	106	9.55
		MEAN	-3.0271		-0.5432	
		p-value	2.66E-04		0.3179	
BB	BB-	N	98	6.85	118	10.63
		MEAN	-0.8530		0.0706	
		p-value	0.5185		0.8364	
BB-	B+	N	105	7.34	104	9.37
		MEAN	-0.6375		0.3270	
		p-value	0.5364		0.5097	
B+	B	N	78	5.45	69	6.22
		MEAN	-1.6538		-0.0937	
		p-value	0.2574		0.8739	
B	B-	N	39	2.73	37	3.33
		MEAN	-1.1150		0.7488	
		p-value	0.5239		0.3895	
B-	CCC+	N	19	1.33	19	1.71
		MEAN	-8.4018		0.0642	
		p-value	0.0573		0.9736	

Even if the number of observations collected for individual groups of credit rating downgrades and upgrades is approximately two times higher than number of observations investigated by Jorion and Zhang (2007), the statistical significance of tests is generally lower in comparison to analysis dividing the credit rating changes without controlling for magnitude. There is not any group of credit rating upgrades for which it is possible to reject that there are not any CAR around their announcement. Therefore the results presented in *Table 4.2.2* are not consistent with the first hypothesis ($H2a$).

Figure 4.2.2 presents the development in average CAR and statistical significance for the groups of credit rating downgrades and upgrades introduced in *Table 4.2.2*.

Figure 4.2.2: Development of average CAR and their significance concerning the credit rating prior to the announcement (magnitude = 1)

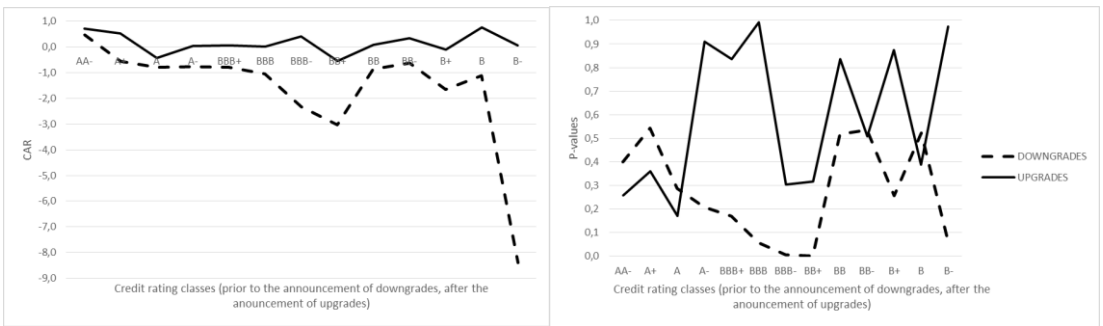


Figure 4.2.2 does not express any support to the second hypothesis ($H2b$). There are not any recognizable regularities concerning the credit rating prior the announcement of credit rating changes and average CAR around the announcement of credit rating change and corresponding p-values.

The variable $PRIOR$ representing the credit rating prior to the announcement of credit rating change is not statistically significant in regression models (available in **Appendix J**) run for credit rating downgrades (Model 1 and Model 2) and credit rating upgrades (Model 5). The coefficient is positive for credit rating upgrades and negative for credit rating downgrades, but p-values suggest that it is not possible to reject that credit rating prior to the announcement is not influencing corresponding CAR. The result are in contrast with Jorion and Zhang (2007) analysis that recognized the variable representing credit rating prior to the announcement as the most important driver of stock return. They find the variable standing for prior credit rating statistically significant for both credit rating downgrades and upgrades. Therefore from this perspective the results presented in the thesis are not consistent with their conclusions.

All together the first hypothesis ($H2a$) testing whether credit rating upgrades influence the stock price of company when it is controlled for the credit rating prior to the announcement is rejected. Statistically significant CAR are not detected for any single group of credit rating upgrades. The second hypothesis ($H2b$) testing whether the influence of credit rating changes on stock price of company is growing for issuers with lower credit rating prior to the announcement of credit rating change is also rejected. No such relationship is detected for both types of dividing the credit rating changes into groups when the development of average CAR and significance of CAR is investigated. In the same time the credit rating prior to the announcement does not prove to influence the variation in CAR computed for individual credit rating changes. Therefore the results are not consistent with statement proposed by Jorion and Zhang (2007) that credit rating prior to the announcement of credit rating change is the

neglected factor that in large extent explains the different influence of credit rating downgrades and upgrades on stock price of companies.

4.3 Set of hypotheses concerning the different distribution of credit rating downgrades and upgrades and its influence on overall results

The next set of hypotheses is tested in order to investigate whether different distribution of credit rating downgrades and upgrades in the sample can influence the overall result. If Jorion and Zhang (2007) argue to explain the different influence of credit rating downgrades and upgrades on stock prices with controlling for the credit rating prior to the announcement and magnitude, it is examined whether controlling for crossing the investment-speculative barrier, credit rating magnitudes, credit rating changes across and within credit rating category and consecutive credit rating changes in the same direction can also contribute to explaining the paradox.

The first hypothesis ($H3a$) focuses on investment-speculative barrier. In order to test the hypothesis, the credit rating changes across the barrier are investigated in more detail and sign and statistical significance of the variable representing whether the credit rating change is across the investment-speculative barrier is discussed.

$H3a$: The influence of credit rating change on stock price of company is higher when investment-speculative barrier is crossed

Table 4.3.1 introduces the average CAR connected to credit rating downgrades and upgrades across the investment-speculative barrier. The results are compared with the values presented in *Table 4.2.1* and *Table 4.2.2* and differences in proportion of credit rating downgrades and upgrades crossing the barrier are discussed.

Table 4.3.1: CAR around the announcement of credit rating change crossing the investment-speculative barrier

Credit rating change		**DOWNGRADES**	**%**	**UPGRADES**	**%**
crossing I/S barrier	N	141	9.85	128	11.53
	+	49	34.75	72	56.25
	-	92	65.25	56	43.75
	MEAN	-2.9809		0.5331	
	VARIANCE	148.7232		18.0244	
	STANDARD ERROR	12.1952		4.2455	
	t-statistic	-2.9025		1.4208	
	p-value	4.30E-03		0.1578	

Similarly to overall results, average CAR around the announcement of credit rating downgrades across the investment-speculative barrier are negative (-2.98) and statistically significant (4.30E-03). Average CAR around the announcement of credit rating upgrades are positive (0.53), but not significant (0.16). If the credit rating changes across the investment-speculative barrier are compared with similarly big groups of credit rating changes not crossing the barrier, then the significance of CAR connected to credit rating changes crossing the barrier is rather large. Nevertheless, when the credit rating changes across the barrier between BBB- and BB+ credit rating classes are compared with similar group of credit rating changes between BB+ and BB, then the results are similar.

The dummy variable D_BARRIER representing whether the credit rating change is across the investment-speculative barrier is not statistically significant in any regression model (**Appendix J**) and the sign of corresponding coefficient is opposite (positive) than expected (negative) in Model 1. When the variable D_BARRIER that has the lowest explanatory power in comparison with the other variables is excluded from the regression both the adjusted R-squared and p-value for F-test examining the relevance of the whole regression improve.

As it is discussed in subchapter focusing on descriptive statistics there is not any big difference between proportion of credit rating downgrades and upgrades crossing the investment-speculative barrier, therefore controlling for crossing the investment-speculative barrier is not necessary. All together, the hypothesis ($H3a$) that the influence of credit rating change on stock price of company is higher when investment-speculative barrier is crossed is rejected and the overall results are not affected by the influence of crossing the investment-speculative barrier.

The next hypothesis ($H3b$) focuses on the credit rating changes of different magnitudes when it is examined whether the credit rating changes of higher magnitude influence the stock price of company more substantially.

$H3b$: The influence of credit rating change on stock price of company is higher for credit rating changes of higher magnitude

Credit rating changes are divided into three groups when the third group includes credit rating changes of magnitude 3 and higher in order to have sufficiently large number of observations in each investigated group. *Table 4.3.2* summarizes the results for individual groups.

Table 4.3.2: CAR around the announcement of credit rating changes of different magnitudes

Magnitude		DOWNGRADES	%	UPGRADES	%
1	N	1126	78.69	1005	90.54
	+	497	44.14	520	51.74
	-	629	55.86	485	48.26
	MEAN	-1.3078		0.0984	
	VARIANCE	83.1355		16.5577	
	STANDARD ERROR	9.1179		4.0691	
	t-statistic	-4.8131		0.7666	
	p-value	1.69E-06		0.4435	
2	N	236	16.49	87	7.84
	+	90	38.14	48	55.17
	-	146	61.86	39	44.83
	MEAN	-2.8598		0.7019	
	VARIANCE	267.5997		25.6371	
	STANDARD ERROR	16.3585		5.0633	
	t-statistic	-2.6856		1.2929	
	p-value	7.75E-03		0.1995	
3 AND MORE	N	69	4.82	18	1.62
	+	26	37.68	12	66.67
	-	43	62.32	6	33.33
	MEAN	-9.4955		0.3302	
	VARIANCE	756.0831		17.3902	
	STANDARD ERROR	27.4970		4.1702	
	t-statistic	-2.8685		0.3359	
	p-value	5.47E-03		0.7411	

The average CAR are growing for credit rating downgrades of higher magnitude. Statistical significance of CAR is very high for each group of credit rating downgrades even if the number of observations is decreasing for credit rating downgrades of higher magnitudes. The average CAR around the announcement of credit rating upgrades is very small (0.10) and insignificant (0.44) for the first group of credit rating upgrades. The number of negative CAR (48.26%) is almost equal to number of positive CAR (51.74%). CAR connected to credit rating upgrades of magnitude 2 is still insignificant (0.20), but the average CAR (0.70) are larger and share of positive CAR increases (55.17%). The third group includes only 18 observations therefore the interpretation of results is questionable.

The variable MAGNITUDE is strongly significant in regression Models 1, 2, 3 and 4 (**Appendix J**). The variable most properly explains the variation in CAR and

magnitude of credit rating change is recognized as the most important driver of stock return.

All together, the hypothesis ($H3b$) is not rejected. Because the distribution of credit rating downgrades and upgrades concerning the magnitude of credit rating change is different when there is proportionally more than two times more credit rating downgrades (21.31%) with higher magnitude than 1 than credit rating upgrades (9.46%), it is reasonable to control for magnitude of credit rating change and to focus only on credit rating changes between neighbouring credit rating classes in the analysis. The average CAR around the announcement of credit rating downgrades (-1.31) are also 13 times larger than average CAR around the announcement of credit rating upgrades (0.10) as it is also investigated in overall analysis focusing on all credit rating changes. Even if controlled for the magnitude of credit rating change, the results are still clear. The CAR around the credit rating downgrades are significant (1.69E-06) and it is possible to reject that there are not any significant CAR around the announcement of credit rating downgrades and contrary it is not possible to reject the same for credit rating upgrades (0.44). Therefore the results are still consistent with Holthausen and Leftwich (1986).

The next hypothesis ($H3c$) focuses on differences between credit rating changes across two credit rating categories and within one when the influences of credit rating change on stock price is expected to be higher for credit rating changes across credit rating categories as it was firstly proposed by Holthausen and Leftwich (1986).

$H3c$: The influence of credit rating change on stock price of company is higher for credit rating changes across two credit rating categories (e.g. from BB- to B+ by S&P) than within one credit rating category (e.g. from BB- to BB by S&P)

Table 4.3.3 introduces the results for credit rating changes within and across credit rating categories. It is not controlled for magnitude, therefore there is proportionally more credit rating downgrades (39.06%) across credit rating categories than upgrades (35.23%) as it is discussed in descriptive statistics in more detail.

Table 4.3.3: CAR around the announcement of credit rating changes within and across credit rating categories

Credit rating change		DOWNGRADES	%	UPGRADES	%
WITHIN	N	872	60.94	719	64.77
	+	381	43.69	370	51.46
	-	491	56.31	349	48.54
	MEAN	-1.2433		0.0398	
	VARIANCE	119.5318		15.7039	
	STANDARD ERROR	10.9331		3.9628	
	t-statistic	-3.3582		0.2692	
	p-value	8.19E-04		0.7878	
ACROSS	N	559	39.06	391	35.23
	+	232	41.50	211	53.96
	-	327	58.50	180	46.04
	MEAN	-3.0742		0.3511	
	VARIANCE	192.0450		20.1389	
	STANDARD ERROR	13.8580		4.4876	
	t-statistic	-5.2450		1.5471	
	p-value	2.22E-07		0.1227	

The average CAR are larger for both credit rating downgrades and upgrades across credit rating categories than within one credit rating category. Even if there is less observations for credit rating changes across categories, average CAR are statistically more significant than average CAR connected to credit rating changes within one category. Nevertheless it still remains that it is possible to reject that there are not any CAR around the announcement of credit rating downgrades for both changes across the categories and within one and it is not possible to reject it for both groups of credit rating upgrades.

The coefficient corresponding to dummy variable D_ACROSS representing whether the credit rating change is within or across credit rating categories is negative in regressions run for credit rating downgrades (**Appendix J**) as expected, but it is not statistically significant (p-values around 0.17).

To conclude the results it is not possible to reject the hypothesis that the influence of credit rating change on stock price of company is higher for credit rating changes across two credit rating categories. There is proportionally more credit rating downgrades (39.06%) across credit rating categories than upgrades (35.23%) in the sample, but even if controlled for credit rating changes across credit rating categories and within the results remains the same. As it is shown in *Table 4.3.3*, the different

influence of credit rating downgrades and upgrades on stock price of issuer is clearly recognized for both groups of credit rating changes.

The last hypothesis ($H3d$) focuses on consecutive credit rating changes in the same direction when credit rating change following other one within one year is expected to influence the stock price of company more distinctively.

$H3d$: The influence of credit rating change on stock price of company is higher when the credit rating change follows credit rating change in the same direction within one year

Table 4.3.4 divides credit rating changes into two groups. The first group (YES) consists of credit rating changes following the credit rating change in the same direction within 365 calendar days when the condition for dividing the credit rating changes is expressed in calendar days instead of trading days in order to make the analysis clearer and more understandable. The second group (NO) of credit rating changes consists of credit rating changes following the credit rating change that is in opposite direction or occurred earlier than 365 days before the actual change.

Table 4.3.4: CAR around the announcement of credit rating changes following credit rating changes in the same direction within one year

Same change soon		DOWNGRADES	%	UPGRADES	%
YES	N	409	28.58	116	10.45
	+	157	38.39	59	50.86
	-	252	61.61	57	49.14
	MEAN	-3.3866		0.14813545	
	VARIANCE	331.7968		15.19182291	
	STANDARD ERROR	18.2153		3.897668908	
	t-statistic	-3.7600		0.409338932	
	p-value	1.95E-04		0.683052	
NO	N	1022	71.42	994	89.55
	+	456	44.62	522	52.52
	-	566	55.38	472	47.48
	MEAN	-1.3871		0.1496	
	VARIANCE	74.3136		17.5298	
	STANDARD ERROR	8.6205		4.1869	
	t-statistic	-5.1439		1.1266	
	p-value	3.23E-07		0.2602	

While the results are almost the same for consecutive and non-consecutive credit rating upgrades, the average CAR around the announcement of consecutive

credit rating downgrades are 2.7 times higher than average CAR around the announcement of non-consecutive credit rating downgrades. The statistical significance of CAR around consecutive credit rating downgrades is weaken by lower number of observations (in comparison to non-consecutive credit rating downgrades) and mainly by higher variance that suggests that consecutive credit rating downgrades are connected with more dramatic reactions of stock prices.

The coefficient corresponding to variable SAMESOON representing whether credit rating change follows other credit rating change in the same direction within one year is negative in regressions run for credit rating downgrades (**Appendix J**). The variable is not statistically significant, but p-values (around 0.10) are relatively small when it is compared with the other explanatory variables included in the regression models.

The hypothesis $H3d$ would be rejected for credit rating upgrades, but it is not possible to reject it for credit rating downgrades. Because noticeably different results for credit rating downgrades and upgrades are detected, the analysis of only those credit rating changes that are not following other credit rating change in the same direction follows. When all consecutive credit rating changes are excluded, the average CAR around the announcement of credit rating downgrades (-1.39) is 9.3 time higher than CAR around the announcement of credit rating upgrades (0.15) and it is strongly significant (3.23E-07) while CAR around the announcement of credit rating upgrades still remain statistically insignificant (0.26).

Moreover in order to assure that the overall results for all credit rating downgrades and upgrades are not deviated by extreme values or incorrectly obtained data, two further analyses are presented in **Appendix K**. Firstly, when the top and bottom 1%, 2% and 5% of credit rating downgrades and upgrades is excluded from the sample (in terms of CAR), the results are not changed at all. Statistical significance of CAR around the announcement of credit rating downgrades is very high (p-value 2.80E-15 when top and bottom 1% of observations is excluded, 7.33E-17 when 2% and 9.08E-20 when 5%) while average CAR connected to credit rating upgrades are still insignificant. Secondly, the observations where CAR were computed with use market model with coefficient of determination lower than 0.05, 0.1 and 0.2 are successively excluded from the sample. The results are not changed, CAR connected to credit rating downgrades are significant and CAR connected to credit rating upgrades not.

To shortly conclude all the results investigated in subchapter 4.3, credit rating changes of higher magnitude, credit rating changes across credit rating categories and

consecutive downgrades prove to influence the stock price of company more than the other corresponding credit rating changes and there is proportionally more credit rating downgrades of higher magnitude, more credit rating downgrades across credit rating categories and more consecutive credit rating downgrades. But even if controlled for magnitude of credit rating change, credit rating changes across and within one credit rating category and consecutive credit rating changes, the results are still clear and consistent with the statement that credit rating downgrades influence the stock price of company and upgrades not.

4.4 Influence of credit rating changes on stock price of issuers classified in selected industry sectors

The last hypothesis ($H4$) is not motivated by the concerns about different distribution in credit rating downgrades and upgrades as previous hypotheses, but it focuses on individual GICS industry sectors in order to examine whether there are any differences among them that could contribute to better understanding of the relationship between credit rating changes and stock price of issuers. Especially it is investigated whether there is any GICS industry sector where it holds that credit rating upgrades influence the stock price of companies.

$H4$: When controlled for the industry the credit rating upgrades influence the stock price of company

The analysis is focused on 9 from the total number of 10 GICS industry sectors when "Telecommunication services" sector is not included because sum of collected credit rating downgrades and upgrades is lower than 100. In order to keep the analysis clear, only the number of credit downgrades and upgrades, average CAR and corresponding p-values are presented in *Table 4.4.1* and complete overview of results is available on enclosed DVD as it is described in **Appendix I**.

Table 4.4.1: CAR around the announcement of credit rating changes for issuers classified into GICS industry sectors

GICS		DOWNGRADES	%	UPGRADES	%
Consumer Discretionary	N	327	22.85	241	21.71
	MEAN	-0.6459		0.4618	
	p-value	0.2500		0.1222	
Consumer Staples	N	73	5.10	40	3.60
	MEAN	-0.5481		0.9329	
	p-value	0.4270		0.1565	

GICS		DOWNGRADES	%	UPGRADES	%
Consumer Discretionary	N	327	22.85	241	21.71
	MEAN	-0.6459		0.4618	
	p-value	0.2500		0.1222	
Consumer Staples	N	73	5.10	40	3.60
	MEAN	-0.5481		0.9329	
	p-value	0.4270		0.1565	
Energy	N	139	9.71	134	12.07
	MEAN	-1.5623		-0.5573	
	p-value	0.1175		0.1357	
Financials	N	220	15.37	152	13.69
	MEAN	-1.7191		0.2772	
	p-value	0.1273		0.2203	
Health Care	N	83	5.80	98	8.83
	MEAN	-5.3259		0.0689	
	p-value	0.0082		0.8582	
Industrials	N	190	13.28	164	14.77
	MEAN	-2.7417		-0.3628	
	p-value	0.0024		0.1535	
Information Technology	N	82	5.73	75	6.76
	MEAN	-1.9646		0.3794	
	p-value	0.0768		0.5299	
Materials	N	179	12.51	113	10.18
	MEAN	-2.2895		0.5617	
	p-value	0.0014		0.1501	
Utilities	N	112	7.83	80	7.21
	MEAN	-2.8480		-0.2971	
	p-value	0.0070		0.6192	

The average CAR are positive for two thirds of credit rating upgrades collected for individual GICS sectors, but none of them is statistically significant. The most significant average CAR are collected for credit rating upgrades experienced by issuers classified in “Consumer discretionary” sector (0.12). Therefore it holds for all GICS sectors that it is not possible to reject that there are not any significant CAR around the announcement of credit rating upgrades. And the hypothesis ($H4$) as it is stated is rejected.

For each GICS sector the average CAR are negative. CAR are strongly statistically significant for “Health Care”, “Industrials”, “Materials” and “Utilities” when matching p-values are lower than 0.01. The analysis of results for credit rating downgrades and upgrades suggests that there is not any significant influence of credit rating upgrades on stock prices in any investigated GICS sector and even if there are

differences in significance of CAR around the announcement of credit rating downgrades there is not any GICS sector dramatically standing out from the line in the way that it could be possible to highlight it as a sector determining the overall results (driving the results) or contrarily to designate it as a sector exhibiting completely opposite results from the other sectors. The results of analysis focusing on influence of credit rating changes on stock prices of company for individual GICS sectors are consistent with the overall results introduced in subchapter 4.1.

5 Conclusion

The aim of the thesis is to examine whether counting for credit rating prior to the announcement of credit rating change explains in large extent the paradox that credit rating downgrades influence the stock price of company, but upgrades not. Jorion and Zhang (2007) suggest that credit rating changes from low credit rating classes influence the stock price of company more distinctively and there is proportionally more credit rating downgrades from lower credit rating classes than upgrades. They argue that omitting these characteristics affects the overall results discussed by prior authors. Jorion and Zhang (2007) find 14 times larger stock price reaction to credit rating downgrades than upgrades when they analyze all credit rating changes, but only 2 times larger stock price reaction to credit rating downgrades than upgrades when they control for credit rating prior to the announcement of credit rating change and its magnitude. Simultaneously the cumulated abnormal returns (CAR) connected to credit rating upgrades are statistically significant when controlled for prior credit rating and for magnitude. The role of prior credit rating is revisited in the thesis at least for three reasons. Firstly the revision investigating the role of credit rating prior to the announcement with use of different dataset is missing even if the results proposed by Jorion and Zhang (2007) suggest that the credit rating prior to the announcement is driver of variation in CAR connected to credit rating changes and counting for prior credit rating considerably change the conclusions for credit rating upgrades. Secondly it is not discussed whether it holds generally that there is proportionally more credit rating downgrades from lower credit rating classes than upgrades even if this assumption is essential for their explanation of the results introduced by prior authors. And finally the practice of controlling markedly decreases the number of investigated observations that is influencing the reliability of their analysis.

The dataset collected by author consists of 1431 credit rating downgrades and 1110 credit rating upgrades. More importantly the sample exhibit the opposite characteristics than it is assumed by Jorion and Zhang (2007) when there is proportionally more credit rating upgrades from low credit rating classes than downgrades. Despite the different distribution the overall results when CAR are computed for all credit rating downgrades and upgrades are consistent with the overall results published in prior papers such as Holthausen and Lefwich (1986) or Ederington and Goh (1999). The credit rating downgrades are connected with 13 times larger CAR than upgrades and only cumulated abnormal returns around the announcement of credit

rating downgrades are statistically significant. In order to examine the role of credit rating prior to the announcement the credit rating changes are divided into groups according to their prior credit ratings. There are not detected any significant CAR for any group of credit rating upgrades. Simultaneously it does not hold generally that the CAR connected to individual groups of credit rating changes are increasing for credit rating changes from lower credit rating categories. The average CAR exhibit increasing tendency for groups of credit rating downgrades from lower credit rating classes, but the statistical significance of CAR is similarly high for all groups of credit rating downgrades. And there is not detected any growing tendency in average CAR for credit rating upgrades from lower credit rating classes. Contrary to Jorion and Zhang (2007) the variable representing the credit rating prior to the announcement of credit rating change is not significant in the regression model explaining the variance in CAR and all together the practice of counting for the role of credit rating prior to the announcement does not contribute to explanation of the different influence of credit rating downgrades and upgrades on stock price of company.

The rationale for counting for credit rating prior to the announcement is based on notion that different distribution of credit rating downgrades and upgrades can possibly influence the overall results. Therefore the influence of credit rating changes of higher magnitude, credit rating changes crossing the investment-speculative barrier, credit rating changes within and across credit rating categories and consecutive credit rating changes in the same direction is examined and it is discussed whether different distribution of credit rating downgrades and upgrades influence the overall results. The results suggest that the influence of credit rating change on stock price of company is higher for credit rating changes of higher magnitude and there is proportionally more credit rating downgrades of higher magnitude than upgrades. When controlling for credit rating magnitude the results remain the same, the credit rating downgrades influence the stock price of company and upgrades not. The credit rating changes across credit rating categories prove to influence the stock price of company more distinctively than credit rating changes within one broad credit rating category and there is proportionally more credit rating downgrades across credit rating categories than upgrades, but when controlled for credit rating changes across credit rating categories it is not affecting the statement that credit rating downgrades influence the stock price of company and upgrades not. And finally consecutive credit rating downgrades prove to influence the stock price of company more substantially and there is proportionally more consecutive credit rating downgrades than upgrades, but when all consecutive credit rating changes are excluded from the analysis the CAR connected to credit rating downgrades remain strongly significant and CAR connected to upgrades not. Altogether, any further controlling in order to protect the overall results

from being affected by different distribution of credit rating downgrades and upgrades does not prove to be necessary and the results are persistent for all sets of controlling.

In the end the credit rating changes are divided into ten groups concerning the industry classification of issuers. The overall results are not driven by the results exhibited by companies classified only in one or few industry sectors, the results are persistent over all sectors and there are not detected any significant CAR connected to credit rating upgrades for any industry sector.

All together the thesis is consistent with the papers pointing out that credit rating downgrades influence the stock price of company and upgrades not. The results are not changed when the practice of controlling for credit rating prior to the announcement is employed and there is not detected any significant stock price reaction to credit rating upgrades. Even if it is controlled for the magnitude of credit rating change, credit rating changes within and across credit rating categories, consecutive credit rating downgrades or industry sectors of issuers, the results are persistent and credit rating downgrades seem to influence the stock price of company and upgrades not. The results support the idea that there is difference in reaction to credit rating downgrades and upgrades and it is not possible to explain it by differences in distribution of credit rating downgrades and upgrades. Therefore the further research focusing on investigation of real differences between credit rating downgrades and upgrades is needed and discussion of topics as different timeliness of credit rating downgrades and upgrades or influence of different willingness of managers to voluntarily publish bad and good news about company is required.

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Appendix A: Long-term credit ratings

S&P	Issue credit ratings	Issuer credit ratings
AAA	An obligation rated 'AAA' has the highest rating assigned by S&P. The obligor's capacity to meet its financial commitment on the obligation is extremely strong.	An obligor rated 'AAA' has extremely strong capacity to meet its financial commitments. 'AAA' is the highest issuer credit rating assigned by S&P.
AA	An obligation rated 'AA' differs from the highest-rated obligations only to a small degree. The obligor's capacity to meet its financial commitment on the obligation is very strong.	An obligor rated 'AA' has very strong capacity to meet its financial commitments. It differs from the highest-rated obligors only to a small degree.
A	An obligation rated 'A' is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligations in higher-rated categories. However, the obligor's capacity to meet its financial commitment on the obligation is still strong.	An obligor rated 'A' has strong capacity to meet its financial commitments but is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligors in higher-rated categories.
BBB	An obligation rated 'BBB' exhibits adequate protection parameters. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitment on the obligation.	An obligorrated 'BBB' has adequate capacity to meet its financial commitments. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitments.
BB	An obligation rated 'BB' is less vulnerable to nonpayment than other speculative issues. However, it faces major ongoing uncertainties or exposure to adverse business, financial, or economic conditions which could lead to the obligor's inadequate capacity to meet its financial commitment on the obligation.	An obligor rated 'BB' is less vulnerable in the near term than other lower-rated obligors. However, it faces major ongoing uncertainties and exposure to adverse business, financial, or economic conditions which could lead to the obligor's in adequate capacity to meet its financial commitments.
B	An obligation rated 'B' is more vulnerable to nonpayment than obligations rated 'BB', but the obligor currently has the capacity to meet its financial commitment on the obligation. Adverse business, financial, or economic conditions will likely impair the obligor's capacity or willingness to meet its financial commitment on the obligation.	An obligo rrated 'B' is more vulnerable than the obligors rated 'BB', but the obligor currently has the capacity to meet its financial commitments. Adverse business, financial, or economic conditions will likely impair the obligor's capacity or willingness to meet its financial commitments.

S&P	Issue credit ratings	Issuer credit ratings
CCC	An obligation rated 'CCC' is currently vulnerable to nonpayment, and is dependent upon favorable business, financial, and economic conditions for the obligor to meet its financial commitment on the obligation. In the event of adverse business, financial, or economic conditions, the obligor is not likely to have the capacity to meet its financial commitment on the obligation.	An obligor rated 'CCC' is currently vulnerable, an disdependent upon favorable business, financial, and economic conditions to meet its financial commitments.
CC	An obligation rated 'CC' is currently highly vulnerable to nonpayment.	An obligor rated 'CC' is currently highly vulnerable.
C	A 'C' rating is assigned to obligations that are currently highly vulnerable to nonpayment, obligations that have payment arrearages allowed by the terms of the documents, or obligations of an issuer that is the subject of a bankruptcy petition or similar action which have not experienced a payment default.	
D	An obligation rated 'D' is in payment default. The 'D' rating category is used when payments on an obligation are not made on the date due, unless Standard & Poor's believes that such payments will be made within five business days, irrespective of any grace period.	An obligor rated 'D' is in payment default on one or more of its financial obligations (rated or unrated) unless Standard & Poor's believes that such payments will be made within five business days, irrespective of any grace period. A 'D' rating is assigned when Standard&Poor's believes that the default will be a general default and that the obligor will fail to pay all or substantially all of its obligations as they come due.
SD		An obligor rated 'SD' (selective default) is in payment default on one or more of its financial obligations (rated or unrated) unless Standard & Poor's believes that such payments will be made within five business days, irrespective of any grace period. An 'SD' rating is assigned when Standard & Poor's believes that the obligor has selectively defaulted on a specific issue or class of obligations, but it will continue to meet its payment obligations on other issues or classes of obligations in a timely manner.
R		An obligor rated 'R' is under regulatory supervision owing to its financial condition. During the pendency of the regulatory supervision the regulators may have the power to favor one class of obligations over others or pay some obligations and not others.

Source: Standard & Poor's Ratings Definitions published by Standard and Poor's Financial Services on 22.6.2012

Note: The ratings from 'AA' to 'CCC' may be modified by the addition of a plus (+) or minus (-) sign to show relative standing within the major rating categories.

Appendix B: Credit rating transition matrices

1) Annual transitions of S&P long-term issuer credit ratings that start year in 'AAA' credit rating category

AAA	**AAA**	AA	A	BBB	BB	B	CCC	CC	SD. D. R	# of T	# of W
2000	**89.80**	10.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	196	12
2001	**89.25**	10.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	186	4
2002	**70.21**	29.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	188	1
2003	**87.79**	11.45	0.76	0.00	0.00	0.00	0.00	0.00	0.00	131	6
2004	**93.55**	6.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	124	1
2005	**77.77**	21.37	0.86	0.00	0.00	0.00	0.00	0.00	0.00	117	4
2006	**94.44**	4.44	1.11	0.00	0.00	0.00	0.00	0.00	0.00	90	4
2007	**97.12**	1.92	0.96	0.00	0.00	0.00	0.00	0.00	0.00	104	3
2008	**57.14**	30.95	6.35	0.00	0.00	3.97	1.59	0.00	0.00	126	7
2009	**87.67**	12.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73	2
2010	**66.15**	33.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65	0
2011	**51.02**	48.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49	0
2012	**92.31**	7.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26	0
AAA	**81.09**	**17.71**	**0.77**	**0.00**	**0.00**	**0.31**	**0.12**	**0.00**	**0.00**	**113.46**	**3.38**
										Total	116.85
										% of W	2.90%

2) Annual transitions of S&P long-term issuer credit ratings that start year in 'AA' credit rating category

AA	AAA	**AA**	A	BBB	BB	B	CCC	CC	SD. D. R	# of T	# of W
2000	0.37	**90.16**	8.98	0.49	0.00	0.00	0.00	0.00	0.00	813	72
2001	0.60	**87.25**	11.92	0.24	0.00	0.00	0.00	0.00	0.00	840	47
2002	0.25	**75.65**	20.62	3.23	0.00	0.25	0.00	0.00	0.00	805	51
2003	1.23	**83.87**	14.90	0.00	0.00	0.00	0.00	0.00	0.00	651	45
2004	0.00	**96.57**	3.25	0.18	0.00	0.00	0.00	0.00	0.00	554	42
2005	0.00	**94.32**	4.76	0.92	0.00	0.00	0.00	0.00	0.00	546	37
2006	0.51	**97.31**	2.19	0.00	0.00	0.00	0.00	0.00	0.00	594	19
2007	0.77	**95.99**	3.08	0.15	0.00	0.00	0.00	0.00	0.00	649	48
2008	0.14	**80.65**	18.49	0.43	0.00	0.00	0.00	0.14	0.14	704	31
2009	0.00	**77.37**	21.20	1.27	0.16	0.00	0.00	0.00	0.00	631	34
2010	1.01	**86.03**	12.96	0.00	0.00	0.00	0.00	0.00	0.00	494	17
2011	0.00	**83.62**	13.62	2.55	0.00	0.21	0.00	0.00	0.00	469	11
2012	0.22	**82.38**	15.86	1.54	0.00	0.00	0.00	0.00	0.00	453	10
AA	**0.39**	**87.01**	**11.68**	**0.85**	**0.01**	**0.04**	**0.00**	**0.01**	**0.01**	**631.00**	**35.69**

Total	666.69
% of W	5.35%

3) Annual transitions of S&P long-term issuer credit ratings that start year in 'A' credit rating category

A	AAA	AA	**A**	BBB	BB	B	CCC	CC	SD. D. R	# of T	# of W
2000	0.00	3.44	**88.10**	7.39	0.38	0.06	0.38	0.00	0.25	1597	105
2001	0.19	2.39	**90.23**	6.24	0.38	0.00	0.00	0.25	0.25	1587	125
2002	0.00	0.49	**87.42**	10.91	0.86	0.12	0.06	0.00	0.12	1623	131
2003	0.00	1.03	**89.92**	8.93	0.13	0.00	0.00	0.00	0.00	1556	163
2004	0.00	1.35	**95.51**	3.14	0.00	0.00	0.00	0.00	0.00	1560	66
2005	0.06	1.81	**94.44**	3.69	0.00	0.00	0.00	0.00	0.00	1601	73
2006	0.00	4.72	**91.27**	3.48	0.47	0.06	0.00	0.00	0.00	1697	57
2007	0.00	4.37	**92.60**	2.61	0.18	0.18	0.06	0.00	0.00	1648	165
2008	0.00	1.45	**92.89**	5.09	0.31	0.00	0.13	0.00	0.13	1589	107
2009	0.00	0.25	**91.09**	7.18	0.56	0.50	0.00	0.43	0.00	1615	118
2010	0.00	1.40	**95.79**	2.75	0.00	0.06	0.00	0.00	0.00	1636	56
2011	0.00	1.89	**91.64**	6.04	0.43	0.00	0.00	0.00	0.00	1639	74
2012	0.00	1.72	**91.51**	6.21	0.49	0.06	0.00	0.00	0.00	1626	56
A	**0.02**	**2.02**	**91.72**	**5.67**	**0.32**	**0.08**	**0.05**	**0.05**	**0.06**	**1613.38**	**99.69**
										Total	1713.08
										% of W	5.82%

4) Annual transitions of S&P long-term issuer credit ratings that start year in 'BBB' credit rating category

BBB	AAA	AA	A	**BBB**	BB	B	CCC	CC	SD. D. R	# of T	# of W
2000	0.06	0.36	3.92	**90.50**	4.10	0.53	0.12	0.06	0.36	1684	95
2001	0.11	0.22	3.43	**90.16**	4.53	0.17	0.44	0.55	0.28	1808	105
2002	0.00	0.16	2.01	**87.76**	6.57	2.54	0.21	0.11	0.53	1886	145
2003	0.00	0.00	2.59	**90.67**	6.42	0.32	0.00	0.00	0.00	1543	457
2004	0.00	0.06	5.04	**91.72**	2.93	0.19	0.06	0.00	0.00	1607	93
2005	0.00	0.19	8.07	**88.08**	3.09	0.50	0.00	0.00	0.06	1586	98
2006	0.00	0.13	4.73	**92.31**	2.56	0.26	0.00	0.00	0.00	1522	117
2007	0.07	0.07	4.52	**92.04**	2.63	0.68	0.00	0.00	0.00	1482	134
2008	0.00	0.13	3.25	**92.04**	3.85	0.27	0.07	0.07	0.33	1505	66
2009	0.00	0.00	2.85	**90.48**	5.21	0.97	0.21	0.07	0.21	1440	145
2010	0.00	0.00	2.95	**95.20**	1.71	0.14	0.00	0.00	0.00	1458	59
2011	0.00	0.00	3.08	**92.88**	3.43	0.48	0.00	0.07	0.07	1460	84
2012	0.00	0.00	3.06	**92.80**	4.08	0.06	0.00	0.00	0.00	1568	54
BBB	**0.02**	**0.10**	**3.81**	**91.28**	**3.93**	**0.55**	**0.09**	**0.07**	**0.14**	**1580.69**	**127.08**
										Total	1707.77
										% of W	7.44%

5) Annual transitions of S&P long-term issuer credit ratings that start year in 'BB' credit rating category

BB	AAA	AA	A	BBB	**BB**	B	CCC	CC	SD. D. R	# of T	# of W
2000	0.00	0.39	0.10	3.97	**86.94**	7.45	0.77	0.10	0.29	1035	78
2001	0.00	0.18	0.18	3.23	**82.26**	8.97	2.31	0.74	2.13	1083	69
2002	0.09	0.28	0.47	3.63	**83.13**	9.69	0.56	0.47	1.68	1073	98
2003	0.00	0.00	0.00	4.00	**83.06**	11.65	0.24	0.12	0.94	850	320
2004	0.11	0.00	0.11	5.51	**87.75**	5.39	0.11	0.11	0.90	890	74
2005	0.00	0.00	0.21	9.52	**82.54**	7.20	0.32	0.00	0.21	946	83
2006	0.00	0.12	0.00	6.84	**87.12**	5.68	0.23	0.00	0.00	862	130
2007	0.00	0.00	0.00	8.56	**84.46**	6.87	0.11	0.00	0.00	888	100
2008	0.00	0.00	0.00	6.65	**82.72**	8.53	1.33	0.22	0.55	903	77
2009	0.00	0.00	0.00	3.47	**82.13**	12.90	0.87	0.12	0.50	806	90
2010	0.00	0.00	0.00	5.44	**89.77**	4.53	0.13	0.00	0.13	772	60
2011	0.00	0.00	0.00	6.21	**86.19**	6.84	0.63	0.00	0.13	789	107
2012	0.00	0.00	0.12	4.77	**87.33**	7.67	0.12	0.00	0.00	860	59
BB	**0.02**	**0.07**	**0.09**	**5.52**	**85.03**	**7.95**	**0.59**	**0.14**	**0.57**	**904.38**	**103.46**
										Total	1007.85
										% of W	10.27%

5) Annual transitions of S&P long-term issuer credit ratings that start year in 'B' credit rating category

B	AAA	AA	A	BBB	BB	**B**	CCC	CC	SD. D. R	# of T	# of W
2000	0.00	0.42	0.31	0.63	5.12	**82.97**	5.02	0.00	5.54	957	123
2001	0.00	0.00	0.56	0.45	7.40	**75.90**	7.96	2.69	5.05	892	142
2002	0.00	0.00	0.00	0.27	3.99	**82.31**	9.18	1.06	3.19	752	110
2003	0.00	0.00	0.00	0.15	7.54	**83.43**	6.36	0.30	2.22	676	211
2004	0.00	0.00	0.53	0.40	11.55	**83.80**	2.66	0.13	0.93	753	95
2005	0.00	0.00	0.12	0.62	9.53	**84.65**	4.58	0.12	0.37	808	144
2006	0.00	0.00	0.11	0.00	10.24	**85.68**	3.30	0.11	0.55	908	131
2007	0.00	0.00	0.00	0.10	9.37	**86.51**	3.60	0.41	0.00	971	140
2008	0.00	0.00	0.00	0.19	4.17	**83.58**	8.72	1.21	2.13	1079	114
2009	0.00	0.00	0.00	0.00	2.73	**80.33**	12.20	1.58	3.16	951	107
2010	0.00	0.00	0.11	0.00	7.45	**89.66**	2.23	0.22	0.33	899	83
2011	0.00	0.00	0.00	0.10	7.71	**86.11**	4.47	0.38	1.24	1051	119
2012	0.00	0.00	0.00	0.35	3.99	**90.20**	4.51	0.35	0.61	1152	111
B	**0.00**	**0.03**	**0.13**	**0.25**	**6.98**	**84.24**	**5.75**	**0.66**	**1.95**	**911.46**	**125.38**
										Total	1036.85
										% of W	12.09%

6) Annual transitions of S&P long-term issuer credit ratings that start year in 'CCC' credit rating category

CCC	AAA	AA	A	BBB	BB	B	**CCC**	CC	SD. D. R	# of T	# of W
2000	0.00	0.00	0.00	0.00	0.00	12.75	**70.59**	0.98	15.69	102	30
2001	0.00	0.00	0.00	0.00	0.79	9.45	**66.14**	3.94	19.69	127	44
2002	0.00	0.00	0.00	0.00	1.27	12.74	**64.97**	1.27	19.75	157	46
2003	0.00	0.00	0.00	0.00	0.00	24.58	**61.86**	3.39	10.17	118	77
2004	0.00	0.00	0.00	0.00	0.98	23.53	**68.63**	0.00	6.86	102	43
2005	0.00	0.00	0.00	1.09	1.09	27.17	**65.22**	3.26	2.17	92	22
2006	0.00	0.00	0.00	0.00	0.00	17.50	**77.50**	1.25	3.75	80	27
2007	0.00	0.00	0.00	0.00	0.00	31.65	**59.49**	2.53	6.33	79	24
2008	0.00	0.00	0.00	0.00	0.00	20.34	**64.41**	8.48	6.78	59	29
2009	0.00	0.00	0.00	0.00	0.00	16.67	**57.14**	5.95	20.24	84	70
2010	0.00	0.00	0.00	0.00	0.00	44.30	**49.66**	2.01	4.03	149	33
2011	0.00	0.00	0.00	0.00	1.15	29.89	**59.77**	3.45	5.75	87	21
2012	0.00	0.00	0.00	0.00	0.00	27.16	**62.96**	6.17	3.70	81	35
CCC	**0.00**	**0.00**	**0.00**	**0.08**	**0.41**	**22.90**	**63.72**	**3.28**	**9.61**	**101.31**	**38.54**
										Total	139.85
										% of W	27.56%

6) Annual transitions of S&P long-term issuer credit ratings that start year in 'CC' credit rating category

CC	AAA	AA	A	BBB	BB	B	CCC	**CC**	SD. D. R	# of T	# of W
2000	0.00	0.00	0.00	0.00	10.00	0.00	30.00	**30.00**	30.00	10	3
2001	0.00	0.00	0.00	0.00	0.00	25.00	25.00	**50.00**	0.00	4	2
2002	0.00	0.00	4.00	0.00	4.00	12.00	12.00	**24.00**	44.00	25	32
2003	0.00	0.00	0.00	0.00	0.00	9.09	36.36	**45.45**	9.09	11	12
2004	0.00	0.00	16.67	0.00	0.00	0.00	50.00	**33.33**	0.00	6	7
2005	0.00	0.00	0.00	0.00	0.00	66.67	0.00	**0.00**	33.33	3	1
2006	0.00	0.00	0.00	0.00	0.00	33.33	0.00	**66.67**	0.00	3	2
2007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**100.00**	0.00	1	3
2008	0.00	0.00	0.00	0.00	0.00	0.00	50.00	**25.00**	25.00	4	3
2009	0.00	0.00	0.00	0.00	12.50	0.00	12.50	**25.00**	50.00	8	15
2010	0.00	0.00	0.00	0.00	0.00	16.67	22.22	**55.56**	5.56	18	13
2011	0.00	0.00	0.00	0.00	0.00	9.09	18.18	**72.72**	0.00	11	4
2012	0.00	0.00	0.00	0.00	0.00	0.00	8.33	**83.33**	8.33	12	5
CC	**0.00**	**0.00**	**1.59**	**0.00**	**2.04**	**13.22**	**20.35**	**47.00**	**15.79**	**8.92**	**7.85**
										Total	16.77
										% of W	46.79%

7) Annual transitions of S&P long-term issuer credit ratings that start year in ‘SD’. ‘D’ and ‘R’ credit rating categories

SD. D. R	AAA	AA	A	BBB	BB	B	CCC	CC	**SD. D. R**	# of T	# of W
2000	0.00	0.46	0.46	0.00	0.00	0.00	0.92	0.00	**98.17**	218	23
2001	0.00	0.00	0.00	0.00	0.00	0.38	0.00	1.15	**98.47**	261	53
2002	0.00	0.00	0.00	0.00	0.66	2.00	1.33	0.00	**96.00**	150	219
2003	0.00	0.00	0.00	0.00	0.00	0.98	5.37	0.00	**93.66**	205	44
2004	0.00	0.00	0.00	0.51	1.54	3.59	3.08	0.00	**91.28**	195	40
2005	0.00	0.00	0.00	0.00	0.00	3.30	0.55	0.00	**96.15**	182	21
2006	0.00	0.00	0.00	0.00	0.00	2.40	0.00	0.00	**97.60**	167	18
2007	0.00	0.00	0.00	0.70	0.00	0.70	0.00	0.00	**98.60**	143	30
2008	0.00	0.00	0.00	0.00	0.00	0.70	0.00	0.00	**99.30**	143	7
2009	0.00	0.00	0.00	0.00	0.00	15.39	23.08	0.00	**61.54**	13	171
2010	0.00	0.00	0.00	0.00	7.14	46.43	14.29	0.00	**32.14**	28	38
2011	0.00	0.00	0.00	0.00	0.00	16.67	16.67	0.00	**66.67**	6	16
2012	0.00	0.00	0.00	0.00	0.00	33.33	11.11	0.00	**55.56**	9	17
SD. D. R	**0.00**	**0.04**	**0.04**	**0.09**	**0.72**	**9.68**	**5.88**	**0.09**	**83.47**	**132.31**	**53.62**
										Total	185.92
										% of W	28.84%

Note: T – transactions, W - withdrawals

Appendix C: Credit rating changes for one issuer

The example of overview of credit rating changes downloaded from Thompson Reuters Eikon database for one issuer (United States Steel Corporation). Author always transformed credit rating to cardinal scale and dates to numerical form. The same information are collected for all 685 issuers that are included in the dataset and excel files for each issuer is available on Enclosed DVD.

S&P Rating	Date	Numerical	Cardinal Scale
BB+	30-Sep-1993	30.9.1993	11
BBB-	27-Nov-1996	27.11.1996	10
BBB	08-May-2000	8.5.2000	9
NR	04-Dec-2000	4.12.2000	
BB+	24-Apr-2001	24.4.2001	11
BB	29-Jun-2001	29.1.2001	12
BB-	07-May-2003	7.5.2003	13
BB	12-Nov-2004	12.11.2004	12
BB+	17-Jan-2007	17.1.2007	11
BB	28-Apr-2009	28.4.2009	12
BB-	17-Jun-2013	17.7.2013	13
	17-Jun-2013		

Appendix D: Classification structure of GICS

GICS Sectors	GICS Industry Groups	GICS Industries
Energy	Energy	Energy Equipment & Services Oil, Gas & Consumable Fuels
Materials	Materials	Chemicals Construction Materials Containers & Packaging Metals & Mining Paper & Forest Products
Industrials	Capital Goods Commercial & Professional Services Transportation	Aerospace & Defense Building Products Construction & Engineering Electrical Equipment Industrial Conglomerates Machinery Trading Companies & Distributors Commercial Services & Supplies Professional Services Air Freight & Logistics Airlines Marine Road & Rail Transportation Infrastructure
Consumer Discretionary	Automobiles & Components Consumer Durables & Apparel Consumer Services Media Retailing	Auto Components Automobiles Household Durables Leisure Products Textiles, Apparel & Luxury Goods Hotels, Restaurants & Leisure Diversified Consumer Services Media Distributors Internet & Catalog Retail Multiline Retail Specialty Retail
Consumer Staples	Food & Staples Retailing Food, Beverage & Tobacco Household & Personal Products	Food & Staples Retailing Beverages Food Products Tobacco Household Products Personal Products

GICS Sectors	GICS Industry Groups	GICS Industries
Health Care	Health Care Equipment & Services Pharmaceuticals, Biotechnology & Life Sciences	Health Care Equipment & Supplies Health Care Providers & Services Health Care Technology Biotechnology Pharmaceuticals Life Sciences Tools & Services
Financials	Banks Diversified Financials Insurance Real Estate	Banks Thrifts & Mortgage Finance Diversified Financial Services Consumer Finance Capital Markets Insurance Real Estate Real Estate Investment Trusts Real Estate Management & Development
Information Technology	Software & Services Technology Hardware & Equipment Semiconductors & Semiconductor Equipment	Internet Software & Services IT Services Software Communications Equipment Technology Hardware, Storage & Peripherals Electronic Equipment, Instruments & Components Office Electronics Semiconductor Equipment & Products
Telecommunication Services	Telecommunication Services	Diversified Telecommunication Services Wireless Telecommunication Services
Utilities	Utilities	Electric Utilities Gas Utilities Multi-Utilities Water Utilities Independent Power and Renewable Electricity Producers

Source: Official GICS structure & sub-industry definitions, Effective as of February 28, 2014

Appendix E: Information gathered for each company

The example of gathered and calculated information for one issuer (United States Steel Corporation). The same information are collected for all 685 issuers that are included in the dataset and excel files for each issuer is available on Enclosed DVD.

Company	Industry - GICS	Ticker	Stock Exchange	Date of change
UNITED STATES STEEL CORP	Materials	X	NYSE	27.11.1996
UNITED STATES STEEL CORP	Materials	X	NYSE	8.5.2000
UNITED STATES STEEL CORP	Materials	X	NYSE	29.1.2001
UNITED STATES STEEL CORP	Materials	X	NYSE	7.5.2003
UNITED STATES STEEL CORP	Materials	X	NYSE	12.11.2004
UNITED STATES STEEL CORP	Materials	X	NYSE	17.1.2007
UNITED STATES STEEL CORP	Materials	X	NYSE	28.4.2009
UNITED STATES STEEL CORP	Materials	X	NYSE	17.7.2013

Prior rating	Change to	Magnitude	DOWN (=0)/UP (=1)	BARRIER (YES=1)	ACROSS (=1) /WITHIN (=0)
11	10	1	1	1	1
10	9	1	1	0	0
11	12	1	0	0	0
12	13	1	0	0	0
13	12	1	1	0	0
12	11	1	1	0	0
11	12	1	0	0	0
12	13	1	0	0	0

Days from change	Same direction (YES=1)	Change soon (YES=1)	SAME CHANGE SOON (YES=1)	CAR	R^2
			0	-0.88346	0.1017
1258	1	0	0	-1.39176	0.1122
266	0	1	0	3.611625	0.0856
828	1	0	0	0.810865	0.285
555	0	0	0	0.421208	0.3191
796	1	0	0	-3.94069	0.3558
832	0	0	0	-13.7895	0.6398
1541	1	0	0	2.593376	0.2613

Appendix F: Practice of obtaining the CAR

The example of obtaining the CAR connected to one credit rating change announcement. Namely it is for the credit rating change announcement for United States Steel Corporation that occurred on 27.11.1996. CAR are computed over period from 26.11.1996 to 29.11.1996. Parameters are estimated with use of market model over period from 4.12.1995 to 18.9.1996. The same procedure was employed for each credit rating change announcement when the final dataset consists of 2541 credit rating change announcement. All market models and computed CAR are available in excel files for each issuer on Enclosed DVD.

DATE	S&P 500 returns (%)	Company stock's returns (%)
29.11.1996	0.27	-1.23
27.11.1996	**-0.13**	**0.41**
26.11.1996	-0.14	-0.41
25.11.1996	1.11	0.83
22.11.1996	0.81	0.41
21.11.1996	-0.16	0.00
20.11.1996	0.24	0.42
19.11.1996	0.70	0.42
18.11.1996	-0.08	0.42
15.11.1996	0.24	0.85
14.11.1996	0.65	2.61
13.11.1996	0.22	-2.13
12.11.1996	-0.32	4.44
11.11.1996	0.14	0.90
8.11.1996	0.44	-0.45
7.11.1996	0.42	-0.88
6.11.1996	1.46	0.44
5.11.1996	1.05	3.69
4.11.1996	0.42	0.46
1.11.1996	-0.21	-0.46
31.10.1996	0.62	-0.46
30.10.1996	-0.09	-1.36
29.10.1996	0.61	1.84
28.10.1996	-0.52	1.88
25.10.1996	-0.20	-2.29
24.10.1996	-0.70	-2.68
23.10.1996	0.10	-0.44

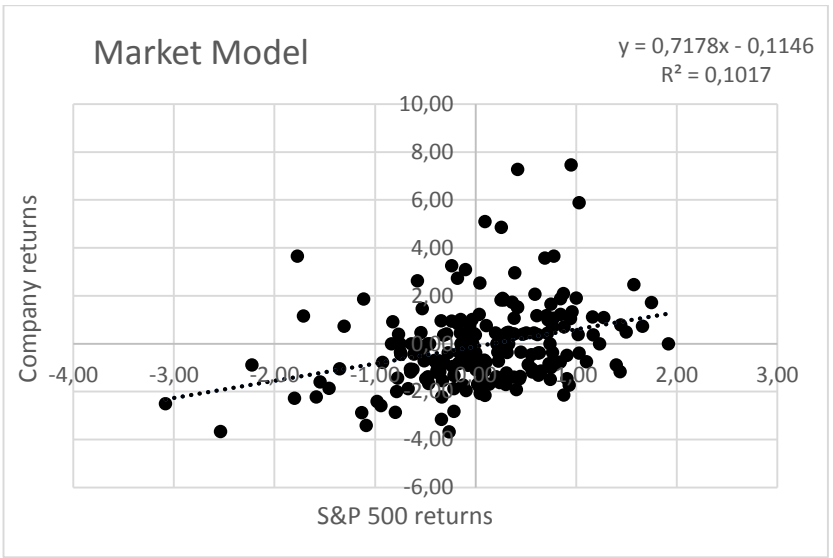
22.10.1996	-0.46	-0.88
21.10.1996	-0.14	0.89
18.10.1996	0.54	-1.32
17.10.1996	0.37	2.24
16.10.1996	0.26	0.00
15.10.1996	-0.14	-0.89
14.10.1996	0.41	-0.88
11.10.1996	0.87	1.34
10.10.1996	-0.31	-1.32
9.10.1996	-0.56	0.44
8.10.1996	-0.38	-0.88
7.10.1996	0.27	0.88
4.10.1996	1.25	-1.31
3.10.1996	-0.18	-0.87
2.10.1996	0.72	-1.28
1.10.1996	0.26	2.63
30.9.1996	0.16	1.33
27.9.1996	0.05	0.90
26.9.1996	0.00	-0.45
25.9.1996	0.03	0.45
24.9.1996	-0.13	0.00
23.9.1996	-0.08	-0.45
20.9.1996	0.59	-0.44
19.9.1996	0.22	0.90
18.9.1996	-0.22	-1.33
17.9.1996	-0.15	0.44
16.9.1996	0.51	0.45
13.9.1996	1.40	-0.88
12.9.1996	0.58	0.44
11.9.1996	0.52	-0.88
10.9.1996	0.01	-0.87
9.9.1996	1.23	0.00
6.9.1996	0.96	1.33
5.9.1996	-0.94	-2.59
4.9.1996	0.14	-1.69
3.9.1996	0.42	7.27
30.8.1996	-0.82	0.92
29.8.1996	-1.11	1.87
28.8.1996	-0.24	0.94
27.8.1996	0.38	-1.40
26.8.1996	-0.47	-1.38
23.8.1996	-0.54	0.46
22.8.1996	0.84	1.88
21.8.1996	-0.09	0.00
20.8.1996	-0.13	0.00
19.8.1996	0.21	-1.39

16.8.1996	0.44	-1.37
15.8.1996	0.03	-1.79
14.8.1996	0.28	1.83
13.8.1996	-0.84	0.00
12.8.1996	0.55	-0.45
9.8.1996	-0.07	-0.90
8.8.1996	-0.24	3.26
7.8.1996	0.27	1.90
6.8.1996	0.33	0.48
5.8.1996	-0.34	0.96
2.8.1996	1.92	0.00
1.8.1996	1.57	2.46
31.7.1996	0.74	0.00
30.7.1996	0.69	3.57
29.7.1996	-0.78	-2.00
26.7.1996	0.75	-0.99
25.7.1996	0.72	1.00
24.7.1996	-0.04	1.01
23.7.1996	-1.09	-3.41
22.7.1996	-0.78	-1.44
19.7.1996	-0.75	0.00
18.7.1996	1.50	0.48
17.7.1996	0.91	-0.48
16.7.1996	-0.23	-0.95
15.7.1996	-2.54	-3.67
12.7.1996	0.08	-0.91
11.7.1996	-1.58	-2.22
10.7.1996	0.20	0.45
9.7.1996	0.34	0.45
8.7.1996	-0.75	-0.45
5.7.1996	-2.22	-0.88
3.7.1996	-0.18	2.73
2.7.1996	-0.34	-2.22
1.7.1996	0.78	-0.88
28.6.1996	0.31	0.44
27.6.1996	0.63	-1.31
26.6.1996	-0.61	-0.43
25.6.1996	-0.06	0.00
24.6.1996	0.30	-1.71
21.6.1996	0.72	0.43
20.6.1996	0.02	-1.69
19.6.1996	-0.02	0.42
18.6.1996	-0.47	-1.67
17.6.1996	-0.10	0.00
14.6.1996	-0.31	-0.83
13.6.1996	-0.17	-0.82

12.6.1996	-0.29	0.41
11.6.1996	-0.18	0.83
10.6.1996	-0.17	-0.82
7.6.1996	0.04	2.53
6.6.1996	-0.80	-2.87
5.6.1996	0.87	2.09
4.6.1996	0.73	-0.83
3.6.1996	-0.22	-2.82
31.5.1996	-0.38	-1.20
30.5.1996	0.56	-1.18
29.5.1996	-0.64	0.00
28.5.1996	-0.93	-0.78
24.5.1996	0.37	0.39
23.5.1996	-0.36	-1.16
22.5.1996	0.84	-0.77
21.5.1996	-0.06	0.78
20.5.1996	0.63	-0.39
17.5.1996	0.61	1.17
16.5.1996	-0.09	-0.39
15.5.1996	-0.03	0.00
14.5.1996	0.62	-0.39
13.5.1996	1.44	0.78
10.5.1996	1.03	-0.39
9.5.1996	0.10	-0.77
8.5.1996	1.02	0.39
7.5.1996	-0.40	-0.77
6.5.1996	-0.13	-0.76
3.5.1996	-0.27	-0.38
2.5.1996	-1.71	1.15
1.5.1996	0.06	-1.52
30.4.1996	0.00	-0.38
29.4.1996	0.11	0.76
26.4.1996	0.09	-1.13
25.4.1996	0.42	1.53
24.4.1996	-0.22	-1.87
23.4.1996	0.57	-1.11
22.4.1996	0.44	-1.46
19.4.1996	0.23	-0.72
18.4.1996	0.31	-0.36
17.4.1996	-0.53	-0.36
16.4.1996	0.39	2.96
15.4.1996	0.91	-1.46
12.4.1996	0.88	-2.14
11.4.1996	-0.37	-0.71
10.4.1996	-1.35	-1.05
9.4.1996	-0.32	0.35

8.4.1996	-1.77	3.65
4.4.1996	-0.00	0.37
3.4.1996	0.09	-2.15
2.4.1996	0.23	-0.36
1.4.1996	1.27	1.08
29.3.1996	-0.53	1.47
28.3.1996	0.00	-1.09
27.3.1996	-0.62	-1.08
26.3.1996	0.45	-0.36
25.3.1996	-0.09	-0.71
22.3.1996	0.22	-0.35
21.3.1996	-0.12	-1.74
20.3.1996	-0.26	-3.68
19.3.1996	-0.15	1.01
18.3.1996	1.75	1.72
15.3.1996	0.09	-0.68
14.3.1996	0.36	1.74
13.3.1996	0.23	0.00
12.3.1996	-0.46	0.00
11.3.1996	1.03	5.88
8.3.1996	-3.08	-2.51
7.3.1996	0.25	1.82
6.3.1996	-0.58	2.62
5.3.1996	0.77	-0.37
4.3.1996	1.00	1.90
1.3.1996	0.62	0.38
29.2.1996	-0.67	-1.87
28.2.1996	-0.38	-1.11
27.2.1996	-0.50	-1.46
26.2.1996	-1.31	0.74
23.2.1996	0.03	-1.09
22.2.1996	1.66	0.73
21.2.1996	1.16	1.11
20.2.1996	-1.13	-2.88
16.2.1996	-0.51	-0.71
15.2.1996	-0.65	-1.06
14.2.1996	-0.75	-0.35
13.2.1996	-0.14	-0.35
12.2.1996	0.77	1.06
9.2.1996	0.05	-2.08
8.2.1996	0.94	1.05
7.2.1996	0.56	-1.04
6.2.1996	0.76	0.70
5.2.1996	0.88	0.70
2.2.1996	-0.41	-0.70
1.2.1996	0.38	1.06

31.1.1996	0.93	-1.74
30.1.1996	0.95	7.46
29.1.1996	0.42	1.52
26.1.1996	0.74	-1.49
25.1.1996	-0.47	0.00
24.1.1996	1.17	0.37
23.1.1996	-0.10	3.09
22.1.1996	0.26	4.86
19.1.1996	0.59	2.07
18.1.1996	0.31	-1.22
17.1.1996	-0.34	-3.16
16.1.1996	1.44	-1.17
15.1.1996	-0.33	-1.54
12.1.1996	-0.15	0.00
11.1.1996	0.70	1.17
10.1.1996	-1.80	-2.28
9.1.1996	-1.46	-1.87
8.1.1996	0.28	0.37
5.1.1996	-0.16	-0.37
4.1.1996	-0.58	0.00
3.1.1996	0.10	5.10
2.1.1996	0.78	3.66
29.12.1995	0.29	0.00
28.12.1995	-0.07	-0.40
27.12.1995	0.04	1.23
26.12.1995	0.38	0.41
22.12.1995	0.24	-1.62
21.12.1995	0.75	1.65
20.12.1995	-0.98	-2.41
19.12.1995	0.84	1.22
18.12.1995	-1.55	-1.60
15.12.1995	-0.09	-1.96
14.12.1995	-0.77	0.39
13.12.1995	0.47	0.40
12.12.1995	-0.12	0.40
11.12.1995	0.33	0.00
8.12.1995	0.21	0.00
7.12.1995	-0.65	-1.18
6.12.1995	0.40	-1.92
5.12.1995	0.65	-1.14
4.12.1995	1.10	-0.75



α	-0.1146
β	0.7178
R^2	0.1017
CAR	-0.883459591

Appendix G: Overview of all collected observations

The overview of the most basic information about all collected observations. The complete information gathered for all credit rating change announcements are available on Enclosed DVD.

Ticker	Date	Prior rating	Change to	CAR
A	15.11.2001	8	10	-0.7799
A	07.2.2003	10	12	-27.9030
A	13.4.2005	12	11	1.2942
A	12.1.2007	11	10	-2.3658
A	22.12.2011	10	8	-0.8573
AA	3.10.2002	5	6	-2.2634
AA	20.6.2003	6	7	-1.8738
AA	19.1.2007	7	8	2.9858
AA	10.2.2009	8	10	-1.4501
AAP	16.9.2003	13	12	0.8758
AAP	01.10.2004	12	11	1.0722
AAP	26.4.2010	11	10	0.7016
ABC	28.4.2003	12	11	5.9790
ABC	10.11.2005	11	10	-1.2121
ABC	25.1.2008	10	9	-1.6629
ABC	30.1.2009	9	8	1.1156
ABC	26.1.2011	8	7	0.8817
ABG	24.12.2008	13	14	11.6952
ABG	23.4.2012	14	13	-2.4722
ABG	14.3.2013	13	12	3.8664
ABT	02.3.2001	1	3	-0.7818
ABT	26.10.2012	3	5	-0.4501
ACCO	7.1.2009	13	14	21.9450
ACCO	1.5.2012	14	13	2.4915
ACI	3.8.2004	11	12	-4.2536
ACI	19.7.2005	12	13	3.4491
ACI	15.9.2008	13	12	1.4351
ACI	1.10.2009	12	13	-2.0663
ACI	3.5.2012	13	14	-6.1156
ACI	3.12.2013	14	15	6.6050
ACMP	26.4.2012	11	12	1.5173
ACMP	15.5.2012	12	13	-1.9025
ACMP	30.7.2013	13	12	-1.9080
ACW	19.12.2012	15	16	-3.2957
ADM	20.1.2000	4	5	0.3309
ADM	13.9.2005	5	6	-1.0856
AEE	31.1.2003	5	7	0.0400
AEE	03.10.2005	7	8	-1.1370
AEE	05.10.2006	8	9	-0.8349
AEE	23.4.2007	9	10	3.4694
AEE	14.3.2013	10	9	1.4932
AEE	04.12.2013	9	8	0.8892
AEP	23.5.2002	7	8	1.7322
AEP	07.3.2003	8	9	0.4574
AES	05.6.2002	12	13	-22.4586
AES	03.10.2002	13	14	-11.8106
AES	29.3.2006	14	13	0.1743
AES	07.1.2011	13	12	2.6651
AES	17.5.2011	12	13	-2.1078
AET	14.8.1997	7	6	0.3245
AET	15.11.2000	6	7	4.3955
AET	06.6.2001	8	9	5.5432
AET	23.11.2004	9	8	1.3104
AET	24.5.2006	8	7	-5.1121
AF	18.4.2006	10	9	1.2020
AF	17.6.2009	9	10	-2.7665
AFG	3.10.2001	8	9	2.7758
AFG	5.10.2010	9	8	-0.0299
AFL	23.1.2009	6	7	-49.6413
AGCO	15.3.2001	10	11	9.4045
AGCO	5.3.2010	11	10	-3.5979
AGN	27.4.2010	6	5	-0.8571
AIG	30.3.2005	1	2	-3.1914
AIG	3.6.2005	2	3	-1.3885
AIG	8.5.2008	3	4	-14.7172
AIG	15.9.2008	4	7	-107.403
AIR	3.7.1997	10	9	1.3279
AIR	10.1.2002	9	10	-1.4237
AIR	17.4.2003	10	13	0.0005
AIR	13.10.2006	13	12	2.8572
AIZ	10.12.2009	8	9	-1.2319
AIZ	24.6.2013	9	8	-1.0114
AKS	30.9.1999	13	12	6.6002
AKS	6.5.2003	12	13	0.2258
AKS	21.7.2003	13	14	-23.7857
AKS	1.2.2008	14	13	-3.3724
AKS	27.4.2010	13	12	-4.0283
AKS	21.12.2011	12	13	1.5478
AKS	29.6.2012	13	14	-5.8735
AKS	13.11.2012	14	15	-22.4129
ALB	31.5.2007	10	9	-1.4586
ALB	25.5.2011	9	8	2.0238
ALE	06.3.1996	7	8	-2.4754
ALJ	20.8.2010	14	15	-1.5925

ALK	17.11.1997	14	13	1.9622
ALK	25.6.1998	13	11	3.3229
ALK	20.9.2001	11	12	-11.0487
ALK	4.9.2003	12	13	4.3783
ALK	1.5.2008	13	14	1.8734
ALK	3.10.2008	14	15	3.9382
ALK	2.8.2010	15	14	-4.2473
ALK	29.7.2011	14	13	-1.3331
ALK	29.7.2013	13	12	-0.3348
ALK	17.12.2013	12	11	-5.3589
ALL	29.1.2009	5	7	-17.1343
ALR	4.4.2005	14	15	-3.2220
ALR	21.3.2007	15	14	-3.1745
ALR	27.11.2012	14	15	-1.3618
AMD	25.7.1996	12	13	15.1913
AMD	9.4.1998	13	15	-16.4618
AMD	19.11.2002	15	16	-15.3876
AMD	14.10.2004	16	15	5.0635
AMD	27.1.2006	15	14	4.5427
AMD	23.4.2007	14	15	2.0444
AMD	22.4.2009	15	17	3.9017
AMD	13.11.2009	17	16	18.7007
AMD	26.7.2010	16	14	3.5643
AMD	25.4.2012	14	13	-2.8952
AMD	8.1.2013	13	15	4.0823
AMG	10.6.2013	10	9	1.2031
AMP	10.7.2008	7	6	-1.5795
AMT	20.10.2000	14	13	-0.7465
AMT	9.11.2001	13	14	5.5683
AMT	22.1.2003	14	16	11.1599
AMT	13.5.2005	16	15	-3.4438
AMT	27.7.2005	15	12	6.9673
AMT	11.8.2005	12	11	-0.0663
AMT	28.8.2013	11	10	0.3455
AMTD	2.2.2009	12	8	1.7438
AMTD	25.2.2011	8	7	2.2809
AMTD	1.3.2012	7	6	3.7880
AN	14.5.2004	10	9	-0.4747
AN	30.8.2006	9	10	1.5346
AN	24.12.2008	10	11	-1.9758
AN	18.7.2011	11	10	-2.0803
ANR	4.8.2009	13	12	-5.8944
ANR	8.5.2012	12	13	0.4239
ANR	27.9.2012	13	14	2.5666
ANR	9.12.2013	14	15	5.0560
AOI	21.11.2005	13	14	9.9264
AOI	9.5.2011	14	15	2.3691
APA	13.1.1997	9	8	-0.4565
APA	26.1.2001	8	7	-1.6666
APC	23.8.2006	8	9	3.4138
APC	8.9.2006	9	10	-9.7240
APD	11.4.1996	5	6	8.9226
APH	21.5.1997	10	14	-3.1080
APH	14.1.2000	14	12	2.0332
APH	30.1.2001	12	11	0.2471
APH	06.6.2005	11	10	-0.0216
APH	23.12.2010	10	9	-0.0588
APL	27.7.2007	13	14	0.8584
APL	3.3.2009	14	15	-46.6657
APL	29.5.2009	15	16	2.3073
APL	21.9.2010	16	15	-2.8777
APL	4.2.2011	15	14	2.1515
ARC	28.7.2011	13	14	2.6894
ARG	11.3.1999	10	11	2.6566
ARG	1.3.2002	11	12	-7.0075
ARG	4.11.2004	12	11	0.6888
ARG	4.6.2008	11	10	3.9246
ARG	30.7.2009	10	9	2.7126
ARW	13.5.1998	6	7	-0.0782
ARW	05.10.1999	7	8	-4.2057
ARW	13.2.2001	8	9	-0.8296
ARW	09.10.2002	9	10	-5.2344
ASH	22.9.2005	9	10	-0.1546
ASH	21.8.2006	10	11	-4.3219
ASH	14.11.2008	11	13	-3.5460
ASH	25.11.2009	13	12	0.3522
ASH	12.3.2010	12	11	0.5461
ASH	25.8.2011	11	12	1.1499
ATI	31.8.2001	6	8	-1.0773
ATI	23.7.2002	8	9	-14.0428
ATI	24.6.2003	9	11	1.0630
ATI	23.12.2003	11	12	2.5895
ATI	10.5.2004	12	13	-0.3869
ATI	6.10.2005	13	12	-5.4615
ATI	6.8.2007	12	11	-4.9662
ATI	11.2.2008	11	10	3.7249
ATK	6.11.1998	12	13	2.9528
ATK	17.2.2006	13	12	0.3103
ATO	30.9.2004	7	9	0.8868
ATO	23.12.2008	9	8	2.4331
ATO	08.10.2013	8	7	0.6409
ATU	28.10.2003	13	12	1.5106
ATU	27.3.2012	12	11	0.7168
AVA	01.7.1996	7	6	2.3180
AVA	24.8.1999	6	8	2.1528
AVA	01.8.2000	8	9	-1.1547
AVA	02.8.2001	9	10	-2.2789
AVA	10.10.2001	10	11	-2.4203
AVA	07.2.2008	11	10	0.7905
AVA	02.3.2011	10	9	1.3331
AVP	25.3.1996	7	6	0.8250
AVP	11.2.2010	6	7	-1.1752
AVP	1.3.2011	7	8	-0.5437
AVP	16.3.2012	8	9	0.3288
AVP	8.5.2012	9	10	6.8808
AVT	05.10.1999	6	7	-1.9599
AVT	05.10.2001	7	8	5.8929
AVT	07.11.2001	8	9	-0.0782
AVT	10.10.2002	9	10	-16.8433
AVY	12.11.2004	6	7	-0.4301
AVY	3.7.2007	7	8	0.0355
AVY	5.12.2008	8	9	-3.1837
AWI	10.11.2010	12	13	-1.3223
AWK	24.5.2013	8	7	-1.3082
AWR	22.4.2004	5	7	2.0205
AWR	22.8.2007	7	6	0.8706

AWR	30.7.2010	6	5	-2.2519
AXE	24.2.2005	10	11	-2.3102
AXE	22.6.2010	11	12	0.2522
AXL	12.11.2003	11	9	6.1511
AXL	17.8.2005	9	10	0.3625
AXL	4.5.2006	10	12	2.5180
AXL	29.5.2008	12	13	-3.5754
AXL	31.7.2008	13	14	-1.9540
AXL	9.10.2008	14	15	18.1500
AXL	12.1.2009	15	17	-18.7358
AXL	17.2.2010	17	16	-11.3431
AXL	20.9.2010	16	14	1.9582
AXL	7.6.2011	14	13	-3.4240
AXLL	19.10.1999	10	11	-2.3710
AXLL	17.10.2006	11	13	-0.9501
AXLL	25.4.2007	13	14	7.0902
AXLL	21.9.2007	14	15	-5.3085
AXLL	28.1.2008	15	16	13.9389
AXLL	8.5.2008	16	17	-23.2768
AXLL	1.4.2009	17	20	11.9642
AXLL	3.6.2011	15	14	2.5391
AXLL	25.4.2012	14	13	-3.5007
AXLL	15.1.2013	13	12	-3.6972
AXP	19.12.2008	5	6	-0.7009
AXP	30.4.2009	6	8	-2.6862
AYI	13.5.2005	9	10	-1.2005
AYI	6.12.2013	10	9	1.0013
AZO	17.2.2000	7	8	-2.3771
AZO	26.6.2008	8	9	10.1081
BA	31.7.1997	3	2	-0.3874
BA	8.6.1998	2	3	0.0191
BA	3.12.1998	3	4	-18.0434
BA	5.2.2002	4	5	3.2531
BA	15.5.2003	5	6	3.1224
BA	3.11.2006	6	5	-0.6471
BA	29.7.2009	5	6	1.9235
BAC	19.12.1996	6	5	0.2687
BAC	1.2.2005	5	4	0.6438
BAC	14.2.2007	4	3	-0.0380
BAC	15.9.2008	3	4	-2.9642
BAC	19.12.2008	4	5	0.3069
BAC	3.3.2009	5	6	-3.7871
BAC	29.11.2011	6	7	-8.0283
BAS	10.3.2008	14	13	2.4401
BAS	7.7.2009	13	14	5.8414
BAS	10.12.2009	14	15	-0.2265
BAS	1.7.2011	15	14	3.0819
BAX	02.10.1996	7	6	-4.1044
BAX	13.1.2004	6	7	0.7732
BAX	08.11.2006	7	6	-3.5069
BAX	15.11.2007	6	5	1.0028
BAX	06.12.2012	5	6	-0.9108
BBG	30.9.2013	13	14	2.6842
BBT	6.6.2002	7	6	0.4969
BBT	28.2.2006	6	5	-0.8269
BBT	17.6.2009	5	6	-1.2310
BBT	6.12.2011	6	7	0.4173
BBY	15.7.1996	12	13	-3.7541
BBY	09.12.1996	13	14	0.0828
BBY	07.5.1998	14	13	0.5870
BBY	15.2.2005	10	9	0.6828
BBY	18.11.2008	9	10	-6.6869
BBY	06.8.2012	10	11	12.4907
BBY	21.11.2012	11	12	-16.1079
BC	5.2.2002	8	9	1.9192
BC	20.5.2004	9	8	-0.1892
BC	4.9.2007	8	9	-3.0401
BC	30.6.2008	9	10	-4.9681
BC	8.7.2008	10	11	1.5069
BC	10.10.2008	11	13	-21.8022
BC	11.11.2008	13	16	-19.8394
BC	15.4.2011	16	14	-1.5891
BC	13.4.2012	14	13	1.9540
BC	30.4.2013	13	12	-9.1126
BCO	17.7.1997	10	9	-0.1189
BCO	17.2.2006	9	8	2.4293
BCO	4.11.2008	8	9	-3.5445
BCO	17.9.2013	9	10	-1.5746
BCR	05.8.2005	8	6	-1.1963
BDC	2.3.2007	13	11	5.4489
BDC	2.3.2009	11	12	-8.5172
BDC	23.6.2009	12	13	-2.5841
BDC	18.3.2011	13	12	-0.7614
BDX	10.7.2008	5	4	0.7736
BDX	02.11.2011	4	5	-8.1843
BDX	29.11.2012	5	6	-1.3909
BEN	8.3.2006	6	5	-3.7432
BEN	6.10.2008	5	4	-2.5270
BF	3.2.2003	6	5	14.7623
BF	5.3.2003	5	6	2.6537
BF	28.11.2012	6	7	2.5025
BG	14.11.2006	9	10	-3.2719
BGC	9.11.2006	14	13	-3.1860
BGG	16.5.2001	8	10	4.8822
BGG	3.6.2002	10	11	-4.9213
BGG	3.6.2004	11	10	10.9744
BGG	23.1.2007	10	11	-2.5935
BGG	30.9.2008	11	13	-2.1790
BGG	20.10.2011	13	12	-4.3161
BGS	15.12.2009	15	14	0.4256
BGS	18.12.2013	14	13	-0.2839
BHE	25.10.1999	13	14	-49.9601
BHE	22.7.2003	14	13	1.4023
BHI	9.7.1997	7	6	-0.0468
BHI	10.9.2002	6	7	2.4108
BHI	5.5.2006	7	6	0.2159
BID	22.2.2000	6	9	11.1923
BID	16.7.2001	9	11	4.6542
BID	25.3.2002	11	14	2.4143
BID	9.11.2004	14	13	-6.2468
BID	13.4.2006	13	12	1.0868
BID	27.3.2007	12	11	6.2418
BID	9.6.2008	11	10	8.3548
BID	5.5.2009	10	13	-4.5967
BID	17.8.2010	13	11	0.1054
BIG	10.6.2010	10	9	-0.9083

BIG	9.11.2012	9	10	-4.0029
BIO	6.5.2003	12	11	-2.4585
BIO	14.1.2008	11	10	-2.2393
BIO	30.4.2010	10	9	1.4647
BK	8.5.1997	6	5	0.8706
BK	27.6.2008	5	4	-3.4582
BK	29.11.2011	4	5	0.7238
BKH	13.5.2003	8	9	-1.3971
BKH	24.7.2013	9	8	-0.6990
BLK	28.8.2008	5	4	2.4902
BLK	12.6.2009	4	5	-3.2751
BMS	26.2.2010	6	9	3.9032
BMY	25.7.2002	1	3	-5.5511
BMY	29.7.2003	3	4	1.3095
BMY	16.8.2004	4	5	-1.1175
BOH	4.2.1998	7	8	0.9997
BOH	22.6.2000	8	9	-18.5205
BOH	25.10.2000	9	10	-4.1917
BOH	23.2.2004	10	9	-0.3398
BOH	14.2.2006	9	8	-0.0805
BOH	8.5.2007	8	7	0.6340
BPL	5.4.2004	6	7	-0.8843
BPL	27.9.2004	7	8	1.2294
BPL	24.4.2007	8	9	0.7637
BPL	28.1.2013	9	10	-0.0482
BR	08.4.2008	10	12	-6.5531
BR	07.11.2008	12	11	10.6359
BR	28.4.2009	11	10	1.1289
BR	10.5.2010	10	9	-6.9159
BR	17.10.2013	9	8	-0.1739
BRK	4.2.2010	11	10	0.7696
BRK	16.5.2013	10	8	-0.7111
BSX	09.9.1998	7	9	-2.7189
BSX	16.4.2003	9	7	-2.9583
BSX	05.8.2005	7	6	3.5050
BSX	21.4.2006	6	8	1.9117
BSX	05.12.2006	8	9	7.7313
BSX	23.7.2007	9	10	-2.6121
BSX	03.8.2007	10	11	-2.0139
BSX	10.12.2009	11	10	0.6902
BTH	19.9.2005	10	11	2.9136
BTH	20.12.2005	11	12	-2.1839
BTH	31.3.2006	12	13	-0.3781
BTH	12.12.2008	13	14	-2.7804
BTU	15.9.2008	12	11	0.5910
BTU	26.8.2013	11	12	3.9445
BWA	05.5.2004	8	7	-2.0019
BWA	12.1.2009	7	9	-4.9068
BWA	10.4.2012	9	8	-0.6645
BWP	17.3.2008	8	9	-0.6540
BWS	13.3.1996	11	12	2.9273
BWS	28.8.2008	12	13	-6.1074
BWS	6.3.2009	13	15	-31.9051
BWS	1.9.2009	15	16	5.5128
BWS	30.3.2010	16	15	-1.9803
BWS	1.9.2010	15	14	-3.9818
BWS	2.12.2011	14	15	4.9601
BWS	17.12.2013	15	14	5.5144

BXP	21.3.2007	8	7	-1.5777
BXS	28.2.2006	9	8	-0.2264
BXS	7.2.2011	8	9	0.6798
BXS	13.12.2011	9	10	0.2714
BYD	28.6.1999	11	12	22.8866
BYD	26.11.2008	12	13	8.1045
BYD	28.5.2010	13	14	-4.1396
BYD	27.10.2010	14	15	1.2611
BYI	10.11.1998	13	14	-7.8740
BYI	9.2.1999	14	15	-1.9827
BYI	16.4.2001	15	14	12.5890
BYI	22.11.2002	14	13	1.8397
BYI	3.11.2005	13	14	2.4380
BYI	1.5.2006	14	15	-1.0050
BYI	9.10.2006	15	16	0.7468
BYI	5.11.2007	16	14	-6.1148
BYI	22.7.2008	14	12	10.5024
BYI	30.10.2009	12	11	6.7117
C	2.4.1997	5	4	3.0055
C	14.2.2007	4	3	0.0784
C	15.1.2008	3	4	-4.8817
C	19.12.2008	4	6	-6.9272
C	29.11.2011	6	7	3.3566
CAG	20.12.1996	9	8	2.2977
CAG	3.4.2009	8	9	1.5758
CAG	28.12.2012	9	10	-0.0861
CAH	20.5.1998	7	6	-3.8052
CAH	15.9.2004	6	7	5.3501
CAH	20.10.2004	7	9	-4.8861
CAH	31.1.2008	9	8	0.3938
CAH	28.7.2011	8	7	1.0194
CAM	18.5.2005	7	8	2.0347
CAS	26.6.2013	14	15	-4.0705
CAS	31.10.2013	15	16	-3.1099
CAT	22.5.1997	6	5	-0.1543
CAT	24.6.2003	5	6	-0.0790
CB	7.11.2001	2	4	-1.6484
CB	6.11.2002	4	5	-3.5027
CB	24.3.2003	5	6	-4.0187
CB	15.12.2008	6	5	1.4969
CBB	11.3.2002	11	12	-4.9211
CBB	06.12.2002	12	16	-15.3415
CBB	23.7.2003	16	15	-6.0345
CBB	30.10.2003	15	14	3.4742
CBB	17.2.2011	14	15	-13.1082
CBS	15.6.2005	7	8	-1.8344
CBS	03.1.2006	8	9	7.8615
CBS	05.6.2009	9	10	-1.1745
CBS	10.11.2011	10	9	2.6736
CCI	16.1.2003	14	16	-1.6374
CCI	14.1.2005	16	15	-1.3313
CCI	18.12.2007	12	13	3.3175
CCI	17.7.2008	13	14	-3.0983
CCI	28.8.2013	14	13	2.1270
CCI	21.10.2013	13	12	-3.4296
CCK	3.2.1998	8	9	3.2963
CCK	26.7.2000	9	10	-5.9672
CCK	22.12.2000	10	12	31.7658

CCK	13.3.2001	12	13	-23.5735
CCK	13.11.2001	13	16	-6.2691
CCK	14.2.2003	16	13	-11.5568
CCK	15.4.2009	13	12	8.8090
CCK	1.7.2011	12	11	-0.1325
CCL	20.2.1996	7	6	-0.2649
CCL	16.4.2003	6	7	3.5911
CCL	26.3.2009	7	8	-3.3030
CDE	27.1.2009	16	18	-11.4306
CDE	7.8.2009	18	16	-5.8702
CEQP	12.12.2005	15	14	-0.9896
CEQP	31.1.2008	14	13	0.8052
CFN	15.3.2012	10	9	-0.7873
CFR	14.2.2006	8	7	0.9621
CFR	6.12.2011	7	6	1.2575
CI	06.6.1996	8	7	-2.7283
CI	23.10.1997	7	6	2.5685
CI	21.12.2000	6	5	8.1640
CI	01.10.2002	5	6	-0.5080
CI	31.10.2002	6	8	2.6010
CI	14.7.2003	8	9	-12.1371
CI	12.3.2007	9	8	-0.1876
CI	18.3.2009	8	9	2.4384
CI	17.6.2013	9	7	-0.8023
CIEN	26.8.2002	14	15	23.5535
CIEN	24.3.2008	15	14	6.3040
CIEN	24.11.2009	14	15	-7.7848
CIT	9.3.2012	14	13	0.9277
CKH	29.7.2005	9	10	2.8014
CKH	1.7.2011	10	11	3.2440
CKH	6.9.2012	11	12	-2.9083
CKH	30.4.2013	12	13	-1.4519
CL	31.3.2000	6	5	6.9338
CL	4.5.2001	5	4	1.9665
CLGX	30.11.2005	9	8	0.4693
CLGX	2.8.2007	8	9	-6.2237
CLGX	16.6.2009	9	10	3.9370
CLGX	4.3.2010	10	12	-1.1834
CLH	1.8.2002	15	13	5.9294
CLH	6.12.2005	13	12	-2.4675
CLH	14.9.2011	12	11	-1.0223
CLR	25.1.2012	12	11	8.2617
CLR	29.8.2013	11	10	-1.2633
CLX	12.2.1997	4	5	0.7207
CLX	7.10.2004	5	7	3.2571
CLX	24.8.2007	7	8	0.9170
CMA	17.6.2009	6	7	-2.2071
CMC	19.6.2001	8	9	6.4848
CMC	23.3.2010	9	10	-1.9876
CMC	23.11.2011	10	11	-3.3231
CMI	24.4.2001	8	9	1.5538
CMI	8.2.2002	9	10	0.2204
CMI	15.10.2002	10	11	-7.5016
CMI	28.7.2005	11	10	0.0351
CMI	10.3.2008	10	9	0.0797
CMI	1.9.2010	9	8	3.1800
CMI	21.9.2011	8	6	-2.1024
CMP	9.10.2007	14	13	0.5164
CMP	19.5.2008	13	12	1.8948
CMP	21.6.2010	12	11	-0.9795
CMS	9.5.2007	12	10	-2.7809
CMS	18.3.2013	10	9	-0.6852
CNA	15.2.2000	7	9	-6.6543
CNA	10.10.2001	9	10	3.2687
CNA	24.6.2013	10	9	1.7327
CNC	22.4.2008	12	13	15.7043
CNC	29.3.2011	13	12	4.0965
CNK	15.6.2009	15	14	2.1451
CNK	31.5.2011	14	13	-3.0369
CNL	8.5.2000	6	8	-0.4253
CNL	15.11.2002	8	9	-9.4223
CNL	26.7.2013	9	8	0.7025
CNO	7.8.2007	13	14	-15.1214
CNO	27.2.2009	14	18	-55.7998
CNO	17.12.2009	18	16	2.1856
CNO	21.12.2010	16	15	1.9956
CNO	4.8.2011	15	14	0.9315
CNO	3.5.2013	14	13	3.0932
CNO	24.7.2013	13	12	0.3731
CNP	22.11.2011	9	8	-0.2439
CNP	2.5.2013	8	7	-1.9592
CNW	3.6.1997	10	9	-0.9231
CNW	5.12.2001	9	10	20.1727
CNW	1.2.2006	10	9	-1.7043
CNW	12.12.2008	9	10	-6.3320
CNX	23.1.2003	8	9	-4.9309
CNX	11.7.2003	9	10	-3.0312
CNX	21.7.2003	10	11	-3.3711
CNX	5.12.2003	11	13	14.8097
CNX	15.9.2006	13	12	-6.8654
CNX	15.9.2008	12	11	-0.1971
CNX	24.3.2010	11	12	-3.7052
COF	8.9.2004	11	10	0.8057
COF	8.5.2006	10	9	1.0237
COF	1.12.2006	9	8	0.5337
COF	17.6.2009	8	9	-3.9065
COL	23.12.2013	6	7	1.2406
COO	22.1.2007	12	13	-5.1897
COO	22.1.2010	13	12	-1.7907
COO	20.1.2011	12	11	-1.6933
COO	05.4.2012	11	10	3.7111
COP	10.10.2007	7	6	1.1285
CPB	19.9.1996	3	4	-0.0671
CPB	16.11.2000	4	5	10.8337
CPB	13.2.2001	5	6	-5.3444
CPB	17.10.2011	6	7	1.0580
CPB	20.7.2012	7	8	-0.5251
CPN	30.9.2011	15	14	-3.8085
CQB	20.9.2004	15	14	-0.1961
CQB	2.11.2006	14	15	-0.4147
CQB	3.8.2007	15	16	-18.0446
CQB	3.9.2009	16	15	-0.0478
CR	18.3.1998	9	8	0.4564
CR	29.11.2004	8	9	2.2844
CRK	13.2.2004	14	13	-0.1413
CRK	7.2.2012	13	14	6.0893

CRK	8.5.2012	14	15	8.8623
CRL	24.2.2003	12	11	-0.6909
CRL	22.2.2008	11	10	0.1828
CRS	9.4.1999	7	8	1.3587
CRS	4.6.2001	8	9	2.5433
CRS	8.1.2004	9	10	-5.6404
CRS	15.10.2007	10	9	-0.9374
CSC	09.8.2006	6	7	-3.6656
CSC	28.12.2011	7	8	-9.9110
CSC	22.5.2012	8	9	1.4617
CSL	19.7.2001	8	9	-3.0859
CSX	25.4.1997	8	9	-3.4709
CSX	8.5.2007	9	10	0.0361
CSX	28.4.2011	10	9	0.8922
CSX	31.10.2013	9	8	-0.7496
CTB	28.10.1999	5	7	-7.6439
CTB	23.11.1999	7	8	-4.0885
CTB	15.1.2002	8	9	-1.8155
CTB	24.2.2005	9	10	-2.5420
CTB	5.10.2005	10	11	0.6856
CTB	16.3.2006	11	12	2.0922
CTB	4.8.2006	12	14	-13.8478
CTB	2.4.2009	14	15	13.7663
CTB	28.6.2010	15	13	1.6947
CTL	04.5.2006	8	9	-3.1917
CTL	24.6.2008	9	10	17.3501
CTL	01.4.2011	10	12	-4.0158
CVC	15.8.1997	13	11	-3.1915
CVC	16.9.2002	11	12	6.6805
CVC	20.12.2005	12	13	-4.4594
CVD	27.4.2005	11	10	-2.9296
CVD	10.4.2006	10	9	-2.6701
CVD	02.7.2007	9	8	-0.1410
CVG	7.8.2008	9	10	5.8420
CVG	7.11.2008	10	11	-15.5623
CVO	20.7.1998	13	12	-2.5234
CVO	9.7.2002	12	13	-40.9060
CVO	10.12.2004	13	14	-8.9480
CVO	4.12.2007	14	13	-1.3557
CVO	10.3.2009	13	14	-14.8597
CVO	1.12.2010	14	15	3.6001
CVO	28.6.2013	15	16	-3.5242
CVS	2.10.1996	5	7	-2.3388
CVS	19.1.1999	7	6	-4.3252
CVS	29.4.2004	6	7	0.9426
CVS	25.4.2006	7	8	0.4256
CXO	25.1.2012	12	11	3.7977
CYH	20.6.2002	14	13	-2.9024
CYH	26.7.2007	13	14	-3.6315
CYN	15.3.2005	9	8	1.4217
CYN	21.3.2006	8	7	-0.2350
CYN	4.5.2009	7	8	8.7542
CYT	3.3.2005	9	10	0.1388
CYT	13.12.2007	10	9	1.5377
CYT	29.6.2009	9	10	6.2562
CYT	3.9.2010	10	9	-1.7814
CYT	9.8.2013	9	10	1.3041
D	16.12.1999	7	8	-4.6696
D	19.12.2005	8	9	0.3109
D	27.12.2007	9	7	-0.6965
DAN	3.12.2009	16	15	1.6552
DAN	25.5.2010	15	14	6.6120
DAN	24.1.2011	14	13	0.7213
DAN	5.3.2012	13	12	-2.0410
DAR	17.3.2011	13	12	1.2989
DAR	29.3.2012	12	11	-1.0233
DD	25.10.2005	4	6	6.2430
DDR	23.10.2008	9	10	-24.9844
DDR	23.10.2009	10	12	5.6395
DDR	19.9.2012	12	11	-1.6583
DDS	13.8.1998	5	9	4.0922
DDS	11.9.2000	9	10	1.5972
DDS	3.12.2001	10	11	-8.0543
DDS	31.7.2003	11	12	1.1473
DDS	14.4.2008	12	13	5.1650
DDS	7.11.2008	13	14	-8.5607
DDS	16.4.2009	14	16	11.3439
DDS	22.4.2010	16	14	7.1517
DDS	11.1.2011	14	13	-3.5484
DDS	14.3.2012	13	12	-1.7051
DDS	12.3.2013	12	11	-1.0811
DE	22.5.1997	6	5	0.1799
DE	4.9.2001	5	6	2.6600
DE	28.5.2002	6	7	1.1498
DE	14.12.2006	7	6	-0.7232
DF	2.3.2007	11	12	4.8984
DF	3.10.2007	12	13	0.4442
DF	2.12.2010	13	14	0.2342
DG	20.7.2011	12	11	-0.3318
DG	30.4.2012	11	10	0.2487
DGX	03.4.2001	11	10	1.0558
DGX	13.5.2003	10	9	-0.1683
DGX	24.10.2005	9	8	-7.6936
DHI	13.2.2004	12	11	1.9046
DHI	5.4.2006	11	10	0.9918
DHI	2.11.2007	10	11	-4.3601
DHI	12.5.2008	11	12	-2.2401
DHI	26.11.2008	12	13	24.4705
DHI	26.6.2013	13	12	-0.0338
DIS	15.10.2001	6	7	-3.1586
DIS	04.10.2002	7	8	-7.8037
DIS	02.6.2005	8	7	-0.9732
DIS	05.10.2007	7	6	1.4296
DLX	22.3.1996	4	5	1.1187
DLX	5.8.2002	5	6	7.0446
DLX	28.6.2004	6	8	-0.5195
DLX	27.1.2006	8	10	-5.3292
DLX	30.6.2006	10	11	-31.5332
DLX	10.10.2006	11	13	2.3631
DLX	30.10.2013	13	12	-0.6674
DNB	7.2.2005	8	7	-1.2001
DNB	13.7.2012	7	8	-0.5445
DNB	11.3.2013	8	9	0.8867
DNR	20.5.2002	14	13	0.5580
DNR	4.11.2005	13	12	-4.5046
DO	22.4.1998	7	6	2.5440

DO	27.7.2004	6	7	-1.4129
DO	17.12.2013	7	6	-2.2227
DOV	22.8.2005	5	6	-0.6272
DOW	13.3.2003	6	7	3.4957
DOW	29.12.2008	7	9	-20.5993
DOW	1.4.2009	9	10	13.7636
DOW	11.5.2011	10	9	-2.5949
DPS	22.3.2010	10	9	-1.4184
DPS	13.11.2013	9	8	1.1023
DRC	13.9.2006	14	13	-3.1807
DRC	9.4.2008	13	12	0.5977
DRE	12.1.2009	8	9	-13.4608
DRE	1.2.2010	9	10	-3.2486
DRI	17.12.1999	9	8	9.5491
DRI	14.3.2008	8	9	1.6107
DRI	2.10.2013	9	10	-0.1865
DTE	18.5.2001	9	8	3.1888
DTE	1.12.2004	8	9	-3.5808
DTE	9.12.2010	9	8	0.3435
DUK	14.8.2002	5	6	3.5255
DUK	31.1.2003	6	7	1.9794
DUK	17.6.2003	7	8	8.9274
DUK	10.2.2004	8	9	-1.7827
DUK	21.5.2007	9	7	-1.6212
DUK	25.7.2012	7	8	2.2559
DVA	19.1.2000	13	14	-21.7646
DVA	15.3.2002	14	13	14.4696
DVA	28.1.2004	13	12	2.1112
DVA	03.3.2005	12	13	2.4040
DVN	14.5.1998	10	9	1.9353
DVN	14.12.1998	9	8	-2.0879
DVN	29.8.2000	8	7	1.4034
DVN	24.9.2001	7	8	-10.7844
DVN	28.1.2002	8	9	-7.3515
DVN	18.3.2008	9	8	-7.2913
DYN	24.4.2002	8	9	-29.8763
DYN	25.6.2002	9	10	-15.9262
DYN	22.7.2002	10	12	-76.2726
DYN	25.7.2002	12	11	-41.6901
DYN	26.11.2002	11	15	8.8828
DYN	12.4.2010	15	16	0.5634
DYN	01.3.2011	16	18	-2.4919
DYN	18.3.2011	18	20	3.6486
EAT	1.12.2006	9	10	1.2961
ECL	5.6.1998	7	6	0.5673
ECL	5.12.2011	6	8	-1.1482
ED	16.5.2003	5	6	4.0315
ED	25.3.2008	6	7	-2.5852
EDE	2.7.2002	7	9	-4.6535
EDE	17.5.2006	9	10	1.4378
EDE	6.3.2013	10	9	-0.5932
EE	08.12.1997	13	11	0.9201
EE	29.9.1999	11	10	1.6435
EE	12.8.2004	10	9	0.6572
EEP	10.12.2002	7	8	-0.2583
EEP	4.10.2004	8	9	0.7940
EFX	15.2.2007	7	8	-5.3922
EGN	13.4.1999	6	5	1.4360
EGN	08.12.2000	5	7	-6.9507
EGN	28.6.2005	7	8	-0.8382
EGN	25.2.2009	8	9	1.5289
EGN	16.12.2013	9	10	-2.9828
EIX	08.2.2002	11	16	-7.0757
EIX	03.12.2003	16	11	0.6641
EIX	16.2.2005	11	9	-0.9203
EIX	29.9.2006	9	10	-0.3997
EL	7.3.2007	5	6	2.5828
EL	13.12.2013	6	5	-1.0902
EMC	03.5.1996	12	11	6.6832
EMC	28.2.1997	11	10	-2.8893
EMC	20.4.1999	10	9	1.3617
EMC	28.3.2000	9	8	-6.5760
EMC	25.6.2002	8	9	12.9261
EMC	17.3.2006	9	8	0.8004
EMC	16.6.2008	8	7	0.5653
EMC	25.6.2012	7	6	-0.4972
EME	5.11.1999	13	11	-2.9301
EME	25.7.2001	11	10	-4.3672
EME	28.1.2005	10	11	-0.7845
EME	5.12.2013	11	10	1.9043
EMN	20.11.2001	8	9	0.9448
EMR	16.2.2000	2	4	6.4715
EMR	4.2.2002	4	6	-1.9114
EOG	4.11.1999	7	8	-5.9269
EOG	12.4.2007	8	7	1.2013
EPB	24.5.2012	12	10	5.3944
EPD	26.11.2003	9	10	-1.8967
EPD	18.5.2004	10	11	-0.4643
EPD	19.12.2006	11	10	-1.8846
EPD	12.1.2012	10	9	-0.1938
EPD	27.2.2013	9	8	1.1477
EQC	31.1.2012	9	10	2.2825
EQC	10.6.2013	10	11	-0.5585
EQR	13.12.2005	8	7	-0.7062
EQR	12.3.2008	7	8	2.6209
EQT	31.3.2005	6	7	2.1197
EQT	15.1.2008	7	9	1.7313
ESL	15.3.2011	12	11	1.1314
ETE	28.3.2012	13	12	-1.3361
ETH	25.7.2007	7	8	9.8264
ETH	13.11.2008	8	10	-0.5035
ETH	16.6.2009	10	12	-6.9503
ETH	2.11.2009	12	14	-6.2267
ETH	14.12.2012	14	13	-5.1895
ETM	25.2.2002	13	12	-2.0228
ETM	7.11.2006	12	13	3.7005
ETM	14.11.2008	13	14	17.2901
EVC	18.6.2009	14	15	1.8549
EVC	27.3.2013	15	14	-9.7809
EXC	03.10.2005	7	8	-1.6115
EXC	21.10.2008	8	9	-5.2248
EXH	24.5.2012	12	14	-1.3155
F	08.10.1997	5	6	5.0168
F	13.12.1999	6	5	-2.8222
F	14.4.2000	5	6	10.8701
F	15.10.2001	6	8	-1.5643

F	25.10.2002	8	9	-3.5004
F	12.11.2003	9	10	5.6542
F	05.5.2005	10	11	2.5496
F	05.1.2006	11	13	7.5928
F	28.6.2006	13	14	-3.6705
F	19.9.2006	14	15	-3.2505
F	31.7.2008	15	16	-7.3930
F	20.11.2008	16	17	-2.5396
F	04.3.2009	17	20	-0.4046
F	03.11.2009	17	16	0.6637
F	02.8.2010	16	14	-3.3370
F	01.2.2011	14	13	-8.9298
F	21.10.2011	13	11	3.0932
F	06.9.2013	11	10	0.4259
FCE	23.10.2008	11	12	-14.4408
FCE	1.7.2009	12	14	-3.7516
FCX	9.1.1998	10	11	-9.7896
FCX	2.2.1998	11	13	-2.9647
FCX	18.3.1998	13	14	9.4507
FCX	18.5.1998	14	16	1.2655
FCX	7.4.1999	16	17	9.3934
FCX	2.10.2000	17	16	3.5050
FCX	21.5.2001	16	17	3.9901
FCX	2.5.2002	17	15	0.5912
FCX	16.7.2004	15	14	1.3477
FCX	27.12.2004	14	13	-0.0320
FCX	28.2.2007	13	12	-1.1499
FCX	4.4.2007	12	11	-1.7203
FCX	8.4.2008	11	10	3.4429
FCX	29.7.2011	10	9	0.1292
FDP	7.11.2002	13	12	-7.8192
FDP	10.1.2007	12	13	2.5827
FDP	24.8.2009	13	12	0.2417
FE	23.12.2003	9	10	0.5632
FE	03.10.2005	10	9	0.3818
FE	11.2.2010	9	10	-5.9927
FGP	7.8.2002	14	13	-2.7551
FGP	9.3.2005	13	14	2.1767
FGP	29.5.2012	14	15	1.9984
FHN	17.1.2008	7	8	-6.0215
FHN	3.9.2008	8	9	6.7023
FHN	23.4.2009	9	10	-3.8679
FHN	27.11.2013	10	11	-3.4988
FCH	4.1.2000	11	12	0.1274
FCH	8.1.2002	12	13	5.0762
FCH	13.2.2003	13	14	-9.0019
FCH	18.12.2003	14	15	-3.4032
FCH	25.1.2006	15	14	3.9020
FCH	16.10.2006	14	13	0.2683
FCH	21.10.2008	13	14	-5.5336
FCH	17.12.2008	14	15	20.1020
FCH	27.3.2009	15	16	1.0749
FIS	08.3.2006	9	11	-1.2880
FIS	17.9.2007	11	12	-4.2092
FIS	02.7.2008	12	11	-0.4518
FIS	01.7.2010	11	12	-1.1142
FIS	05.3.2012	12	11	-0.1379
FIS	17.1.2013	11	10	-0.1262

FL	16.2.1999	8	9	-16.9379
FL	28.3.2002	9	10	1.0200
FL	9.10.2007	10	11	-1.7966
FL	21.11.2008	11	12	-38.3951
FL	23.11.2009	12	10	-9.8538
FL	10.3.2011	10	9	1.8321
FL	21.3.2012	9	8	4.7276
FL	17.10.2012	8	10	1.0861
FLR	22.3.1999	5	6	-1.5970
FLR	22.1.2004	6	7	-2.1561
FLS	26.9.2008	13	12	-9.1798
FLS	18.9.2009	12	11	-0.3099
FLS	11.7.2012	11	10	-4.9715
FMC	11.2.1998	9	10	2.7515
FMC	6.6.2007	10	9	0.8268
FMC	22.10.2009	9	8	0.0093
FMC	17.12.2012	8	7	-0.3122
FMER	17.2.2009	9	8	-3.5566
FNF	16.6.2009	9	10	-3.4400
FNFG	31.1.2011	10	9	0.2049
FOE	19.9.2001	8	10	0.5863
FOE	23.7.2004	10	11	-14.6633
FOE	2.6.2005	11	12	1.0351
FOE	31.3.2006	12	14	-0.8115
FOE	2.2.2009	14	16	-30.8468
FOE	29.5.2009	16	17	2.1284
FOE	9.12.2009	17	15	-3.9170
FOE	4.8.2010	15	13	0.7354
FOE	4.5.2011	13	12	-3.6700
FOE	17.5.2012	12	13	-8.4063
FOE	30.7.2012	13	14	7.9427
FST	9.12.1996	14	13	3.2670
FST	27.12.2000	13	12	18.4429
FST	28.5.2004	12	13	2.6499
FST	18.7.2012	13	14	14.3726
FUN	9.2.2012	14	13	0.7877
FUN	8.11.2013	13	12	2.5071
GAS	22.9.2000	8	7	-4.5112
GAS	15.12.2011	7	8	2.4074
GCI	13.2.1998	5	4	-0.8868
GCI	8.9.2000	4	6	-4.2846
GCI	22.12.2006	6	7	0.0927
GCI	28.2.2008	7	8	-3.2604
GCI	11.11.2008	8	10	-7.9907
GCI	2.3.2009	10	12	-33.5822
GCO	24.6.1997	15	14	1.7357
GCO	11.2.1998	14	13	4.0949
GCO	17.12.2007	13	14	9.3909
GCO	6.4.2010	14	13	1.5881
GCO	25.4.2012	13	12	0.3675
GDP	13.11.2012	15	16	-8.5573
GE	12.3.2009	1	2	4.0288
GEF	20.1.2005	12	11	1.8819
GEF	20.9.2013	11	12	-0.2757
GES	1.10.2002	11	12	-28.4448
GES	15.1.2003	12	13	-0.1617
GES	6.12.2006	13	12	0.0303
GFIG	23.4.2012	10	11	3.3393

GFIG	21.12.2012	11	13	12.4861
GFIG	26.6.2013	13	14	1.6140
GGP	18.3.2008	10	11	1.2872
GGP	26.9.2008	11	12	3.5072
GGP	6.10.2008	12	14	-12.9938
GGP	28.10.2008	14	17	38.7034
GGP	25.11.2008	17	19	143.2427
GGP	24.12.2008	19	20	-1.7747
GHC	30.6.2000	3	4	0.8296
GHC	28.6.2001	4	5	2.7580
GHC	26.6.2009	5	6	-1.4256
GHC	1.8.2011	6	7	0.7501
GHC	29.11.2011	7	8	-2.0198
GHC	20.9.2012	8	9	1.8173
GIS	17.7.2000	5	7	-5.6341
GIS	26.4.2002	7	8	-12.3033
GLF	28.9.2006	13	14	-0.4343
GLF	29.11.2007	14	13	-2.3363
GLT	12.9.2002	8	9	-0.2667
GLT	1.3.2005	9	11	-1.8665
GLW	14.5.1996	5	6	9.7460
GLW	25.4.2001	6	10	-11.6249
GLW	09.7.2001	10	7	0.4619
GLW	06.11.2001	7	9	5.1570
GLW	26.4.2002	9	10	7.7879
GLW	29.7.2002	10	11	-32.9405
GLW	27.4.2005	11	10	13.1267
GLW	10.4.2006	10	9	-0.0396
GLW	02.7.2007	9	8	-0.9653
GLW	16.12.2013	8	7	0.9275
GME	18.5.2007	14	13	4.0187
GME	27.9.2007	13	12	-2.3987
GME	18.9.2008	12	11	-10.6127
GMT	23.2.1998	9	8	-1.0491
GMT	14.3.2002	8	9	-3.4936
GMT	15.4.2003	9	10	10.6422
GMT	26.1.2006	10	9	-2.5258
GMT	25.1.2007	9	8	-1.3081
GMT	6.8.2010	8	9	2.5202
GNC	26.7.2012	13	12	-1.3657
GNC	20.11.2013	12	11	-2.7389
GPI	10.7.2001	13	12	-6.9322
GPI	28.5.2008	12	13	-3.2438
GPI	24.12.2008	13	14	6.8896
GPI	24.11.2010	14	13	2.2140
GPI	23.4.2012	13	12	-1.0767
GPI	10.10.2013	12	11	-1.5314
GPS	29.10.2001	6	8	-4.7931
GPS	14.2.2002	8	11	-3.5549
GPS	10.2.2005	11	10	0.7292
GPS	17.11.2006	10	11	-3.2920
GPS	10.5.2013	11	10	3.8431
GRT	23.10.2008	12	13	-5.9846
GRT	1.4.2009	13	14	13.3215
GRT	30.5.2013	14	13	-4.0883
GS	27.10.2006	5	4	1.0092
GS	19.12.2008	4	6	3.3521
GS	29.11.2011	6	7	0.7572

GTI	20.4.1998	12	14	-7.8077
GTI	27.7.1998	14	16	-5.9913
GTI	11.11.1998	16	13	2.1321
GTI	24.10.2001	13	14	4.5370
GTI	21.3.2005	14	15	2.2616
GTI	10.5.2007	15	14	0.2513
GTI	15.5.2008	14	13	-0.6577
GTI	14.1.2010	13	11	-8.8130
GTN	14.2.2007	14	15	-0.6256
GTN	16.6.2008	15	16	-2.7800
GTN	20.4.2009	16	17	12.3505
GTN	19.8.2009	17	18	-14.8741
GTN	3.5.2010	18	16	1.1766
GTN	4.4.2012	16	15	-5.1535
GTN	8.8.2013	15	14	-8.2629
HAL	12.11.1997	6	5	-8.0168
HAL	16.10.1998	5	4	12.2234
HAL	1.5.2000	4	5	5.3150
HAL	11.12.2001	5	7	12.7640
HAL	18.12.2002	7	9	-0.6671
HAL	5.5.2006	9	8	-1.5642
HAL	20.8.2007	8	6	-1.1627
HAR	30.7.1996	12	11	-2.6771
HAR	13.6.1997	11	10	-1.0826
HAR	28.10.2004	10	9	11.5609
HAR	30.11.2005	9	10	-0.1150
HAR	26.4.2007	10	13	19.3276
HAR	6.11.2008	13	11	-9.8054
HAR	27.7.2009	11	14	0.9072
HAR	6.10.2010	14	12	-1.3994
HAR	23.11.2011	12	11	0.2936
HAR	6.9.2012	11	10	1.3995
HBI	12.5.2008	14	13	2.9884
HBI	04.4.2013	13	12	2.8973
HCN	2.4.2013	10	9	1.8579
HCP	11.10.2006	8	9	-1.2322
HCP	13.11.2012	9	8	0.6829
HD	03.4.1996	5	4	-2.2893
HD	22.11.2000	4	3	-3.5215
HD	12.12.2006	3	5	0.8203
HD	05.7.2007	5	8	1.6533
HD	16.11.2011	8	7	0.9443
HD	15.10.2013	7	6	-2.8969
HE	15.11.2010	9	10	-0.3194
HEP	6.7.2011	13	12	-0.4424
HES	7.11.2000	9	8	-3.0545
HES	3.8.2001	8	9	-0.9452
HES	31.3.2004	9	10	0.3041
HES	22.7.2010	10	9	-2.6655
HFC	6.7.2011	12	11	0.3213
HFC	21.5.2013	11	10	0.5710
HGR	30.1.2001	14	15	-33.3977
HGR	23.1.2003	15	14	-0.8709
HGR	12.11.2004	14	15	5.2121
HGR	19.6.2009	15	14	2.0947
HGR	19.10.2010	14	13	12.6610
HI	16.10.2012	9	10	5.6139
HIG	26.11.2002	6	7	-2.0764

HIG	9.5.2006	7	6	2.1235
HIG	9.2.2009	6	7	-6.6136
HIG	26.2.2009	7	8	-17.7155
HIG	3.3.2009	8	9	-10.5004
HK	7.12.2012	16	15	2.4649
HLS	8.7.1996	13	11	2.0914
HLS	17.2.1998	11	9	-1.2045
HLS	17.7.2000	9	10	-7.0724
HLS	19.9.2002	10	12	-25.9946
HLS	5.3.2003	12	13	6.3563
HLS	19.3.2003	13	16	-62.0467
HLS	20.3.2003	16	19	-121.969
HLS	28.9.2010	15	14	3.1150
HLS	30.5.2012	14	13	0.0604
HLX	10.2.2009	13	14	-3.7308
HLX	8.6.2010	14	15	5.0830
HLX	19.9.2011	15	14	-2.3215
HMN	20.8.2001	7	8	-0.3572
HMN	17.12.2003	8	9	-1.7932
HNR	7.12.1998	14	15	-12.0193
HNR	22.6.2001	15	16	-1.7858
HNR	16.5.2002	16	15	-2.8803
HNR	13.12.2002	15	17	-10.2250
HNR	6.8.2003	17	16	-6.4868
HNR	26.8.2004	16	15	9.6078
HNT	5.1.2001	11	10	7.4129
HNT	2.11.2004	10	11	-1.8871
HNT	1.3.2005	11	12	2.6893
HNT	12.3.2007	12	11	3.1563
HNT	4.11.2008	11	12	-8.4581
HNT	15.7.2009	12	13	-15.5962
HNT	19.5.2010	13	12	2.2489
HOG	02.8.1996	8	7	2.9205
HOG	31.7.1997	7	6	3.4521
HOG	15.10.2004	6	5	-2.0471
HOG	27.11.2007	5	6	2.0878
HOG	16.1.2009	6	8	-5.4264
HOG	27.7.2009	8	9	-1.2501
HOG	25.1.2012	9	8	5.9908
HOG	20.9.2013	8	7	0.3851
HOT	06.5.2003	10	11	4.1370
HOT	26.7.2006	11	10	-7.8080
HOT	22.12.2008	10	11	1.9070
HOT	16.4.2009	11	12	8.8057
HOT	01.10.2010	12	11	1.3128
HOT	14.2.2012	11	10	-3.3003
HOT	08.6.2012	10	9	-0.0500
HOV	1.5.2003	13	12	-0.8493
HOV	15.8.2007	12	13	-4.2193
HOV	21.11.2007	13	14	-14.4029
HOV	15.2.2008	14	16	-3.3912
HOV	1.4.2009	16	18	4.0675
HOV	5.10.2009	18	17	14.1808
HOV	28.6.2011	17	18	3.3492
HOV	5.10.2011	18	20	-9.7713
HOV	5.11.2012	19	17	16.0359
HOV	23.4.2013	17	16	6.2816
HPQ	22.12.1999	2	4	2.6498
HPQ	07.3.2002	4	7	-2.4415
HPQ	07.2.2007	7	6	-1.1097
HPQ	30.11.2011	6	8	2.5843
HRB	31.8.2007	8	10	1.5386
HRB	31.7.2008	10	9	-0.3056
HRC	19.5.2005	5	6	3.0947
HRC	17.11.2006	6	7	4.2160
HRC	1.4.2008	7	10	-0.4269
HRC	10.1.2012	10	9	-11.0767
HRS	09.1.1997	8	7	-0.9956
HRS	08.11.1999	7	9	-5.0181
HRS	30.3.2007	9	8	1.0732
HSC	18.7.2000	6	7	0.6637
HSC	16.3.2011	7	8	0.4373
HSC	29.3.2012	8	9	-0.3807
HSC	15.3.2013	9	10	0.5061
HSC	20.12.2013	10	11	1.9866
HSP	12.5.2006	9	8	1.0990
HSP	02.2.2007	8	9	1.1159
HSP	10.11.2009	9	8	0.9915
HSP	03.5.2013	8	10	0.2101
HST	15.7.1998	13	12	-2.1515
HST	8.1.2002	12	13	4.0108
HST	13.2.2003	13	14	-7.0602
HST	8.11.2005	14	13	0.8404
HST	23.6.2006	13	12	0.0937
HST	19.2.2009	12	13	3.4091
HST	21.2.2013	13	12	-0.4854
HSY	19.8.1997	4	5	1.1676
HSY	10.9.2007	5	6	-0.2517
HTZ	20.12.2010	15	14	0.9223
HUB	7.6.2001	4	5	1.8583
HUB	29.7.2009	5	6	-0.1455
HUM	24.6.1997	7	8	-1.8188
HUM	17.12.1999	8	9	-2.1970
HUM	15.7.2009	9	10	-7.8783
HUM	27.4.2011	10	9	4.5530
HUM	17.7.2013	9	8	3.6197
HUN	17.3.2009	13	15	2.0724
HUN	13.9.2010	15	14	3.1324
HUN	12.9.2011	14	13	0.0360
HUN	26.4.2012	13	12	-1.9967
HW	4.2.2004	14	13	-3.4433
HW	17.3.2006	14	13	0.1430
HW	30.7.2008	13	14	26.2243
HW	5.2.2009	14	15	-5.9679
HW	13.10.2009	17	15	16.9052
HXL	23.12.1997	13	12	-3.9623
HXL	20.1.2000	12	13	-2.1918
HXL	28.11.2001	13	15	2.7967
HXL	27.1.2005	15	14	-3.1623
HXL	17.2.2006	14	13	-0.4236
HXL	26.3.2007	13	12	0.6588
HXL	31.5.2011	12	11	-1.4499
CHD	5.5.2008	12	11	-3.5231
CHD	16.6.2010	11	10	-2.0000
CHD	5.10.2011	10	9	-0.0354
CHD	28.6.2013	9	8	1.8808

CHH	28.2.2005	10	9	1.4543
CHH	20.6.2012	9	11	6.9433
CHK	13.4.1998	13	14	-7.2784
CHK	14.9.1998	14	15	3.2874
CHK	18.1.2001	15	14	-11.0150
CHK	10.7.2003	14	13	1.1884
CHK	27.9.2005	13	12	6.2668
CHK	8.4.2011	12	11	-0.0748
CHK	26.4.2012	11	12	-2.9640
CHK	15.5.2012	12	13	-1.6947
CHMT	10.10.2001	9	10	8.7265
CHMT	8.8.2003	10	11	2.8044
CHMT	4.2.2004	11	12	-4.7909
CHMT	13.7.2004	12	13	0.6518
CHMT	5.7.2005	13	11	3.3116
CHMT	7.5.2008	11	12	2.0185
CHMT	5.11.2008	12	13	-4.2271
CHMT	17.12.2008	13	15	15.0088
CHMT	22.1.2009	15	18	-37.0144
IBM	26.2.1998	6	5	-0.5861
IBM	30.5.2012	5	4	-0.5430
IDA	29.3.2000	6	5	-0.1345
IDA	25.3.2002	5	6	1.2484
IDA	29.11.2004	6	8	-0.8533
IDA	31.1.2008	8	9	-0.6884
IEX	1.8.1997	11	10	2.5411
IEX	27.3.2003	10	9	-0.8406
IFF	9.11.2000	6	8	7.9482
IFF	3.10.2007	8	9	-0.6220
IFF	12.7.2013	9	8	-2.0458
IM	15.3.2000	9	10	1.6977
IM	31.10.2001	10	11	2.8325
IM	28.11.2006	11	10	-1.5037
INGR	27.5.2008	10	9	2.6218
IO	10.3.2009	13	15	29.6565
IO	1.5.2013	15	14	-7.9325
IO	10.12.2013	14	15	0.1675
IP	20.7.1998	7	8	3.0004
IP	12.6.2001	8	9	-1.3811
IPG	30.7.2001	6	7	-3.1416
IPG	16.11.2001	7	8	-2.6922
IPG	18.10.2002	8	9	-36.4007
IPG	6.12.2002	9	10	-3.3252
IPG	7.3.2003	10	11	-7.2540
IPG	22.3.2006	11	15	1.0425
IPG	26.5.2010	15	12	3.9863
IPG	18.5.2011	12	11	4.1610
IRM	3.3.2000	14	13	8.3632
IRT	19.10.2000	14	13	18.9277
IRT	5.5.2005	13	12	0.9185
IRT	4.11.2008	12	13	-7.0711
IRT	23.11.2009	13	14	-2.6958
IRT	21.12.2010	14	13	-2.5777
ITC	05.12.2011	9	8	-2.3201
ITC	06.12.2013	8	7	-0.8858
ITT	25.9.2001	9	8	-2.2753
ITT	31.10.2011	8	10	32.3939
ITW	30.3.2004	4	3	0.9091
ITW	11.7.2008	3	4	0.5897
ITW	10.3.2009	4	5	-0.3528
IVC	21.11.2008	15	14	-15.5951
IVC	20.9.2010	14	12	1.9714
JAH	13.1.2010	14	13	-6.3733
JAH	13.9.2013	13	12	0.1867
JBL	04.1.2001	12	11	-1.3750
JBL	19.8.2005	11	10	-1.0820
JBL	04.4.2008	10	11	4.6648
JBL	10.12.2012	11	10	1.3003
JCI	24.7.1998	6	7	0.5592
JCI	28.1.2003	7	6	0.5312
JCI	01.12.2005	6	7	0.6486
JCI	09.1.2009	7	9	2.6793
JCI	05.11.2010	9	8	0.9107
JCP	29.1.1997	5	6	-2.2827
JCP	1.6.1999	6	8	-0.7119
JCP	4.5.2000	8	9	6.1123
JCP	5.10.2000	9	10	-19.0778
JCP	29.5.2003	10	11	-0.5030
JCP	6.4.2006	11	10	2.3836
JCP	16.4.2009	10	12	1.5290
JCP	7.4.2010	12	11	-7.7091
JCP	7.3.2012	11	12	-0.3828
JCP	17.5.2012	12	13	-18.4753
JCP	11.7.2012	13	14	-8.0120
JCP	9.11.2012	14	16	-21.1712
JCP	28.2.2013	16	17	-16.4092
JNS	7.8.2002	7	8	-5.9348
JNS	30.8.2005	8	9	-0.5390
JNS	5.6.2007	9	10	2.2984
JNS	23.2.2009	10	11	-0.1227
JNS	10.1.2011	11	10	-2.0123
JOY	15.2.2005	12	11	-4.8477
JOY	3.3.2006	11	10	-4.0069
JOY	15.2.2011	10	9	1.7863
JPM	6.5.1998	6	5	0.3908
JPM	21.12.2000	5	4	1.9142
JPM	17.9.2002	4	5	-3.8805
JPM	14.2.2007	5	4	-0.5976
JPM	19.12.2008	4	5	-0.6547
JPM	29.11.2011	5	6	-0.5851
JWN	01.5.1998	5	6	1.6076
JWN	12.1.2001	6	7	0.4728
JWN	13.4.2006	7	6	-0.5404
JWN	21.11.2007	6	7	15.8916
JWN	16.4.2009	7	8	3.1059
JWN	03.2.2011	8	7	6.2388
K	10.1.1997	1	3	1.2268
K	29.12.2000	3	9	3.2774
K	11.8.2004	9	8	0.5710
KAMN	7.7.2005	9	10	-1.2797
KAMN	12.12.2013	10	11	-0.8777
KATE	3.6.2008	9	11	-0.8375
KATE	23.12.2008	11	13	-40.5564
KATE	17.8.2009	13	15	-13.1215
KATE	23.3.2010	15	16	-4.0051
KATE	11.3.2011	16	20	1.3217

KATE	2.3.2012	16	15	17.4241
KBH	22.3.1996	11	12	-0.9049
KBH	2.7.1998	12	11	3.9356
KBH	19.5.2008	11	12	-9.6868
KBH	26.11.2008	12	13	6.0480
KBH	16.7.2010	13	14	-3.6494
KBH	27.3.2012	14	15	-10.7284
KEG	26.2.2001	14	13	2.3977
KEG	26.7.2002	13	12	0.6309
KEG	30.3.2004	12	14	-6.6890
KEG	8.6.2004	14	15	-2.8562
KEG	29.3.2005	15	16	-2.2176
KEG	3.7.2008	14	13	-5.3958
KEG	26.11.2008	13	12	0.7631
KEG	6.7.2009	12	13	-3.4682
KEM	11.4.2011	15	14	-3.5566
KEM	7.8.2013	14	16	-3.3154
KEX	1.2.2006	9	8	-2.0421
KEX	18.3.2010	8	7	0.6038
KEY	17.6.2009	7	8	-1.5487
KIM	12.12.2008	7	8	-11.6056
KKR	17.12.2013	7	6	-4.9951
KMB	17.7.2003	3	4	-1.8576
KMB	24.7.2007	4	5	4.4244
KMB	19.8.2008	5	6	-2.0788
KMP	1.10.1999	7	8	-2.3721
KMP	10.10.2000	8	7	2.9610
KMP	8.8.2002	7	8	4.8148
KMP	5.1.2007	8	9	0.6732
KMPR	14.8.2003	7	8	-1.0876
KMPR	3.9.2008	8	9	5.7102
KMPR	12.11.2009	9	10	2.0395
KMT	1.10.1998	8	9	-18.8897
KNL	14.7.2006	13	12	5.0223
KO	14.7.1997	3	4	-1.0661
KO	21.12.1999	4	5	-2.2422
KO	13.9.2012	5	4	-0.3321
KOG	19.7.2013	15	14	1.0322
KOP	23.11.2010	14	13	0.7735
KR	14.4.1997	11	10	-0.5585
KR	9.7.2003	10	9	1.3090
KR	29.6.2005	9	10	-1.7304
KR	30.9.2009	10	9	3.4539
KRO	31.5.2013	13	14	3.9160
KSS	17.11.1998	9	8	-0.9560
KSS	04.12.2000	8	7	5.9868
KSS	06.3.2006	7	8	5.0240
KSS	17.4.2007	8	7	-0.2457
KSS	20.9.2007	7	8	0.9228
KSU	27.5.1997	8	10	-0.9842
KSU	27.7.2000	10	12	4.7717
KSU	27.10.2003	12	13	4.5088
KSU	10.4.2006	13	15	1.6381
KSU	25.9.2007	15	14	-0.2657
KSU	24.3.2009	14	15	-8.9105
KSU	21.6.2010	15	13	-4.1605
KSU	13.5.2011	13	12	-0.8907
KSU	27.3.2012	12	11	0.1620
KSU	8.3.2013	11	10	0.0792
KWK	26.1.2009	13	14	4.9132
KWK	2.3.2009	14	15	-5.8735
KWK	23.6.2009	15	14	-6.6863
KWK	8.5.2012	14	15	3.6433
KWK	27.6.2012	15	16	24.7612
KWK	25.6.2013	16	17	-8.2209
L	13.8.2002	4	5	1.4377
L	10.6.2003	5	6	-0.1466
L	17.11.2011	6	5	0.3258
LB	07.10.2004	8	9	6.1713
LB	22.6.2007	9	10	1.0749
LB	19.12.2008	10	11	3.6424
LB	27.2.2009	11	12	-11.6981
LB	13.1.2011	12	11	-2.0491
LDOS	27.9.2013	7	9	5.9781
LEA	21.9.2010	15	13	0.0689
LEA	31.3.2011	13	12	-1.1260
LEA	14.1.2013	12	11	0.7274
LEG	28.4.1998	6	5	-1.6951
LEG	1.5.2007	5	6	0.2610
LEG	25.11.2008	6	7	-4.0235
LEG	2.11.2010	7	8	-1.5333
LEN	21.11.1997	10	11	6.3910
LEN	18.6.1998	11	10	-5.4447
LEN	18.4.2000	10	11	-0.5786
LEN	30.1.2003	11	10	-1.5354
LEN	17.5.2005	10	9	4.1960
LEN	2.11.2007	9	11	-3.2284
LEN	16.5.2008	11	12	-4.2617
LEN	15.8.2008	12	13	0.9601
LEN	13.10.2010	13	14	-3.0253
LEN	25.1.2013	14	13	-2.9047
LEU	30.8.1999	8	9	-5.3990
LEU	4.2.2000	9	11	-31.1515
LEU	7.5.2002	11	12	0.9488
LEU	11.10.2004	12	13	-5.4387
LEU	10.8.2005	13	14	-2.8567
LEU	27.6.2006	14	16	-0.1208
LEU	21.12.2009	16	17	-5.6268
LEU	15.8.2012	17	18	-8.0834
LG	5.5.2003	5	6	-1.1233
LG	19.7.2013	6	7	0.5375
LGF	27.1.2012	16	15	-7.1469
LGF	14.6.2013	15	14	1.3555
LH	10.11.2000	11	9	-3.7406
LH	16.1.2002	9	8	0.3527
LH	11.11.2002	8	9	-4.3747
LH	20.8.2009	9	8	0.3226
LH	09.1.2013	8	9	-0.6497
LH	13.12.2013	9	8	1.5985
LII	27.2.2004	13	12	0.1712
LII	25.1.2008	12	11	-0.3361
LII	19.2.2010	11	10	0.6258
LIN	24.10.2013	14	13	-0.5753
LLL	25.6.2002	12	11	-11.7973
LLL	6.1.2005	11	10	1.1586
LLY	19.8.2010	3	4	-0.6094

LM	3.11.2003	9	8	1.0578
LM	23.6.2011	8	9	-0.3522
LMT	27.9.1999	8	9	0.7960
LMT	3.11.1999	9	10	-10.4972
LMT	18.4.2002	10	9	-3.2981
LMT	17.5.2005	9	8	-1.0252
LMT	27.4.2007	8	7	0.9981
LNC	26.5.1998	6	7	-2.6335
LNC	3.4.2006	7	5	4.2660
LNC	26.2.2009	5	7	-29.0919
LNT	17.10.2001	5	7	-0.8055
LNT	06.12.2002	7	8	1.5524
LNT	11.1.2013	8	7	0.8378
LOW	09.12.2004	6	5	1.0842
LOW	08.4.2010	5	6	2.3603
LOW	15.11.2011	6	7	3.7901
LPX	24.11.1999	7	8	-2.9194
LPX	3.11.2000	8	9	-1.0347
LPX	23.4.2001	9	10	2.3829
LPX	26.7.2001	10	11	-3.4506
LPX	19.12.2001	11	12	-11.2940
LPX	20.10.2003	12	11	0.4178
LPX	11.3.2004	11	10	-0.5289
LPX	29.7.2008	10	11	-12.6026
LPX	6.11.2008	11	12	-39.5206
LUK	9.4.1999	8	7	-2.7364
LUK	1.4.2002	7	9	-0.0495
LUK	28.5.2003	9	10	-1.8004
LUK	18.8.2004	10	12	-1.0412
LUK	16.7.2007	12	11	4.6609
LUK	1.3.2013	11	9	-3.8743
LUV	16.1.2001	7	6	-6.5132
LUV	28.8.2007	6	7	-0.2645
LUV	9.10.2008	7	8	8.0412
LUV	14.10.2009	8	9	-1.8877
LUV	2.5.2011	9	10	-1.7259
LVLT	22.6.2001	15	16	7.1802
LVLT	30.1.2002	16	17	-37.7738
LVLT	06.8.2002	17	18	-25.4404
LVLT	03.11.2004	18	20	-10.6710
LVLT	03.12.2004	20	18	-0.3566
LVLT	19.1.2006	18	17	4.7921
LVLT	20.2.2007	17	16	3.9690
LVLT	18.11.2008	16	20	-0.0983
LVLT	03.5.2013	16	15	8.1491
LVS	19.9.2008	13	14	12.5979
LVS	31.10.2008	14	15	47.4527
LVS	17.3.2009	15	16	-2.0892
LVS	18.8.2010	16	15	2.5557
LVS	12.11.2010	15	13	0.8977
LVS	15.6.2011	13	12	-0.3544
LVS	05.4.2012	12	11	6.0902
LVS	04.12.2013	11	10	6.2661
LXK	14.7.2000	10	9	-10.0623
LXK	4.3.2009	9	10	-2.9581
LYV	4.10.2007	14	15	-0.0970
LYV	21.4.2010	15	14	3.0901
LYV	8.8.2013	14	13	13.4474

M	14.5.1997	11	10	5.5988
M	17.11.1998	10	8	1.8030
M	30.8.2005	8	9	-4.2961
M	06.2.2008	9	10	-2.2186
M	16.4.2009	10	12	4.6231
M	11.5.2010	12	11	3.3308
M	18.5.2011	11	10	3.8519
M	10.4.2012	10	9	-1.6544
M	04.12.2013	9	8	-0.6672
MA	19.8.2011	8	7	-0.8217
MA	08.8.2013	7	6	-2.3152
MAN	2.8.1996	8	7	3.5512
MAN	21.6.1999	7	8	0.6947
MAN	26.4.2001	8	9	4.4169
MAN	4.10.2002	9	10	-5.5176
MAS	24.3.1998	8	7	-0.6226
MAS	30.11.2000	7	8	5.4488
MAS	19.12.2008	8	9	5.4618
MAS	3.11.2011	9	10	1.4964
MBI	9.1.2008	3	4	-19.4406
MBI	5.6.2008	4	7	-14.5797
MBI	18.2.2009	7	11	13.1184
MBI	5.6.2009	11	12	-11.9296
MBI	28.9.2009	12	13	3.0602
MBI	22.12.2010	13	16	-3.1829
MBI	10.5.2013	16	9	1.4510
MCD	29.10.2001	3	5	-7.5999
MCD	08.5.2003	5	6	-0.6238
MCK	12.11.1996	5	6	2.6244
MCK	04.3.1998	6	7	5.6963
MCK	21.6.1999	7	8	-9.5500
MCK	22.12.1999	8	9	2.3295
MCK	01.2.2008	9	8	-4.1854
MCK	12.3.2010	8	7	-0.5397
MCP	13.8.2012	15	17	-7.2679
MCY	11.5.2007	6	7	-0.1241
MCY	13.5.2010	7	8	-0.3048
MDC	29.12.1999	13	12	2.6303
MDC	4.3.2002	12	11	-1.2755
MDC	5.11.2003	11	10	2.1287
MDC	27.6.2011	10	11	-2.0588
MDR	22.2.2000	10	11	1.7192
MDR	20.12.2000	11	15	10.5469
MDR	7.4.2003	15	17	-21.7693
MDR	19.3.2004	17	16	-8.8011
MDR	1.12.2005	16	14	0.5549
MDR	24.5.2007	14	12	0.3679
MDR	28.5.2008	12	11	-1.3712
MDR	30.3.2010	11	12	4.4019
MDT	14.2.2012	4	5	-1.1034
MDT	13.12.2013	5	4	-0.1995
MDU	08.1.2003	6	7	-2.1060
MDU	28.2.2006	7	8	-1.3164
MEG	16.8.2005	11	10	-1.2539
MEG	25.2.2011	15	16	1.1517
MEG	26.10.2011	16	17	25.3794
MEG	8.10.2012	17	16	-0.7050
MEG	24.6.2013	16	15	-1.0370

MEG	10.7.2013	15	14	-2.8473
MET	26.2.2009	6	7	-12.0759
MGM	04.9.2003	10	11	2.8263
MGM	26.4.2005	11	12	3.3778
MGM	29.10.2008	12	13	31.7080
MGM	30.1.2009	13	14	-4.8207
MGM	27.2.2009	14	16	-10.6716
MGM	19.3.2009	16	18	4.0225
MGM	18.5.2009	18	17	8.3130
MGM	09.11.2011	17	16	-6.9471
MGM	06.12.2012	16	14	8.9502
MHK	21.5.2004	9	8	1.2040
MHK	07.10.2005	8	10	1.4667
MHK	11.3.2009	10	11	8.7852
MHK	14.3.2012	11	10	1.7473
MHK	22.8.2013	10	9	-2.0633
MHO	8.5.2001	14	13	15.2930
MHO	5.11.2003	13	12	1.4195
MHO	21.8.2007	12	13	-6.1170
MHO	19.2.2008	13	14	2.4160
MHO	8.8.2008	14	15	-3.5784
MHO	26.11.2008	15	16	36.1702
MHO	5.3.2013	16	15	2.6197
MKC	17.8.2000	6	7	1.5071
MKC	22.6.2004	7	6	-0.2517
MKC	4.8.2008	6	7	1.8811
MKL	11.8.1998	9	8	-1.9613
MKL	31.3.2000	8	9	5.7422
MKL	26.1.2001	9	10	-1.0613
MKL	1.7.2008	10	9	-0.3368
MLM	8.9.2000	6	7	1.3249
MLM	21.5.2004	7	8	0.6177
MLM	1.8.2012	8	9	-4.4991
MMC	7.7.2004	4	5	0.1441
MMC	21.10.2004	5	8	11.6152
MMC	23.11.2004	8	9	4.4661
MMC	5.12.2007	9	10	0.2272
MMC	12.10.2012	10	9	0.1100
MMC	20.11.2013	9	7	0.8999
MMM	10.2.1998	1	3	-0.1706
MMM	18.3.2009	3	4	-2.6562
MMP	18.5.2004	10	9	-5.0569
MMP	31.7.2013	9	8	1.4536
MNI	25.11.2003	9	8	-0.3733
MNI	28.6.2006	8	9	-2.4152
MNI	26.4.2007	9	11	-4.3934
MNI	21.11.2007	11	12	-5.9150
MNI	23.4.2008	12	13	4.6677
MNI	11.7.2008	13	14	-4.8644
MNI	29.9.2008	14	15	8.4436
MNI	6.2.2009	15	17	0.0609
MNI	22.5.2009	17	20	60.6800
MNI	11.2.2010	20	16	-0.9956
MNI	15.12.2010	16	15	12.0773
MNI	10.5.2011	15	16	-3.4677
MO	9.4.2003	6	8	4.3064
MO	6.1.2009	8	9	1.0869
MOG	4.1.2005	13	12	-5.9169
MOG	8.1.2007	12	11	-1.2790
MOG	24.6.2009	11	12	-5.2284
MON	12.5.2004	6	7	1.8030
MON	24.10.2007	7	6	4.7626
MON	21.10.2008	6	5	4.0872
MOS	11.1.2008	12	11	19.1398
MOS	6.6.2008	11	10	8.9604
MOS	28.4.2011	10	9	-4.3484
MRK	24.11.2010	4	3	-1.5346
MRO	1.7.2011	8	9	5.5577
MS	17.5.2000	5	4	1.6773
MS	17.10.2002	4	5	-0.1467
MS	30.7.2007	5	4	2.4830
MS	2.6.2008	4	5	0.2755
MS	19.12.2008	5	6	-3.6070
MS	29.11.2011	6	7	0.0688
MSCI	19.4.2012	12	11	-1.3230
MSI	27.5.1998	3	4	-1.4544
MSI	03.6.1999	4	5	8.4171
MSI	22.1.2001	5	6	-2.4839
MSI	21.5.2001	6	7	3.3762
MSI	17.10.2001	7	8	5.5756
MSI	14.6.2002	8	9	2.2546
MSI	31.5.2005	9	8	-0.0305
MSI	26.6.2006	8	7	0.4751
MSI	25.1.2008	7	9	10.9944
MSI	05.12.2008	9	11	-3.1848
MSI	04.1.2011	11	9	5.6219
MTB	14.3.2003	8	7	-2.6457
MTG	19.12.2003	5	6	-0.5012
MTG	21.11.2007	6	7	-0.7651
MTG	8.4.2008	7	9	2.8627
MTG	19.12.2008	9	11	31.6386
MTG	13.3.2009	11	18	-14.8594
MTG	27.4.2010	18	17	-4.2380
MTG	30.1.2012	17	18	0.5582
MTG	15.10.2012	18	17	1.5165
MTG	8.3.2013	17	16	-11.0091
MTH	13.2.2004	14	13	2.7394
MTH	26.2.2007	13	12	3.4178
MTH	22.2.2008	12	13	6.1548
MTH	26.1.2009	13	14	0.8579
MTN	10.3.2011	13	12	1.7753
MTOR	23.3.2001	9	10	-1.3052
MTOR	20.5.2003	10	11	0.5663
MTOR	10.5.2005	11	12	2.4038
MTOR	23.1.2007	12	13	-1.3959
MTOR	4.10.2007	13	14	-4.1454
MTOR	12.1.2009	14	15	-10.7790
MTOR	12.2.2009	15	17	-31.5285
MTOR	10.6.2010	17	16	-1.4743
MTOR	28.1.2011	16	15	0.3865
MTRN	17.11.1998	8	9	-4.4970
MTRN	11.1.2002	9	13	-6.7079
MTW	30.7.2003	12	13	12.5450
MTW	23.3.2006	13	12	3.0554
MTW	8.5.2009	12	11	-6.5584
MTW	8.10.2010	11	14	1.3611

MTZ	2.3.2000	11	9	14.3421
MTZ	11.3.2002	9	10	-1.6027
MTZ	18.3.2003	10	12	1.0691
MTZ	13.4.2004	12	13	-8.6456
MTZ	11.5.2004	13	15	-36.2878
MTZ	11.4.2012	13	12	-2.5845
MUR	3.5.2006	7	9	0.5882
MWA	6.5.2009	13	15	-15.3927
MWA	20.6.2013	15	13	-2.0050
MWE	9.4.2010	14	13	-2.1971
MWE	16.5.2011	13	12	-4.0419
MWV	4.10.1999	6	7	0.2503
MWV	31.5.2000	7	8	-1.8594
MWV	29.6.2001	8	9	1.4896
NAV	26.1.1998	12	11	-3.5677
NAV	14.2.2000	11	10	4.5408
NAV	13.3.2002	10	11	-1.3668
NAV	23.8.2002	11	12	0.7104
NAV	9.12.2002	12	13	-3.8265
NAV	7.6.2012	13	14	1.1546
NAV	9.7.2012	14	15	-21.6855
NAV	14.6.2013	15	16	-2.6430
NAV	7.10.2013	16	17	-4.1791
NBL	17.5.2005	9	10	2.7088
NBL	24.2.2009	10	9	-2.4294
NCR	03.8.2011	10	11	-1.7169
NCS	25.5.2004	13	12	3.0845
NCS	21.5.2009	12	14	-9.7005
NCS	22.6.2009	14	15	-3.4353
NCS	16.7.2009	15	17	5.6446
NCS	20.8.2009	17	20	-17.7102
NCS	11.5.2010	14	15	13.6987
NCS	18.5.2011	15	14	-5.1877
NEE	18.9.2000	5	4	-0.5516
NEE	26.9.2001	4	6	-1.5997
NEE	11.3.2010	6	7	-0.2980
NEM	26.2.1998	8	9	8.5161
NEM	16.3.2005	9	8	-0.0218
NEM	1.11.2013	8	9	-1.7572
NES	20.12.2013	14	15	-0.1258
NEU	27.8.1997	9	11	3.3867
NEU	9.7.2001	11	13	4.4895
NEU	26.4.2002	13	14	-4.6702
NEU	30.11.2004	14	13	0.1270
NEU	6.12.2005	13	12	2.5966
NEU	25.2.2010	12	11	-2.9549
NFG	13.12.2002	7	8	2.5754
NFG	25.2.2009	8	9	-1.1825
NGLS	17.5.2011	13	12	1.1693
NI	18.12.2007	9	10	-1.5348
NKA	30.3.2012	12	13	1.0394
NKA	15.11.2013	13	14	0.0401
NKE	19.4.1999	5	6	1.0706
NKE	10.6.2005	6	5	1.9478
NKE	06.11.2013	5	4	-0.1208
NL	8.12.2000	14	13	-4.6565
NNI	23.1.2008	8	9	12.2088
NNI	3.2.2009	9	10	-6.9888
NNN	14.6.2011	10	9	-0.8660
NOC	13.2.1996	9	10	0.1294
NOC	24.2.1998	10	8	0.2535
NOC	17.7.1998	8	10	-10.1461
NOC	18.8.2003	10	9	3.4586
NOC	12.8.2005	9	8	1.2249
NOR	31.5.2011	15	14	-2.6812
NOR	28.9.2012	14	15	-6.5454
NOV	25.4.2012	7	6	-4.8699
NOV	12.12.2013	6	5	1.2914
NP	16.3.2010	14	13	3.6607
NP	13.12.2013	13	12	2.8255
NR	22.10.2004	12	13	0.9966
NR	26.7.2006	13	14	1.0171
NR	27.5.2009	14	15	3.2359
NR	21.7.2009	15	16	-8.1408
NR	3.8.2010	16	15	3.1280
NR	1.11.2013	15	14	-0.4196
NRG	22.5.2009	14	13	3.0784
NSC	3.2.1997	3	4	-0.1036
NSC	6.5.1997	4	8	0.6749
NSC	3.5.2000	8	9	-4.2453
NSC	18.7.2005	9	8	1.7627
NU	28.5.1996	10	11	-1.5833
NU	11.10.1996	11	12	-6.8804
NU	05.3.1997	12	13	3.2908
NU	05.1.1998	13	14	6.0882
NU	24.5.1999	14	11	2.6005
NU	21.12.1999	11	10	-3.5534
NU	31.1.2001	10	8	-1.5838
NU	27.5.2005	8	9	2.4575
NU	16.5.2011	9	8	1.4433
NU	05.4.2012	8	7	0.0115
NUE	13.9.2002	4	5	0.0824
NUE	29.7.2009	5	6	-3.8177
NVR	23.5.2000	13	12	-4.8841
NVR	14.4.2003	12	11	-0.1231
NVR	10.5.2005	11	10	-1.1083
NVR	16.10.2009	10	9	-2.0697
NWE	7.4.2006	12	11	-2.0279
NWE	14.3.2008	11	9	-1.5728
NWL	1.8.2001	6	7	7.5617
NWL	4.3.2002	7	8	-0.7965
NWL	12.2.2009	8	10	-2.1617
NWN	4.1.2005	6	5	-1.4371
NWN	28.2.2006	5	4	0.9997
NWN	25.1.2010	4	5	0.7204
NYT	25.10.2005	5	6	0.3401
NYT	21.7.2006	6	7	0.5633
NYT	26.12.2006	7	8	0.8329
NYT	11.7.2007	8	9	-2.3746
NYT	29.4.2008	9	10	-5.8591
NYT	23.10.2008	10	13	-12.2706
NYT	22.4.2009	13	14	-12.4252
NYT	21.5.2009	14	15	6.5207
NYT	22.7.2010	15	14	-5.0634
O	18.11.2003	10	9	0.3003
O	19.6.2013	9	8	-6.4717

OAS	31.1.2012	15	14	-4.1572
OAS	4.10.2013	14	13	2.6824
OB	2.7.2010	9	10	-1.9788
OCN	26.3.1998	14	13	-2.0652
OCN	16.7.1999	13	14	6.3997
OCN	13.11.2001	14	15	3.4546
OCN	14.8.2002	15	16	-6.1203
OCN	25.6.2010	16	15	2.3664
OCN	12.11.2013	15	14	1.5273
OCR	27.7.2000	9	10	15.5723
OCR	18.6.2007	10	11	0.9893
OCR	20.12.2007	11	12	-3.4808
OGE	06.9.2001	5	7	2.0285
OGE	15.1.2003	7	8	-0.4481
OGE	02.5.2013	8	7	-0.7707
OI	28.4.1997	12	11	-3.2687
OI	20.10.2000	11	12	0.3864
OI	4.2.2004	12	13	0.8789
OI	14.2.2008	13	12	-0.9263
OI	17.2.2010	12	11	-1.0392
OIS	18.12.2012	12	11	2.1978
OKE	16.7.1998	7	6	-3.2692
OKE	23.5.2003	6	7	-0.9659
OKE	5.11.2004	7	8	-0.3109
OKE	28.10.2005	8	9	-0.6163
OKS	24.2.2005	7	8	1.6279
OKS	15.5.2006	8	9	1.5287
OLN	4.2.2003	9	10	0.9553
OLN	29.8.2007	10	11	2.0727
OLN	13.8.2009	11	13	4.9173
OLN	4.11.2011	13	12	2.7110
OLN	19.6.2013	12	11	0.2417
OMC	14.3.2003	6	7	3.6458
OMC	02.8.2010	7	8	-0.4000
OMG	31.10.2002	12	13	-31.2329
OMG	15.11.2002	13	14	-10.4426
OMG	30.8.2007	14	13	12.1498
OMG	23.5.2013	13	12	1.0427
OMI	17.12.2002	12	11	-0.0706
OMI	27.9.2005	11	10	1.2510
OMI	19.6.2012	10	9	1.6522
OMN	6.3.2003	11	12	1.3559
OMN	3.10.2003	12	13	2.3252
OMN	18.10.2004	13	14	-0.6875
OMN	14.2.2005	14	15	7.0068
OMN	19.10.2006	15	14	0.5180
OMN	16.10.2008	14	15	-42.3028
OPY	22.3.2013	14	15	0.3543
ORCL	10.11.1999	8	7	3.3199
ORCL	05.4.2007	7	6	0.4710
ORCL	24.4.2012	6	5	-0.8456
ORI	25.10.1999	4	5	-1.1163
ORI	8.4.2008	5	6	-0.5503
ORI	26.8.2008	6	7	0.7265
ORI	19.12.2008	7	8	2.7942
OSK	11.1.2000	13	11	3.5402
OSK	13.12.2002	11	10	-4.8236
OSK	4.9.2008	12	13	-8.0827
OSK	29.1.2009	13	15	-25.3392
OSK	13.8.2009	15	14	-0.8271
OSK	11.8.2010	14	13	-6.3639
OSK	8.3.2011	13	12	-3.0348
OSK	18.12.2013	12	11	-1.4315
OXY	8.3.2000	9	10	-0.9522
OXY	19.7.2001	10	9	-1.9702
OXY	11.6.2003	9	8	0.2820
OXY	23.6.2005	8	7	1.3150
OXY	23.6.2008	7	6	0.9469
PAA	25.2.2003	11	10	-0.2835
PAA	30.5.2012	10	9	-1.3320
PAG	10.7.2001	14	13	-6.9061
PAG	24.12.2008	13	14	-2.2354
PAG	21.6.2012	14	13	-3.3711
PAY	11.3.2010	14	13	-0.4232
PBI	3.8.2004	3	5	1.7036
PBI	9.5.2008	5	6	-2.9939
PBI	5.8.2010	6	8	-17.2776
PBI	13.11.2012	8	9	-6.2957
PBY	8.7.1997	9	8	-1.4539
PBY	8.1.1999	8	10	-1.9555
PBY	14.4.2000	10	11	6.6714
PBY	11.8.2000	11	13	-11.3867
PBY	21.7.2005	13	14	-0.0147
PBY	14.12.2005	14	16	0.1641
PBY	18.11.2010	16	15	1.6976
PCP	11.6.1999	9	10	1.5319
PCP	15.7.2005	10	9	-0.9070
PCP	2.8.2007	9	8	1.9993
PCP	26.8.2010	8	7	0.2336
PEG	23.4.2013	9	8	-0.6913
PEP	30.10.2003	6	5	-1.5394
PEP	17.3.2010	5	6	-0.0911
PES	27.4.2012	15	14	-2.5478
PFE	16.10.2009	1	3	3.2123
PFG	19.2.2009	6	7	2.0951
PFG	5.5.2009	7	8	33.3199
PFG	12.5.2010	8	9	0.4423
PFG	19.6.2012	9	8	-2.5271
PG	16.11.2001	3	4	0.4475
PGE	8.12.2011	8	9	-0.7488
PHH	22.1.2007	9	10	1.1633
PHH	11.2.2009	10	11	-3.5422
PHH	21.12.2011	11	13	-25.5301
PHM	1.8.2001	9	10	-5.5240
PHM	5.4.2006	10	9	3.9041
PHM	21.8.2007	9	10	-1.4970
PHM	2.11.2007	10	11	-6.7856
PHM	1.5.2008	11	12	0.2460
PHM	14.9.2010	12	13	-3.6931
PHM	26.6.2013	13	12	0.5156
PIR	24.6.1997	12	11	2.7183
PIR	5.6.1998	11	10	4.6775
PIR	18.7.2005	10	12	2.6399
PIR	7.2.2006	12	15	2.4004
PIR	18.9.2006	15	16	-3.0219
PKD	24.9.2003	14	15	1.4490

PKD	2.10.2007	15	14	-4.0752
PKG	21.2.2002	11	10	4.3391
PKG	23.7.2003	10	9	1.2171
PKI	08.3.1999	6	7	1.4693
PKI	19.5.1999	7	8	0.7755
PKI	23.5.2002	8	10	4.2305
PKI	11.12.2002	10	11	7.1881
PKI	01.11.2005	11	10	4.0330
PKI	10.8.2007	10	9	4.5338
PL	26.2.2009	6	7	-17.8850
PLD	3.6.2011	9	10	-4.5599
PLD	20.5.2013	10	9	0.7367
PLL	8.8.2007	7	9	-3.0942
PLL	3.10.2012	9	8	-0.7147
PNC	11.4.2006	7	6	-1.3852
PNC	12.11.2007	6	5	8.0261
PNC	7.1.2009	5	6	2.9035
PNC	6.12.2011	6	7	2.1230
PNK	28.6.2001	13	14	-9.4481
PNK	13.2.2002	14	15	-7.1165
PNK	21.12.2004	15	14	2.6638
PNK	5.3.2012	14	13	-1.2732
PNM	27.2.2004	10	9	0.4472
PNM	19.12.2007	9	10	-0.2141
PNM	18.4.2008	10	11	-3.0382
PNM	06.5.2008	11	13	-7.6133
PNM	26.9.2011	13	12	1.7129
PNM	13.4.2012	12	10	1.4167
PNM	05.4.2013	10	9	1.7178
PNW	21.12.2005	9	10	-0.8353
PNW	24.6.2011	10	9	0.5595
PNW	28.11.2012	9	8	1.6442
PNW	04.12.2013	8	7	1.0340
PNX	29.8.2003	8	9	1.4553
PNX	15.3.2007	9	10	1.4775
PNX	31.10.2008	10	11	-0.0562
PNX	2.3.2009	11	12	-36.0113
PNX	10.3.2009	12	13	81.2267
PNX	7.5.2009	13	14	18.1880
PNX	6.8.2009	14	16	-9.0555
PNX	12.2.2010	16	17	-17.5686
PNX	5.4.2012	17	16	-1.5120
POL	18.1.2002	9	10	-4.8010
POL	18.9.2002	10	11	-5.8358
POL	24.3.2003	11	13	-8.9484
POL	14.6.2004	13	14	-1.6832
POL	16.12.2008	14	15	-7.4615
POL	11.2.2009	15	16	-3.0229
POL	22.4.2010	16	15	-1.8613
POL	13.9.2010	15	14	1.5066
POL	21.4.2011	14	13	0.9831
POL	13.12.2013	13	12	4.1600
POM	07.8.2006	8	9	-0.9455
POM	01.7.2010	9	8	0.3486
POR	29.1.2010	8	9	-0.8186
PPG	2.1.2008	6	7	-1.6008
PPG	5.3.2009	7	8	0.8770
PPL	29.5.2002	8	9	-0.5305
PPL	27.10.2010	9	8	-1.4179
PPL	02.3.2011	8	9	1.2498
PPO	24.8.2011	15	14	5.7348
PPO	11.12.2013	14	13	2.7315
PPS	15.2.2002	8	9	0.6926
PPS	31.3.2009	9	10	0.0011
PPS	27.9.2012	10	9	-0.6952
PQ	29.6.2007	17	16	1.5042
PQ	31.3.2008	16	15	-3.8211
PQ	26.1.2009	15	16	6.5393
PQ	10.8.2010	16	15	-3.2608
PRA	9.11.2010	10	9	-0.2756
PRA	24.7.2013	9	8	-2.2213
PRU	15.2.2006	7	6	-0.7340
PRU	3.5.2007	6	5	4.2772
PRU	17.2.2009	5	6	-5.0221
PSA	16.1.1996	8	7	1.4213
PSA	10.12.2010	7	6	-0.6855
PSB	10.12.2010	9	8	0.7773
PVA	14.3.2012	13	15	1.6950
PVH	17.3.1998	11	12	-3.8143
PVH	24.6.2005	12	11	-1.7109
PVH	13.7.2007	11	10	-5.3929
PVH	7.4.2010	10	11	1.8059
PWR	5.9.2007	13	12	-4.4362
PX	9.4.2003	8	7	-2.5897
PX	3.5.2006	7	6	0.0553
PXD	17.12.1998	10	11	-6.4332
PXD	15.3.2004	11	10	0.5990
PXD	6.10.2005	10	11	-5.8723
PXD	11.11.2011	11	10	5.1493
QTM	8.11.2002	12	13	1.5809
QTM	17.3.2006	13	14	-6.1777
QTM	5.6.2006	14	15	-2.6548
QTM	2.12.2008	15	16	4.0586
QTM	3.4.2009	16	20	-8.3379
QTM	8.7.2009	20	16	-8.1219
QTM	2.3.2011	16	15	-4.4517
QUAD	14.12.2012	11	12	17.1928
RAD	30.4.1996	7	8	-0.3308
RAD	14.6.1999	8	9	0.7199
RAD	7.10.1999	9	10	-3.9864
RAD	22.10.1999	10	12	-8.9560
RAD	13.1.2000	12	15	-24.5039
RAD	23.4.2003	15	14	15.1425
RAD	8.5.2007	14	15	1.2882
RAD	16.10.2008	15	16	-10.6807
RAD	30.9.2013	16	15	2.4917
RAI	2.5.2008	11	10	0.0811
RCL	05.10.1999	10	9	-2.7351
RCL	22.1.2001	9	10	3.1764
RCL	19.9.2001	10	11	-26.7436
RCL	12.1.2006	11	10	1.6976
RCL	03.4.2008	10	11	-4.6318
RCL	05.12.2008	11	12	8.8193
RCL	26.3.2009	12	13	3.4831
RCL	17.11.2010	13	12	3.2584
RDN	13.2.2008	6	7	-19.3181

RDN	8.4.2008	7	9	-8.3399
RDN	26.8.2008	9	11	-1.4721
RDN	19.12.2008	11	12	12.5610
RDN	8.4.2009	12	18	1.2317
RDN	24.5.2010	18	17	-0.2108
RDN	30.1.2012	17	18	8.1984
RDN	2.8.2012	18	19	1.7072
RDN	15.10.2012	19	17	4.1087
RDN	9.7.2013	17	16	-4.8877
REG	5.12.2007	9	8	2.5782
REG	30.9.2009	8	9	1.0433
RF	16.7.1998	5	6	-0.9132
RF	17.6.2009	6	8	-7.1492
RF	4.11.2009	8	9	-4.3103
RF	11.3.2010	9	10	4.5650
RF	23.11.2010	10	11	-4.9948
RF	15.3.2012	11	10	10.0831
RGA	9.8.1999	6	12	4.5587
RGA	10.8.1999	12	15	-4.6267
RGA	7.1.2000	15	6	1.8627
RGA	19.3.2003	6	7	-3.1743
RGC	27.2.2009	13	14	5.4459
RGP	25.3.2011	13	12	2.3030
RHT	21.8.2006	15	14	-2.5030
RHT	28.3.2008	14	13	3.4545
RHT	29.1.2009	13	12	0.6319
RHT	10.11.2009	12	11	-3.0669
RHT	20.12.2011	11	10	-19.7251
RKT	8.5.2000	9	10	-0.3707
RKT	28.4.2005	10	12	-13.4617
RKT	1.8.2007	12	11	-3.0357
RKT	24.11.2009	11	10	-2.4407
RKT	23.12.2010	10	9	-0.4885
RKT	1.6.2011	9	10	-4.1917
RL	19.7.2006	9	8	0.2975
RL	01.3.2011	8	7	-0.0061
RL	12.8.2013	7	6	0.6334
RMD	29.8.2003	14	13	1.1981
ROK	29.10.1998	4	5	5.5186
ROK	29.6.2001	5	6	-60.1344
ROP	18.5.2007	11	10	-0.5472
ROP	7.2.2012	10	9	-0.0461
RPM	14.8.2006	9	10	0.2240
RRC	28.3.2000	13	14	15.8416
RRC	10.10.2003	14	13	-2.2687
RRC	29.5.2007	13	12	2.7784
RS	31.7.2012	10	9	4.2152
RSG	28.5.2003	9	8	0.2932
RSG	3.12.2008	8	9	-4.2359
RSG	12.12.2013	9	8	-0.4696
RSH	8.8.2005	7	8	3.4401
RSH	21.4.2006	8	10	-1.5372
RSH	25.10.2006	10	12	-7.6525
RSH	15.11.2011	12	13	-2.9287
RSH	2.3.2012	13	14	-2.1207
RSH	30.7.2012	14	16	16.8862
RSH	21.11.2012	16	17	-4.3943
RSH	1.8.2013	17	18	-4.8377
RSH	20.12.2013	18	17	-2.1170
RTN	7.1.1997	5	8	-1.9537
RTN	16.1.1997	8	9	3.0139
RTN	29.10.1999	9	10	5.9423
RTN	15.7.2005	10	9	-0.5420
RTN	21.12.2006	9	8	0.2772
RTN	4.9.2008	8	7	0.8031
RYL	21.6.1996	11	12	0.1542
RYL	4.3.2002	12	11	-1.7899
RYL	21.10.2003	11	10	5.0817
RYL	1.5.2008	10	11	-2.2976
RYL	15.8.2008	11	13	-4.3311
SAH	6.12.1999	14	13	-5.4188
SAH	10.7.2001	13	12	0.2897
SAH	5.5.2005	12	13	-1.5451
SAH	24.12.2008	13	14	3.7536
SAH	13.2.2009	14	17	-24.2995
SAH	29.1.2010	17	14	1.0787
SAH	15.7.2011	14	13	0.8842
SAH	6.5.2013	13	12	4.8908
SCCO	21.8.2002	17	20	-0.9299
SCCO	9.12.2003	20	17	0.7783
SCCO	16.8.2004	17	16	4.1545
SCCO	28.1.2005	16	13	1.9750
SCCO	12.7.2005	13	10	-0.1002
SCCO	26.1.2012	10	9	2.4029
SCG	17.7.1998	7	6	0.2114
SCG	30.7.2002	6	7	6.9013
SCG	22.4.2009	7	8	-1.9128
SCI	31.3.1999	8	9	-10.7841
SCI	2.11.1999	9	10	9.0247
SCI	22.2.2000	10	11	-7.6855
SCI	12.7.2000	11	13	-12.8446
SCI	22.7.2004	13	12	-1.5135
SCS	29.10.2002	7	8	-4.1302
SCS	22.4.2003	8	9	4.2865
SCS	16.10.2003	9	10	0.3099
SCS	13.6.2008	10	9	1.2439
SCS	15.1.2010	9	10	2.0840
SCS	30.7.2013	10	9	-0.5869
SD	9.12.2009	15	14	-3.8570
SD	30.9.2011	14	15	-9.7156
SE	4.11.2013	8	9	-1.3771
SEE	4.11.1998	11	9	5.5782
SEE	2.5.2008	9	10	-3.7598
SEE	16.1.2009	10	11	-3.3876
SEE	16.9.2011	11	12	1.7073
SEE	10.8.2012	12	13	-1.3992
SEE	10.12.2013	13	12	-1.9917
SEMG	29.5.2012	15	14	0.1668
SFG	31.8.2006	8	7	-0.4487
SFG	22.7.2011	7	8	-16.3901
SFY	27.12.2000	14	13	15.5982
SFY	26.1.2009	13	14	3.7365
SGU	18.10.2004	13	16	-46.1594
SGU	10.2.2005	16	17	-57.3191
SGU	02.5.2006	17	16	15.8087
SGU	13.7.2009	16	15	3.0313

SGU	22.4.2010	15	14	0.6803
SGY	20.9.1999	14	13	-8.9895
SGY	4.12.2001	13	12	3.1138
SGY	7.10.2005	12	13	-16.0900
SGY	6.12.2005	13	14	2.0854
SGY	26.1.2009	14	15	-1.2061
SHW	22.2.1996	6	5	0.7579
SHW	3.2.1997	5	6	-1.6005
SHW	15.11.2005	6	5	1.3088
SHW	24.4.2006	5	7	-2.2447
SHW	12.11.2010	7	6	0.8142
SCHW	14.4.2000	7	6	-7.2227
SCHW	31.7.2002	6	7	-12.2962
SCHW	13.2.2008	7	6	-2.0759
SIX	30.11.2011	13	12	2.6755
SKH	8.7.2010	14	18	-35.3923
SKH	12.10.2010	18	15	-1.2058
SLB	11.12.2002	4	5	-1.0191
SLB	22.11.2013	5	4	-2.1607
SLH	30.4.2010	13	12	0.4451
SLH	27.6.2013	12	13	5.4560
SM	20.3.2008	13	12	-5.5065
SMG	30.6.1998	10	11	-1.8998
SMG	21.1.1999	11	12	-0.2883
SMG	3.3.2009	12	13	-2.6649
SMG	13.12.2010	13	12	0.5271
SMG	25.1.2012	12	11	1.3696
SMP	27.3.2002	12	13	0.7629
SMP	3.7.2003	13	14	1.2961
SMP	20.5.2005	14	16	0.6201
SMP	20.1.2009	16	17	-11.2441
SMP	25.3.2009	17	20	-16.4499
SNA	4.6.1999	4	5	-0.9656
SNA	21.8.2003	5	6	-0.7296
SNA	30.11.2006	6	7	-0.5705
SNV	19.12.2007	6	7	0.5354
SNV	28.1.2009	7	8	1.7052
SNV	17.6.2009	8	13	-11.0640
SNV	6.12.2011	13	15	-5.0396
SNV	28.2.2013	15	14	-0.3116
SNV	22.7.2013	14	13	5.3761
SON	18.7.1996	5	6	3.0195
SON	12.7.2001	6	7	2.3586
SON	21.3.2006	7	8	1.5369
SPF	2.11.2007	12	13	-3.2744
SPF	15.2.2008	13	14	-0.2607
SPF	16.5.2008	14	16	-12.6530
SPF	4.3.2009	16	18	0.8338
SPF	10.9.2009	18	17	5.6610
SPF	26.3.2010	17	15	-2.9712
SPF	7.12.2010	15	14	-3.4980
SPG	21.3.2006	8	7	-3.9502
SPG	16.5.2013	7	6	-0.3264
SPH	24.10.2005	13	14	3.5828
SPH	5.3.2008	14	13	-2.9823
SPH	1.9.2009	13	12	2.9985
SPH	2.8.2012	12	13	-1.7749
SPN	24.4.2001	13	12	9.6911
SPN	15.8.2008	12	11	-4.2764
SPN	23.5.2012	11	10	-2.8812
SPW	10.12.1999	12	11	-1.4977
SPW	27.3.2003	11	10	1.0873
SPW	7.3.2005	10	11	7.5548
SRE	17.4.2002	6	7	2.6205
SRE	07.10.2003	7	8	-7.9799
SRI	16.5.2006	13	14	10.7264
SRI	27.5.2011	14	13	4.9553
STI	27.1.2009	5	6	-4.0831
STI	28.4.2009	6	8	-6.9707
STI	1.2.2010	8	9	-7.3148
STJ	03.4.2003	9	8	-2.5071
STJ	01.5.2008	8	7	-4.2431
STJ	05.6.2009	7	6	-3.2839
STON	29.2.2012	15	16	-2.5093
STZ	1.3.2007	12	13	-15.6414
STZ	3.9.2009	13	12	4.4217
STZ	25.5.2011	12	11	-1.9115
SUNE	24.5.2012	12	14	1.4630
SVU	2.5.2001	8	9	0.2964
SVU	5.6.2006	9	11	-2.0011
SVU	18.1.2011	11	14	-2.4886
SVU	18.7.2012	14	15	-6.3427
SVU	27.3.2013	15	14	-1.6609
SWC	29.10.2001	12	13	-18.2425
SWC	21.2.2003	13	14	-6.7153
SWC	20.6.2003	14	13	-2.7963
SWC	22.3.2006	13	14	0.7278
SWC	23.12.2008	14	16	-13.6659
SWC	7.12.2009	16	15	-5.3740
SWFT	24.1.2012	15	14	6.1265
SWN	12.3.2001	8	9	-7.3512
SWN	3.1.2005	9	10	-9.0378
SWN	1.8.2006	10	11	9.1790
SWN	6.7.2010	11	10	-6.7172
SWX	24.4.2009	10	9	-4.9562
SWX	27.4.2011	9	8	0.7677
SWX	19.3.2013	8	7	0.7522
SWY	16.10.1996	10	9	0.4672
SWY	29.6.2005	9	10	-2.0000
SWY	8.4.2008	10	9	0.2732
SXL	8.10.2012	9	10	-3.0954
SXT	3.5.2004	9	10	-0.0629
SXT	20.7.2005	10	11	-5.9818
SYK	13.12.2002	8	7	-1.9649
SYK	04.2.2005	7	6	0.4950
SYK	13.4.2007	6	5	-0.2082
SYY	21.1.2011	4	5	-1.1397
SYY	28.2.2013	5	6	0.9429
T	21.3.2000	3	4	-6.8527
T	28.5.2003	4	5	-1.4268
T	28.9.2004	5	6	-0.4632
T	06.12.2010	6	7	-0.1340
TAC	29.5.2003	8	10	-2.1424
TAC	06.2.2006	10	9	-1.9097
TAC	01.8.2012	9	10	-1.9393
TAP	1.3.2005	8	9	1.5898

TAP	8.5.2009	9	10	0.6588
TC	7.5.2012	14	16	-23.7856
TC	10.8.2012	16	17	-12.7568
TCB	11.12.1997	10	9	7.0273
TCB	21.8.2003	9	8	-0.3152
TCB	24.12.2009	8	9	-1.0613
TCB	29.11.2012	9	10	-0.7514
TDS	10.5.2000	9	7	1.2063
TDS	26.10.2006	7	8	1.1095
TDS	07.11.2006	8	9	-1.9475
TDS	13.2.2007	9	10	-0.5485
TDS	23.4.2007	10	11	-1.6164
TDS	13.3.2008	11	10	1.4527
TDW	4.11.1996	10	9	-5.8185
TE	27.10.2000	4	6	1.2267
TE	22.11.2000	6	7	-0.6933
TE	28.11.2000	7	6	-1.9603
TE	25.4.2002	6	7	-1.3749
TE	24.9.2002	7	9	8.0820
TE	30.5.2003	9	10	-0.2440
TE	20.7.2004	10	12	-2.1224
TE	20.11.2007	12	10	2.5062
TE	06.5.2009	10	9	2.2992
TE	27.5.2011	9	8	0.5930
TEG	21.3.2001	3	4	-3.6548
TEG	18.10.2001	4	5	0.4223
TEG	08.11.2002	5	6	-3.3165
TEG	21.2.2007	6	7	0.0334
TEG	05.3.2009	7	8	-1.6211
TEG	24.1.2012	8	7	2.1951
TEN	25.10.2000	12	13	-9.4044
TEN	25.4.2001	13	14	2.7315
TEN	5.4.2002	14	15	2.9426
TEN	21.5.2004	15	13	-13.3094
TEN	25.5.2004	13	14	12.2072
TEN	3.4.2006	14	13	-5.5814
TEN	13.1.2009	13	14	-21.3522
TEN	27.2.2009	14	16	11.9241
TEN	16.2.2010	16	15	-4.7611
TEN	8.11.2010	15	13	-0.5663
TEN	19.5.2011	13	12	-0.7614
TEX	10.3.1998	16	14	2.0162
TEX	2.9.1999	14	13	1.9216
TEX	23.6.2006	13	12	2.3507
TEX	22.5.2009	12	13	-4.5287
TGI	5.12.2013	12	11	1.1127
TGT	17.11.1998	8	7	-3.5647
TGT	04.8.2000	7	6	-0.4592
TGT	21.8.2001	6	5	-2.3573
THC	17.2.1998	12	11	0.2537
THC	05.10.2001	11	9	3.1754
THC	07.11.2002	9	10	-39.6645
THC	10.7.2003	10	12	-0.5541
THC	23.10.2003	12	13	-16.6063
THC	28.1.2004	13	14	-27.8226
THC	11.3.2004	14	15	-12.9830
THG	1.8.2002	7	9	-11.1911
THG	28.10.2002	9	13	-1.9293
THG	8.7.2004	13	12	0.3982
THG	20.12.2005	12	11	0.8788
THG	30.5.2008	11	10	-0.5657
TJX	04.12.2013	6	5	-0.1840
TKR	19.9.1997	7	6	0.0542
TKR	8.12.2000	6	7	1.6679
TKR	13.2.2002	7	9	-1.6394
TKR	12.2.2003	9	10	-3.0077
TMK	5.8.2003	6	5	1.2358
TMK	15.11.2007	5	6	-2.3590
TMO	15.9.1999	6	8	-1.8090
TMO	29.1.2009	8	7	1.0636
TMO	14.2.2011	7	6	-1.0774
TMO	16.7.2012	6	7	-0.4878
TMO	15.4.2013	7	9	3.4341
TMUS	18.7.2008	16	15	0.8710
TMUS	03.3.2011	15	14	2.3281
TMUS	01.5.2013	14	12	11.5110
TOL	29.4.1997	11	10	-3.0798
TOL	27.6.2011	10	11	0.0186
TRI	29.11.2013	7	8	0.1269
TRK	24.5.2007	12	11	-0.3651
TRK	27.10.2008	11	12	2.3590
TRN	13.8.2001	8	9	-1.9916
TRN	26.10.2001	9	10	8.3417
TRN	30.12.2002	10	12	-7.6584
TRN	22.6.2007	12	11	-2.0151
TRN	29.5.2013	11	10	0.0117
TRV	29.6.1998	3	5	2.1759
TRV	13.1.1999	5	6	-3.1428
TRV	23.2.2000	6	5	-4.0471
TRV	12.12.2001	5	7	-4.6351
TRV	16.7.2002	7	8	-10.9136
TRV	14.6.2006	8	7	1.0531
TRV	28.7.2011	7	6	-0.6311
TSN	26.9.2001	7	9	19.4995
TSN	31.7.2006	9	10	-2.7962
TSN	4.9.2008	10	12	-1.1990
TSN	19.8.2010	12	11	3.5959
TSN	24.2.2011	11	10	0.8430
TSN	11.2.2013	10	9	-1.6748
TSO	5.6.1998	15	11	2.2211
TSO	1.4.2002	11	12	2.3639
TSO	3.10.2002	12	13	-29.7377
TSO	21.7.2004	13	11	-9.6242
TSS	22.6.2012	9	8	-0.2720
TTC	30.4.2012	10	9	0.6237
TUP	14.6.1999	8	9	3.1454
TUP	6.6.2003	9	10	-0.2317
TUP	17.12.2003	10	11	1.5073
TUP	6.12.2005	11	12	-3.0252
TUP	18.8.2008	12	11	1.9949
TUP	30.6.2010	11	10	3.3782
TVC	8.8.2011	1	2	-0.4950
TWI	28.2.2001	12	15	4.6533
TWI	11.11.2002	15	16	-21.3872
TWX	27.3.2009	8	9	-0.5589
TXT	19.5.1997	9	7	-0.6506

TXT	30.6.1999	7	6	-0.0993
TXT	30.5.2003	6	7	3.8934
TXT	16.12.2008	7	8	-1.9354
TXT	17.3.2009	8	10	23.7650
UAL	25.7.2008	15	16	-18.7953
UAL	24.9.2010	16	15	-1.9699
UAM	5.3.2008	10	11	-22.5962
UFI	20.11.2000	7	8	5.3991
UFI	25.6.2001	8	11	-2.5516
UFI	10.5.2002	11	12	-4.1241
UFI	21.11.2003	12	14	7.8105
UFI	27.8.2004	14	16	-10.2793
UFI	23.9.2005	16	17	-4.9321
UFI	4.12.2009	17	16	7.5175
UFI	13.12.2010	16	15	2.2740
UHS	25.9.2003	10	9	-1.6331
UHS	30.4.2007	9	10	1.2721
UHS	25.6.2010	10	12	0.5472
UIS	23.2.1996	13	14	-1.3070
UIS	4.6.1998	14	13	-0.9008
UIS	2.8.1999	13	11	-0.3600
UIS	30.8.2005	11	13	-1.4108
UIS	1.9.2006	13	14	-0.3207
UIS	10.2.2009	14	15	-23.6644
UIS	30.4.2009	15	20	13.2018
UIS	24.8.2010	15	14	0.1011
UIS	28.4.2011	14	13	1.0083
UNH	03.9.1998	5	6	-2.0654
UNH	31.10.2007	6	7	2.7901
UNH	24.9.2012	7	6	3.2301
UNM	13.7.1999	8	6	0.1222
UNM	1.2.2000	6	7	-0.1667
UNM	7.2.2003	7	8	-19.8076
UNM	13.3.2003	8	9	21.1267
UNM	25.4.2003	9	10	-15.7592
UNM	6.5.2004	10	11	-6.2616
UNM	17.7.2008	11	10	8.4585
UNM	9.10.2012	10	9	0.6782
UNP	3.7.1996	7	9	-0.8208
UNP	29.5.1998	9	10	-7.4050
UNP	29.5.2002	10	9	-1.3887
UNP	18.11.2010	9	8	-0.1873
UNP	23.4.2012	8	7	4.6536
UNP	11.12.2013	7	6	0.0353
UPS	9.1.2008	1	4	2.5958
UPS	21.9.2012	4	5	-2.9590
URI	24.7.1998	12	11	-6.6743
URI	29.10.2002	11	12	-5.6094
URI	26.1.2006	12	13	13.2136
URI	1.6.2009	13	15	8.7499
URI	30.8.2012	15	14	2.4324
URI	9.12.2013	14	13	2.1629
USB	10.5.2000	7	6	1.7018
USB	25.7.2003	6	5	-1.4352
USB	27.1.2006	5	4	0.3780
USB	14.2.2007	4	3	-0.0295
USB	17.6.2009	3	5	1.6339
USB	6.12.2011	5	6	0.8135
USB	20.8.2012	6	5	-0.6362
USG	10.2.1997	12	11	-0.3758
USG	9.12.1997	11	9	0.6966
USG	22.6.1999	9	8	1.0290
USG	24.10.2000	8	9	17.7933
USG	4.4.2001	9	13	-3.7996
USG	4.6.2001	13	17	-56.9041
USG	29.10.2008	11	13	-40.6294
USG	29.1.2009	13	14	-19.4890
USG	11.8.2011	14	15	-3.2155
USM	10.5.2000	9	7	2.6936
USM	26.10.2006	7	8	1.3045
USM	07.11.2006	8	9	1.0652
USM	13.2.2007	9	10	0.5548
USM	23.4.2007	10	11	-1.2399
USM	13.3.2008	11	10	0.3541
UTX	2.10.2003	5	6	1.7981
UVV	23.2.2005	7	8	2.4147
UVV	24.2.2006	8	10	-1.2850
VHI	22.8.2006	12	13	1.4222
VHI	11.5.2007	13	14	-6.0795
VHI	7.5.2008	14	15	2.8120
VHI	18.2.2009	15	16	-4.9085
VHI	20.3.2009	16	18	-0.0149
VHI	28.5.2010	18	17	4.1191
VHI	18.11.2010	17	15	-2.1132
VHI	21.6.2011	15	14	5.4403
VHI	11.5.2012	14	13	-2.2588
VLO	21.12.2001	10	9	1.7848
VLO	25.4.2005	9	10	-2.8111
VLO	7.11.2006	10	9	-2.1059
VLY	13.12.2011	7	8	-0.0482
VMC	29.10.2008	7	8	-7.0226
VMC	5.5.2009	8	9	4.8157
VMC	5.8.2010	9	10	-2.2811
VMC	18.3.2011	10	12	-0.1658
VMI	15.1.2008	12	11	-2.1665
VMI	31.7.2009	11	10	0.5195
VMI	2.5.2013	10	9	0.8810
VSH	17.1.2003	11	12	-6.2121
VSH	5.6.2009	12	13	-0.8147
VSH	4.8.2009	13	12	0.8565
VSH	28.6.2011	12	11	-1.8258
VTR	28.6.2004	13	12	1.5548
VTR	5.12.2005	12	11	0.9986
VTR	5.2.2008	11	10	-2.4731
VTR	21.11.2011	10	9	0.7430
VTR	16.12.2013	9	8	2.3333
VZ	13.1.2006	5	6	-0.6697
VZ	06.12.2010	6	7	0.4985
VZ	02.9.2013	7	8	-2.8840
WAB	6.5.2011	12	11	0.6470
WAB	28.6.2013	11	10	1.8044
WAG	4.5.2010	5	6	3.0569
WAG	2.8.2012	6	9	-1.7621
WBS	17.2.1999	11	10	0.3227
WBS	28.3.2006	10	9	-0.0573

WBS	17.6.2009	9	10	-4.2092
WCC	12.8.2013	13	12	0.4399
WCG	5.12.2006	14	13	2.0647
WCG	29.1.2008	13	14	8.6614
WCG	19.6.2008	14	15	-14.5655
WCG	18.12.2008	15	16	14.2776
WCG	17.3.2010	16	15	-1.7312
WCN	26.9.2003	12	11	0.0483
WCN	29.6.2007	11	10	-0.3247
WCN	1.7.2011	10	9	0.5139
WCN	19.10.2012	9	10	2.1958
WDR	1.9.2010	9	8	1.2590
WEC	19.4.2000	3	5	-1.8552
WEC	18.10.2001	5	7	-1.7200
WEC	07.3.2003	7	8	-0.9418
WEC	27.6.2011	8	7	0.8544
WES	25.4.2013	11	10	-0.8085
WFC	31.1.1997	4	6	0.6075
WFC	3.11.1998	6	5	0.0487
WFC	13.10.2003	5	4	1.0281
WFC	1.8.2006	4	3	-0.0982
WFC	14.2.2007	3	2	-0.1260
WFC	19.12.2008	2	3	-3.0189
WFC	17.6.2009	3	4	-4.1395
WFC	29.11.2011	4	5	-0.1419
WG	20.9.2011	13	14	-8.3030
WG	20.12.2011	14	15	2.4314
WG	2.3.2012	15	16	-6.6257
WGL	18.3.2011	4	5	1.0095
WHR	05.3.1996	5	6	0.3087
WHR	13.2.1997	6	7	-1.2144
WHR	14.4.1999	7	8	7.9630
WHR	30.3.2006	8	9	2.1326
WHR	20.1.2009	9	10	-3.6097
WHR	29.3.2013	10	9	1.3153
WLK	10.1.2006	12	11	0.4383
WLK	22.6.2009	11	12	-1.8016
WLK	15.6.2010	12	11	-0.4548
WLK	19.11.2010	11	10	4.2019
WLK	6.9.2013	10	9	1.2705
WLL	6.7.2006	14	13	-3.2086
WLL	16.9.2009	13	12	-2.3893
WLL	25.1.2012	12	11	0.0702
WLP	20.11.2007	8	7	0.8800
WLT	20.6.2005	12	13	3.7630
WLT	3.10.2005	13	14	-1.5943
WLT	15.9.2008	14	13	-8.8918
WLT	6.11.2012	13	14	-0.9111
WLT	6.6.2013	14	15	-9.7204
WLT	5.9.2013	15	16	8.9293
WM	20.2.1996	11	10	-1.3114
WM	11.10.1996	10	9	2.9658
WM	9.7.1998	9	8	5.6824
WM	17.8.1999	8	9	-3.8117
WM	12.12.2013	9	7	-1.0446
WMB	18.2.1999	10	9	-1.8348
WMB	16.10.2001	9	8	-3.8547
WMB	28.5.2002	8	9	-9.4831
WMB	23.7.2002	9	11	-95.8975
WMB	25.7.2002	11	14	-11.5435
WMB	4.5.2006	14	13	-0.8760
WMB	19.3.2007	13	11	-0.4621
WMB	9.11.2007	11	10	-2.7002
WMB	5.3.2012	10	9	1.0770
WNR	30.4.2008	13	14	3.2822
WNR	9.3.2010	14	15	5.9109
WNR	30.8.2012	15	14	3.2972
WOR	13.5.1999	7	9	-8.9637
WPZ	19.3.2007	13	11	1.6648
WPZ	9.11.2007	11	10	-1.8382
WPZ	5.3.2012	10	9	-1.4693
WR	22.1.1997	7	8	-0.2377
WR	29.3.2000	8	11	-5.0906
WR	27.2.2007	11	10	-1.9126
WR	27.4.2010	10	9	0.3894
WRB	15.1.1996	5	6	-1.5039
WRB	13.5.1999	6	8	-0.2498
WRI	16.12.1997	5	6	2.2899
WRI	15.11.2006	6	7	-0.8403
WRI	17.12.2007	7	8	-1.8838
WRI	12.12.2008	8	9	-0.6805
WTM	7.11.2005	10	9	2.4754
WTM	2.7.2010	9	10	0.0645
WTM	29.6.2012	10	9	1.2992
WTS	21.12.1998	7	8	-4.1731
WTS	24.9.1999	8	9	-0.2098
WTS	15.11.2007	9	10	-3.5467
WTW	11.3.2003	13	12	-1.0549
WTW	18.3.2013	12	13	1.5225
WU	09.11.2012	7	8	-0.4901
WY	7.6.2001	6	7	-0.8097
WY	12.2.2002	7	9	0.8501
WY	27.2.2009	9	10	-6.2301
WYN	22.7.2008	8	9	13.0134
X	27.11.1996	11	10	-0.8835
X	8.5.2000	10	9	-1.3918
X	29.1.2001	11	12	3.6116
X	7.5.2003	12	13	0.8109
X	12.11.2004	13	12	0.4212
X	17.1.2007	12	11	-3.9407
X	28.4.2009	11	12	-13.7895
X	17.7.2013	12	13	2.5934
XCO	19.8.2009	15	14	-0.9381
XCO	7.10.2009	14	13	-3.4896
XCO	7.2.2012	13	14	6.9017
XCO	9.5.2012	14	15	9.6075
XEC	14.5.2008	13	12	-0.2268
XEC	29.4.2011	12	11	-2.6585
XEL	24.6.2002	7	9	-10.6829
XEL	16.10.2007	9	8	0.5996
XEL	23.6.2010	8	7	-1.6565
XRM	19.3.2008	14	17	-69.7669
XRM	29.9.2008	17	16	-7.7198
XRM	29.7.2009	16	17	-6.6345
XRM	6.8.2009	17	20	-32.6336
XRX	27.7.2000	6	7	-15.5948

XRX	19.9.2000	7	9	-1.8331
XRX	24.10.2000	9	10	9.0198
XRX	23.10.2001	10	12	-11.1200
XRX	11.6.2002	12	13	-2.8162
XRX	01.3.2006	13	11	2.7561
XRX	10.5.2007	11	10	-0.6081
XRX	21.4.2008	10	9	-5.3108
XRX	08.2.2010	9	10	-3.9632
XRX	02.12.2013	10	9	1.1107
YUM	16.4.2003	12	11	0.5086
YUM	14.4.2004	11	10	-3.4056

YUM	14.2.2006	10	9	0.2413
YUM	09.10.2007	9	10	10.1470
YUM	28.2.2012	10	9	0.7579
ZMH	29.9.2003	10	9	0.3800
ZMH	04.2.2005	9	8	-2.3515
ZMH	13.4.2007	8	7	-1.0055
ZQK	7.5.2007	12	13	-0.9588
ZQK	24.11.2008	13	14	19.2173
ZQK	17.3.2009	14	16	16.2491
ZQK	29.11.2010	16	15	7.0120
ZQK	16.10.2012	15	16	-7.1818

Appendix H: Descriptive statistics for GICS sectors

The overview introduces the average number of credit rating changes for companies classified in GICS sectors and share of credit rating upgrades and downgrades for individual GICS sectors.

SECTOR - GICS	Included companies	Observations	Observations per company	Share of upgrades
CONSUMER DISCRETIONARY	113	568	5.03	42%
CONSUMER STAPLES	39	113	2.90	35%
ENERGY	94	273	2.90	49%
FINANCIALS	111	372	3.35	41%
HEALTH CARE	50	181	3.62	54%
INDUSTRIALS	102	354	3.47	46%
INFORMATION TECHNOLOGY	38	157	4.13	48%
MATERIALS	70	292	4.17	39%
TELECOMMUNICATION SERVICES	8	39	4.88	33%
UTILITIES	60	192	3.20	42%
Total	**685**	**2541**	**3.71**	**44%**

Appendix I: Content of Enclosed DVD

There is a DVD enclosed to this thesis which contains all collected data, descriptive statistics and analysis.

- Folder 1: ALL
    - ALL – Complete overview of all observations
    - ALL_ANALYSIS – All descriptive statistics and analysis of CAR for individual groups of observations (all observations included)
    - ALL_REG_RESULTS_DOWN – Results of run regressions for credit rating downgrades from Gretl
    - ALL_REG_RESULTS_UP – Results of run regressions for credit rating upgrades from Gretl
    - ALL_REGRESSION – All observations prepared for running the regressions
    - ALL_REGRESSION_DOWN – Credit rating downgrades prepared for running the regressions in appropriate format
    - ALL_REGRESSION_UP – Credit rating upgrades prepared for running the regressions in appropriate format
- Folder 2: CONSUMER DISCRETIONARY
    - AAA_CONSUMER_DISCRETIONARY – Complete overview of all observations collected for issuers classified in ‘Consumer discretionary’ GICS sector
    - AAA_CONSUMER_DISCRETIONARY_ANALYSIS - All descriptive statistics and analysis of CAR for individual groups of observations (only ‘Consumer discretionary’ observations included)
    - Company profiles with all information and computations of all issuers classified in ‘Consumer discretionary’ GICS sector

- Folder 3: CONSUMER STAPLES
    - AAA_CONSUMER_STAPLES – Complete overview of all observations collected for issuers classified in ‘Consumer staples’ GICS sector
    - AAA_CONSUMER_STAPLES_ANALYSIS - All descriptive statistics and analysis of CAR for individual groups of observations (only ‘Consumer staples’ observations included)
    - Company profiles with all information and computations of all issuers classified in ‘Consumer staples’ GICS sector
- Folder 4: ENERGY
    - AAA_ENERGY – Complete overview of all observations collected for issuers classified in ‘ENERGY’ GICS sector
    - AAA_ENERGY_ANALYSIS - All descriptive statistics and analysis of CAR for individual groups of observations (only ‘Energy’ observations included)
    - Company profiles with all information and computations of all issuers classified in ‘Energy’ GICS sector
- Folder 5: FINANCIALS
    - AAA_FINANCIALS – Complete overview of all observations collected for issuers classified in ‘Financials’ GICS sector
    - AAA_FINANCIALS_ANALYSIS - All descriptive statistics and analysis of CAR for individual groups of observations (only ‘Financials’ observations included)
    - Company profiles with all information and computations of all issuers classified in ‘Financials’ GICS sector
- Folder 6: HEALTH CARE
    - AAA_HEALTH_CARE – Complete overview of all observations collected for issuers classified in ‘Health care’ GICS sector

- AAA_ HEALTH_CARE_ANALYSIS - All descriptive statistics and analysis of CAR for individual groups of observations (only ‘Health care’ observations included)
- Company profiles with all information and computations of all issuers classified in ‘Health care’ GICS sector

- Folder 7: INDUSTRIALS
  - AAA_INDUSTRIALS – Complete overview of all observations collected for issuers classified in ‘Industrials’ GICS sector
  - AAA_INDUSTRIALS_ANALYSIS - All descriptive statistics and analysis of CAR for individual groups of observations (only ‘Industrials’ observations included)
  - Company profiles with all information and computations of all issuers classified in ‘Industrials’ GICS sector
- Folder 8: INFORMATION TECHNOLOGY
  - AAA_ INFORMATION_TECHNOLOGY – Complete overview of all observations collected for issuers classified in ‘Information technology’ GICS sector
  - AAA_INFORMATION_TECHNOLOGY_ANALYSIS - All descriptive statistics and analysis of CAR for individual groups of observations (only ‘Information technology’ observations included)
  - Company profiles with all information and computations of all issuers classified in ‘Information technology’ GICS sector
- Folder 9: MATERIALS
  - AAA_MATERIALS – Complete overview of all observations collected for issuers classified in ‘Materials’ GICS sector
  - AAA_MATERIALS_ANALYSIS - All descriptive statistics and analysis of CAR for individual groups of observations (only ‘Materials’ observations included)
  - Company profiles with all information and computations of all issuers classified in ‘Materials’ GICS sector

- Folder 10: TELECOMMUNICATION SERVICES
    - AAA_TELECOMMUNICATION_SERVICES – Complete overview of all observations collected for issuers classified in ‘Telecommunication services’ GICS sector
    - Company profiles with all information and computations of all issuers classified in ‘Telecommunication services’ GICS sector
- Folder 11: UTILITIES
    - AAA_ UTILITIES – Complete overview of all observations collected for issuers classified in ‘Utilities’ GICS sector
    - AAA_ UTILITIES_ANALYSIS - All descriptive statistics and analysis of CAR for individual groups of observations (only ‘Utilities’ observations included)
    - Company profiles with all information and computations of all issuers classified in ‘Utilities’ GICS sector

Appendix J: Models examining the variance in CAR

The regressions are run separately for credit rating downgrades and credit rating upgrades. Simultaneously the different combinations of explanatory variables are examined.

Model 1: OLS, Downgrades 1-1431
Dependent variable: CAR

	Coefficient	**Std. Error**	**t-ratio**	**p-value**	
const	2.69174	1.12565	2.3913	0.01692	**
PRIOR	-0.159545	0.0981374	-1.6257	0.10423	
MAGNITUDE	-1.87972	0.517953	-3.6291	0.00029	***
D_BARRIER	0.255616	1.17694	0.2172	0.82809	
D_ACROSS	-1.01489	0.750698	-1.3519	0.17661	
D_SAMESOON	-1.21543	0.748868	-1.6230	0.10481	

Mean dependent var	-1.958557	S.D. dependent var	12.18778
Sum squared resid	207914.9	S.E. of regression	12.07912
R-squared	0.021186	Adjusted R-squared	0.017752
F(5, 1425)	6.168761	P-value(F)	0.000012
Log-likelihood	-5592.800	Akaike criterion	11197.60
Schwarz criterion	11229.20	Hannan-Quinn	11209.40

Model 2: OLS, Downgrades 1-1431
Dependent variable: CAR

	Coefficient	**Std. Error**	**t-ratio**	**p-value**	
const	2.68759	1.12512	2.3887	0.01704	**
PRIOR	-0.15926	0.0980958	-1.6235	0.10470	
MAGNITUDE	-1.87925	0.517775	-3.6295	0.00029	***
D_ACROSS	-0.950812	0.690062	-1.3779	0.16846	
D_SAMESOON	-1.21191	0.748443	-1.6192	0.10562	

Mean dependent var	-1.958557	S.D. dependent var	12.18778
Sum squared resid	207921.8	S.E. of regression	12.07509
R-squared	0.021154	Adjusted R-squared	0.018408
F(4, 1426)	7.704306	P-value(F)	3.85e-06
Log-likelihood	-5592.824	Akaike criterion	11195.65
Schwarz criterion	11221.98	Hannan-Quinn	11205.48

Model 3: OLS, Downgrades 1-1431
Dependent variable: CAR

	Coefficient	**Std. Error**	**t-ratio**	**p-value**	
const	2.61738	1.12431	2.3280	0.02005	**
PRIOR	-0.160484	0.0981227	-1.6355	0.10216	
MAGNITUDE	-2.10367	0.491645	-4.2788	0.00002	***
D_SAMESOON	-1.21445	0.748676	-1.6221	0.10500	

Mean dependent var	-1.958557	S.D. dependent var	12.18778
Sum squared resid	208198.6	S.E. of regression	12.07889
R-squared	0.019851	Adjusted R-squared	0.017790
F(3, 1427)	9.633507	P-value(F)	2.69e-06
Log-likelihood	-5593.776	Akaike criterion	11195.55
Schwarz criterion	11216.62	Hannan-Quinn	11203.42

Model 4: OLS, Downgrades 1-1431
Dependent variable: CAR

	Coefficient	**Std. Error**	**t-ratio**	**p-value**	
const	1.27807	0.716037	1.7849	0.07449	*
MAGNITUDE	-1.87183	0.518052	-3.6132	0.00031	***
D_ACROSS	-0.96096	0.69043	-1.3918	0.16419	
D_SAMESOON	-1.58075	0.713537	-2.2154	0.02689	**

Mean dependent var	-1.958557	S.D. dependent var	12.18778
Sum squared resid	208306.1	S.E. of regression	12.08200
R-squared	0.019345	Adjusted R-squared	0.017283
F(3, 1427)	9.383054	P-value(F)	3.84e-06
Log-likelihood	-5594.145	Akaike criterion	11196.29
Schwarz criterion	11217.36	Hannan-Quinn	11204.16

Model 5: OLS, Upgrades 1-1110
Dependent variable: CAR

	Coefficient	**Std. Error**	**t-ratio**	**p-value**
const	-0.56412	0.510413	-1.1052	0.26930
PRIOR	0.0422007	0.0418038	1.0095	0.31296
MAGNITUDE	0.136046	0.267011	0.5095	0.61049
D_BARRIER	0.307894	0.449659	0.6847	0.49366
D_ACROSS	0.167082	0.305433	0.5470	0.58447
D_SAMESOON	-0.110394	0.413982	-0.2667	0.78978

Mean dependent var	0.149452	S.D. dependent var	4.155901
Sum squared resid	19095.89	S.E. of regression	4.158966
R-squared	0.003040	Adjusted R-squared	-0.001476
F(5, 1104)	0.673179	P-value(F)	0.643854
Log-likelihood	-3154.060	Akaike criterion	6320.119
Schwarz criterion	6350.192	Hannan-Quinn	6331.491

Appendix K: Analysis of restricted samples

Analysis of CAR around the announcement of credit rating changes when the top and bottom 1%, 2% and 5% of credit rating downgrades and upgrades is excluded from the sample (in terms of CAR) and when the observations where CAR were computed with use of market model with coefficient of determination lower than 0.05, 0.1 and 0.2 are excluded from the sample.

Top and bottom CAR excluded		**DOWNGRADES**	**%**	**UPGRADES**	**%**
0.01	N	1403	98.04	1088	98.02
	+	599	42.69	570	52.39
	-	804	57.31	518	47.61
	MEAN	-1.779270293		0.135296745	
	VARIANCE	69.58267859		11.51323352	
	STANDARD ERROR	8.341623259		3.393115606	
	t-statistic	-7.989510867		1.315234342	
	p-value	2.80E-15		0.188709	
0.02	N	1375	96.09	1066	96.04
	+	586	42.62	559	52.44
	-	789	57.38	507	47.56
	MEAN	-1.642941455		0.097764194	
	VARIANCE	51.98244195		9.021909646	
	STANDARD ERROR	7.209885017		3.003649388	
	t-statistic	-8.449774098		1.062696351	
	p-value	7.33E-17		0.288161	
0.05	N	1289	90.08	1000	90.09
	+	542	42.05	526	52.60
	-	747	57.95	474	47.40
	MEAN	-1.356761283		0.059816857	
	VARIANCE	27.73501881		5.588024237	
	STANDARD ERROR	5.266404733		2.363900217	
	t-statistic	-9.249444869		0.800192443	
	p-value	9.08E-20		0.423789	

R-square		**DOWNGRADES**	**%**	**UPGRADES**	**%**
higher than 0.05	N	1281	89.52	1005	90.54
	+	552	43.09	525	52.24
	-	729	56.91	480	47.76
	MEAN	-1.774393497		0.131552733	
	VARIANCE	146.2217775		15.98538035	
	STANDARD ERROR	12.09221971		3.998172126	
	t-statistic	-5.25192448		1.043089126	
	p-value	1.76E-07		0.297158	
higher than 0.10	N	1118	78.13	938	84.50
	+	473	42.31	486	51.81
	-	645	57.69	452	48.19
	MEAN	-1.74810109		0.130589629	
	VARIANCE	150.5877532		13.68483455	
	STANDARD ERROR	12.27142018		3.6993019	
	t-statistic	-4.763132017		1.081160905	
	p-value	2.16E-06		0.279904	
higher than 0.20	N	670	46.82	608	54.77
	+	282	42.09	327	53.78
	-	388	57.91	281	46.22
	MEAN	-1.21983706		0.212447273	
	VARIANCE	155.9221137		13.38855325	
	STANDARD ERROR	12.48687766		3.659037203	
	t-statistic	-2.528630478		1.431647584	
	p-value	0.0116797		0.152759	