

SHAREHOLDER ACTIVISM AND BOND PRICE RETURNS

A study on hedge fund activism's effect on bond price returns around the financial crisis of 2008

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ABSTRACT

Hedge fund activism is an increasingly occurring event in the financial markets, often resulting in positive returns for shareholders. This study examines how bondholders are affected in terms of bond price returns. Particularly, differences between reactions in economic downturns and booms are in focus. Looking at a sample of U.S.-based companies targeted by activists between 2005 and 2012, we find that activism interventions result in declining bond prices on average. Although this conclusion applies to the sample as a whole, dividing the sample into two groups, before and after the Lehman Brothers bankruptcy in 2008, reveals that the negative average returns observed in previous literature are likely to be strongly biased by results coming from weak economic time periods. As a matter of fact, a general direction of the price movements following a hedge fund activist entrance and 13D filing is difficult to predict in more stable macroeconomic phases. After a financial crisis the evidence of declining returns is much more noteworthy.

Keywords: Hedge fund activism, bondholders, bond price returns, financial crisis, event study, difference-in-difference estimation

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1. Introduction

Shareholder activism, most often performed by hedge funds, has during the past two decades been widely debated in media and it is evident that activist interference in publicly traded companies is gaining popularity. Our study focuses on activism performed by hedge funds on U.S.-based firms in the period 2005-2012. Hedge fund activism takes form as an acquisition of an equity stake of significant size in a company, usually around 5% of the total voting equity, used to put public pressure on management in order to force actions enhancing shareholder value. In 2013, there were 220 activist cases in North America, up from 209 in 2012 and 179 in 2011.¹

The phenomenon has been observed by researchers such as Brav et al (2008) and (2013) and Franks et al (2010). The overall consensus on the matter amongst these is that activists act in favor of the shareholders, shown by increased price returns following an activist intervention. However, there is still little research on how bondholders of target companies are affected, which is what our study is focusing on. Through performing event studies and difference-in-difference estimations, we find that bondholders are on average disadvantaged, as activists tend to push a credit-negative agenda while shareholder interests are taking the center stage. These results are consistent with Klein and Zur (2008), who find that hedge fund activism on average reduce bondholders' wealth. Extending the analysis to comparing the activism effect on debt before and after the financial crisis of 2008, we conclude that the average negative bond returns can be related to economically unstable periods, as no evidence of the hypothesis can be found in economic booms. This is a finding that, to our knowledge, has not been observed in earlier research.

1.1 Relevance and purpose

So far most activists have targeted small to medium-sized companies with unrated bonds. However, a significant increase in activism amongst larger firms has been seen in recent years. Recent cases include eBay, Apple and PepsiCo. While only 56 out of 220 targeted corporates are rated by Moody's, Activist Insight predicts that the number of such cases will rise sharply in the coming years, creating a need for debt holders to better

¹ Moody's Investor Service (2014)

be able to assess possible consequences combined with the risk of a company being targeted by activist funds.² Furthermore, our study takes into account the potential differences in bond returns that could be expected when firms are targeted following a crisis in the financial markets, enabling for investors to make more thoughtful decisions on whether to avoid investing in debt in especially activism-exposed industries in weak macroeconomic times.

The aim of our research is to further investigate whether the gain of shareholders, observed in previous literature, actually occurs at the expense of bondholders, resulting in negative bond price returns. Beyond that, we look into how this general result might vary between different levels of economics stability.

1.2 Outline

The remainder of this paper is organized as follows: Section 2 covers the concept of shareholder activism, specifically focusing on hedge funds as acquirers. Section 3 presents earlier research relevant for our study and hypotheses we have made, partly based on previous findings. In section 4 we explain what our data consists of and the rationale behind the choice of the sample. The fifth section discusses the statistical methods used, followed by section 6 which focuses on the results our study has produced and analyzes our findings. The last section consists of an overall conclusion and suggests ideas for further research within the field of hedge fund activism.

² Moody's Investor Service (2014)

2. Shareholder Activism

2.1 Background

Although other practitioners of shareholder activism exist, today most activism targeting is carried out by hedge funds, hence this is the investor type we will base our research on. A hedge fund is an investment vehicle that, in contrast to most other investor types, is to a large extent unregulated by the Security & Exchange Commission (SEC). This enables more risk-taking and speculation through highly leveraged positions.³ One possible return-increasing strategy used by some funds is the so-called hedge fund activism, meaning buying a substantial equity stake in a firm as to be able to impact corporate decisions towards increased shareholder value. Through campaigns, negotiations and proxy battles the hedge funds out public pressure on corporate executives to enforce payout-increasing activities. Common implementations are financial and strategic policy shifts, share repurchase programs and divestiture of cash-generating business units.⁴

When transcending the 5% ownership line of voting equity, the fund must file for Schedule 13D according to SEC law, stating the following:

*“...any person who, after acquiring directly or indirectly the beneficial ownership of any equity security of a class which is specified in paragraph (i) of this section, is directly or indirectly the beneficial owner of more than five percent of the class shall, within 10 days after the acquisition, file with the Commission a statement containing the information required by Schedule 13D”.*⁵

Hence, up to 10 days prior to the filing is when the information becomes public knowledge on the market, creating potential trading reactions of the company's securities. Normally, activists do not acquire much more than 5-10%, as it is usually enough to perform their intentions.⁶ The stock price of a target tends to escalate

³ Stulz (2007)

⁴ Franks et al (2010)

⁵ U.S. Security and Exchange Commission, *Securities Exchange Act of 1934*

⁶ Brav et al (2008)

following an activist intervention, since the market participants expect that the fund will try to achieve procedures in favor of the shareholders.

Typical targets are firms not performing to their full potential due to poor management, with clear room for improvements and can often be considered as undervalued.⁷ Further common characteristics are large cash reserves, easily sold assets or business units or belong to an industry where regulation is not one of the key driving forces. These characteristics are common within the technology, healthcare and energy sectors, resulting in that these are among the most activism-exposed industry sectors.⁸ So far, most cases have been observed in the U.S., where the phenomenon is increasing in popularity. Europe is still slow on picking up on the trend, hence most evidence of outcomes currently available is based on the American financial market.⁹

⁷ Sunesson (2012)

⁸ Moody's Investor Service (2014)

⁹ Marriage (2014)

3. Previous Literature

3.1 Previous research

A number of studies have been made on consequences that hedge fund activism pose on companies. Brav et al (2008) conduct a study on activism targets on the U.S. stock market in the period 2001-2006. They find that shareholders are significantly better off by such interventions, with abnormal returns following the announcement being 7% on average, with no reversal of the positive effect during the first year. This price development is in part explained by initiation or increases of share buyback programs and other actions taken to benefit shareholders. Among these are increased payout ratios, which according to the paper rises between 0.3% and 0.5% on average and an average increase in leverage is seen to be approximately 1,4%. One aspect is also the fact that hedge funds tend to target undervalued firms, hence the stake acquisition signals to the market that the actual value of the firm should be higher, affecting market participants to trade up the stock price. However, the first-mentioned actual changes made by the hedge funds are the main price catalysts. Furthermore, no gain at the expense of creditors is found. In a later study by Brav et al (2013), a discussion around vulnerability of targeted firms as a result to economic shocks is made, reflecting around whether the downside risk might be enhanced in the event of an economic downturn, considering the high leverage and payout ratios.

Critiques have questioned whether the strongly positive abnormal returns seen in targeted companies' stocks only depend on the simple fact that hedge funds are good stock pickers and target undervalued firms, arguing that there is little link between performance and the activism itself.¹⁰ However, Franks et al (2010) perform a case study with access to private information of a UK hedge fund, showing that abnormal returns are largely associated with engagement rather than stock picking.

There is very limited research focusing on returns to bondholders as a result of shareholder activism. However, among the very few is Klein and Zur (2008), who observes U.S. firms being targeted between 1994 and 2006, concluding that there is a mean abnormal return of -3.9% around the 13D filing date. The paper supports the

¹⁰ Black (1998)

hypothesis that bondholders made worse off, as bond returns appear to be inversely related to subsequent changes in dividends and leverage and directly related to changes in cash on hand. Hence, shareholder activism increases credit risk, pushing down bond prices of targets. Contrary to this, Brav (2008) claims that there no effect posed on bondholders' wealth can be observed and the gain of shareholders is thereby not created at the expense of fixed income investors.

A study that emphasizes a market's perception of firms' default risk under different economic outlooks is Ho & Rao (1993). The paper compares how credit rating institutes' evaluation of companies differ between an economically stable period (1967-1968) and a less stable period (1980-1981). They discover that bond ratings are more sensitive to different measures of cash flow stability and solvency in a less stable period.

3.2 Hypotheses

With the previous literature in mind, we form our first hypothesis: ***I. Bond price returns decline following a hedge fund activism intervention.*** Seeing to the fact that many actions that hedge funds try to force onto companies are somehow related to increased leverage or other things that normally affect debt holders negatively, we expect that the findings of the extensive shareholder value related literature on the topic are true. The reason for this is that the value of a bond depends on investors' perceptions of the risk of default and likelihood of receiving the nominal value at maturity date, and the activities undertaken by activist are associated with increased credit risk, thus increasing the risk of default.¹¹

Our second hypothesis is ***II. Bond price returns declines even more sharply following a hedge fund activism intervention in periods of a financial crisis.*** As the financial crisis of 2008 highlighted the risks of high debt ratios, Lehman Brothers having a debt to assets ratio of 95.89%¹² in the quarter before the collapse, investors' skepticism towards leverage rose. Since hedge fund as an investor base, as well as their actions in targeted firms, are clearly connected to higher leverage ratios it is reasonable to believe that the fixed income investors' negative reaction around the announcement of a 13D filing is

¹¹ Klein & Tirtiroglu (1997)

¹² Bloomberg

even stronger in weak macroeconomic time periods. After the bankruptcy of Lehman Brothers, the market sentiment switched from risk on to risk off, causing investors to flee to what was considered the safest – U.S. Treasuries. On a relative value basis between various corporate bonds, it is likely that similar behavioral bias applied. It is likely to believe that this encouraged bondholders to reinvest in less risky corporate bonds in companies with higher equity ratios rather than keep positions in activism-targeted firms.

4. Data

4.1 Data sources

The sample of hedge fund activism targets consists of 20 U.S.-based companies in total. Half of these were targeted within four years before the financial crisis, defined as the Lehman Brothers bankruptcy date (September 15, 2008), henceforth “pre-crisis cases”. The remaining half were targeted within four years after the Lehman crash, henceforth “post-crisis cases”. This split enables us to compare the difference between the consequences of activism during economically stable and unstable periods. Our sample is independently constructed based on mandatory Schedule 13D filings, as there is no central database of activist hedge funds. The filing information is obtained from U.S. Securities and Exchange Commission’s (SEC) database EDGAR. To make sure all the significant stake acquisitions that we study were made with a purpose of shareholder activism, we search the internet for news articles confirming that such motive lies behind the event. No company in the sample has been targeted more than once within one year before or after the event date. The rationale for this criterion is to avoid effects caused by other potential activism interventions on the company. Bond price data is extracted from the Trade Reporting and Compliance Engine (TRACE) within Wharton Research Data Services (WRDS). For each date we use the closing price and for the dates during which no trades have been made we use the latest available closing price.

All companies are matched to a financial peer respectively, which is used as a benchmark in our analysis, henceforth “peers”. The purpose for this will be explained in the methodology section. The peers are chosen mainly based on The Standard Industrial Classification (SIC) core codes, which in most cases is identical to the company’s to which is supposed to serve as a benchmark for. SIC is a system of classifying industries by a four-digit code, mostly used by government agencies, which allows companies to be divided into not only a wider industry group, but also major group and division. The first three digits of the SIC code comprise the core SIC code. This data is obtained from the Orbis database. When no peers with the same SIC code were found to have publicly traded bonds within the relevant time period, we chose the most similar firm available. The criteria that was taken into account in our choice of a suitable peer, besides a similar core SIC code as possible, is company description on the firm’s own website, focusing

on core business activities. All peers are also U.S.-based and none of these firms have themselves been subjects for hedge fund activism within one year before or after the date when Schedule 13D was filed for their respective peers.

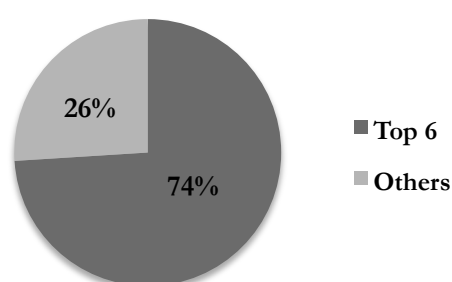
For those companies of which bonds have a credit rating, the ratings were obtained from Standard&Poor's. Two companies will be evaluated using financial measures such as leverage and cash. The purpose of this will be described in the next section. For this analysis the data is also extracted from COMPUSTAT.

4.2 Selection of companies and bonds

As is clear from the previous section, the targets in the sample are different in terms of industry belonging. We have tried to mirror the real industry distribution amongst the total of rated and unrated activist targets.¹³ As our sample is relatively small, we have grouped industries into one group containing the top 6 most activism-exposed industries and one group containing all others. Figure 4.1 shows the distribution. Although our sample is small, it mirrors the real distribution across industries of activist-targeted firms relatively well.

Figure 4.1: Industry distribution of U.S. hedge fund activism targets

Panel A: Real split¹⁴



Panel B: Our sample

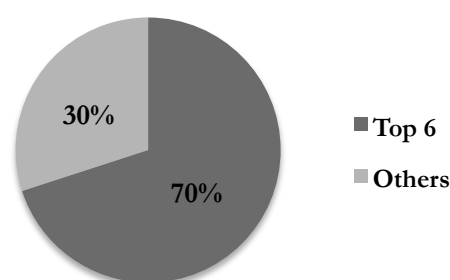


Figure 4.1 shows the relation between the top 6 most activist-targeted industry sectors and other sectors in the U.S. in 2013, which is compared to the industry distribution amongst the companies in our sample. The top 6 sectors are technology, healthcare, energy, retail, commercial & distribution services and manufacturing.

¹³ Based on all companies targeted in 2013 in the U.S.

¹⁴ Factset

To be able to draw a conclusion as general as possible for all bonds, we include a mix of rated and unrated bonds, different credit ratings among the rated ones, different maturities and coupon structure. When a company has several bonds trading simultaneously around the relevant period, we chose the most liquid bond, in other words the most frequently traded one. For simplicity, we ignore the fact that the bond types may vary in each pair of peers and accept the slight error that this fact brings to the study, as it does not affect the general conclusion. However, convertible bonds are completely excluded from the study, hence only pure debt is accepted. Figure 4.2 shows the descriptive statistics of the sample that the above selection process results in. Further detailed information about the specific companies included in the sample can be found in Figure A1 in the Appendix.

Figure 4.2: Descriptive statistics

Year	Number of targets	Number of observations
2005	2	480
2006	7	1680
2007	1	240
2008	1	240
2009	1	240
2010	1	240
2011	5	1200
2012	2	480
Total	20	4800

Figure 4.2 shows number of targets included in our sample in each year within the studied time period 2005-2012. Number of observations means number of data points observed during each year, where one data point is on company's closing price on any given day within the event window.

To extend our study, we will show two concrete examples of activism target cases that react in two different ways and reflect around why that is the case. The first will have an overall downward sloping compound abnormal return, while the other will show an initial decline followed by a price performance recovery. BMC Software is one example of targets that is showing the first-mentioned price behavior. As an opposite case, PolyOne shows a recovery in terms of bond price decline within the studies period.

5. Methodology

5.1 Abnormal bond price returns

The date of the significant equity stake acquisition is for simplicity defined as 10 days before the date of the Schedule 13D filing made by the fund as a filing is required to be made within 10 days after the actual crossing of a 5% ownership. We start our event window 10 days prior to the filing, as this is when the event first could come to public attention. The event date of each target is also considered being the event date of its peer for benchmarking purposes. The rationale of the event study is that it allows to capture effects on bond prices that potentially occur when news about the intervention reaches the market. As bonds are significantly less liquid than stocks, our event window is extended beyond the short periods typically used in event studies applied on stocks, and ends 60 days after the event date. Hence, the total time period of the event window is 70 days.

We mainly want to measure market reactions to news of the filing, resulting in trading actions. Hence, the focus is not on whether the hedge fund succeeded in forcing changes on the company and how in that case it potentially affected the financial statements at future reporting dates. Therefore, we observe a time period following an intervention, prior to any actions taken by the target's management as a result of public activist pressure. Thereby, an event study measuring compound abnormal returns (CAR) is a suitable method to apply.

To measure CAR following activist targeting, which according to the previous sections is expected to be negative on average, each target's peer is used as a benchmark. The definition of an abnormal return is the return generated by a security that is different from the expected rate of return over a specific period. Two other assumptions that are expected to hold are that the event is not anticipated by the market and that the consequences of the event will be incorporated immediately into the bond price. Equation 5.1 shows the abnormal return formula, also described in MacKinley (1997).

$$(5.1) \quad AR_{it} = R_{it} - E(R_{it} | X_t)$$

We use the plug-and-play method in our estimation. The statistical model based on an estimated alpha and beta which is usually used in event studies is not as correct for bonds as for stocks. The actual return of each target is denoted by R_{it} , while $E(R_{it} | X_t)$ is the expected return of the target, in this case the return of the target's peer. The peer benchmark is assumed to be representative for the industry's overall returns under the relatively short period. Due to a thorough matching process of targets to appropriate peers previously discussed, this allows for an isolation of industry specific movements, as we rely on the assumption that companies within a certain sector will keep their relative positions in the short run, if no significant event that only affects one company but not the others occurs. We expect such events to be unlikely over the course of our chosen event window.

5.2 Difference-in-difference regression model

While the event study based on abnormal returns gives a clear picture of the instant bond price consequences that follows from hedge fund activism relative to a company's non-targeted peer, there is a risk for the abnormal returns to include a measurement error as a result of the peer choice. Therefore, to strengthen our results, a difference-in-difference regression model is added. This allows all targets to be compared to all non-targeted peers simultaneously. First, we perform the regression on all pre- and post-crisis cases taken together in one big group, which enables us to draw a conclusion regarding hypothesis I, stated in section 3. Our sample is somewhat limited as it only includes the studied peers in the control group, instead of extending the group with more bonds traded in the U.S. that have not been subjects for activism. However, there is value added to the difference-in-difference estimation by doing so, since it makes the control group as similar to the treatment group as possible.

Next, we apply the same regression model on all pre-crisis as one group, and the post-crisis cases are regressed separately as a second group, in order to test hypothesis II.

Equation 5.2 shows the econometric model in the analysis discussed above, both for testing hypothesis I and II.

$$(5.2) \quad y = \beta_0 + \delta_0 d1 + \delta_1 d2 + \beta_1 \text{Target} + \delta_2 d1 + \delta_3 d2 + \delta_4 d1 * \text{Target} + \delta_5 d2 * \text{Target} + \varepsilon_i$$

A dummy is used to separate the control group from the treatment group, the dummy *Target* indicates whether the firm is targeted by a hedge fund activist. When all targets in the treatment group are set in general comparison to all peers used as a control group, an overall outcome regardless of industry belonging can be determined. Time dummy variables are used for the time after the filing to be able to separate the effect on price caused by the hedge fund activism. As discussed earlier, since information about the intervention is usually coming to public attention after the acquisition itself and not by the time of the actual filing, the day dividing the time period into before after the event is 10 days before the filing. To be able to analyze when the effect of the bond price is most significant, two dummy variables are used, *d1* for the month after the filing and *d2* for two months after the filing. Two interaction variables, controlling for time and type of firms are used, *Int1* ($\delta_4 d1 * Target$) indicating that it is a target firm during the month after filing, and *Int2* ($\delta_5 d2 * Target$) indicating that it is a target firm two months after filing. To adjust for potential heteroskedasticity, robust standard errors are used in the regression.

5.3 Two specific cases

Next, we turn to examining two cases with different compound abnormal return behavior around the event date, BMC Software and PolyOne, which were included in the observation in section 5.1. Since there are many potential contributing factors to a bond price development, especially during economic downturns, we chose to try to explain the differences in price behavior of the bond by only studying the main financial measures usually associated with hedge fund activism.¹⁵ These are debt to assets ratio, cash and cash equivalents as a percentage of total assets and credit rating, which will be observed at the time of the event for both companies respectively. To put these numbers in a context, and be able to understand their relative differences, we compare the measures against industry averages for their respective industry sector.

¹⁵ Considering the extensive analysis that is required to fully understand the market sentiment around the few days of interest, we chose to focus on more concrete financial measures not influenced by short-term market movements.

6. Results and Analysis

6.1 Abnormal bond price returns

Our observations show that the results of the two groups on each side of the crisis are different. The pre-crisis cases show no coherent outcome, as the number of cases showing positive CAR and the number of cases showing negative CAR following the activist targeting are nearly the same. Also, the average CAR of the pre-crisis group is significantly close to 0. Although this result might be biased by the random target selection, as is always a risk with small samples, we are cautious on drawing conclusions regarding a general returns pattern for the pre-crisis group. However, 90% of the post-crisis cases show a negative CAR during the event window, resulting in a considerably more negative average CAR for the post-crisis group than for the pre-crisis one, which is strongly aligned with our hypothesis II. Figure 6.1 shows the summary of CARs over the observed period, whereas graphs based on daily closing prices can be found in the Appendix.

Figure 6.1: Compound abnormal returns for each observed company in the sample

Pre-Crisis Targets	CAR	Post-Crisis Targets	CAR
Company A	0.0698	Company K	-0.0375
Company B	-0.1240	Company L	-0.0053
Company C	0.0243	Company M	-0.0060
Company D	0.0490	Company N	-0.0162
Company E	0.0060	Company O	-0.1052
Company F	-0.0158	Company P	-0.1969
Company G	-0.0149	Company Q	-0.0408
Company H	-0.0417	Company R	-0.1239
Company I	0.0198	Company S	0.0211
Company J	0.0253	Company T	-0.0137
Average	-0.0002	Average	-0.0524

Figure 6.1 shows compound abnormal returns within the event window (-10;60) for each company observed, where 0 is represented by the 13D filing date. Average compound abnormal returns are calculated separately for the pre- and the post-crisis group.

6.2 Difference-in-difference regression model

6.2.1 Entire sample taken as one group

Our first regression, treating both pre- and post-crisis cases together as one group, shows two important outcomes (Figure 6.2). Firstly, the bond price returns of the targets are on average 1.96% lower than the control group consisting of peers, during the second month after the filing. This is in line with the hypothesis that hedge fund activism in general poses negative consequences on bondholders and also with Klein and Zur (2008), arguing that hedge fund activists push a credit-negative agenda, which is reflected in the bond prices. A value-declining effect is shown in the first month as well, though the results do not show a high enough statistical significance, having a t-value of -1.62. Overall, in line with hypothesis I, this suggests that hedge fund activism is value-destroying for fixed income investors. We are cautious on drawing conclusions regarding the first month following the filing.

Figure 6.2: Bond price impact from hedge fund activism, both periods together

Log Price	Coefficient	Robust Std. Error	t-value	P-value
Target	-0.0174	0.0048	-3.64	0.0000
d1	-0.0035	0.0062	-0.56	0.5780
d2	-0.0001	0.0067	-0.01	0.9880
Int1	-0.0133	0.0082	-1.62	0.1060
Int2	-0.0196	0.0085	-2.30	0.0220
β_0	4.6575	0.0037	1267.71	0.0000

Figure 6.2 shows the results of Equation 5.2. The sample consists of bond price data for 40 firms, 20 being targeted by a hedge fund activist and 20 being peers of these firms. The time period 2005-2012 involves both non-crisis and crisis years. The explanatory variables *Target*, are dummy variables taking on the value of 1 if the firm was targeted by a hedge fund activist during the relevant target window for each specific case. Two explanatory variables *d1* and *d2* are time dummy variables, taking on the value 1 if the observed bond data is for the period one month and two month after the filing respectively. *Int1* and *Int2* are interaction variables, whose value is the effect on bond price from a 13D filing in the first and second month after the announcement respectively.

The second observation is that regardless of whether the fund acquisition would have taken place or not, the prices of the target firms would have been lower, on average 1.74% lower relative to peers. This is shown by the negative coefficient on the *event*-variable. This once again proves that hedge funds often initiate ownership in poorly perceived or undervalued firms, just as Brav et al (2008) predicts. However, that paper

only makes this conclusion based on stock prices, while our results also show that the same illation is true for bonds. This is somewhat surprising, as previous literature suggests that activist often target companies with large cash balances, which is something that normally could be thought of as beneficial for debt holders, as it improves the firm's repayment ability.

6.2.2 Dividing the sample in pre- and post-crisis

Separating our sample in a pre- and a post-crisis groups, results in regression outputs shown in Figure 6.3. Here is where we first find support for our second hypothesis. Considering low statistical significance, for the pre-crisis group we cannot determine if there is any negative price return effect. As previously mentioned, Brav et al (2008) does not find any evidence for that creditors are made worse off at the gain of shareholders. However, for the post-crisis group, the outcome is highly significant with a t-value of -2.15. The targets' price returns turn out to be 3.33% lower following the filing compared to its peer group. An interesting and important fact discovered by this analysis is that the price return of hedge fund targeted firms, during weak macroeconomic periods, is strongly negatively impacted, while no such evidence is seen for more stable times. Hypothesis II is thereby approved by this output.

Figure 6.3

Panel A: Bond price impact from hedge fund activism, pre-crisis

Log Price	Coefficient	Robust Std. Error	t-value	P-value
Target	-0.0206	0.0046	-4.44	0.0000
d1	-0.0063	0.0060	-1.04	0.2990
d2	0.0005	0.0062	0.08	0.9370
Int1	0.0024	0.0074	0.33	0.7400
Int2	-0.0059	0.0072	-0.82	0.4120
β_0	4.6573	0.0038	1212.69	0.0000

Panel A shows the results of Equation 5.2. The sample consists of bond price data for 20 firms, 10 being targeted by a hedge fund activist and 10 being peers of these firms. For each target and its respective peer, the bond price data for 10 days before the filing up until 60 days after the filing is used. The time period 2005-2007 involves non-crisis years only. The explanatory variables *Target*, are dummy variables taking on the value of 1 if the firm was targeted by a hedge fund activist during the relevant target window for each specific case. Two explanatory variables *d1* and *d2* are time dummy variables, taking on the value 1 if the observed bond data is for the period one month and two month after the filing respectively. *Int1* and *Int2* are interaction variables, whose value is the effect on bond price from a 13D filing in the first and second month after the announcement respectively.

Panel B: Bond price impact from hedge fund activism, post-crisis

Log Price	Coefficient	Robust Std. Error	t-value	P-value
Target	-0.0142	0.0084	-1.70	0.0900
d1	-0.0007	0.0109	-0.06	0.9520
d2	-0.0007	0.0118	-0.06	0.9530
Int1	-0.0290	0.0147	-1.98	0.0480
Int2	-0.0333	0.0154	-2.15	0.0310
β_0	4.6577	0.0063	742.89	0.0000

Panel B shows the results of Equation 5.2. The sample consists of bond price data for 20 firms, 10 being targeted by a hedge fund activist and 10 being peers of these firms. For each target and its respective peer, the bond price data for 10 days before the filing up until 60 days after the filing is used. The time period 2007-2012 involves crisis years only. The explanatory variables *Target*, are dummy variables taking on the value of 1 if the firm was targeted by a hedge fund activist during the relevant target window for each specific case. Two explanatory variables *d1* and *d2* are time dummy variables, taking on the value 1 if the observed bond data is for the period one month and two month after the filing respectively. *Int1* and *Int2* are interaction variables, whose value is the effect on bond price from a 13D filing in the first and second month after the announcement respectively.

Since credit rating is an indication of default risk and a contributing factor in the market's pricing of bonds, it is rational to believe that the rating is positively correlated with bond prices. As Ho and Rao (1993) discusses, during macroeconomic weaknesses market participants overreact more strongly to negative news, as activist interventions are considered to be for bondholders, leading to declining credit ratings. Our study continues to support this idea and highlights the important finding that hedge fund activism news are perceived as more negative after crisis-initiating events by which a period of economic instability follows, such as the Lehman Brothers bankruptcy.

Given our findings in Figure 6.3, it is reasonable to argue that the output in Figure 6.2 is a result of the strong negative effect on price return for targeted firms following an intervention after the crisis, rather than all targeted firms taken as a whole.

6.2.3 Further general analysis

An interesting discussion can be made around the fact that Brav et al (2008) and Klein and Zur (2008) present conflicting arguments regarding activism's consequences on bond holder's wealth. As we see in our pre-crisis study, it is difficult to develop any statistical significance around whether the hypothesis is true or not, as the split between

the cases supporting it and opposing it are close to be evenly split. Although both papers examine the period before the financial crisis, we believe that their sample differs due to one having a several years longer observation period than the other, which in turn can have influenced the respective outcomes. Ultimately, this would indeed give opposing results, as one sample might by chance be more heavily weighted towards firms showing value-destructive movements from a bondholder's perspective, while the other is not, when in reality the split between them might not differ too much from being equal, our analysis also has difficulties in determining if there in general are any negative returns for bondholders associated with hedge fund activism during times of strong economic outlooks. Nevertheless, we accomplish a finding that to our knowledge has not been made before; while the effect on bond prices resulting from hedge fund activism can not be determined with certainty for economically stable periods, there is strong evidence for the hypothesis that following a financial crisis activism interventions damage bondholder's value.

Further, another possible reflection on the comparison between Klein and Zur (2008) and our discoveries can be attributed to the differences in making a distinction between bullish and bearish macroeconomic time periods. While Brav et al (2008) observes a shorter time period, mostly including optimistic years, Klein and Zur's sample is more similar to our, as both a recession (The Dot Com Bubble 2001-2003) and booms (the period before and after the Dot Com Bubble) are included in Klein & Zur's observations. Although part of the bubble is included in Brav et al's study as well, a vast majority of the observation made lie in the period after 2003, meaning that majority of the sample represents strong economic outlook periods. Hence, this is one explanation to why we find support for hypothesis I, in line with Klein and Zur, when a difference-in-difference regression is made in the entire sample as one group, not distinguishing pre- and post-crisis from each other. It is sensible to question whether, just like in our study, the negative impact shown in their study actually originates from the distinctive negative results posed on bond prices during instable times, as a result of activism. Hence, it is possible that Klein and Zur's results would have been consistent with our hypothesis II as well, and thereby our conclusions from this study overall, if the sample had been divided into two groups depending on periods with different degrees of economic stability.

To summarize the analysis in this section, we see that our results give support for both hypothesis I and II, the first matched to previous literature and the second being a contribution to financial research, at least to our knowledge.

6.3 Bond rating

Our sample shows that there is nearly no difference in the number of bonds being downgraded following an activism intervention between the post-crisis period and before the crisis. However, there are more bonds being downgraded than upgraded in the year following the intervention, which could mean that hedge fund activism does have a negative impact on bond even from a rating perspective. Though, the difference is very small between the groups and since our sample is small, this difference can have occurred only by chance when choosing between several bonds of the same company for our study. One should also remember that bond ratings are not as volatile as bond prices, as a change of rating is an extensive process for the rating agency. Hence, although prices do react to the news of an activist ownership entrance, a significant change of the firm's fundamentals has to be in place for it to be subject for downgrading. Therefore, we choose not to proceed with analyzing activism's impact on credit rating, as no clear results can be made from this group of firms.

6.4 Two specific cases

As discussed above, the post-crisis group of companies gives us a more interesting and statistically significant result, therefore we base our study of two specific cases on two firms within the post-crisis sample. Two companies that show the different movements mentioned in section 5.4 after being targeted are BMC Software and PolyOne, where the first experiences an overall bond price decline over the entire event window, while the second begins recovering after an initial sharp decline. Figure 6.4 shows the compound abnormal returns for the two companies, which are part of the results previously discussed in section 6.1.

Figure 6.4: Compound abnormal returns

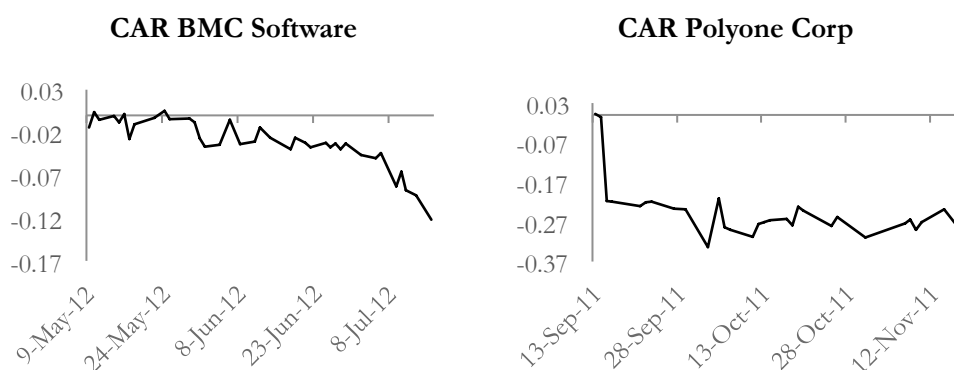


Figure 6.4 shows the compound abnormal returns for BMC Software and PolyOne in the event window (-10,60), where day 0 is defined as the 13D filing date.

Figure 6.5 shows the observed values for the measures we use to describe the different price movements.

Figure 6.5: Selected financial measures for BMC Software and PolyOne

Company	Rating ¹⁶	Debt/ Assets (DA)	Debt/Assets - Industry (DAI)	DA/ DAI	Cash/Assets (CA)	Cash/Assets- Industry (CAI)	CA/ CAI
BMC Software	BBB	0.7030	0.24	3.0	0.33	0.1210	2.7
PolyOne	BB	0.6910	0.34	2.0	0.23	0.0370	6.1

Figure 6.5 shows financial measures for our two studies targets, BMC Software and PolyOne. The table includes the S&P credit rating of the companies at the time of the activism intervention. Furthermore we include debt to assets ratios and cash to assets ratios, both for companies and their respective industry average of these values.

The main dissimilarity between the two firms lies in the fact that BMC's bond is BBB-rated, meaning it is considered to be investment grade, hence the bond has a relatively low default risk. Many institutional investors only have a mandate to invest in investment grade bonds, hence need to sell off all positions in securities that are downgraded to junk bond level. As BBB is the lowest possible investment grade rating,

¹⁶ Standard & Poor's

BMC would enter the non-investment grade group of bonds should it be downgraded, hence not being included in the investment mandate of a significant number of fixed income investors. The magnitude of this effect is important, as a vast majority of investors investing in bonds are of institutional type.¹⁷ Knowing about the risks posed on the company by an activist intervention, bondholders immediately adjust their expectations on the price performance, pricing in the risk of a downgrading and potential forced sale of many investors. The aftermath shows that the market pricing reaction was correct, as several debt securities of BMC were downgraded by Moody's during the next year after the event, where the activist intervention was explicitly stated as one reason.¹⁸ This significant sell-off impact from a potential change in credit rating is not present to the same extent for PolyOne, as the bond we are observing is already non-investment grade. However, during the first year after the activism intervention, PolyOne's bond was downgraded as well, just like Ho and Rao (1993) predicts would happen.

Observing the leverage ratio we see that the absolute values are not very different between the two companies. With this said, one should not take it as that the debt to equity ratio should not be an explanation for the price movement differences. In fact, these two companies belong to two different industries where the normal level of debt of the first is quite unlike the other. For specialty chemicals the industry average debt to assets ratio 34.36%, whereas for computer software firms the mean is 23.79%.¹⁹ Hence, BMC has 3 times higher debt to capital ratio relative to industry average, while PolyOne only has 2 times the industry average value. Therefore, BMC is relatively more levered than PolyOne, being in a worse condition from a credit perspective, signaling a higher default risk to bond holders.

Next, we consider the cash and cash equivalents as a percentage of total assets. It is clear that both companies have higher cash reserves than their respective industry averages.²⁰ This could be part of the explanation why these firms were targeted by hedge funds in the first place. Thus, to reflect the risk of the cash potentially being returned to shareholders and thereby decreasing debt repayment capability, it is natural that the

¹⁷ Klein and Zur (2008)

¹⁸ Moody's Investor Service (2014)

¹⁹ Damodaran (2014)

²⁰ Advantcomp Bizstats, 2010

instant reaction of the bondholders is to trade down the price. Though, we find no obvious evidence to the price recovery of PolyOne studying the cash level alone.

Summarizing the three aspects discussed above, it is reasonable to state that the potential downgrading of BMC to non-investment grade is the main explanatory factor to the different trading behavior of the investors following an activist intervention. This effect is further enhanced by the higher relative leverage ratio. Although high levels of cash on the balance sheet is one reason for being targeted, in this specific comparison it is somewhat ambiguous how the cash reserves affect the price movements, thus we are cautious on drawing any conclusions based on this measure.

6.5 Economic implications

Considering the investor base, a distinction should be made between investors active on the corporate bond market with focus on value appreciation and those with the mandate to short-sell. If being long the bonds one should pay attention to the risk of the firm invest in potentially being targeted by activist funds, which could decrease the value of ones holdings, especially in post-crisis periods. As we saw in the case of BMC Software, this is particularly important for crossover bonds, taking into account the potential downgrading to junk bond level. Our findings are therefore important to such investors, in order to plan ahead of decreasing their exposure to the company in time. On the other hand, this knowledge could also be useful for market participants executing short-selling strategies, to which a potential activist intervention could be a sign of the right time to short the targeted company's bond.

7. Conclusion

7.1 General conclusion

In accordance with our hypothesis I and II, we find that overall hedge fund activism has a disadvantageous impact on bond prices. With most previous literature on activism in mind, which argue for value creation for shareholders, we find that this often is done at the expense of fixed income investors. Nevertheless, seeing to our results, as hypothesis I states, since overall bond price returns decline following a hedge fund activism intervention, there is a possibility that this outcome in reality derives mainly from the post-crisis outcome. This helps us explain the differences between Brav et al (2008) and Klein and Zur (2008), by shedding light upon the discrepancies resulting from their different time periods observed. Our most important finding in this study is what confirms hypothesis II, namely that bond price returns decline even more sharply following a hedge fund activism intervention in periods of a financial crisis. The financial crisis has underlined the magnitude of risks associated with leverage. As hedge fund activism often involves raised debt ratios, in combination with the overall bearish market sentiment during economic downturns a downwards-trading overreaction following an activist intervention can be seen. Studying two specific cases we see that a significant negative price development can be observed following an intervention in situations where relatively more harmful changes can be expected to occur, both in terms of capital structure changes and a lowered credit rating.

7.2 Delimitations

Firstly, our main deficiency is the small sample we base our research on. Although we have a well-diversified group of companies in terms of industry spread, as well as achieving statistical significance in our most relevant observations, our conclusion could have been made with stronger certainty with a larger sample. Moreover, the fact that we use bonds of different maturities, with different coupons and a mix of rated and unrated bonds could potentially be considered as a shortcoming. While the purpose of doing so is to make a general conclusion applicable regardless of bond type, this as well might have given even more valid results if applied on a higher number of firms. Lastly, there could be a small bias in the compound abnormal returns measure, since all returns are based on each day's closing price within the observed period. Movements in both positive and

negative directions during the day are hence not captured in full. However, as bonds are significantly less liquid than stocks, the number of trades during the day is usually low and this method could therefore be considered accurate enough.

7.3 Further research suggestions

Our study has exclusively focused on hedge fund activism in the American bond market. So far Europe has been lagging in terms of such investment activity. As the phenomenon becomes more practiced and accepted across the Atlantic, a similar study could be made on European firms, as an extension to Sunesson (2012) and Franks (2010). With a larger sample of targets and a longer history of activism practice, this would also enable a direct comparative study between the two geographic regions, drawing conclusion on whether the European financial markets allow for the same activism consequences on corporate bonds.

Furthermore, some companies within often-targeted industries in the U.S. have recently adopted behavioral changes in response to activist interest in their sector, in order to avoid activist interference. Examples of precautionary actions taken include initiation of share buyback programs, alterations of payout ratios and spin-offs of high-growth unit.²¹ In the future, it would be of interest to conduct a study on how activism-defensive activities might have reshaped the overall financial discipline within the sectors.

²¹ Moody's Investor Service (2014)

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9. Appendix

Section A – Case Summary

Figure A1 shows a summary of all hedge fund activism cases used as underlying data to this paper. Panel A represents the pre-crisis cases, while Panel B represents the post-crisis cases. The first column contains the date when a 13D filing was made. Next column presents the SEC accession number, which is a unique number that is assigned to each submission in the EDGAR database as the submission is received. The third column shows the industry to which the target belongs to, where the range of industry classifications are in line with Moody's Investor Service (2014). Column 4 and 5 show the acquiring fund and the target respectively, followed by the target's core SIC code and credit rating at the time of the activism intervention and one year later. Ratings are based on the scale of S&P. The last two columns show the target and its core SIC code.

Panel A: Pre-Crisis									
13D Date	SEC Accession Number	Industry	Hedge Fund	Target	Core SIC	Rating 0	Rating 1	Peer	Core SIC
2005-09-16	0000902664-05-001853	Energy	Jana Partners	Massey Energy	122	BB	BB-	Consol Energy Inc	122
2005-10-14	0000905718-05-000239	Retail	Atlantic Investment Management	Stanley Black&Decker	354	A	A	Snap On	354
2006-01-23	0001193125-06-009860	Retail	Sowood Capital Management LP	Tommy Hilfiger	232	B-	n/a	Oxford Industries	232
2006-04-24	0000902664-06-001281	Consumer	Triana Partners	Heinz H J Co	203	A-	BBB+	Campbell Soup Company	203
2006-06-22	0000902664-06-001704	Manufacturing	Brahman Capital Corp	Alertis International	335	B	n/a	Alcoa	333
2006-06-26	0001013594-06-000383	Energy	Sandell Asset Management	Southern Union	492	BBB	BBB-	AGL Resources	492
2006-08-18	0000807249-06-000225	Manufacturing	Gamco Investors	GATX Corp	478	BBB	BBB+	Trinity Industries	374
2006-10-02	0001012975-06-000395	Entertainment	Hayround Cove Asset Management	Ile of Capri Casinos	799	B	B	Las Vegas Sands Corp	701
2006-11-27	0001089447-06-000086	Technology	MDI Investments LP	Unisys Corp	737	B+	B+	Amdocs	737
2007-12-19	0000902664-07-003588	Transportation	3G Capital Partners	CSX Corp	401	BBB-	BBB-	Norfolk Southern	401
Panel B: Post-Crisis									
13D Date	SEC Accession Number	Industry	Hedge Fund	Target	Core SIC	Rating 0	Rating 1	Peer	Core SIC
2008-10-10	0000909518-08-000751	Retail	Blue Harbour Group	Phillip Van Heusen	232	BB+	BB+	VF Corp	232
2009-03-02	0000905718-09-000226	Manufacturing	Atlantic Investment Management	Joy Global Inc	353	BBB-	BBB-	Caterpillar (1)	353
2010-09-17	0000919574-10-006954	Distr. Services	Fairholme Capital Management	AIG	630	B	B	Metlife	631
2011-06-30	0000807249-11-000233	Basic Industries	Gamco Investors	Lubrizol Corp	286	BBB+	AA+	FMC Corp	287
2011-08-12	0000919574-11-004545	Entertainment	Fine Capital Partners LP	Scientific Games Corp	799	BB-	BB-	International Game Technology	399
2011-08-17	0001418612-11-000072	Technology	ValueAct Capital	VeriSign	737	n/a	n/a	Microsoft	737
2011-09-19	0000919574-11-005369	Basic Industries	Fine Capital Partners LP	Polyone Corp	282	BB-	B+	Dow Chemical Company	282
2011-11-28	0000807249-11-000364	Healthcare	Gamco Investors	Chemel Corp	808	n/a	n/a	Geniva Health Systems	809
2012-05-18	0001013594-12-000291	Technology	Elliott Associates LP	BMC Software	737	BBB+	BB	Oracle	737
2012-06-12	0000905718-12-000176	Manufacturing	Atlantic Investment Management	Kennametal Inc	354	BBB	BBB	Caterpillar (2)	353

Section B – Event Study Results

Figures B1-B20: The graphs illustrate cumulative abnormal returns for each target relative to its peer during the event window; between 10 days prior to the 13D filing and 60 days after the filing. The dotted line represents the filing date. Figures B1-B10 represent the pre-crisis period and figures B11-B20 represent the post-crisis period. The results are discussed in section 6.1.

Pre-Crisis Results

Figure B1

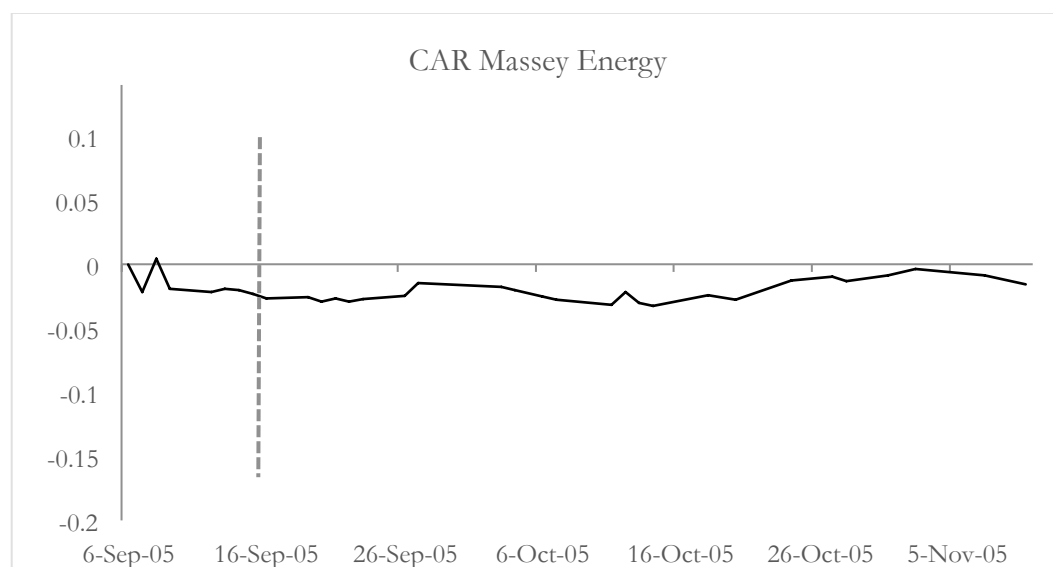


Figure B2

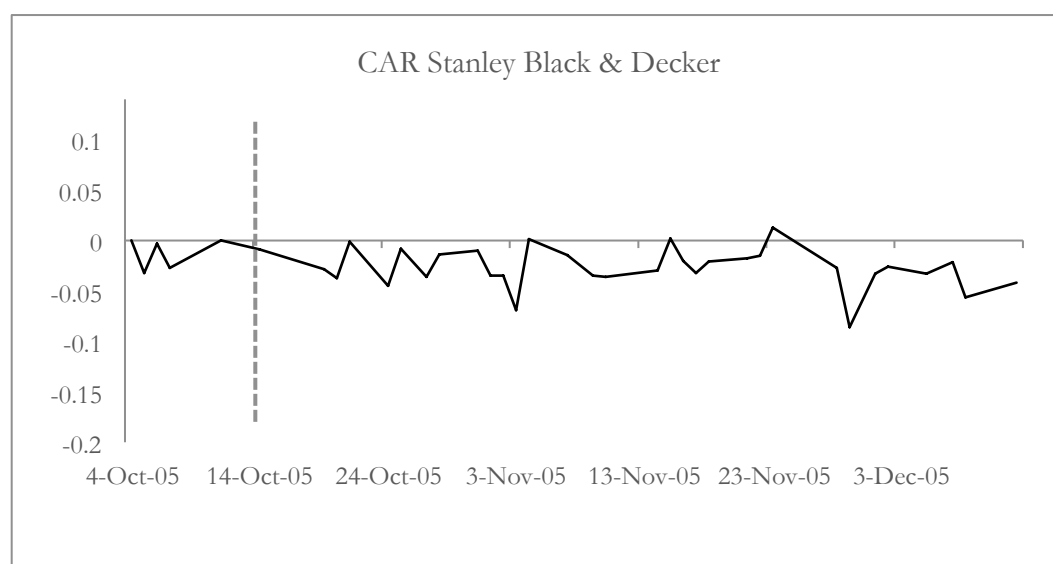


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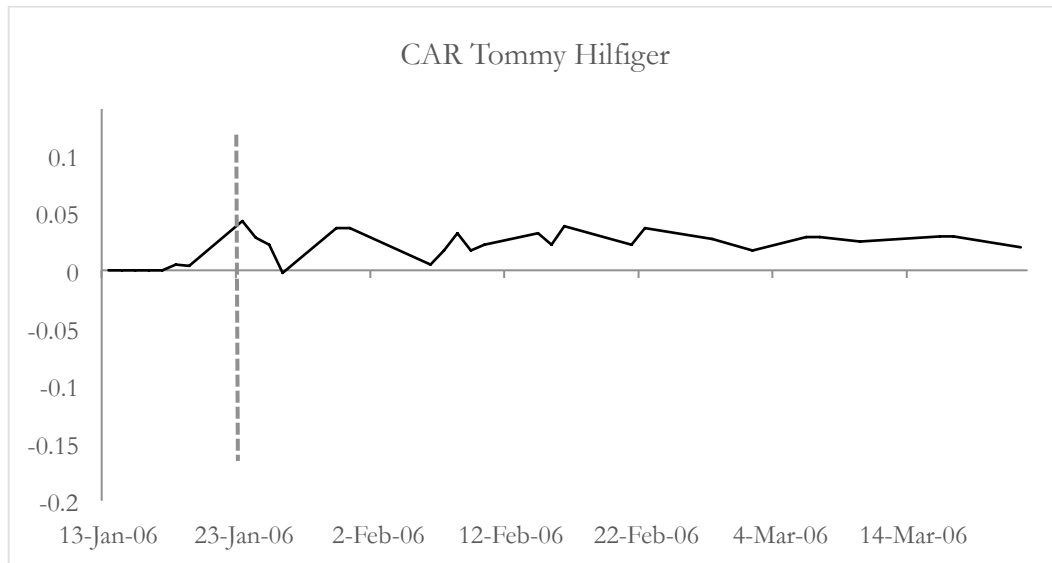


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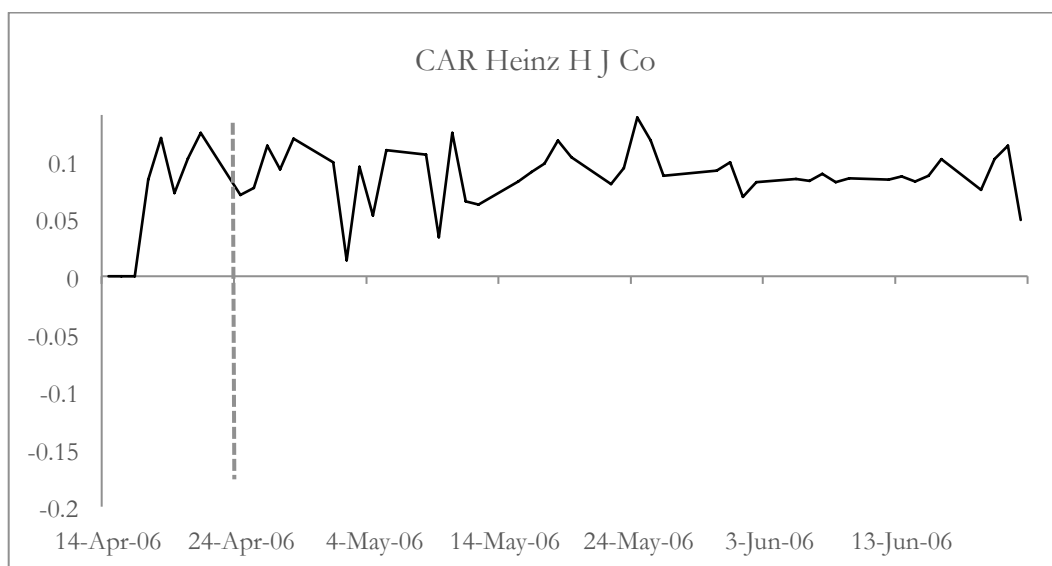


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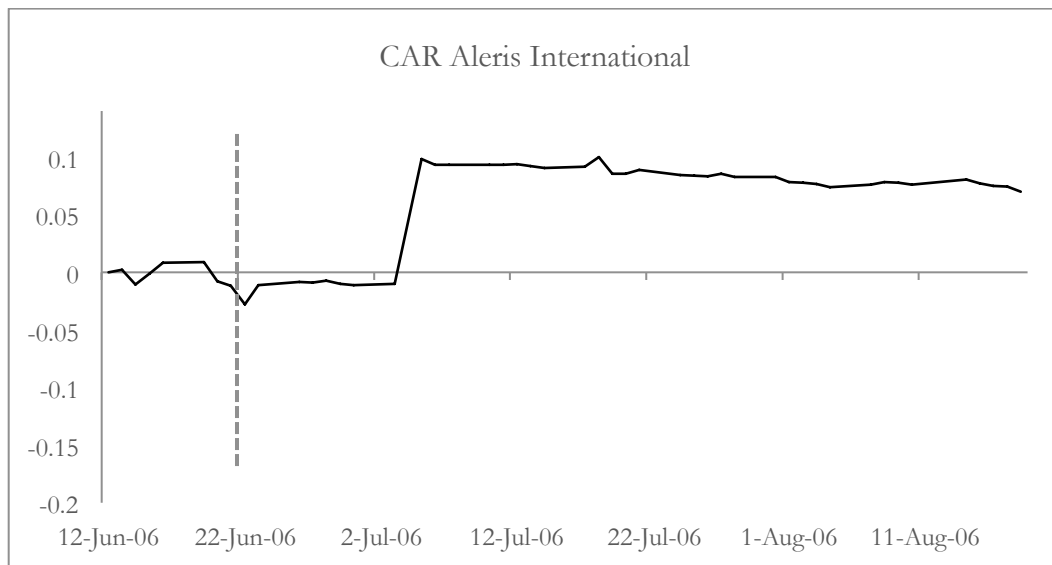


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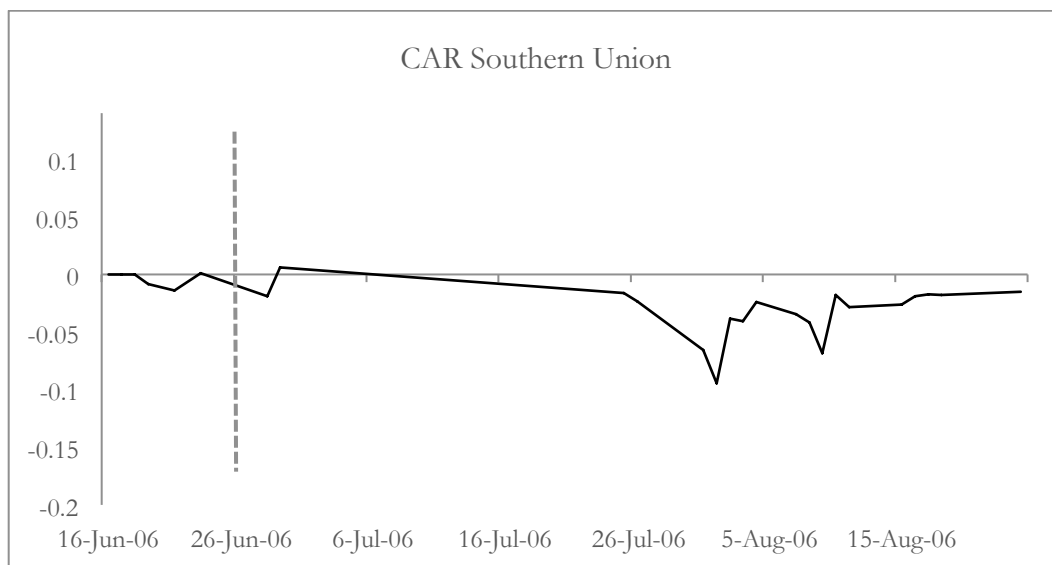


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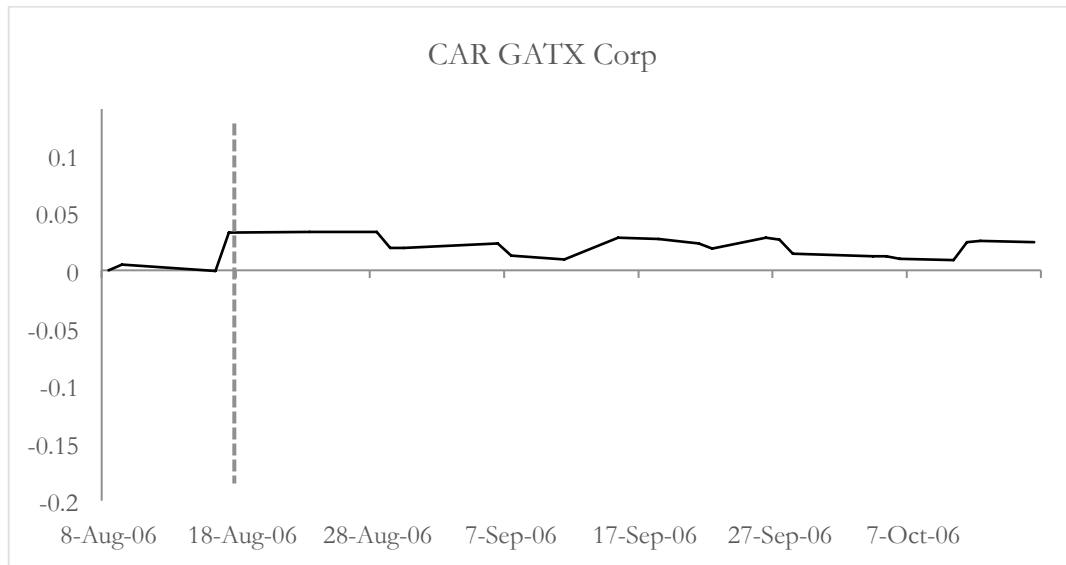


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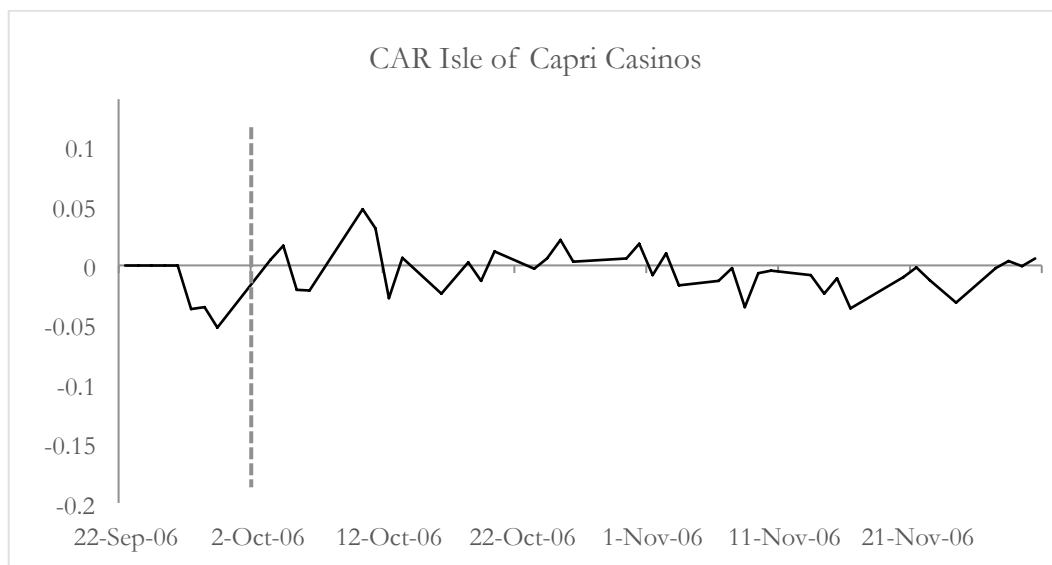


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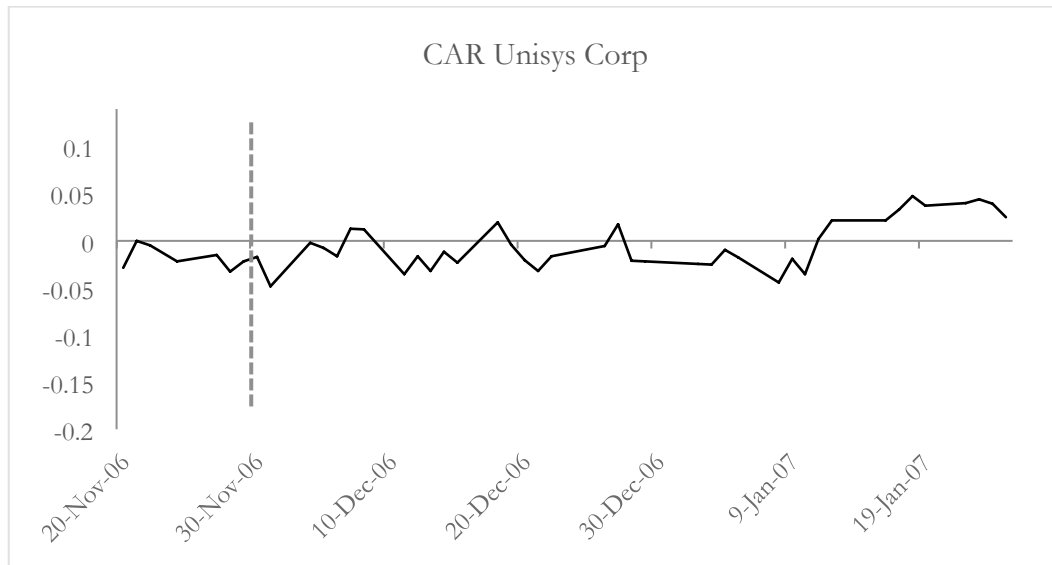
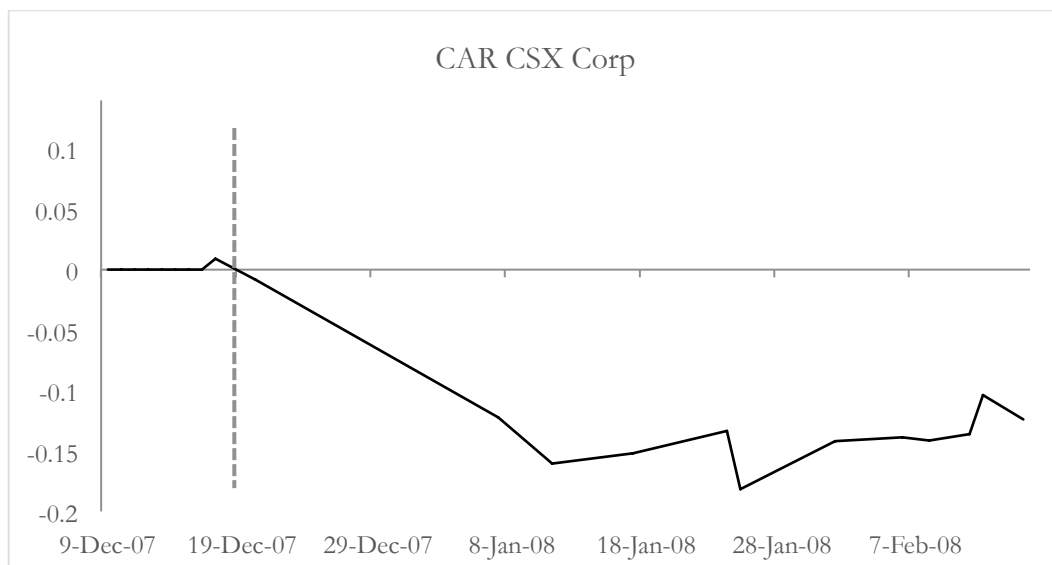


Figure B10



Post-Crisis

Figure B11

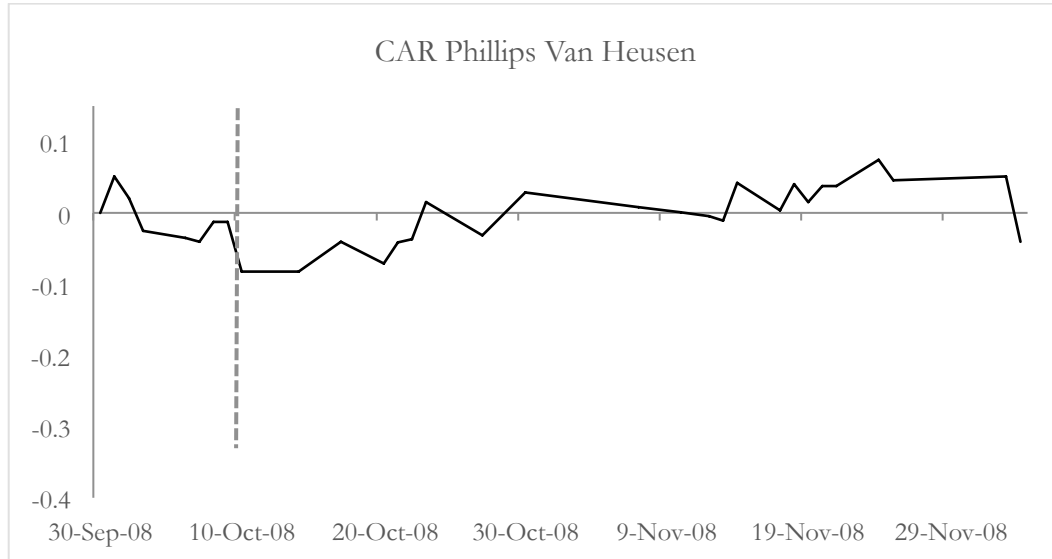


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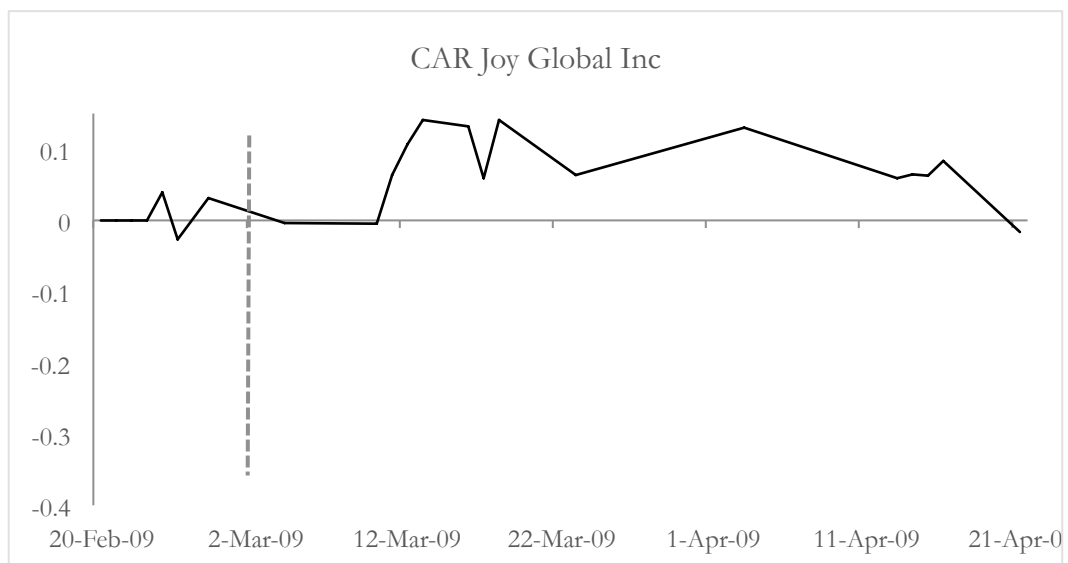


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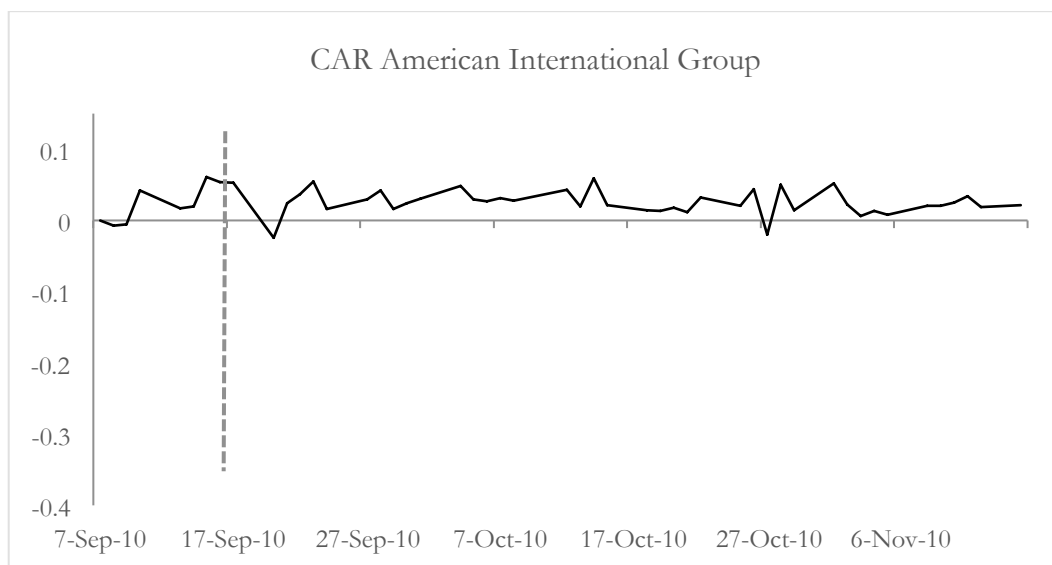


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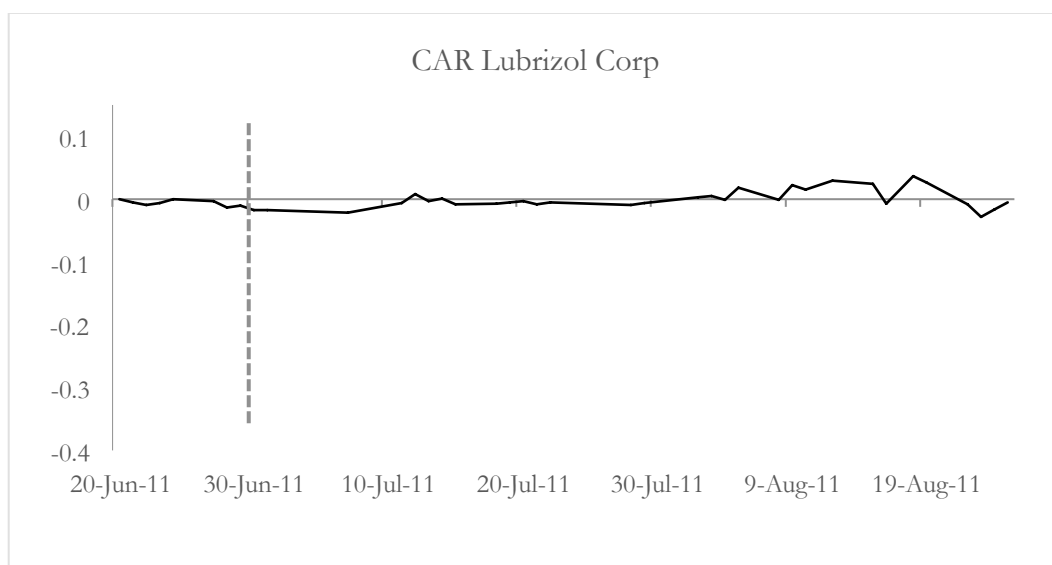


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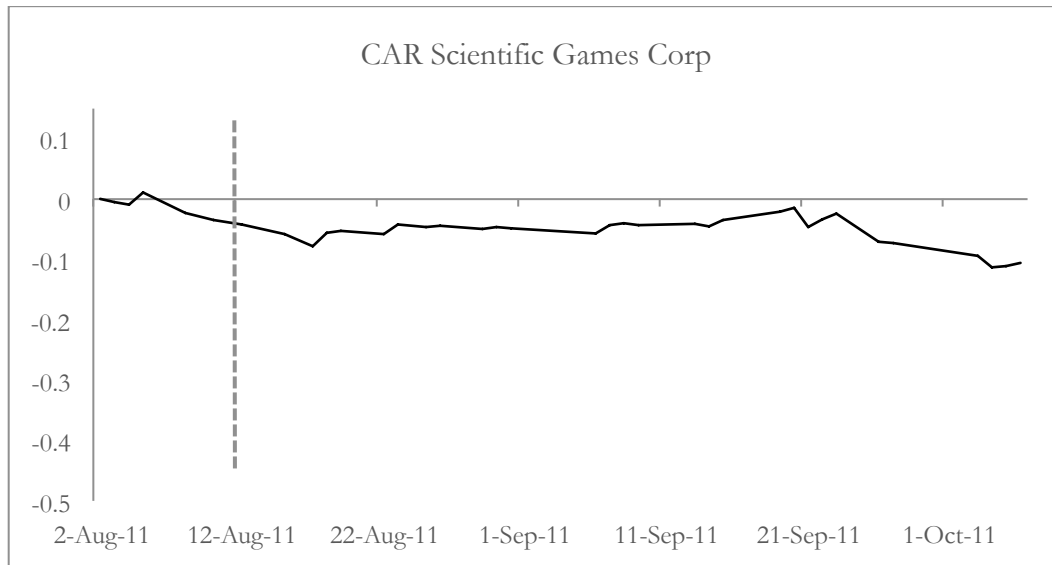


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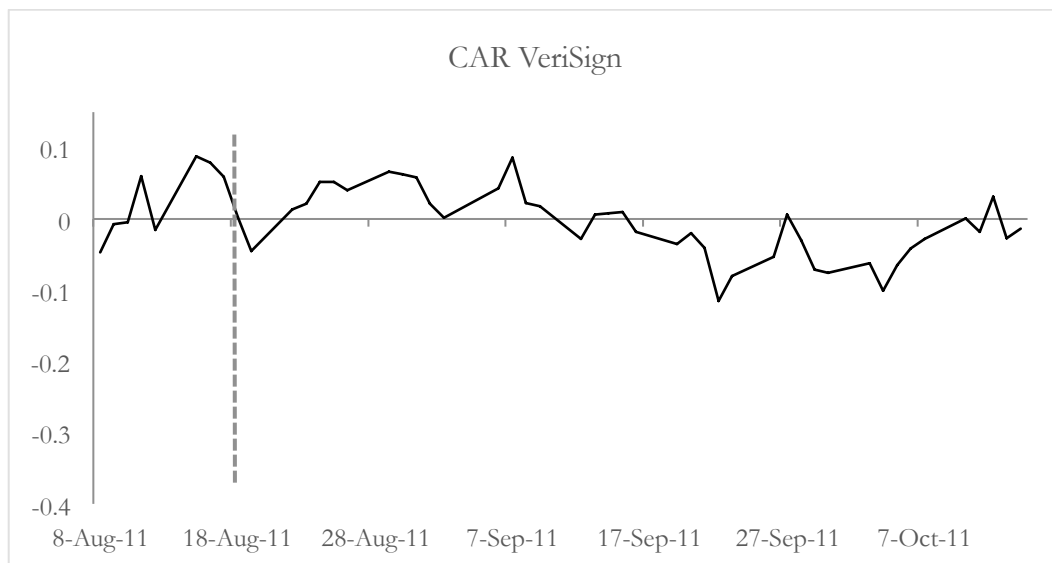


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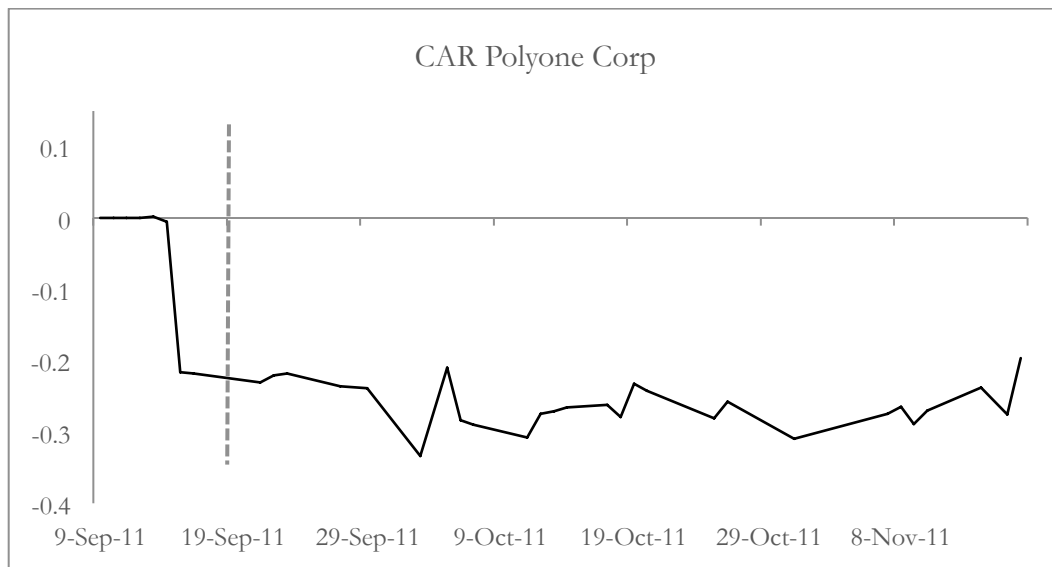


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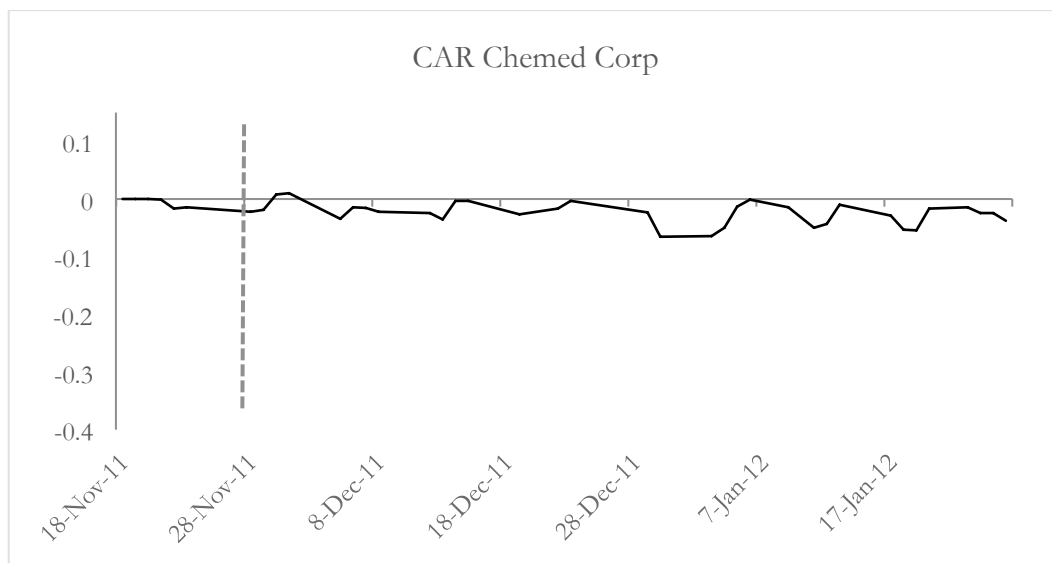


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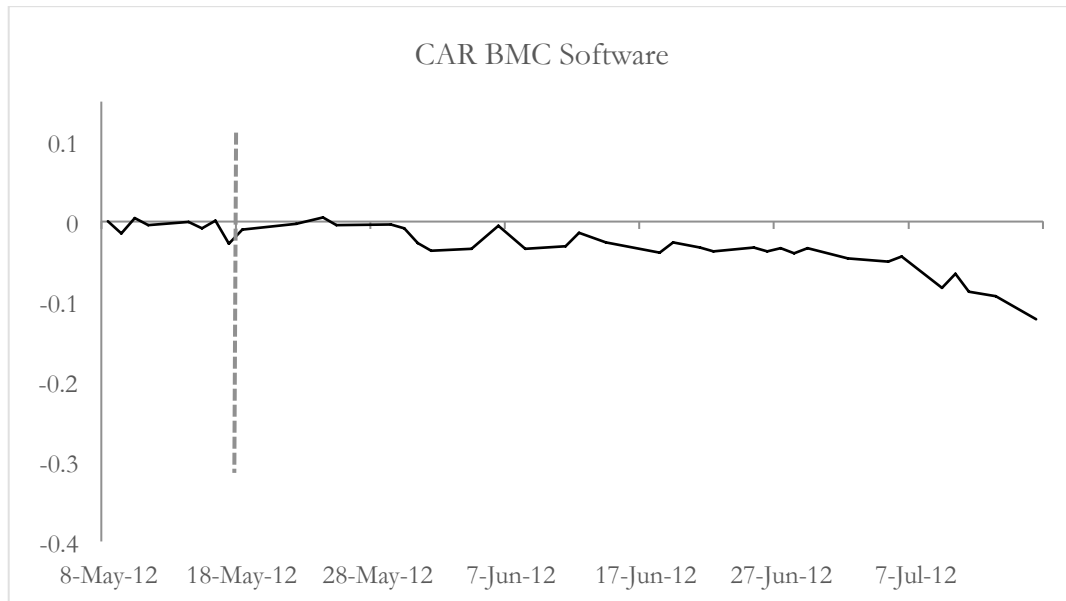


Figure B20

