BI Norwegian Business School - campus Oslo

GRA 19703

Master Thesis

Thesis Master of Science

Debt heterogeneity: A study of how different debt instruments affect the performance of publicly listed U.S. firms.

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Start:	15.01.2020 09.00
Finish:	01.09.2020 12.00

Acknowledgment

The present master thesis is written as an independent project at BI Norwegian Business School and corresponds to 30 ECTS credits of our major: Accounting and Business Control.

We want to show gratitude towards our supervisor Kizkitza Biguri. Her introduction to our topic and prominent guidance, despite unforeseen and demanding circumstances, have been deeply appreciated. We also want to thank our families and the closest ones for their unconditional support this semester. Finally, we would like to thank each other and our fellow graduates for a memorable master's program.

Content

List of tables

Abstract

Academic literature has previously focused on capital structure as a whole; however, in more recent years, research has revolved around debt structure. Evidence from the last decade have proven the importance of debt structure and that debt specialization has a considerable occurrence among U.S. public firms. By examining corporate loans and bonds for U.S. publicly listed firms from the period of 1996-2019, this paper investigates the relationship between debt heterogeneity and firms' performance.

We find evidence that firms with access to multiple debt instruments will be able to improve their performance by being aware of debt heterogeneity. Our results also show that issuing bonds is favorable, as it generates a higher firm performance. However, market imperfections exclude debt instruments for certain firms, and hence, our findings mainly appeal to firms with unprecedented access to debt heterogeneity.

1. INTRODUCTION

Capital structure has been a topic in vasts amounts of research, defined as the combination of sources of funding that finances the operations within firms. Modigliani and Miller published their theorem on capital structure in 1958 and further argued how to utilize debt financing (Modigliani & Miller, 1963). Afterward, several theories on capital structures have been formulated, such as the trade-off and the pecking order theory. The trade-off theory concerns the optimal debt ratio, and Myers stated that this was determined by a trade-off between the benefits and the cost of debt and equity (Myers, 1984). Myers did also establish the pecking order theory, which concerns the primary sources of funding preferred by firms (Myers, 1984). Other researchers have later used his study to explore further the trade-off theory (Frank & Goyal, 2007) and pecking-order theory (Brounen, de Jong, & Koedijk, 2006; Myers & Majluf, 1984; Shyam-Sunder & C. Myers, 1999).

In recent years, there have been more studies researching debt structure. Rauh and Sufi established evidence on why differentiation between priority is important, and how firms' credit ratings affect their sources of debt financing (Rauh & Sufi, 2010). Their findings have been influential in other studies regarding debt priority and seniority (Colla, Ippolito, & Li, 2013; Hackbarth & C. Mauer, 2012). Colla et al. (2013) focus on debt structure on U.S. public firms and found that among these firms, there is a considerable occurrence of debt specialization.

Motivated by the mentioned research on capital and debt structure, and more specifically, debt specialization, our study will try to provide new evidence on debt heterogeneity. Our focus will be solely on corporate loans and bonds issued by U.S. public firms and how different debt characteristics affect their performance. To address this, we have formulated the following research question:

"Will firms improve their performance by being aware of debt heterogeneity, and which debt instruments have the greatest impact on firms' performance?"

2. LITERATURE REVIEW

2.1 General part

The literature review is divided into two separate parts. In the first general part, we will present definitions and previous research on topics and theories similar to our study, and which our study builds on.

2.1.1 Capital structure

Modigliani and Miller's theorem from 1958 has been much used to explain the capital structure. It states that the chosen capital structure does not influence the value of the firm (Modigliani & Miller, 1958). Further, this results in that the financial leverage of the firm does not affect the actual market value (Frank & Goyal, 2007). However, the assumptions in the theorem of Modigliani and Miller are based on a perfect market. Their assumptions consider a market without any existence of asymmetric information, bankruptcy costs, agency costs, tax, or transaction costs. As a result, the Modigliani and Miller theorem argues that financial decisions are irrelevant in a perfect market. Moreover, this implies that the way firms are financed is insignificant.

The assumptions of Modigliani and Miller are not reflecting real markets. Capital markets have several imperfections, which makes the original theorem of Modigliani and Miller to fail under a variety of circumstances (Frank & Goyal, 2007). However, while the theorem does not provide a realistic illustration of how firms finance their operations, it provides a method to find a reason to why financing matters (Frank & Goyal, 2007). The theorem provided by Modigliani and Miller was used as a foundation for corporate finance theory through the 1960s and 1970s. Accordingly, it influenced the early development of both the trade-off and the pecking order theory (Frank & Goyal, 2007). These are appealing extensions of the theorem by Modigliani and Miller, which we will, to some degree, elaborate on.

2.1.2 Trade-off theory

As explained, the trade-off theory has its roots from the debate over the Modigliani and Miller theorem (Frank & Goyal, 2007). In 1963, the two researchers followed up with a correction of their study from 1958, which accounted for corporate income tax and the related tax advantages (Modigliani & Miller, 1963). In this study, they did not recognize any offsetting cost of debt, which implies that 100% of debt financing adds the most value to the firms, as firms have a linear objective function. Furthermore, Kraus and Litzenberger have argued on the existence of a trade-off between the tax shield benefits and the deadweight costs of bankruptcy (Kraus & Litzenberger, 1973). According to Myers, firms' optimal debt ratio is usually determined by a trade-off between costs and benefits of borrowing, while holding the assets and plans of investment constant (Myers, 1984). In the same study, Myers states that the target debt-to-equity ratio is determined by balancing tax shields related to debt against the cost of bankruptcy.

Elaborating on Myers' findings, Frank and Goyal chose to differentiate between static and dynamic trade-off theories (Frank & Goyal, 2007). According to their study, the static trade-off theory states that companies choose their leverage by considering the trade-off between the benefits and costs of debt in one single period. Contrarily, the dynamic trade-off theory considers a longer time frame by adding multiple periods in the consideration. This includes the expectations of future costs and frictions. Hence, a company's debt ratio will differ from the optimal debt ratio, according to the dynamic theory.

2.1.3 Pecking order theory

The pecking order theory was first stated by Myers (Myers, 1984), and it has later been published vast amounts of research on this topic. Myers said that companies primarily prefer funding through internal sources of funds before any other choice because of adverse selection. If external funding is required, like in most cases, companies then choose debt over equity (Myers, 1984). This statement was supported by the adverse selection model of Myers and Majluf from the same year (Myers & Majluf, 1984).

The pecking order theory is based on information asymmetry. The idea is that managers usually have more information about the company than what external investors have. Myers and Majluf argue that management is expected to have superior information. Hence, when they choose to issue equity, it signalizes to investors that the company is overvalued. This may, in turn, cause a reduction in stock prices due to the adverse selection costs (Myers & Majluf, 1984). The degree of asymmetric information determines the relative costs of each financing source, and firms that follow the pecking order theory do not have a target debt-to-equity ratio (Brounen et al., 2006). Retained earnings are the source of funding that is least affected by information asymmetry, which causes internal sources to be preferred over external sources. However, in most cases, retained earnings are not enough to cover financial deficits, which raises the need for external funds. As debt can help to reduce information asymmetry, companies prioritize debt over equity (Brounen et al., 2006).

In a study conducted by Shyam-Sunder and Myers, they found evidence for their hypothesis that companies follow the pecking order theory (Shyam-Sunder & C. Myers, 1999). They performed a regression on a sample that consisted of 157 companies, traded in the period 1971-1989. However, compared to all companies traded in the U.S., the sample was quite small. In a more comprehensive study, Frank and Goyal (Frank & Goyal, 2003) tested the pecking order theory on 768 publicly traded companies in the period 1971-1998. In contradiction to the hypothesis, their findings were that net equity issues track the financial deficit more closely than net debt issues (Frank & Goyal, 2003). Another contradiction in their study was that the pecking order theory works better for large firms, then it does for smaller firms with higher growth.

2.2 Specific part

In this part, we will include more specific research done on the debt structure to get a clear understanding of our topic of research. It aims at enlightening empirical studies on debt, and especially what kind of debt instruments firms prefer and why. Furthermore, this part will look at debt seniority and why differentiation between secured and unsecured debt is essential, which will be used as a source when establishing our research design.

2.2.1 Debt heterogeneity

There has previously been much attention on questions regarding why firms choose to issue debt over equity, and further, how to optimize a firm's capital structure to minimize the cost of financing (Colla et al., 2013). In the paper of Colla et al., the main focus is on a much less studied topic in corporate finance: debt structure. This paper is one of the first papers that provide large-sample evidence on firms' debt structure for U.S. public firms. The foundation of the article is an analysis done by Rauh and Sufi (2010), which examines types, sources, and priorities of debt (Rauh & Sufi, 2010).

Rauh and Sufi (2010) investigated the capital structure of U.S. public firms and found why it is essential to differentiate between priorities. The findings in their work state that almost three-quarters of the sample firms practice at least two different debt instruments. At the same time, one quarter observes no significant change in financial leverage (Rauh & Sufi, 2010). Instead, the last quarter of the sample saw a significant difference in debt composition. The authors also found that firms with credit rating BBB or higher primarily uses equity and senior unsecured debt as their financing sources (figure 5, appendix 1). Meanwhile, firms with credit quality BB and lower, classified as low credit quality firms, use both secured and unsecured debt, in addition to subordinated debt (Rauh & Sufi, 2010).

Further on, as seen in figure 6, appendix 1, Rauh and Sufi observed that an increase in secured debt for low credit quality firms is primarily driven by secured bank debt. In contrast, subordinated bonds and convertibles drive growth in subordinated debt. By a separately collected dataset where firms undergo a downgrade of their credit quality, Rauh and Sufi (2010) show that when firms credit quality gets worse, they tend to spread their priority structure. This supports their other findings, where they state that low credit quality firms rely on bank debt, while high credit quality firms choose to issue debt in the capital markets (Rauh & Sufi, 2010).

The findings of Rauh & Sufi (2010) have further been elaborated and described in other studies. The results of Hackbarth & Mauer (2012) states that riskier firms with high financial distress costs tend to allocate their priority of future debt issues by choosing a more considerable amount of subordinated debt in their

current debt structures (Hackbarth & C. Mauer, 2012). Their model also predicts that financially unconstrained firms with low growth expectations prefer senior debt, while financially constrained firms, both with and without growth expectations, prefer junior debt.

Biguri (2019) further proves the importance of debt structure. The study shows how, when a firm has financial constraints, unsecured debt can affect investments (Biguri, 2019). The results are that a higher amount of unsecured debt in a firm's debt composition facilitates financing larger investment projects. However, firms seem to substitute towards secured debt when they lack access to unsecured debt. Biguri argues that the reason for this is due to higher financing costs, and thus, firms reduce the size of their investment projects.

In the paper of Colla et al. (2013), they presume three possible explanations for debt specialization: lowering expected bankruptcy cost, information asymmetry, and monitoring costs and constrained access to capital. Their research helps us distinguish what generally is referred to as "*debt financing*" and divide this into commercial papers, drawn credit lines, term loans, senior- and subordinated bonds and notes, and capital leases (Colla et al., 2013). Further on, they prove that most firms concentrate their borrowings into one of the mentioned debt types. Besides, they also found that the only type of firms that borrow through multiple types of debt are large- and low-risk firms with high profitability and low growth expectations. In the end, they conclude that debt specialization is a substantial occurrence among U.S. publicly listed firms.

The sample of Colla, Ippolito, and Li's study consists of 16.105 firm-year observations from 3293 different firms, collected from the period 2002 - 2009 (Colla et al., 2013). As they state themselves, they had a relatively short period of debt structure available. Now, seven years later, it is interesting to gather more extended time series data and analyze the debt structure. We hope that such research will be able to examine and show how debt heterogeneity evolves.

Debt structures are not only restricted to the types provided in the paper by Colla et al. (2013). As the authors propose, possible future research could be to "*examine the joint determination of the amount, maturity, pricing and covenants*

of various types of debt, to examine different debt contracts in detail" (Colla et al., 2013). Although they mention several types of debt instruments, they concluded that senior bonds and notes are the most commonly issued debt type. Motivated by this, it would be in our interest to look further into U.S. corporate bonds and loans specifically. An interesting approach is to gather data on the issuance and maturity of loans and bonds and see how different levels of debt heterogeneity affect firms' performance after the issuance date.

3. METHODOLOGY

3.1 Research Design

Our research question, *"Will firms improve their performance by being aware of debt heterogeneity, and which debt instruments have the greatest impact on firms' performance?"* is categorized as an explanatory research question. With this question, our purpose is to clarify if debt heterogeneity correlates with firms' performance.

We decided upon a quantitative research method to explain this phenomenon and further answer our research question. We argue this decision based on our goal. As we are to discover the relationship between different types of debt and firms' performance, we have to require several observations over a given period; this is for us to be able to establish significant results. For the results to be more accurate, larger samples are needed, which we have to run through multiple regression models. Hence, we require secondary data, which would give us big and complex datasets rather than performing questionnaires and surveys.

The use of secondary data also argues for a quantitative research design. We want to test how firm performance is affected by debt heterogeneity variables when performing the regression, such as priority and seniority. The optimal process to do this, following a quantitative research approach, will be to form hypotheses and examine the correlation between dependent and independent variables. For us, the null hypothesis will describe an expectation of insignificant correlations on the performance variables.

The empirical part of the study will argue that firms with access to more debt instruments can perform better than firms with limited access to debt financing. As firms issue debt through different instruments, we can test how performance variables are affected by the type of debt issued. The purpose is for the test to reveal which debt instruments that generate higher firm performance. Therefore, we have defined the following hypothesis:

Hypothesis: *Firms being aware of which debt instruments being issued, can improve their performance.*

We want to look at performance variables over time, such as profitability, investments, R&D investments, leverage, and the relationship between debt characteristics, as a function of debt issuance:

$$Performance_i = \sum_{s=1}^{5} Debt_i I(Age = s) + \gamma_i \quad (1)$$

$Debt_i$ captures which type of debt being issued by the firm and $I(Age = s)$ is a dummy variable that takes the value of 1 when the age of the debt is equal to the age *s*. We cluster the standard errors at the firm-level. See appendix 3 for the debt instruments we define ($Debt_i$).

Due to the use of quantitative data, our focus will start at an overall picture of debt instruments. We will then narrow the focus on specific financing instruments. Therefore, we are first going to perform an event study as explanatory research for which types of debt heterogeneity to focus on. We will then use these findings to decide which sorts of debt characteristics to include in the regression analysis. As a starting point of the analysis, we will use sortings of both loans and bonds combined to confirm relationships already established by previous research. Doing so allows us to validate our data, which in turn increases our own research's reliability.

The second step of the regression analysis will revolve around loans, where we want to identify which characteristics of loans that has a significant impact on firms' performance. We want to look at the same types of sorting as in the first step, and depending on the results of the event study and number of observations, hopefully, include some sortings with characteristics that are unique for loans. Following this, we will continue the analysis by focusing on bonds. If possible, we will include some case sortings of unique bond characteristics. We aim to have regressions on several case sortings, within two sub-types of debt, to analyze and compare with each other.

3.2 Data and collection

The collection of data is essential to appropriately be able to perform the proposed research and answer our hypothesis. For our research, the data will be based solely on quantitative and entirely on secondary sources, exclusively from Thomson Reuters Eikon and WRDS Compustat IQ.

We started the data collection by gathering a sample of all existing U.S. public, corporate bonds and loans from the financial database Thomson Reuters Eikon from 1996-2019. The result was a significant amount of data, containing 33,267 corporate loan issuances and 105,430 corporate bond issuances for our sample period. We believe that including such large datasets as a fundament for the analysis will affect the reliability of our results in a positive matter. The primary purpose with the data collected from Thomson Reuters Eikon was to identify bonds and loan issuances during the selected timespan and gather information about their specific characteristics such as issuance date, seniority, priority, use of proceeds, loan type, bond grade, and coupon type. The data was then used in our event study, where the main intention was to increase our understandings and prepare further for the statistical analysis.

The data we collected from WRDS Compustat IQ contains financial statements characteristics for U.S. public firms from 1996-2019. This data establishes the basis for the independent variables, and hence, the effect on the performance variables. During the analysis, the data gathered from Thomson Reuters Eikon and WRDS Compustat IQ will be merged. This allows us to use the data from Thomson Reuters Eikon as bonds and loan identifiers, while the data from WRDS Compustat IQ provides the fundamentals to analyze the different issuances' effect on the performance variables.

3.3 Variables collected but not included

We collected several variables that we choose not to include in the event study and the regression models. For different reasons, we found these variables not interesting, and removing them also made it easier to work with the spreadsheets prior to the analysis. We removed some variables when cleaning the data, while

others were excluded later in the process. This regarded both datasets for loans and bonds.

3.3.1 Loan variables not included

Many loan variables were included when collecting data through Thomson Reuters Eikon. We got several variables for different ratings by Fitch, S&P, and Moody's. We already had a variable for loan yield types, so we found these variables to be excess. We also expected these to cause too high levels of multicollinearity with *Loan Yield Type* in our regression models.

Other variables that were retrieved had missing values for several of the loans. These were variables that could potentially be interesting to include in our regression models. However, as too many of these rows returned "NULL", it could affect our results and had to be removed. We had these difficulties of missing observations for more variables as well, which we discuss under note 3.4.

3.3.2 Bond variables not included

Several variables of the bond data retrieved were also missing observations. Similar to the loan data, we removed these variables when cleaning the data, which are discussed further below. Furthermore, we also excluded the variable *Call Type* during the cleaning process. Our argument for this was that we already had a variable for the type of coupon, which potentially could provide better results in our analysis.

3.3.2.1 Green bonds

The awareness of "green bonds" and being green have increased through the years. We thought it would be interesting to include this in our regression models and therefore tried to retrieve data on this. This data was collected through Eikon; however, as more than 99% of the observations were marked as not a "green bond", we chose to exclude this variable from our regression models.

3.3.2.2 Seniority and Priority

Both seniority and priority are essential variables when it comes to bonds. To differentiate between senior and junior bonds, as well as secured and unsecured, is

essential in our analysis. We were able to collect these variables for bond data, which had observations for almost all bonds. However, we ran into difficulties that force us only to use these variables for the period 1996-2013. This is discussed further in the next paragraph.

3.4 Missing data

3.4.1 Loan Data for 2014-2019

We were unable to collect some of the data that we intentionally wanted. Due to the unforeseen circumstances regarding the outbreak of Covid-19, we were not able to access and collect all variables for loan data for the period 2014-2019. With a closed campus and a country in complete lockdown and self-isolation, we were spending vasts amounts of time trying to get access to this data through Eikon. However, we were out of luck, and time was running from us, so we eventually decided that we had to move on and work with the data that we had. Therefore, we do not have the required data on seniority and priority for loans from 2014 and onwards. Following, we are not using these variables for 2014-2019 from our bonds dataset. Even though they were included in the dataset, we believe excluding them would yield more accurate results for comparison to loans.

Also, our loan data from the period 2014-2019 uses a different security identifier. The loan data use CUSIP, whereas the bond data uses TICKER. For this reason, the combined debt data, including both loans and bonds, are for the years 1996-2013, as this data includes the same security identifier. It would be optimal to use Eikon and convert the identifier of loans from 2014-2019 to TICKER.

3.4.2 Missing observations

As previously mentioned, we had difficulties in some cases where observations were missing. These cases were mainly related to the loan data and the following variables:

- *Covenants* - We wanted to gather data on covenants. However, all four of the variables which were related to covenants had indices of observations saying “NULL”. We are not able to conclude on the reason for this, and we, therefore, chose to remove the variables from the dataset.

- *Loan Performance Fee* - For the first, second, and third performance fee variables, observations were missing. The variable of fee descriptions also had indices without any data. We believe including these variables in our regression models would have a negative effect on the reliability of our results.

Our bond data also had missing observations, where these variables were affected:

- *Borrower* and *Borrower Country* - We tried to collect data on borrowers, and not only bond issuers, as we believed this could yield exciting results to our analysis. However, several indices of observations were utterly blank, and therefore useless for further findings. The reason for this could be that few are reporting who the borrower is, which leaves less data to be collected.
- *Note Type* - Like the other variables mentioned, there were few observations collected on the different note types. By looking at the data, it seems that bonds related to the government, central banks, and agencies had reported more observations of note types. However, our focus on U.S. public firms filtered out these, leaving mainly indices of missing data.

3.5 Event study

In order to facilitate testing our hypothesis, we would first like to measure the effectiveness of an event impact, more detailed: the short-term effect of the issuance of different debt instruments. To fulfill this purpose, we have conducted several event studies through Wharton Research Data Services (WRDS) "U.S. Daily Event Study" tool ("U.S Daily Event Studies," 1993-2020). The tool consists of first choosing the security identifier of the input file, after that, deciding upon one out of four different risk models. In the next step, we defined the estimation parameters for the event window, and finally, decided upon which estimation parameters to include in the query. The output provides us with graphs, where we were able to observe the development of the cumulative abnormal returns for the specifically chosen debt instrument. The purpose was to derive some conclusions on what we find exciting and help map what to investigate further in our regression analysis.

Figure 1: T_0 and T_1 illustrates the start- and ending point of the estimation window. T_2 and T_3 illustrates the start- and ending point of the event window. 0 is the event date.

In the event study, our estimation window is equal to -100 days. The minimum number of non-missing return observations within the estimation window equal to 70. 0 represents the issuance date of the specific debt instrument. Further, T_2 is equal to -10 days, while T_3 is set to 30 days.

To estimate the cumulative abnormal return, WRDS applies the Fama-French Plus Momentum model, which uses abnormal returns defined with respect to the Carhart (1997) model:

$$R_{i,t} = Rf_t + \beta_{market_i}(Rm_t - Rf_t) + \beta_{SMB_i}(SMB_t) + \beta_{HML_i}(HML_t) + \beta_{MOM_i}(MOM_t) + \varepsilon_{i,t} \qquad (2)$$

The Carhart Four Factor model (Fama-French Plus Momentum) adds a momentum factor (in addition to the three factors in the Fama-French model). The factor measures a portfolio's exposure to previous winners and losers, i.e., the momentum. The factor is constructed by subtracting the equally weighted return of the lowest-performing firms from the highest performing firms, based on a portfolio which is lagged by one period (Carhart, 1997)

In order to estimate the short-term performance in our defined time-interval, the WRDS-tool employs the cumulative abnormal returns method (CAR). CAR is calculated as the sum of abnormal returns during previous periods, for the given stock or portfolio. The method describes the relationship between the expected value of a stock/portfolio, given the performance of the market as a whole, and the actual stock/portfolio value.

$$CAR_i = \sum_{t=T_k}^{T_l} AR_{i,t} \qquad (3)$$

In equation (3), CAR_i is the cumulative abnormal return for event *i* and $AR_{i,t}$ is the abnormal return for event i at time t. Hence, the cumulative abnormal return is the

sum of abnormal returns for event i across time. T_k and T_l indicates which part of the event window investigated.

In the following, the most interesting graphs on our different sortings will be presented. The rest of the sortings are attached in appendix 5.

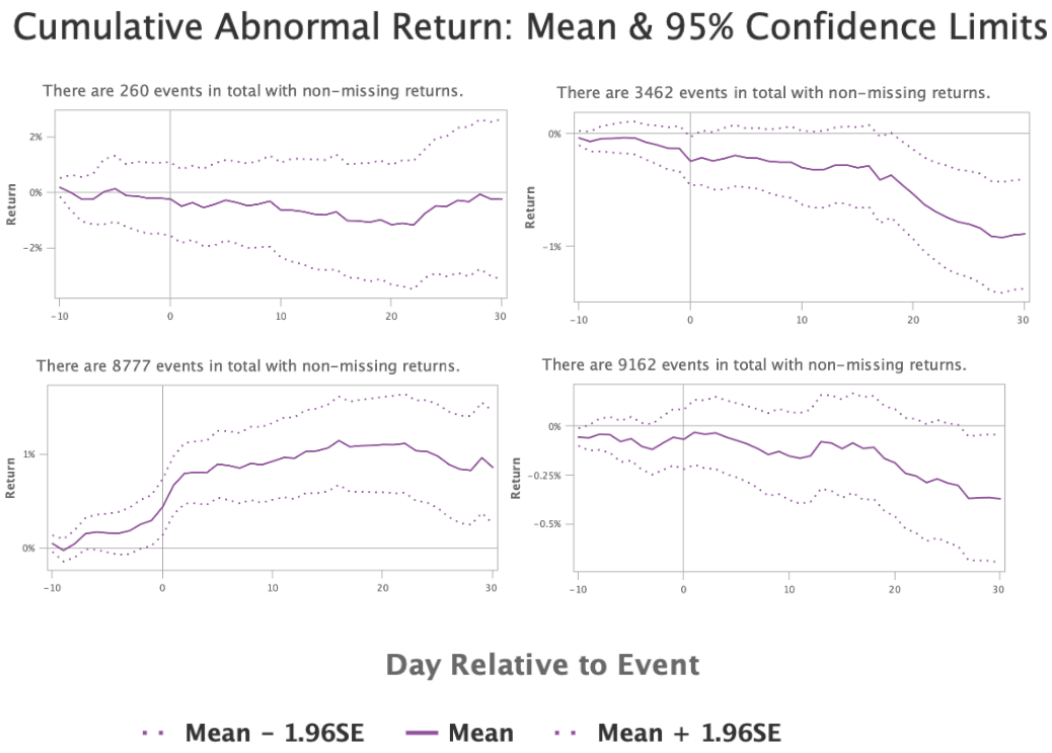

Figure 2: Event study results of issued debt, 1996-2013. Top left: junior subordinated. Top right: senior. Bottom left: secured. Bottom right: unsecured.

Using the event study tool, we created several different graphs on different sortings. To get a general point of view, we started by sorting on loans and bonds for the period 1996-2013 (figure 2). We observe that when we single-sorted at secured and unsecured debt, the results show that secured debt instruments indicate an increase in CAR, while the unsecured sorting expresses a decrease. Also, senior debt seems to have a slightly more significant decrease than junior and subordinated debt. However, the observations from the event study result are fewer when sorting at *junior* and subordinated debt compared to senior, and hence, we perceive the reliability of these findings not to be sufficient enough.

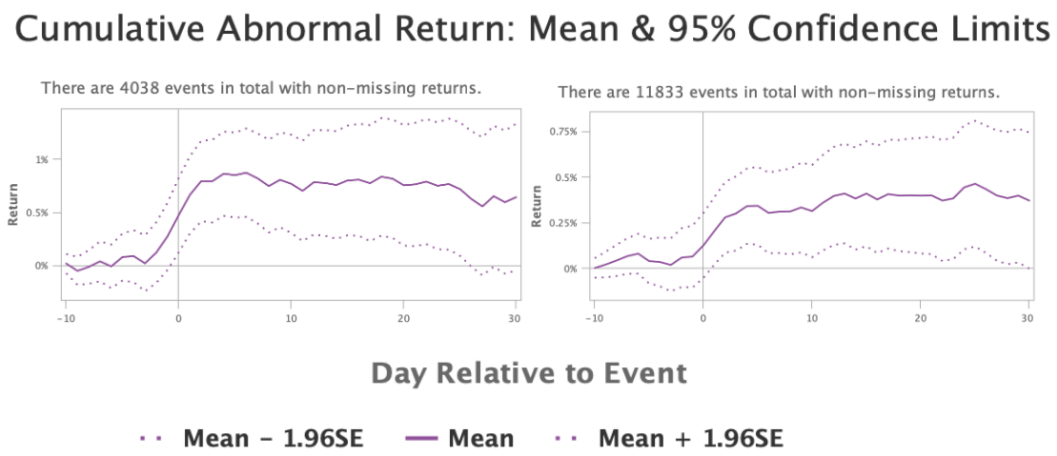

Figure 3: Event study results of issued loans, 1996-2019. Left: term loans. Right: revolving credit lines facility

Following this, we continued by single sorting on specialized debt instruments, starting by choosing to sort on loans for the period 1996-2019. When looking at different loan types, what we found most interesting was *term loans* and *revolving credit lines facility*. See figure 3 for these results. Continuing the sorting, we also made graphs on *use of proceeds, priority,* and *seniority.* This facilitated the double sorting, where we wanted to look at different combinations of *loan types* and *use of proceeds*, in addition to *priority* and *seniority*. Regarding *priority* and *seniority*, we only had data on loans for the period 1996-2013, as previously discussed. In general, we observed that bank loans seem to have a positive effect on cumulative abnormal returns.

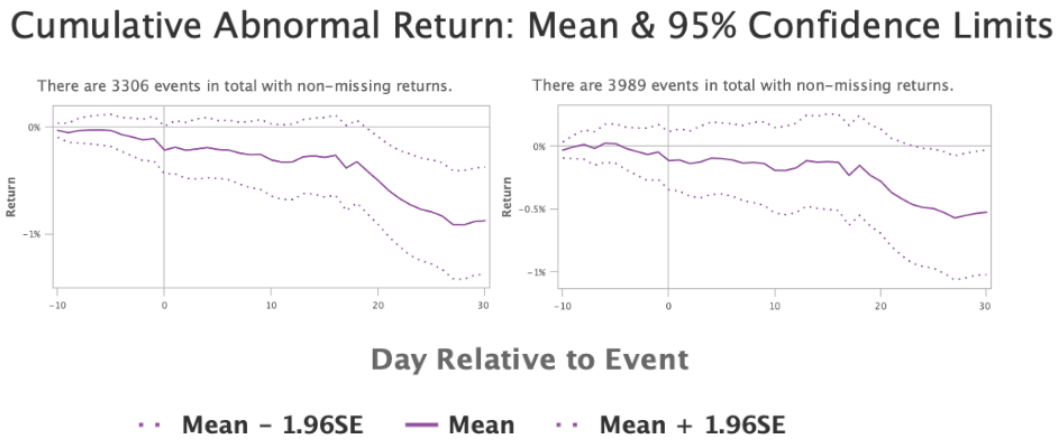

Figure 4: Event study results of issued bonds, 1996-2013. Left: Senior bonds. Right unsecured bonds.

On the bond data, we also started by single sorting. We sorted by *bond grade, seniority, priority, use of proceeds*, and *coupon type.* From the results, we could observe that the event-study tool provided us with most results when sorting at

senior and *unsecured* bonds. We got almost no results at the event study when sorting at *junior* and *secured* cases. From this, we derive the conclusion that in our dataset, most of the bonds issued are *senior* and *unsecured* (figure 4). In order to be able to compare our findings to the loan data results, when sorting at *seniority* and *priority*, we limited the data period to *1996-2013*. We also did some double sorting on *coupon type* and *use of proceeds*, but the results were not engaging in the same way as with *priority* and *seniority*.

In general, we found that while bank loan seems to have a positive effect on the cumulative abnormal return, bonds seem to have the opposite effect. Rauh & Sufi's (2010) findings, states that low credit quality firms rely on bank debt, while high credit quality firms choose to issue debt in capital markets, i.e., bonds. It is therefore interesting to further elaborate on our preliminary findings, as the results from the event study state that the cumulative abnormal return decreases for bond issuances - even though the firms that are issuing these debt instruments may be financially higher rated than those that experience an increase in their cumulative abnormal returns when issuing bank loans.

3.6 Dependent variables

For the analysis of debt issuances, we have several measurements on firm performance. The measures we use are:

Book_lev: a leverage ratio that measures the amount of assets financed by debt:

$$book\_lev = \frac{TOTAL\ LIABILITIES}{TOTAL\ ASSETS} \qquad (4)$$

Punsec: a measure of unsecured debt, standardized by total debt:

$$punsec = \frac{NON\ CURRENT\ LIABILITIES + CURRENT\ LIABILITIES - SEC}{TOTAL\ LIABILITIES}, \qquad (5)$$

where *sec* is secured or collateralized long-term debt.

Profitability: a measure of yielding profit or financial gain relative to total assets:

$$profitability = \frac{EBITDA}{TOTAL\ ASSETS} \qquad (6)$$

Cash_inv_pct: cash and short-term investments measured relative to total assets (measured in %):

$$cash\_inv\_pct = \frac{CASH\ AND\ SHORT\ TERM\ INVESTMENTS}{TOTAL\ ASSETS} \quad (7)$$

Capx_pct: capital expenditures measured relative to total assets (measured in %):

$$capx\_pct = \frac{CAPITAL\ EXPENDITURES}{TOTAL\ ASSETS} \quad (8)$$

Rd_sales: a measure of innovation relative to net sales (measured in %):

$$rd\_sales = \frac{RESEARCH\ AND\ DEVELOPMENT\ EXPENSENS}{SALES} \quad (9)$$

3.7 Evaluation of the data

When evaluating the collected data, we do it by the condition of reliability and validity. All the data used in this research have been provided through Thomson Reuters Eikon and WRDS Compustat IQ. Compustat IQ is an extensive financial and non-financial database provided by S&P and contains the industry's most detailed financial fundamentals for public companies ("S&P Capital IQ Financials - Methodology Guide," 2017). Their database is pooled through publicly available sources, company contracts, and interactive data corporation ("S&P Capital IQ Financials - Methodology Guide," 2017).

Thomson Reuters Eikon is, according to themselves, the world's most comprehensive financial historical database, which enables the exploration of the relationship between different data-series and market trends (Refinitiv, 2019). We are in the belief that both Compustat and Eikon provides a precise collection of data with accurate information, and assess the reliability and validity of the data to be appropriate in such a way that we can deliver precise estimations in our research.

4. DATA ANALYSIS

4.1 Descriptive statistics

4.1.1 Case sortings on loans and bonds

From the data collected during the period 1996-2013, we have several different case sortings used in the event study. These are on *priority*, *seniority*, and *use of proceeds*, and some double sorted cases, which is essential for further analysis. Table 1 provides information on all case sortings we created, containing both loans and bonds.

Sorting type	Obs
Secured	20 555
Unsecured	20 816
Senior	52 116
Junior & Subordinated	670
General Purpose	10 440
Merger & Acquisitions	1 394
Working Capital	3 853
Stock Repurchase	210
Recapitalization	188
Senior & Secured	19 243
Senior & Unsecured + Senior Subordinated & Unsecured	8 071
Junior Subordinated & Secured + Unsecured	97

Table 1: Case sortings on loans and bonds combined, 1996-2013.

4.1.2 Case sortings on loans

Looking specifically at loan data, we sorted out cases on loan types in addition to the sortings mentioned under note 4.1.1. The data is mostly from the period 1996-2019; however, the data regarding seniority and priority is from the period 1996-2013. Table 2 provides information on the different case sortings made from the loan data prior to the event study.

Sorting type	Obs
364 Days Revolver	575
Revolving Credit Lines Facility	21 495
Term Loan	9 600
Acquisition Finance	3 072
Future Acqusitions	1 093
General Corp. Purpose	15 553
LBO	672
Pay Fees and Expenses	479
Recapitalization	174
Refinancing	5 891
Stock Repurchase	237
Working Capital	3 186
Secured	19 251
Unsecured	7 531
Senior	43 073
Senior Subordinated	63
Junior and Subordinated	309

Sorting type	Obs
Revolving Crecit Facility & WC	2 529
Revolving Credit Facility & Acq. Financing	1 127
Revolving Credit Facility & Future Acq.	739
Revolving Credit Facility & Gen. Corp. Purpose	10 849
Revolving Credit Facility & Refinancing	2 271
Term loans & Acq. Financing	1 417
Term loans & Future Acq.	297
Term loans & LBO	333
Term loans & Refinancing	1 190
Term loans & WC	563
Senior & Secured	19 189
Senior & Unsecured	7 466
Junio and Subordinated & Secured	48
Subordinated & Unsecured	66

Table 2: Case sortings on loans, 1996-2019 (seniority & priority, 1996-2013). Left: single sortings. Right: double sortings.

4.1.3 Case sorting on bonds

In table 3, the specific sortings and number of observations per sorting are observed. The sortings are in addition to the sorting mentioned in section 4.1.1 and contain data from 1996-2019 for *bond grade*, *use of proceeds*, and *coupon type*. Observations on seniority and priority are from the period 1996-2013.

Sorting type	Obs
Investment Grade	19 432
High Yield	3 941
Junior	360
Senior	9 042
Secured	1 304
Unsecured	13 285
General Purpose	38 356
Merger & Acquisitions	2 153
Refinance	1 651
Stock Repurchase	101
Working Capital	199
Plain Vanilla Fixed Coupon	44 474
Complex Floating Rate	2 681
Fixed then Floating	2 079
Zero Coupon	23 642

Sorting type	Obs
Junior Unsecured or Junior Subordinated Unsecured	50
Senior Unsecured or Senior Subordinated Unsecured	606
Senior Secured	55
Plain Vanilla Fixed Coupon & General Purpose	11 190
Plain Vanilla Fixed Coupon & Merger and Acq.	1 843
Plain Vanilla Fixed Coupon & Refinance	1 576
Zero Coupon & General Purpose	16 885
Fixed then Floating & General Purpose	1 445
Fixed then Floating & Acquisitions	126

Table 3: Case sortings on bonds, 1996-2019 (seniority & priority, 1996-2013). Left: single sortings. Right: double sortings.

4.1.4 Descriptive statistics of performance variables

In our study, the central variables are measurements on firm performance. We are using book leverage, unsecured debt, profitability, cash and short term investments, capital expenditure, and R&D. These variables are generated after cleaning the data from Compustat IQ. Table 4 presents descriptive statistics of

performance variables. Table 5 contains the distribution of our sample from Compustat IQ. The most extensive coverage of firms is in 1996, with 12,625 observations, and the least coverage was 36 observations in 2019.

Descriptive Statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
book_lev	219000	1.265	38.759	-.05	7516
punsec	264000	.811	.332	0	1
profitabil~y	209000	-1.316	63.155	-24000	1106
cash_inv_pct	219000	.198	.251	-1.18	3.025
capx_pct	206000	.065	.857	-2.772	341
rd_sales	197000	2.387	92.484	-218.737	25684.4

Table 4: Descriptive statistics of performance variables, 1996-2019

Data Year - Fiscal	Frequency	Data Year - Fiscal	Frequency
1996	12625	2008	10678
1997	12441	2009	10807
1998	12558	2010	11042
1999	12534	2011	11627
2000	12098	2012	11834
2001	11586	2013	11822
2002	11254	2014	11611
2003	11066	2015	11403
2004	10900	2016	11196
2005	10855	2017	10910
2006	10872	2018	10146
2007	10863	2019	36

Table 5: Observations by fiscal year

4.2 Regressions on loans and bonds

4.2.1 By priority

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Secured age 1	-0.522***	-0.124***	0.665***	-0.0339***	-0.0103***	-1.111***
	(0.0235)	(0.0106)	(0.0236)	(0.00595)	(0.00236)	(0.0858)
Secured age 2	-0.157***	-0.123***	0.318***	-0.0805***	0.000380	-1.231***
	(0.0244)	(0.0116)	(0.0285)	(0.00676)	(0.00256)	(0.0976)
Secured age 3	0.00209	-0.130***	0.273***	-0.111***	0.00364	-1.463***
	(0.0294)	(0.0126)	(0.0300)	(0.00790)	(0.00299)	(0.122)
Secured age 4	0.0685**	-0.163***	0.194***	-0.139***	0.00252	-1.777***
	(0.0315)	(0.0136)	(0.0319)	(0.00924)	(0.00325)	(0.153)
Secured age 5	0.147***	-0.192***	0.197***	-0.173***	0.0112***	-2.170***
	(0.0312)	(0.0141)	(0.0380)	(0.0106)	(0.00340)	(0.186)
Constant	0.138***	0.867***	-0.110***	0.339***	0.0533***	2.742***
	(0.0253)	(0.00917)	(0.0364)	(0.00894)	(0.00277)	(0.170)
Observations	31,228	31,228	31,228	31,228	31,228	31,228
R-squared	0.058	0.058	0.056	0.106	0.151	0.145
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Regression on loans and bonds, single sorted on secured debt

Table 6 shows how issuances of secured debt impact the performance variables for the following five years. Secured debt of both loans and bonds has a statistically significant positive effect on company performance regarding profitability. A 1% increase in the securitized debt issued by a firm generates an increase in *profitability* of 0.665% one year after the issue and a 0.197% increase in year five. Hence, all other factors held equal, firms issuing secured debt increase their long-term profitability. This also supports the result of the event study, as seen in figure 2. It is also interesting to observe that the effect on *book_lev* is statistically significant negative for the first two years, and then positive for year four and five. This may imply that firms increase their portion of assets financed by equity the first years after issuing secured debt. Further, as the effect becomes positive at the end of the life cycle, the firms finance more assets with debt.

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Unsecured age 1	-0.540***	0.162***	0.724***	-0.0637***	-0.00595**	-1.415***
	(0.0239)	(0.00896)	(0.0246)	(0.00577)	(0.00266)	(0.0831)
Unsecured age 2	-0.173***	0.132***	0.380***	-0.112***	0.00435	-1.404***
	(0.0252)	(0.00995)	(0.0323)	(0.00627)	(0.00266)	(0.0923)
Unsecured age 3	0.00368	0.0859***	0.292***	-0.150***	0.00312	-1.534***
	(0.0265)	(0.0113)	(0.0289)	(0.00727)	(0.00278)	(0.114)
Unsecured age 4	0.119***	0.0157	0.224***	-0.172***	0.00798**	-1.644***
	(0.0285)	(0.0128)	(0.0299)	(0.00865)	(0.00317)	(0.150)
Unsecured age 5	0.213***	-0.0439***	0.244***	-0.206***	0.0130***	-1.952***
	(0.0318)	(0.0138)	(0.0344)	(0.0101)	(0.00331)	(0.176)
Constant	0.129***	0.858***	-0.0985***	0.337***	0.0532***	2.516***
	(0.0223)	(0.00887)	(0.0328)	(0.00832)	(0.00250)	(0.152)
Observations	30,225	30,225	30,225	30,225	30,225	30,225
R-squared	0.058	0.070	0.053	0.126	0.148	0.141
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7: Regression on loans and bonds, single sorted on unsecured debt

Unsecured debt proves to have a statistically significant positive effect on firms' performance concerning profitability. A 1% increase in unsecured debt, leads to an increase in *profitability* equal to 0.724% one year after the issuance, all other factors held equal. In year five, the increase is 0.244%, subsequent to the debt issuance. The interpretation from this is that firms issuing unsecured debt will experience an increase in profitability in the following five years. The regression results for unsecured debt is similar to the output on secured debt, with more statistically significant effects. However, the effect is slightly more favorable when comparing *profitability* on the two different priorities, 0.724 > 0.665 (age = 1)

4.2.2 By seniority

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Senior age 1	-0.544***	-0.0257***	0.713***	-0.0395***	-0.00746***	-1.337***
	(0.0258)	(0.00974)	(0.0246)	(0.00566)	(0.00243)	(0.0735)
Senior age 2	-0.181***	-0.0335***	0.369***	-0.102***	-0.000839	-1.473***
	(0.0228)	(0.0104)	(0.0276)	(0.00605)	(0.00242)	(0.0863)
Senior age 3	0.0203	-0.0672***	0.291***	-0.124***	0.00127	-1.606***
	(0.0281)	(0.0113)	(0.0306)	(0.00768)	(0.00283)	(0.118)
Senior age 4	0.0996***	-0.102***	0.223***	-0.160***	0.00218	-1.861***
	(0.0297)	(0.0125)	(0.0316)	(0.00902)	(0.00316)	(0.151)
Senior age 5	0.162***	-0.141***	0.227***	-0.192***	0.0104***	-2.296***
	(0.0307)	(0.0133)	(0.0392)	(0.0106)	(0.00339)	(0.185)
Constant	0.146***	0.871***	-0.126***	0.347***	0.0533***	2.798***
	(0.0259)	(0.00946)	(0.0379)	(0.00937)	(0.00291)	(0.175)
Observations	33,182	33,182	33,182	33,182	33,182	33,182
R-squared	0.062	0.046	0.065	0.122	0.151	0.155
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Regression on loans and bonds, single sorted on senior seniority

Senior debt has a statistically significant positive effect on *profitability*; all other factors held equal. The independent variable *book_lev* has a significant negative effect in years one and two, i.e., firms that issue senior debt decrease their portion of debt relative to assets. However, in years four and five, the effect changes and gets significantly positive. Senior debt does also have a significant adverse effect on *punsec*, indicating that the percent of unsecured debt relative to total debt decreases in all years.

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Junior & Junior Subordinated age 1	-0.0258	-0.0201	0.396***	-0.0811***	0.00690	-0.0705
	(0.0985)	(0.0365)	(0.0328)	(0.0166)	(0.0124)	(0.367)
Junior & Junior Subordinated age 2	0.233***	-0.0488	0.145***	-0.113***	0.0136	-0.432
	(0.0741)	(0.0373)	(0.0339)	(0.0154)	(0.0104)	(0.292)
Junior & Junior Subordinated age 3	0.337***	-0.0120	0.127***	-0.132***	0.00322	-0.874***
	(0.0753)	(0.0366)	(0.0379)	(0.0167)	(0.00870)	(0.272)
Junior & Junior Subordinated age 4	0.431***	-0.0658*	0.103***	-0.163***	0.00827	-0.952***
	(0.0920)	(0.0359)	(0.0379)	(0.0186)	(0.00903)	(0.317)
Junior & Junior Subordinated age 5	0.417***	-0.109***	0.108**	-0.216***	0.0172**	-1.494***
	(0.0761)	(0.0329)	(0.0479)	(0.0166)	(0.00874)	(0.288)
Constant	0.119***	0.851***	-0.0732**	0.324***	0.0531***	2.410***
	(0.0212)	(0.00864)	(0.0310)	(0.00774)	(0.00233)	(0.143)
Observations	27,479	27,479	27,479	27,479	27,479	27,479
R-squared	0.053	0.049	0.040	0.105	0.151	0.131
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Regression on loans and bonds, single sorted on junior seniority

Junior and junior subordinated debt do not seem to have a statistically significant effect on all the performance variables. However, the effect on *profitability* and *cash_inv* is of significance. A 1% increase in junior and junior subordinated debt increases *profitability* between 0.103-0.396%, and decreases *cash_inv* between 0.0811-0.216%, each of the following years; all other factors held equal. This means that firms that issue junior debt have lower levels of cash and higher profitability compared to firms with any issuance of debt in the same year.

4.2.3 By seniority and priority

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Senior&Secured age 1	-0.506***	-0.118***	0.665***	-0.0340***	-0.00761***	-1.181***
	(0.0288)	(0.0107)	(0.0249)	(0.00632)	(0.00271)	(0.0850)
Senior&Secured age 2	-0.162***	-0.102***	0.322***	-0.0814***	0.00152	-1.174***
	(0.0258)	(0.0115)	(0.0281)	(0.00690)	(0.00305)	(0.115)
Senior&Secured age 3	-0.0124	-0.131***	0.274***	-0.111***	0.00247	-1.424***
	(0.0277)	(0.0123)	(0.0298)	(0.00792)	(0.00286)	(0.124)
Senior&Secured age 4	0.0826***	-0.168***	0.207***	-0.139***	0.00342	-1.742***
	(0.0311)	(0.0135)	(0.0304)	(0.00917)	(0.00324)	(0.151)
Senior&Secured age 5	0.142***	-0.193***	0.205***	-0.174***	0.0115***	-2.129***
	(0.0315)	(0.0144)	(0.0383)	(0.0107)	(0.00347)	(0.187)
Constant	0.140***	0.866***	-0.112***	0.339***	0.0533***	2.740***
	(0.0253)	(0.00916)	(0.0365)	(0.00895)	(0.00278)	(0.170)
Observations	31,209	31,209	31,209	31,209	31,209	31,209
R-squared	0.058	0.056	0.056	0.104	0.150	0.143
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10: Regression on loans and bonds, double sorted on senior and secured debt

Issuance of senior secured debt has a statistically significant positive effect on *profitability*; all other factors held equal. A 1% increase in senior secured debt, results in a 0.665% increase in *profitability* one year after the issuance, and a 0.205% increase the fifth year after issuance. There is also a statistically significant effect on most years of *book_lev*. This effect is negative at first, where a 1% increase in senior secured debt generates a 0.506% decrease one year after issuance. However, this effect becomes positive in the longer term, as it generates a 0.142% increase in *book_lev* five years after the issuance. Finally, there is a negative, statistically significant effect on *cash_inv_pct*. A 1% increase in senior secured debt results in a 0.034% decrease in *cash_inv_pct* one year after the issuance, and further a 0.174% decrease after five years.

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Senior Unsecured & Senior Subordinated Unsecured age 1	-0.545***	0.162***	0.723***	-0.0660***	-0.00692***	-1.437***
	(0.0254)	(0.00922)	(0.0238)	(0.00574)	(0.00268)	(0.0834)
Senior Unsecured & Senior Subordinated Unsecured age 2	-0.201***	0.140***	0.407***	-0.124***	0.00341	-1.478***
	(0.0237)	(0.0101)	(0.0258)	(0.00624)	(0.00268)	(0.0940)
Senior Unsecured & Senior Subordinated Unsecured age 3	-0.0297	0.0828***	0.307***	-0.157***	0.00340	-1.641***
	(0.0262)	(0.0116)	(0.0285)	(0.00723)	(0.00284)	(0.116)
Senior Unsecured & Senior Subordinated Unsecured age 4	0.0833***	0.0118	0.227***	-0.178***	0.00445	-1.730***
	(0.0267)	(0.0130)	(0.0285)	(0.00847)	(0.00294)	(0.146)
Senior Unsecured & Senior Subordinated Unsecured age 5	0.200***	-0.0396***	0.236***	-0.211***	0.0121***	-2.074***
	(0.0319)	(0.0136)	(0.0344)	(0.00992)	(0.00335)	(0.178)
Constant	0.130***	0.857***	-0.0964***	0.336***	0.0531***	2.563***
	(0.0225)	(0.00887)	(0.0329)	(0.00827)	(0.00249)	(0.155)
Observations	29,972	29,972	29,972	29,972	29,972	29,972
R-squared	0.058	0.069	0.052	0.126	0.147	0.142
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11: Regression on loans and bonds, double sorted on senior unsecured and senior subordinated unsecured debt

Firms that issue senior and unsecured debt experience a statistically significant positive effect on *profitability* and a statistically significant negative effect on *cash_inv_pct*; all other factors held equal. On *punsec*, the effect is statistically significant positive in the first three years following the issuance. We interpret, all other factors held equal, issuing senior and unsecured debt improves profitability. Also, we observe that cash holdings decrease. Moreover, as the percent of unsecured debt increases in the years following the issuance, we interpret that firms who access senior unsecured debt prefer to continue with these debt instruments.

4.3 Regression on loans

4.3.1 By priority

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Secured age 1	-0.519***	-0.126***	0.659***	-0.0336***	-0.00886***	-1.098***
	(0.0237)	(0.0110)	(0.0243)	(0.00590)	(0.00239)	(0.0858)
Secured age 2	-0.176***	-0.120***	0.326***	-0.0897***	-0.00101	-1.312***
	(0.0236)	(0.0114)	(0.0279)	(0.00651)	(0.00244)	(0.0939)
Secured age 3	0.00138	-0.133***	0.269***	-0.109***	0.00376	-1.363***
	(0.0291)	(0.0125)	(0.0304)	(0.00807)	(0.00300)	(0.129)
Secured age 4	0.0698**	-0.162***	0.204***	-0.136***	0.00181	-1.796***
	(0.0305)	(0.0136)	(0.0304)	(0.00922)	(0.00322)	(0.152)
Secured age 5	0.145***	-0.196***	0.200***	-0.171***	0.0115***	-2.126***
	(0.0321)	(0.0142)	(0.0383)	(0.0107)	(0.00349)	(0.187)
Constant	0.139***	0.867***	-0.111***	0.338***	0.0532***	2.739***
	(0.0254)	(0.00917)	(0.0364)	(0.00895)	(0.00278)	(0.170)
Observations	31,160	31,160	31,160	31,160	31,160	31,160
R-squared	0.059	0.057	0.056	0.106	0.151	0.144
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12: Regression on the issuance of secured loans

Secured loans have a statistically significant effect on *punsec, profitability, cash_inv_pct,* and *rd_sales*; all other factors are held equal. The effect on *profitability* is positive, while for the other dependent variables, the effect is negative. On *punsec,* the effect of a 1% increase in secured loans is within the interval 0.120-0.196%, which is a somehow slightly effect. When looking at *profitability,* the effect is more extensive as a 1% increase in secured loans increases *profitability* with 0.659% in year one and 0.200% in year five.

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Unsecured age 1	-0.582***	0.162***	0.709***	-0.0692***	-0.00832***	-1.388***
	(0.0280)	(0.00917)	(0.0232)	(0.00572)	(0.00274)	(0.0822)
Unsecured age 2	-0.220***	0.145***	0.393***	-0.118***	0.00313	-1.333***
	(0.0286)	(0.0100)	(0.0251)	(0.00649)	(0.00281)	(0.0958)
Unsecured age 3	-0.0538*	0.0819***	0.301***	-0.151***	0.00358	-1.594***
	(0.0302)	(0.0116)	(0.0282)	(0.00744)	(0.00295)	(0.114)
Unsecured age 4	0.0533*	0.0161	0.230***	-0.178***	0.00533*	-1.675***
	(0.0315)	(0.0132)	(0.0289)	(0.00854)	(0.00312)	(0.148)
Unsecured age 5	0.160***	-0.0334**	0.237***	-0.214***	0.0120***	-2.093***
	(0.0350)	(0.0138)	(0.0344)	(0.0100)	(0.00337)	(0.178)
Constant	0.167***	0.857***	-0.0966***	0.337***	0.0538***	2.597***
	(0.0263)	(0.00887)	(0.0330)	(0.00832)	(0.00253)	(0.156)
Observations	29,943	29,943	29,943	29,943	29,943	29,943
R-squared	0.056	0.068	0.052	0.125	0.147	0.143
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 13: Regression on the issuance of unsecured loans

Unsecured loans have a statistically significant effect on *profitability*, *cash_inv_pct*, and *rd_sales*. A 1% increase in unsecured loans generates a 0.709% increase in *profitability* the following year, which drops to a 0.237% increase in year five, all other factors held equal. Therefore, firms with higher levels of unsecured loans in their debt structure gain higher profitability compared to firms issuing other types of debt the same year. The effects on *cash_inv_pct* and *rd_sales* are adverse for all five years, where a 1% increase of unsecured loans generates a 2.597% decrease in *rd_sales* in year five.

4.3.2 By seniority

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Senior age 1	-0.562***	-0.0315***	0.710***	-0.0429***	-0.0108***	-1.307***
	(0.0219)	(0.00997)	(0.0240)	(0.00525)	(0.00225)	(0.0746)
Senior age 2	-0.170***	-0.0405***	0.375***	-0.0928***	0.00169	-1.391***
	(0.0252)	(0.0106)	(0.0276)	(0.00634)	(0.00283)	(0.101)
Senior age 3	0.00920	-0.0757***	0.308***	-0.122***	0.00258	-1.503***
	(0.0292)	(0.0115)	(0.0310)	(0.00780)	(0.00338)	(0.137)
Senior age 4	0.0784***	-0.109***	0.227***	-0.157***	0.000973	-1.883***
	(0.0300)	(0.0129)	(0.0316)	(0.00903)	(0.00322)	(0.153)
Senior age 5	0.154***	-0.148***	0.238***	-0.191***	0.0111***	-2.321***
	(0.0328)	(0.0135)	(0.0397)	(0.0107)	(0.00360)	(0.195)
Constant	0.144***	0.870***	-0.129***	0.347***	0.0533***	2.817***
	(0.0264)	(0.00945)	(0.0382)	(0.00937)	(0.00296)	(0.178)
Observations	32,863	32,863	32,863	32,863	32,863	32,863
R-squared	0.061	0.046	0.065	0.118	0.145	0.151
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 14: Regression on the issuance of senior loans

Senior loans have a statistically significant positive effect for all years on *profitability*, while on *punsec*, *cash_inv_pct*, and *rd_sales*, the effect is statistically significant negative. By issuing 1% more senior loans, firms reduce *punsec* by 0.0315% in year one, and 0.148% in year five, all other factors held equal. A 1% increase in senior loans decreases *rd_sales* with 1.307% in year one, and 2.321% in year five. The effect on *profitability* is slightly lower at year one (0.71, $p < 0.01$) and higher in year five (0.238, $p < 0.01$) when investigating loans explicit, compared to both loans and bonds combined.

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Junior age 1	-0.326***	-0.729***	0.648***	-0.203***	-0.0276***	-1.362***
	(0.0495)	(0.0160)	(0.0686)	(0.0123)	(0.00369)	(0.187)
Junior age 2	-0.0595	-0.749***	0.465***	-0.260***	-0.0265***	-1.836***
	(0.0607)	(0.0160)	(0.0845)	(0.0136)	(0.00450)	(0.222)
Junior age 3	0.109*	-0.785***	0.275***	-0.308***	-0.0189***	-2.131***
	(0.0598)	(0.0166)	(0.0645)	(0.0140)	(0.00448)	(0.234)
Junior age 4	0.248***	-0.831***	0.171**	-0.325***	-0.0207***	-2.283***
	(0.0615)	(0.0177)	(0.0690)	(0.0145)	(0.00467)	(0.253)
Junior age 5	0.145**	-0.646***	0.259***	-0.361***	0.00426	-2.146***
	(0.0653)	(0.0181)	(0.0868)	(0.0147)	(0.00429)	(0.255)
Constant	0.123***	0.846***	-0.0738**	0.322***	0.0532***	2.409***
	(0.0209)	(0.00868)	(0.0307)	(0.00769)	(0.00231)	(0.142)
Observations	27,248	27,248	27,248	27,248	27,248	27,248
R-squared	0.053	0.051	0.038	0.100	0.149	0.130
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 15: Regression on the issuance of junior loans

The issuance of junior loans has a statistically significant effect on *punsec*, *profitability*, *cash_inv_pct,* and *rd_sales*; all other factors held equal. A 1% increase in junior loans issued generates a decrease in *punsec* of 0.646 - 0.831% each of the following five years. Hence, firms issuing more junior loans get higher levels of secured debt in their debt structure, compared to firms with any issuance of debt the same year. These firms will have reduced access to unsecured debt, forcing them to substitute towards secured debt.

4.3.3 By use of proceeds

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Working Capital age 1	-0.471***	-0.0409***	0.655***	-0.0812***	-0.00876***	-1.374***
	(0.0192)	(0.0123)	(0.0213)	(0.00498)	(0.00248)	(0.0690)
Working Capital age 2	-0.0927***	-0.0464***	0.295***	-0.126***	-0.00118	-1.391***
	(0.0209)	(0.0127)	(0.0245)	(0.00577)	(0.00250)	(0.0789)
Working Capital age 3	0.0794***	-0.0871***	0.199***	-0.156***	0.00293	-1.485***
	(0.0239)	(0.0140)	(0.0268)	(0.00694)	(0.00294)	(0.103)
Working Capital age 4	0.168***	-0.121***	0.134***	-0.178***	0.00237	-1.650***
	(0.0268)	(0.0152)	(0.0273)	(0.00842)	(0.00306)	(0.132)
Working Capital age 5	0.244***	-0.160***	0.148***	-0.215***	0.0100***	-1.902***
	(0.0325)	(0.0168)	(0.0348)	(0.0101)	(0.00352)	(0.169)
Constant	0.120***	0.864***	-0.0932***	0.338***	0.0530***	2.583***
	(0.0228)	(0.00886)	(0.0335)	(0.00826)	(0.00248)	(0.155)
Observations	29,624	29,624	29,624	29,624	29,624	29,624
R-squared	0.057	0.049	0.050	0.131	0.151	0.145
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 16: Regression on the issuance of loans used as working capital

Loans issued for working capital purposes are statistically significant positive on *profitability* for all years following the issuance; all other factors held equal. A 1% increase in loans issued for working capital generates a 0.655% increase in *profitability* the following year and a 0.148% increase in year five. For *punsec*, *cash_inv_pct*, and *rd_sales*, the effect is statistically significant negative on all years. The effect on *book_lev* is negative the two first years after a 1% increase in issued loans for this purpose, with a decrease of 0.471% and 0.0927%, respectively.

4.3.4 By loan type

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Revolving Credit Facility age 1	-0.495***	-0.0641***	0.774***	-0.0837***	-0.00433**	-1.707***
	(0.0201)	(0.00947)	(0.0227)	(0.00423)	(0.00216)	(0.0658)
Revolving Credit Facility age 2	-0.0864***	-0.0655***	0.369***	-0.136***	0.00217	-1.745***
	(0.0222)	(0.0107)	(0.0245)	(0.00546)	(0.00236)	(0.0841)
Revolving Credit Facility age 3	0.0805***	-0.0886***	0.259***	-0.162***	0.000469	-1.878***
	(0.0248)	(0.0125)	(0.0292)	(0.00706)	(0.00274)	(0.114)
Revolving Credit Facility age 4	0.162***	-0.126***	0.177***	-0.186***	0.00153	-2.094***
	(0.0285)	(0.0139)	(0.0308)	(0.00879)	(0.00325)	(0.148)
Revolving Credit Facility age 5	0.241***	-0.163***	0.176***	-0.219***	0.0117***	-2.317***
	(0.0336)	(0.0146)	(0.0406)	(0.0107)	(0.00356)	(0.190)
Constant	0.125***	0.879***	-0.130***	0.361***	0.0525***	2.944***
	(0.0264)	(0.00902)	(0.0384)	(0.00924)	(0.00285)	(0.178)
Observations	29,924	29,924	29,924	29,924	29,924	29,924
R-squared	0.061	0.051	0.064	0.147	0.151	0.158
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 17: Regression on the issuance of revolving credit facility

Revolving credit lines was one of the most interesting case sortings in the event study. These results are statistically significant on all variables except *capx_pct*; all other factors held equal. The effect on *book_lev* is negative in the first two years after the issuance before it gets positive in the remaining three years. This implies that assets financed by debt tends to decrease as the effect is significant negative, and increase after year two as the effect is significant positive. As the effect on *punsec* is negative, the proportion of unsecured debt decreases. We interpret that when firms issue debt in years three, four, and five after the issuance of revolving credit facility, they choose a more substantial portion of secured debt in their debt structure.

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Term Loan age 1	-0.363***	-0.154***	0.719***	-0.0918***	-0.00639**	-1.383***
	(0.0262)	(0.0114)	(0.0245)	(0.00514)	(0.00251)	(0.0821)
Term Loan age 2	-0.0325	-0.139***	0.370***	-0.149***	0.000554	-1.545***
	(0.0242)	(0.0129)	(0.0242)	(0.00573)	(0.00251)	(0.0875)
Term Loan age 3	0.151***	-0.165***	0.264***	-0.173***	0.00324	-1.560***
	(0.0286)	(0.0142)	(0.0272)	(0.00739)	(0.00306)	(0.118)
Term Loan age 4	0.211***	-0.170***	0.181***	-0.193***	0.00655*	-1.745***
	(0.0305)	(0.0157)	(0.0278)	(0.00875)	(0.00334)	(0.141)
Term Loan age 5	0.279***	-0.215***	0.186***	-0.235***	0.0126***	-2.097***
	(0.0346)	(0.0166)	(0.0390)	(0.0104)	(0.00369)	(0.178)
Constant	0.117***	0.878***	-0.100***	0.348***	0.0532***	2.662***
	(0.0238)	(0.00850)	(0.0349)	(0.00852)	(0.00258)	(0.161)
Observations	28,752	28,752	28,752	28,752	28,752	28,752
R-squared	0.054	0.067	0.054	0.136	0.146	0.144
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 18: Regression on the issuance of term loans

Issuing terms loans have a statistically significant negative effect on *punsec*; all other factors held equal. Therefore, firms issuing term loans will have lower levels of unsecured debt in their debt structure, compared to firms issuing any types of debt. The effect on *book_lev* is statistically significant for all years, except the second year after the issuance. The effect is negative at first; however, it is positive for years three to five. Thus, firms finance a higher proportion of their assets with equity in the first year after issuing term loans. Regarding company earnings, a 1% increase in term loans results in a 0.719% increase in *profitability* during year one, and the effect remains statistically significant positive for all years.

4.3.5 By seniority and priority

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Junior Subordinated Secured age 1	-0.476***	-0.432***	0.643***	-0.135***	0.0312	-0.808
	(0.109)	(0.115)	(0.0815)	(0.0192)	(0.0433)	(1.483)
Junior Subordinated Secured age 2	-0.0366	-0.472***	0.305***	-0.190***	0.0680	-1.109
	(0.0794)	(0.0987)	(0.0663)	(0.0154)	(0.0431)	(1.386)
Junior Subordinated Secured age 3	0.109	-0.316***	0.147*	-0.236***	0.0124	-2.538***
	(0.0682)	(0.114)	(0.0802)	(0.0154)	(0.0249)	(0.553)
Junior Subordinated Secured age 4	0.301***	-0.427***	0.163**	-0.264***	-0.0110	-2.773***
	(0.0962)	(0.114)	(0.0728)	(0.0146)	(0.0170)	(0.536)
Junior Subordinated Secured age 5	0.270***	-0.357***	0.138*	-0.294***	-0.00796	-2.818***
	(0.0651)	(0.129)	(0.0747)	(0.0171)	(0.0143)	(0.508)
Constant	0.123***	0.847***	-0.0736**	0.322***	0.0532***	2.409***
	(0.0209)	(0.00868)	(0.0307)	(0.00769)	(0.00231)	(0.142)
Observations	27,283	27,283	27,283	27,283	27,283	27,283
R-squared	0.053	0.052	0.038	0.101	0.149	0.130
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 19: Regression on the issuance of junior subordinated secured loans

Compared to the issuances of junior loans, the issuances of junior subordinated and secured loans only have a statistically significant effect on *punsec* and *cash_inv_pct*; all other factors held equal. The effect is statistically significant negative on both *punsec* and *cash_inv_pct*. This indicates that firms issuing this type of debt continue to increase their portion of secured debt, compared to firms issuing any type of debt in the same period.

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Senior and Secured age 1	-0.522***	-0.118***	0.662***	-0.0347***	-0.0116***	-1.116***
	(0.0286)	(0.0109)	(0.0243)	(0.00637)	(0.00260)	(0.0835)
Senior and Secured age 2	-0.177***	-0.128***	0.336***	-0.0856***	-0.000797	-1.336***
	(0.0238)	(0.0116)	(0.0271)	(0.00669)	(0.00245)	(0.0938)
Senior and Secured age 3	-0.00544	-0.144***	0.273***	-0.114***	0.00211	-1.457***
	(0.0280)	(0.0126)	(0.0299)	(0.00791)	(0.00287)	(0.121)
Senior and Secured age 4	0.0715**	-0.150***	0.188***	-0.137***	0.00299	-1.748***
	(0.0301)	(0.0134)	(0.0315)	(0.00910)	(0.00320)	(0.151)
Senior and Secured age 5	0.143***	-0.197***	0.201***	-0.171***	0.0111***	-2.133***
	(0.0332)	(0.0142)	(0.0382)	(0.0109)	(0.00352)	(0.188)
Constant	0.140***	0.866***	-0.111***	0.339***	0.0534***	2.738***
	(0.0254)	(0.00916)	(0.0365)	(0.00895)	(0.00277)	(0.170)
Observations	31,159	31,159	31,159	31,159	31,159	31,159
R-squared	0.058	0.058	0.056	0.105	0.150	0.144
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 20: Regression on the issuance of senior and secured loans

The effect of issuance on senior and secured loans is statistically significant positive on *profitability*; all other factors held equal. Compared to loans and bonds combined, the isolated effect on senior secured loans' *profitability* is slightly lower in all years. The effect on *punsec* and *cash_inv_pct* is statistically significant negative, which implies that firms issuing senior and secured debt continue issuing the same type of debt instruments. They also seem to reduce their cash holdings, as the negative effect is statistically significant for all years included in the regression model.

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Senior Unsecured age 1	-0.537***	0.168***	0.716***	-0.0677***	-0.00681**	-1.389***
	(0.0259)	(0.00931)	(0.0235)	(0.00585)	(0.00276)	(0.0851)
Senior Unsecured age 2	-0.186***	0.140***	0.393***	-0.117***	0.00166	-1.378***
	(0.0246)	(0.0104)	(0.0252)	(0.00643)	(0.00269)	(0.0938)
Senior Unsecured age 3	-0.0279	0.0860***	0.298***	-0.152***	0.00386	-1.577***
	(0.0261)	(0.0116)	(0.0283)	(0.00726)	(0.00287)	(0.114)
Senior Unsecured age 4	0.0909***	0.0104	0.230***	-0.176***	0.00479	-1.692***
	(0.0297)	(0.0134)	(0.0288)	(0.00873)	(0.00312)	(0.148)
Senior Unsecured age 5	0.198***	-0.0361***	0.237***	-0.206***	0.0125***	-1.971***
	(0.0334)	(0.0139)	(0.0344)	(0.0102)	(0.00337)	(0.178)
Constant	0.129***	0.857***	-0.0960***	0.336***	0.0531***	2.556***
	(0.0225)	(0.00885)	(0.0328)	(0.00827)	(0.00249)	(0.155)
Observations	29,904	29,904	29,904	29,904	29,904	29,904
R-squared	0.058	0.069	0.052	0.124	0.146	0.142
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 21: Regression on the issuance of senior unsecured loans

Senior unsecured loans have a statistically significant effect on three of the performance variables; all other factors held equal. The effect on *profitability* is positive, where a 1% increase in senior unsecured issued loans generates a 0.716% increase in *profitability* in year one. This increase continues with time, all other factors held equal, with a 0.237% increase in year five. For *cash_inv_pct* and *rd_sales*, the effects are statistically significant negative.

4.4 Regression on bonds

4.4.1 By priority

The output of regression on secured bonds generated few statistically significant results. Therefore, we choose to omit it from the analysis and focus on unsecured bonds. The regression results of secured bonds are in appendix 4, table 27.

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Unsecured age 1	-0.592***	0.179***	0.721***	-0.0631***	-0.0108**	-1.740***
	(0.0417)	(0.0137)	(0.0533)	(0.00983)	(0.00427)	(0.154)
Unsecured age 2	-0.244***	0.167***	0.456***	-0.119***	0.000493	-1.759***
	(0.0380)	(0.0145)	(0.0542)	(0.00959)	(0.00369)	(0.148)
Unsecured age 3	-0.0546	0.144***	0.349***	-0.156***	-0.00141	-1.828***
	(0.0339)	(0.0143)	(0.0449)	(0.0101)	(0.00303)	(0.181)
Unsecured age 4	0.115**	0.101***	0.239***	-0.169***	0.00754	-2.013***
	(0.0457)	(0.0158)	(0.0498)	(0.0117)	(0.00481)	(0.207)
Unsecured age 5	0.226***	0.0672***	0.242***	-0.202***	0.00911**	-2.270***
	(0.0399)	(0.0163)	(0.0398)	(0.0121)	(0.00401)	(0.215)
Constant	0.162***	0.845***	-0.0830***	0.325***	0.0537***	2.421***
	(0.0243)	(0.00879)	(0.0308)	(0.00784)	(0.00236)	(0.143)
Observations	28,251	28,251	28,251	28,251	28,251	28,251
R-squared	0.052	0.064	0.042	0.108	0.152	0.134
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 22: Regression on the issuance of unsecured bonds

Issuing unsecured bonds has a statistically significant positive effect on both *punsec* and *profitability* for the following five years; all other factors held equal. A 1% increase in unsecured bonds generates a 0.721% increase in *profitability* of year one and a 0.242% increase in *profitability* of year five. Unsecured bonds do also have a statistically significant effect on *capx_pct* on years one and five. A 1% increase in unsecured bonds generates a 0.0108% decrease in *capx_pct* one year after the issuance and a 0.00911% increase in *capx_pct* in the fifth year. The results show that firms with access to unsecured bonds seem to increase their investments in the longer term.

4.4.2 By seniority

Similar to secured bonds, there were few events in the event study for junior bonds. This affected the regression with few statistically significant results. The results on junior bonds can be seen in appendix 4, table 28.

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Senior age 1	-0.551***	0.193***	0.766***	-0.0735***	-0.0145***	-2.042***
	(0.0364)	(0.0140)	(0.0558)	(0.00941)	(0.00364)	(0.141)
Senior age 2	-0.174***	0.185***	0.481***	-0.123***	0.00359	-1.788***
	(0.0404)	(0.0141)	(0.0540)	(0.00985)	(0.00415)	(0.149)
Senior age 3	0.00641	0.164***	0.373***	-0.157***	0.00220	-1.965***
	(0.0377)	(0.0136)	(0.0457)	(0.0101)	(0.00366)	(0.165)
Senior age 4	0.125***	0.123***	0.283***	-0.179***	0.00345	-2.178***
	(0.0347)	(0.0141)	(0.0362)	(0.0109)	(0.00367)	(0.184)
Senior age 5	0.293***	0.0889***	0.219***	-0.212***	0.00852**	-2.316***
	(0.0426)	(0.0146)	(0.0551)	(0.0119)	(0.00360)	(0.218)
Constant	0.124***	0.846***	-0.0822***	0.325***	0.0530***	2.396***
	(0.0207)	(0.00874)	(0.0306)	(0.00779)	(0.00232)	(0.142)
Observations	28,202	28,202	28,202	28,202	28,202	28,202
R-squared	0.054	0.067	0.042	0.108	0.151	0.134
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 23: Regression on the issuance of senior bonds

From the table 23, we observe that the issuance of senior bonds has statistically significant effects on all years for the variables *punsec*, *profitability*, *cash_inv_pct*, and *rd_sales*; all other factors held equal. On *book_lev*, the effect is statistically significant in all years except from year three. A 1% increase in senior bonds issued generates a 0.766% increase in *profitability* on year one and a 0.219% increase in year five. The effect on *punsec* is positive as well, meaning that firms issuing senior bonds tend to increase their proportion of unsecured debt in their debt structure in the following years, compared to firms with any debt issuance in the same period.

4.4.3 By use of proceeds

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Working Capital age 1	-0.571***	0.249***	0.942***	-0.0572**	-0.0115*	-1.953***
	(0.0580)	(0.0309)	(0.0745)	(0.0290)	(0.00597)	(0.228)
Working Capital age 2	-0.120**	0.254***	0.527***	-0.117***	-0.000367	-1.891***
	(0.0530)	(0.0287)	(0.0750)	(0.0289)	(0.00535)	(0.259)
Working Capital age 3	0.0611	0.244***	0.378***	-0.145***	-0.00702	-1.983***
	(0.0513)	(0.0253)	(0.0696)	(0.0306)	(0.00439)	(0.283)
Working Capital age 4	0.189***	0.199***	0.259***	-0.141***	-0.00137	-2.036***
	(0.0467)	(0.0303)	(0.0570)	(0.0322)	(0.00419)	(0.300)
Working Capital age 5	0.341***	0.141***	0.201***	-0.190***	0.0118**	-2.067***
	(0.0495)	(0.0379)	(0.0660)	(0.0324)	(0.00529)	(0.300)
Constant	0.122***	0.846***	-0.0742**	0.323***	0.0531***	2.409***
	(0.0209)	(0.00868)	(0.0307)	(0.00769)	(0.00231)	(0.142)
Observations	27,319	27,319	27,319	27,319	27,319	27,319
R-squared	0.053	0.052	0.039	0.101	0.149	0.131
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 24: Regression on the issuance of bonds used as working capital

When firms issue bonds intended for working capital, the effect is statistically significant on most of the performance variables the regression. The effect is positive for all years for *profitability;* all other factors held equal. A 1% increase in bonds issued with purpose as working capital increases *profitability* with 0.942% in year one, which is remarkable higher than compared to working capital purpose on loan issuances (0.655, $p < 0.01$). The effect on *book_lev* is statistical negative in year one (0.571, $p < 0.01$) and two (0.120, $p < 0.01$). The trend in *book_lev* seems to be the same as on working capital purposes for loans, but the effect on bonds is somehow slightly larger.

4.4.4 By bond grade

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
InvestmentGrade age 1	-0.437***	0.256***	0.740***	-0.0646***	-0.00635	-1.720***
	(0.0298)	(0.0122)	(0.0310)	(0.0109)	(0.00481)	(0.128)
InvestmentGrade age 2	-0.123***	0.268***	0.425***	-0.110***	0.00178	-1.714***
	(0.0237)	(0.0124)	(0.0341)	(0.0116)	(0.00362)	(0.134)
InvestmentGrade age 3	0.0238	0.230***	0.315***	-0.148***	0.00718	-1.809***
	(0.0259)	(0.0157)	(0.0378)	(0.0147)	(0.00532)	(0.156)
InvestmentGrade age 4	0.130***	0.183***	0.226***	-0.177***	0.00605	-1.922***
	(0.0313)	(0.0167)	(0.0422)	(0.0173)	(0.00405)	(0.175)
InvestmentGrade age 5	0.191***	0.130***	0.202***	-0.220***	0.00361	-2.459***
	(0.0319)	(0.0158)	(0.0501)	(0.0148)	(0.00435)	(0.279)
Constant	0.120***	0.844***	-0.0776**	0.325***	0.0529***	2.365***
	(0.0204)	(0.00875)	(0.0306)	(0.00777)	(0.00232)	(0.139)
Observations	27,360	27,360	27,360	27,360	27,360	27,360
R-squared	0.055	0.063	0.041	0.104	0.149	0.134
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 25: Regression on the issuance of investment grade bonds

The results from the regression show a statistically significant effect on all years in the model for the variables *punsec*, *profitability*, *cash_inv_pct*, and *rd_sales*. The positive effect on *profitability* is relatively high; all other factors held equal, compared to other debt sortings in the analysis. A 1% increase generates a 0.740% increase in *profitability* after one year and a 0.202% increase in year five. It is also interesting to observe the positive effect on *punsec*, meaning that as firms issue investment grade bonds, they tend to issue more unsecured debt in the following years.

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
HighYield age 1	-0.349***	0.0379	0.762***	-0.0871***	0.00124	-2.388***
	(0.0261)	(0.0256)	(0.0335)	(0.00948)	(0.00499)	(0.173)
HighYield age 2	0.0494*	0.0247	0.390***	-0.141***	0.00412	-2.074***
	(0.0293)	(0.0289)	(0.0337)	(0.0101)	(0.00380)	(0.181)
HighYield age 3	0.157***	-0.0184	0.274***	-0.159***	0.000262	-1.870***
	(0.0342)	(0.0387)	(0.0432)	(0.0169)	(0.00408)	(0.303)
HighYield age 4	0.217***	0.000908	0.168***	-0.175***	0.0154**	-2.047***
	(0.0401)	(0.0423)	(0.0541)	(0.0209)	(0.00714)	(0.406)
HighYield age 5	0.312***	-0.0823	0.172***	-0.232***	0.00828	-2.694***
	(0.0495)	(0.0588)	(0.0572)	(0.0180)	(0.00708)	(0.394)
Constant	0.120***	0.848***	-0.0758**	0.324***	0.0530***	2.425***
	(0.0210)	(0.00871)	(0.0309)	(0.00773)	(0.00233)	(0.143)
Observations	27,229	27,229	27,229	27,229	27,229	27,229
R-squared	0.054	0.050	0.040	0.105	0.149	0.134
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 26: Regression on the issuance of high yield bonds

The effect of high yield bonds is statistically significant on several of our dependent variables. High yield bonds prove to have a positive, statistically significant effect on *profitability*. An increase of 1% high yield bond increases *profitability* with 0.762% during year one. This is higher compared to investment grade bonds (0.740%, p <0.01), and taken into consideration that firms issuing high yield bonds most likely have a lower credit rating than those issuing investment grade bonds, the finding is intriguing. Regarding *book_lev*, high yield bonds seem to follow the same pattern as investment grade bonds. The effect is negative in year one and positive in year three, four, and five (p > 0.05 age = 2, i.e., not significant).

5. DISCUSSION

5.1 Debt and company performance

Examining the relationship of issuing loans or bonds and profitability, we discover that the effect is statistically significant positive almost in all cases. However, the coefficients yield different effects depending on each case. The results indicate that issuing unsecured debt affects a company's profitability more positively than issuing secured debt during the life cycle of our analysis. In terms of seniority, our results show that issuing senior debt will have a greater impact on profitability (0.696, $p < 0.01$, age = 1) compared to the effect of issuing junior or subordinated debt (0.369, $p < 0.01$, age = 1). When analyzing the double sorted cases of debt, we proved the same effects on performance variables, as senior secured debt (0.665, $p < 0.01$, age = 1) had a lower impact on profitability than senior unsecured and senior subordinated unsecured debt (0.723, $p < 0.01$, age = 1).

A possibility to these findings is the empirical evidence from Rauh & Sufi (2010), who argues that high credit quality firms (BBB and higher) prefer senior unsecured debt while low credit quality firms (BB and lower) prefers both unsecured and secured debt instruments, but also a greater proportion of subordinated debt. Our interpretation from this is that firms with higher credit quality, in general, are more profitable than lower credit quality firms, and hence, the effect is, therefore, greater for the priority and seniority preferred by high credit quality firms. Concerning empirical evidence provided by Brounen et al., they state that in most cases, retained earnings are not enough to cover financial deficits, which then raises the need for external funds (Brounen et al., 2006). Further, the pecking order theory states that when external funding is required, firms will, in most cases, prefer debt over equity (Myers, 1984). Due to this, we consider our findings when investigating profitability not to add any new evidence to the already existing literature. However, it instead supports the already established literature and therefore confirms the reliability of our data.

5.2 Debt heterogeneity and company performance

Examining the case sortings done separately on loans and bonds, we discover several significant results that we in the following will try to compare in light of existing literature.

5.2.1 Priority and seniority

When looking into priority levels, we observe similar trends between unsecured loans and bonds. However, the effect on bonds is generally higher. For both debt instruments, the effect on firms' book leverage decreases at first, before it becomes positive. We believe that this tendency is explained by the fact that firms who issue unsecured loans or bonds become more financially constrained than before the issuance. Hence, a more considerable amount of their assets needs to be financed by equity or retained earnings after debt has been issued. If the debt issuance has increased the return on an investment, it will probably generate an increased cash flow, which facilitates new debt issuances. This can potentially explain the shifting trend we observe in our regressions.

The coefficients for *punsec* yields higher effects for unsecured bonds than unsecured loans. This result shows that companies issuing unsecured bonds are more attracted to unsecured debt in the future, relative to firms who issue unsecured loans. We believe an explanation is that a greater portion of unsecured bonds is senior, relative to the amount of unsecured loans that are senior as well. This corresponds to our findings from the event study and regression analysis on seniority, where we had more statistically significant evidence on junior loans than junior bonds (table 15 & table 28 in appendix 4).

Our findings on junior loans prove that firms issuing junior loans will have reduced access to unsecured debt; they need to substitute against secured debt. We relate these results to Biguri (2019). The negative effect is amplifying throughout the life cycle, which implies that issuing junior loans further reduces firms' capability to shift towards other debt instruments. Due to market imperfections, firms do not have access to the same debt instruments and markets. Junior debt usually has a higher amount of risk of default. Furthermore, they offer higher coupons, and hence, higher interest rates to pay for the issuing firm to compensate

for the higher risk. As a consequence, these firms become more financially constrained, which limits their access to more preferred debt instruments.

As junior bonds resulted in few events in the event study, we are comparing effects from seniority on senior loans and bonds. From our regressions, we found that the issuance of senior bonds tends to increase the proportion of unsecured debt during the life cycle. Senior loans decrease the share of unsecured debt in the debt structure. We establish a relationship between these findings and the empirical evidence of Rauh & Sufi (2010) and Hackbarth & Mauer (2012). Low credit quality firms rely on bank debt, while high credit quality firms prefer capital markets. Also, financially unconstrained and low growth firms prefer senior debt. We believe this empirical evidence explains the contrary trends observed between senior loans and bonds on firms' debt structure.

5.2.2 Purposes and other characteristics

We wanted to look at loans issued for specific purposes, and where we got the most interesting findings was on debt issued for working capital purposes. Working capital measures a firm's liquidity and draws a picture of how financially constrained firms tend to be in a short term perspective, which makes it interesting to distinguish the effects of issuing loans and bonds. For both debt instruments, the effect on profitability was positive. However, bonds issued as working capital yielded higher coefficients on profitability (0.942, $p < 0.01$, age = 1) than for loans issued for the same purpose (0.655, $p < 0.01$, age = 1). Bond issuances for working capital needs had the greatest effect on profitability in our study.

As previously mentioned, high credit quality firms prefer to issue debt in capital markets, while low credit quality firms rely on bank debt (Rauh & Sufi, 2010). We believe that market imperfections may explain the differences in the effects and that firms issuing bonds generally tend to have greater access to different debt instruments, as discussed under note 5.2.1. In light of the preceding, our interpretation is that firms issuing bonds with working capital purposes are already more profitable than those who not, and hence, the effect reinforces relatively more after the issuance.

Examining how punsec are affected by these issuances, we observe that issued loans increase the amount of collateralized debt, whereas issued bonds increase the portion of unsecured debt. We connect these findings to our previous interpretation that the majority of bonds generally are unsecured, compared to loans. Loans may be more diversified across seniority levels and, therefore, can affect the portion of unsecured debt in the debt structure more negatively.

Investigating characteristics on bonds, we got some interesting results in our regressions on specific bond grades. While both high yield (0.762, $p < 0.01$, age = 1) and investment grade bonds (0.740, $p < 0.01$, age = 1) have a positive effect on profitability during the life cycle, the effect is greater for high yield bonds. This drew our attention, as high yield graded bonds have a higher probability of default than investment grade bonds (figure 7, appendix 1). Concerning this, our immediate intuition was that the effect on the performance of firms issuing investment grade bonds should have been the highest. Therefore, we assign these findings to a possible explanation where firms with high growth issues bonds more frequently rated as high yield (as they cannot access higher bond grading due to financial constraints, i.e., market imperfections). The effect in itself may, therefore, yield a higher increase in profitability, as these firms may be relatively less profitable before the issuance.

By examining the results under note 4.3.2, we understand how the issuance of some loan types can affect firms' performance. The fact that term loans are more employed for longer-term financing than revolving credit lines makes for an interesting comparison. The results were statistically significant, and we observed similar effects from the issuance of revolving credit lines and term loans; two frequently applied loan types. However, term loans have a greater negative impact on unsecured debt in the debt structure (-0.154, $p < 0.01$, age = 1) than revolving credit lines (-0.0641, $p < 0.01$, age = 1). We observe that issuing term loans causes companies to choose a greater portion of secured debt in their debt structure, compared to issuing revolving credit lines for shorter terms.

6. CONCLUSION

6.1 Conclusion

This paper sheds light on how different debt instruments, more specifically loans and bonds, influences different performance indicators for U.S. public firms. By applying our observations in an event study and further run our data through a regression model, we have obtained significant results on several of our dependent variables and established relationships to existing empirical evidence.

With respect to our research question *"Will firms improve their performance by being aware of debt heterogeneity, and which debt instruments have the greatest impact on firms' performance?"* we have found statistically significant evidence which indicates that firms with access to different types of debt instruments will be able to improve their performance by practicing debt heterogeneity. In general, we have found that the issuance of bonds has a greater impact on firms' performance compared to issuing loans. However, a prerequisite to generalize our findings is that all firms have access to the same type of debt instruments. Further, these conditions fail due to market imperfections, where certain types of debt instruments, especially senior unsecured bonds, are inaccessible for several firms.

The paper includes 138,697 observations of debt issuances and firms' performance over a timespan of 23 years (1996-2019). Despite the limitations described further in section 6.2, we still believe that the main strength of our research lies within our comprehensive dataset and that our extensive data collection has contributed to a significant degree of both validity and reliability.

6.2 Limitations

Our research bases on a sample of data on U.S. public firms. Even though we believe in the reliability and validity of the data, our study is subject to some limitations. As discussed under note 3.4.1, we had difficulties with missing data. Considering the situation following Covid-19, we were, in some cases, forced to solutions that were not optimal. An example is that we were not able to collect new data after the lockdown on March 12th, 2020. The Excel add-in screener provided only works for Microsoft. For us, this meant that we could not add more

data to our dataset, due to our computer limitations, even though Eikon licenses were provided by the library's digital resources.

6.3 Further research

This research builds upon prior research on debt structure and is among the first to explore the relationship between individual debt characteristics and the performance of U.S. public firms. Being restricted by time and Covid-19, we believe there yet is much to research and discover within the area. Without these restrictions, we would access campus during the whole semester and collected loan data for the years 2014-2019 and the TICKER for all loans during our period. Doing this allows for a comparison of more data for an extended period, making an even more comprehensive study. We would also encourage future research to investigate how different issuances of debt affects posterior debt issuances over time.

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Appendix

1. Figures

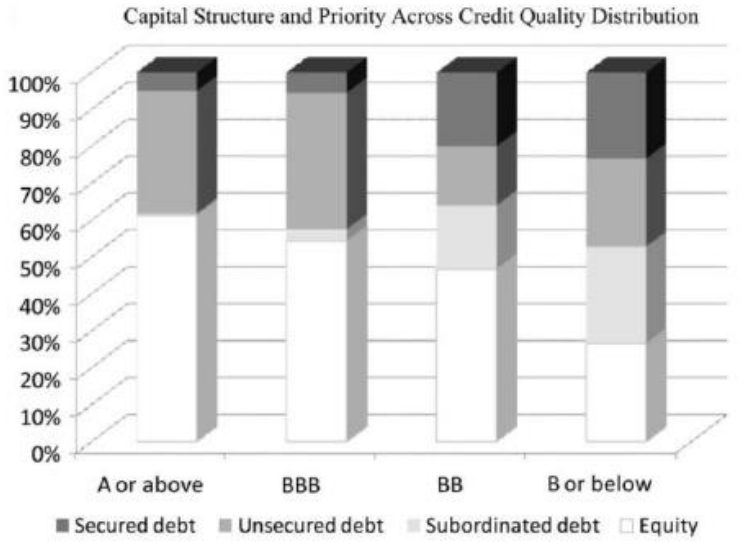

Figure 5: Priority structure of debt by credit rating for the 1,829 rated firm-year observations on the 305 firms in Rauh and Sufi's random sample (Rauh & Sufi, 2010).

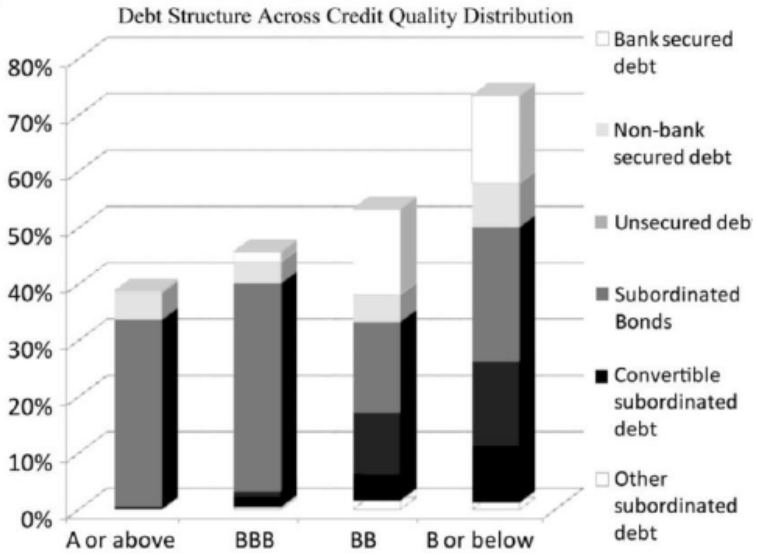

Figure 6: Priority structure of debt by credit rating for the 1,829 rated firm-year observations on the 305 firms in Rauh and Sufi's random sample (Rauh & Sufi, 2010).

Long-Term Issuer Credit Ratings*	
Category	**Definition**
AAA	An obligor rated 'AAA' has extremely strong capacity to meet its financial commitments. 'AAA' is the highest issuer credit rating assigned by S&P Global Ratings.
AA	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 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 obligor rated 'BBB' has adequate capacity to meet its financial commitments. However, adverse economic conditions or changing circumstances are more likely to weaken the obligor's capacity to meet its financial commitments.
BB, B, CCC, and CC	Obligors rated 'BB', 'B', 'CCC', and 'CC' are regarded as having significant speculative characteristics. 'BB' indicates the least degree of speculation and 'CC' the highest. While such obligors will likely have some quality and protective characteristics, these may be outweighed by large uncertainties or major exposure to adverse conditions.
BB	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 that could lead to the obligor's inadequate capacity to meet its financial commitments.
B	An obligor rated '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.
CCC	An obligor rated 'CCC' is currently vulnerable and is dependent upon favorable business, financial, and economic conditions to meet its financial commitments.
CC	An obligor rated 'CC' is currently highly vulnerable. The 'CC' rating is used when a default has not yet occurred but S&P Global Ratings expects default to be a virtual certainty, regardless of the anticipated time to default.
SD and D	An obligor is rated 'SD' (selective default) or 'D' if S&P Global Ratings considers there to be a default on one or more of its financial obligations, whether long- or short-term, including rated and unrated obligations but excluding hybrid instruments classified as regulatory capital or in nonpayment according to terms. A 'D' rating is assigned when S&P Global Ratings 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. An 'SD' rating is assigned when S&P Global Ratings 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. A rating on an obligor is lowered to 'D' or 'SD' if it is conducting a distressed exchange offer.
***Ratings from 'AA' to 'CCC' may be modified by the addition of a plus (+) or minus (-) sign to show relative standing within the rating categories.**	

Figure 7: S&P Long-Term Credit Ratings ("S&P Global Ratings Definition," 2019)

2. The Carhart Four Factor model, variables defined

$R_{i,t}$ = total return of a stock or portfolio *i* at time *t*

Rf_t = risk free rate of return at time *t*

Rm_t = total market portfolio return at time *t*

$R_{i,t} - Rf_t$ = excess return on the market portfolio (index)

SMB_t = size factor at time *t* (small minus big)

HML_t = value factor at time *t* (high minus low)

MOM_t = momentum factor at time *t* (winners minus losers)

3. List of independent variables

- **Junior**: dummy variable, takes the value of 1 for the firm-year observations where the debt issued is junior priority
- **Junior Subordinated**: dummy variable, take the value of 1 for the firm-year observations where the debt issued is junior subordinated priority
- **Senior**: dummy variable, take the value of 1 for the firm-year observations where the debt issued is senior priority
- **Secured**: dummy variable, take the value of 1 for the firm-year observations where the debt issued is secured by company assets
- **Unsecured**: dummy variable, take the value of 1 for the firm-year observations where the debt issued is unsecured
- **General Purpose**: dummy variable, take the value of 1 for the firm-year observations where the debt issued is used for general corporate purposes
- **M&A**: dummy variable, take the value of 1 for the firm-year observations where the debt issued is used for merger & acquisitions
- **Working Capital**: dummy variable, take the value of 1 for the firm-year observations where the debt issued is used as working capital
- **Acquisition Finance**: dummy variable, take the value of 1 for the firm-year observations where the debt issued is used for acquisition finance
- **Revolving Credit Facility**: dummy variable, take the value of 1 for the firm-year observations where the loans issued are revolving credit facilities
- **Term Loan**: dummy variable, take the value of 1 for the firm-year observations where the loan issued are term loans
- **Investment Grade**: dummy variable, take the value of 1 for the firm-year observations where the bonds issued are rated as investment grade bonds
- **High Yield:** dummy variable, take the value of 1 for the firm-year observations where the bonds issued are rated as high yield bonds
- **Senior Secured**: dummy variable, take the value of 1 for the firm-year observations where the debt issued is both senior and secured
- **Senior Unsecured**: dummy variable, take the value of 1 for the firm-year observations where the debt issued is both senior and unsecured
- **Senior Unsecured & Senior Subordinated Unsecured**: dummy variable, take the value of 1 for the firm-year observations where the debt issued is both senior, or senior subordinated, and unsecured

- **Junior Subordinated Secured**: dummy variable, take the value of 1 for the firm-year observations where the debt issued is both junior subordinated and secured
- **Age_1**: dummy variable, take the value of 1 for the first fiscal year after the issuance year
- **Age_2**: dummy variable, take the value of 1 for the second fiscal year after the issuance year
- **Age_3:** dummy variable, takes the value of 1 for the third fiscal year after the issuance year
- **Age_4:** dummy variable, take the value of 1 for the fourth fiscal year after the issuance year
- **Age_5:** dummy variable, takes the value of 1 for the fifth fiscal year after the issuance year

4. Regressions not included in the analysis

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Secured age 1	-0.329***	-0.160*	0.425***	-0.0258	-0.0191**	-1.054*
	(0.0642)	(0.0857)	(0.0882)	(0.0274)	(0.00945)	(0.548)
Secured age 2	0.508	-0.0656	0.150	-0.0279	0.0487	1.224
	(0.383)	(0.0900)	(0.112)	(0.0554)	(0.0410)	(1.427)
Secured age 3	0.580	-0.00558	0.00628	-0.0507	0.0256	0.375
	(0.420)	(0.102)	(0.0838)	(0.0609)	(0.0335)	(1.023)
Secured age 4	0.849*	-0.218**	-1.055	-0.155***	-0.00350	-0.940***
	(0.482)	(0.0951)	(0.935)	(0.0333)	(0.0118)	(0.276)
Secured age 5	0.751*	-0.181**	-0.0697	-0.194***	0.0141	-0.172
	(0.424)	(0.0832)	(0.0909)	(0.0268)	(0.0133)	(1.134)
Constant	0.123***	0.847***	-0.0735**	0.322***	0.0531***	2.405***
	(0.0209)	(0.00868)	(0.0307)	(0.00769)	(0.00231)	(0.142)
Observations	27,296	27,296	27,296	27,296	27,296	27,296
R-squared	0.053	0.050	0.038	0.101	0.149	0.130
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 27: Regression on issuance of secured bonds

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Junior age 1	-0.431***	-0.0495	0.427**	-0.0845*	-0.00461	-0.812**
	(0.152)	(0.123)	(0.166)	(0.0496)	(0.0249)	(0.343)
Junior age 2	0.196	0.0129	0.0753	-0.116**	0.0165	-0.544*
	(0.173)	(0.0857)	(0.163)	(0.0468)	(0.0201)	(0.280)
Junior age 3	0.249**	-0.0283	0.0816	-0.142***	0.0158	-0.832**
	(0.126)	(0.0931)	(0.167)	(0.0450)	(0.0177)	(0.349)
Junior age 4	1.181	-0.0525	0.0428	-0.0473	0.0724	1.312
	(0.769)	(0.0784)	(0.142)	(0.115)	(0.0600)	(1.967)
Junior age 5	1.272*	-0.0939	0.0800	-0.0705	0.0721	1.010
	(0.756)	(0.0798)	(0.168)	(0.113)	(0.0600)	(1.924)
Constant	0.122***	0.847***	-0.0737**	0.322***	0.0530***	2.406***
	(0.0209)	(0.00868)	(0.0307)	(0.00770)	(0.00231)	(0.142)
Observations	27,267	27,267	27,267	27,267	27,267	27,267
R-squared	0.053	0.050	0.038	0.100	0.149	0.130
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 28: Regression on the issuance of junior bonds

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
General Purpose age 1	-0.512***	-0.0865***	0.690***	-0.0457***	-0.00545*	-1.366***
	(0.0256)	(0.0124)	(0.0277)	(0.00665)	(0.00285)	(0.0904)
General Purpose age 2	-0.174***	-0.0760***	0.362***	-0.0963***	0.00224	-1.448***
	(0.0260)	(0.0127)	(0.0301)	(0.00710)	(0.00277)	(0.0982)
General Purpose age 3	-0.0340	-0.104***	0.296***	-0.130***	0.00318	-1.668***
	(0.0273)	(0.0136)	(0.0315)	(0.00800)	(0.00291)	(0.117)
General Purpose age 4	0.0740**	-0.133***	0.220***	-0.152***	0.00452	-1.830***
	(0.0313)	(0.0144)	(0.0297)	(0.00934)	(0.00325)	(0.150)
General Purpose age 5	0.162***	-0.183***	0.203***	-0.185***	0.0120***	-2.217***
	(0.0293)	(0.0152)	(0.0378)	(0.0105)	(0.00334)	(0.177)
Constant	0.131***	0.861***	-0.103***	0.336***	0.0527***	2.595***
	(0.0230)	(0.00888)	(0.0336)	(0.00839)	(0.00256)	(0.157)
Observations	30,069	30,069	30,069	30,069	30,069	30,069
R-squared	0.058	0.052	0.050	0.110	0.154	0.142
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 29: Regression on loans and bonds, single sorted on general purpose

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
General Purpose age 1	-0.510***	-0.0606***	0.780***	-0.0844***	-0.00292	-1.833***
	(0.0204)	(0.0103)	(0.0244)	(0.00439)	(0.00217)	(0.0677)
General Purpose age 2	-0.0793***	-0.0458***	0.384***	-0.131***	0.00414*	-1.694***
	(0.0237)	(0.0114)	(0.0236)	(0.00582)	(0.00237)	(0.0868)
General Purpose age 3	0.0952***	-0.0869***	0.276***	-0.161***	0.00277	-1.821***
	(0.0269)	(0.0130)	(0.0282)	(0.00731)	(0.00285)	(0.115)
General Purpose age 4	0.179***	-0.121***	0.169***	-0.174***	0.00535	-1.963***
	(0.0309)	(0.0144)	(0.0297)	(0.00907)	(0.00342)	(0.147)
General Purpose age 5	0.236***	-0.176***	0.170***	-0.211***	0.0141***	-2.266***
	(0.0341)	(0.0157)	(0.0397)	(0.0109)	(0.00374)	(0.183)
Constant	0.120***	0.874***	-0.117***	0.356***	0.0527***	2.821***
	(0.0251)	(0.00892)	(0.0366)	(0.00890)	(0.00275)	(0.170)
Observations	29,092	29,092	29,092	29,092	29,092	29,092
R-squared	0.059	0.052	0.059	0.134	0.147	0.155
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 30: Regression on the issuance of loans used for general corporate purposes

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Merger and Acquisitions age 1	-0.393***	0.192***	0.762***	-0.0832***	-0.00494	-1.881***
	(0.0419)	(0.0208)	(0.0331)	(0.0114)	(0.00529)	(0.166)
Merger and Acquisitions age 2	-0.0258	0.221***	0.427***	-0.133***	0.00244	-1.792***
	(0.0510)	(0.0194)	(0.0362)	(0.0119)	(0.00533)	(0.192)
Merger and Acquisitions age 3	0.0843***	0.187***	0.302***	-0.167***	0.000195	-2.032***
	(0.0278)	(0.0244)	(0.0406)	(0.0139)	(0.00366)	(0.188)
Merger and Acquisitions age 4	0.205***	0.140***	0.190***	-0.212***	0.00554	-2.235***
	(0.0322)	(0.0265)	(0.0444)	(0.0145)	(0.00514)	(0.218)
Merger and Acquisitions age 5	0.260***	0.0683	0.177***	-0.249***	0.0146*	-2.519***
	(0.0397)	(0.0460)	(0.0643)	(0.0191)	(0.00884)	(0.317)
Constant	0.122***	0.846***	-0.0750**	0.323***	0.0531***	2.412***
	(0.0209)	(0.00870)	(0.0307)	(0.00772)	(0.00231)	(0.142)
Observations	27,344	27,344	27,344	27,344	27,344	27,344
R-squared	0.054	0.056	0.040	0.104	0.149	0.132
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 31: Regression on the issuance of bonds used for M&As

VARIABLES	book_lev	punsec	profitability	cash_inv_pct	capx_pct	rd_sales
Merger and Acquisitions age 1	-0.481***	-0.123***	0.623***	-0.0925***	-0.0118**	-1.484***
	(0.0229)	(0.0241)	(0.0276)	(0.00852)	(0.00485)	(0.122)
Merger and Acquisitions age 2	-0.105***	-0.116***	0.336***	-0.133***	-0.00258	-1.350***
	(0.0363)	(0.0233)	(0.0285)	(0.0118)	(0.00451)	(0.176)
Merger and Acquisitions age 3	0.0351	-0.122***	0.251***	-0.165***	-0.00553	-1.516***
	(0.0382)	(0.0239)	(0.0300)	(0.0114)	(0.00414)	(0.181)
Merger and Acquisitions age 4	0.137***	-0.155***	0.171***	-0.185***	0.00539	-1.755***
	(0.0400)	(0.0244)	(0.0320)	(0.0116)	(0.00491)	(0.187)
Merger and Acquisitions age 5	0.232***	-0.193***	0.180***	-0.222***	0.0101**	-2.106***
	(0.0468)	(0.0250)	(0.0351)	(0.0126)	(0.00462)	(0.212)
Constant	0.124***	0.847***	-0.0763**	0.324***	0.0536***	2.422***
	(0.0212)	(0.00880)	(0.0310)	(0.00780)	(0.00234)	(0.144)
Observations	28,025	28,025	28,025	28,025	28,025	28,025
R-squared	0.053	0.052	0.042	0.108	0.155	0.134
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm
Controls	No	No	No	No	No	No
Industry FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-age FE	No	No	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 32: Regression on loans and bonds, single sorted on M&As

5. Event study results

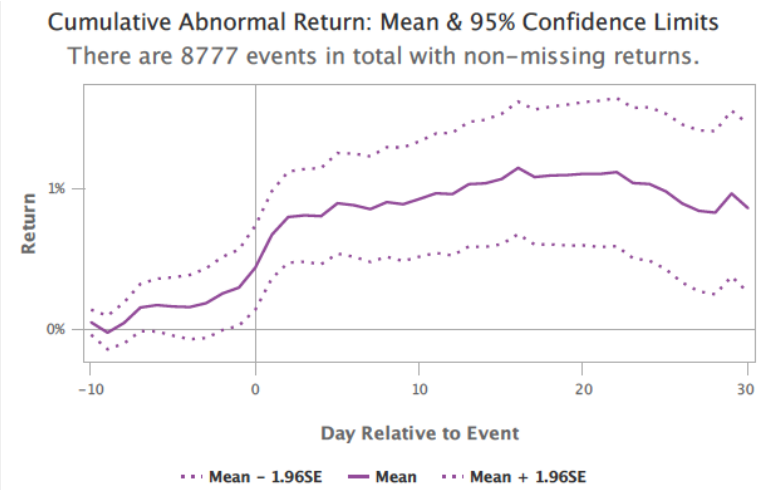

Figure 8: Event study results on secured loans and bonds, 1996-2013

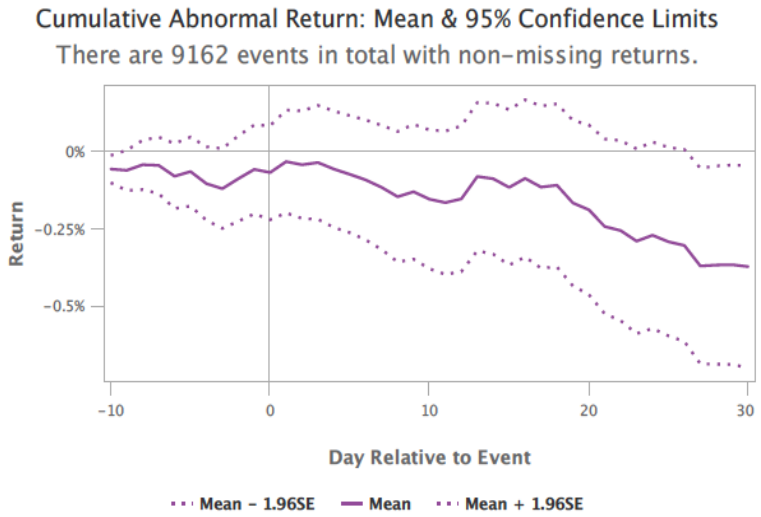

Figure 9: Event study results on unsecured loans and bonds, 1996-2013

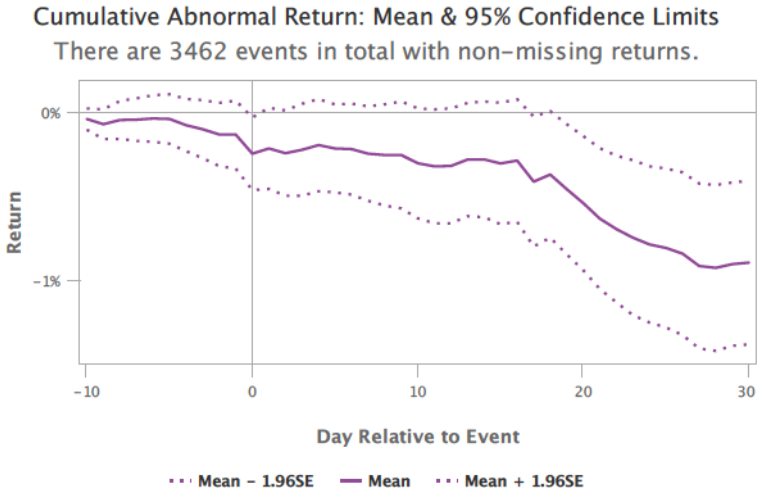

Figure 10: Event study results on senior loans and bonds, 1996-2013

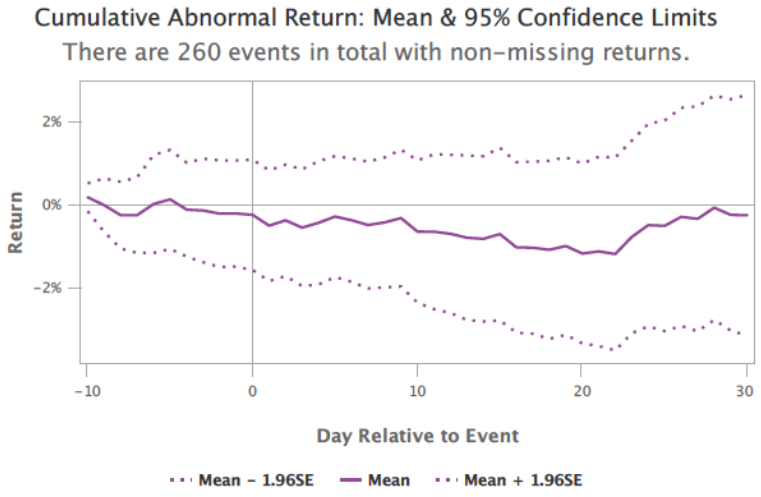

Figure 11: Event study results on junior and subordinated loans and bonds, 1996-2013

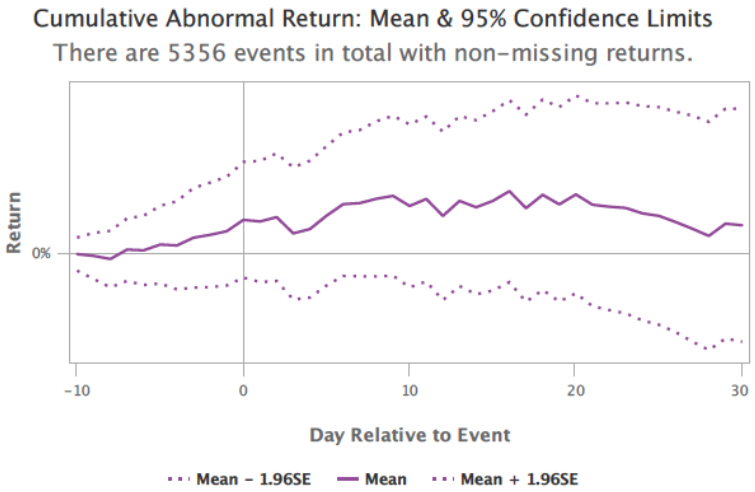

Figure 12: Event study results on loans and bonds used for general purposes, 1996-2019

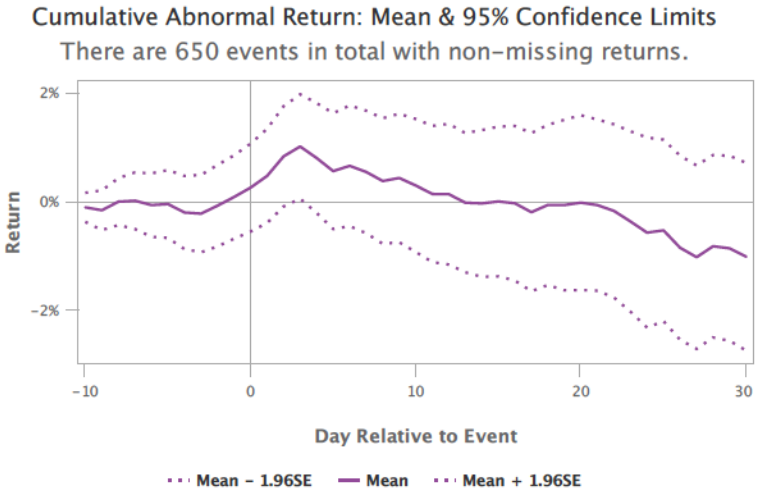

Figure 13: Event study results on loans and bonds used for M&A's, 1996-2013

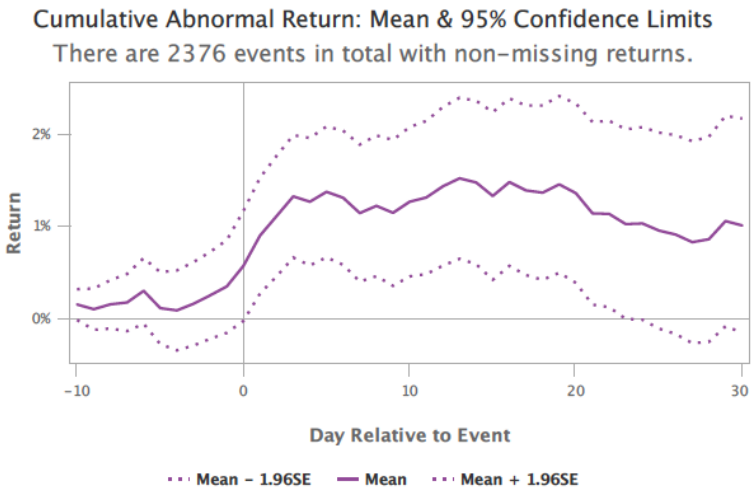

Figure 14: Event study results on loans and bonds used as working capital, 1996-2013

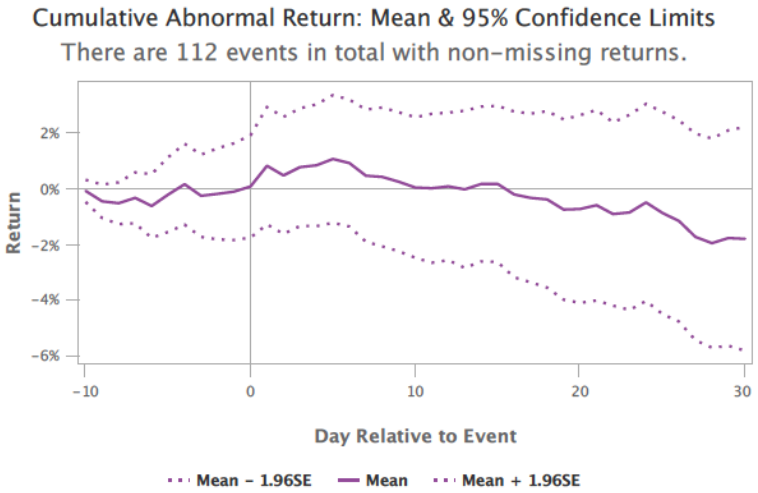

Figure 15: Event study results on loans and bonds used for stock repurchase, 1996-2013

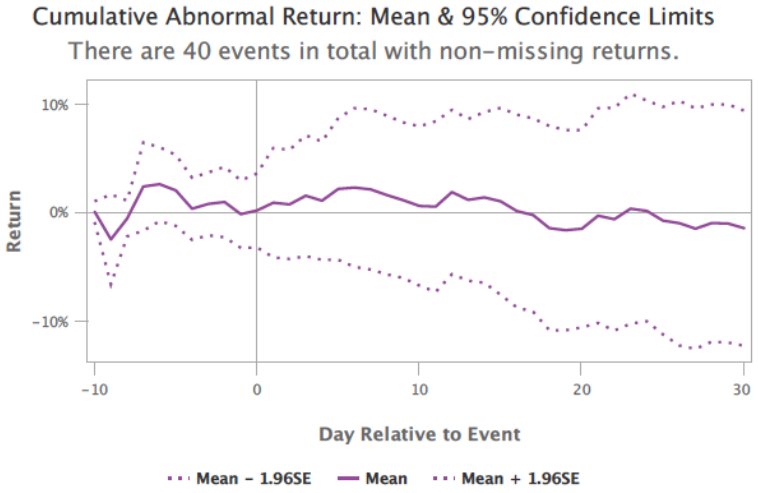

Figure 16: Event study results on loans and bonds used for recapitalization, 1996-2013

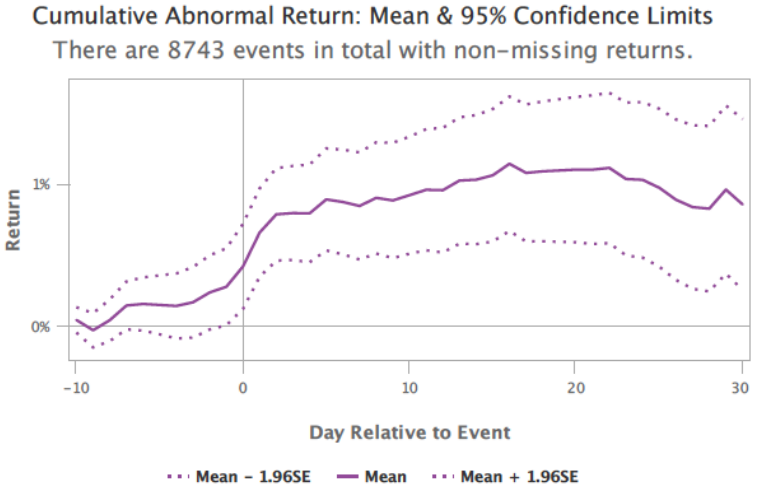

Figure 17: Event study results on senior & secured loans and bonds, 1996-2013

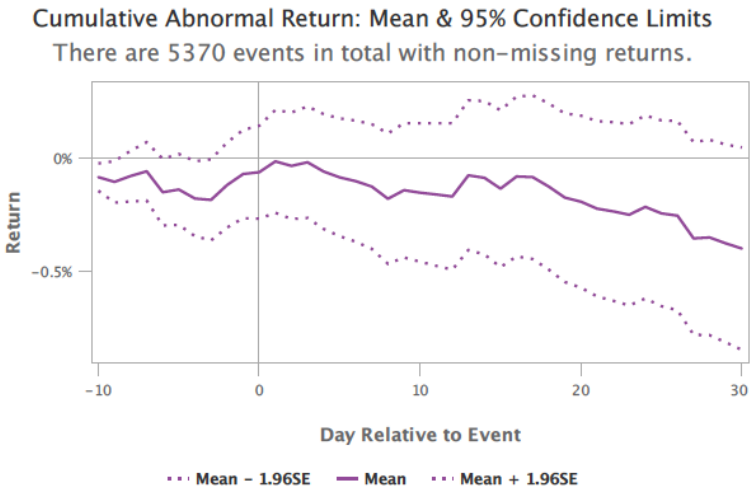

Figure 18: Event study results on senior (+ subordinated) & unsecured loans and bonds, 1996-2013

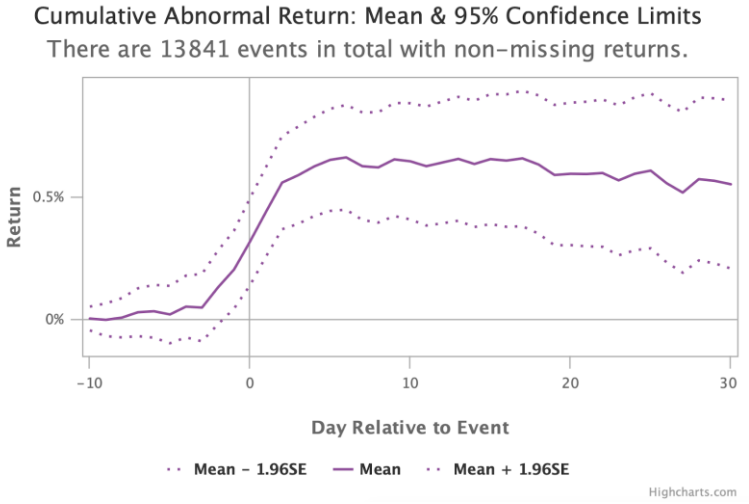

Figure 19: Event study results on all loans, 1996-2019

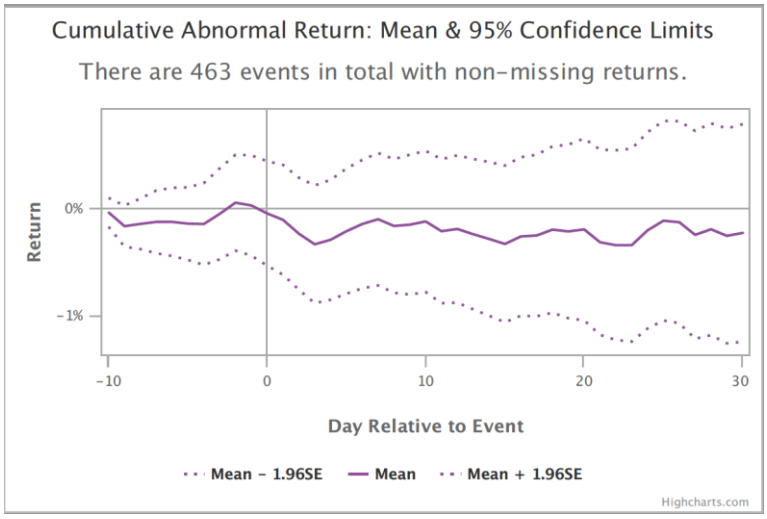

Figure 20: Event study results on loans - 364 Days Revolver, 1996-2019

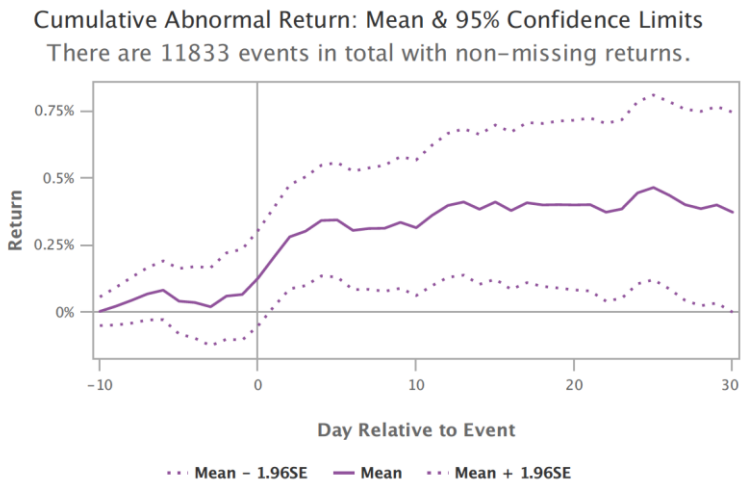

Figure 21: Event study results on loans - Revolving Credit Lines Facility, 1996-2019

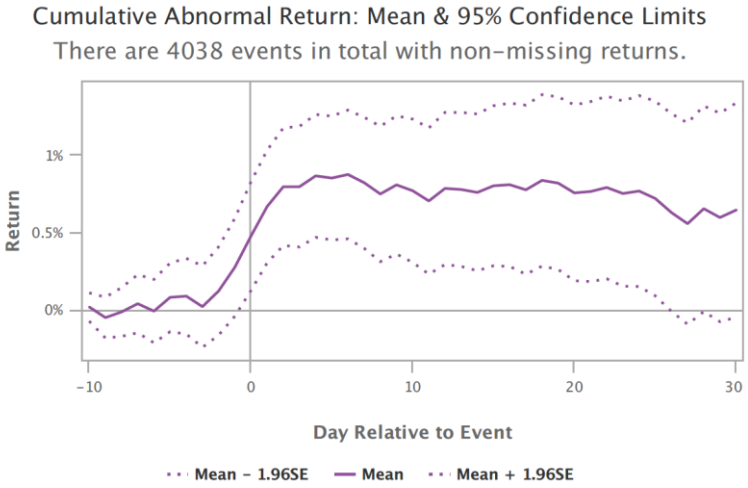

Figure 22: Event study results on Term Loans, 1996-2019

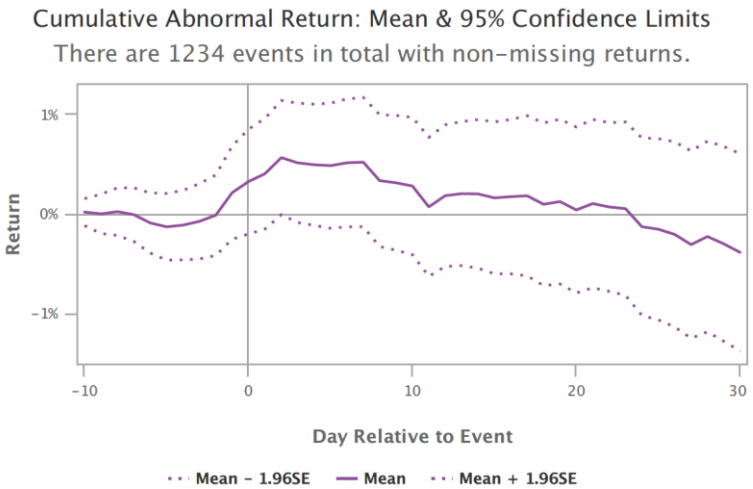

Figure 23: Event study results on loans used for Acquisition Finance, 1996-2019

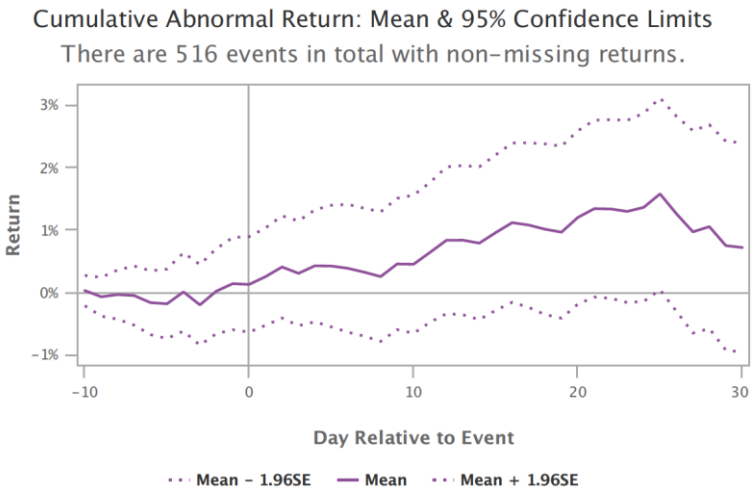

Figure 24: Event study results on loans used for Future Acquisitions, 1996-2019

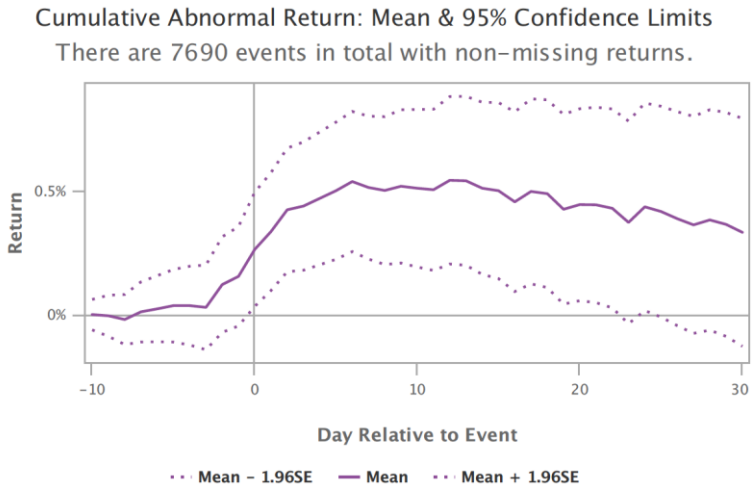

Figure 25: Event study results on loans used for General Corporate Purposes, 1996-2019

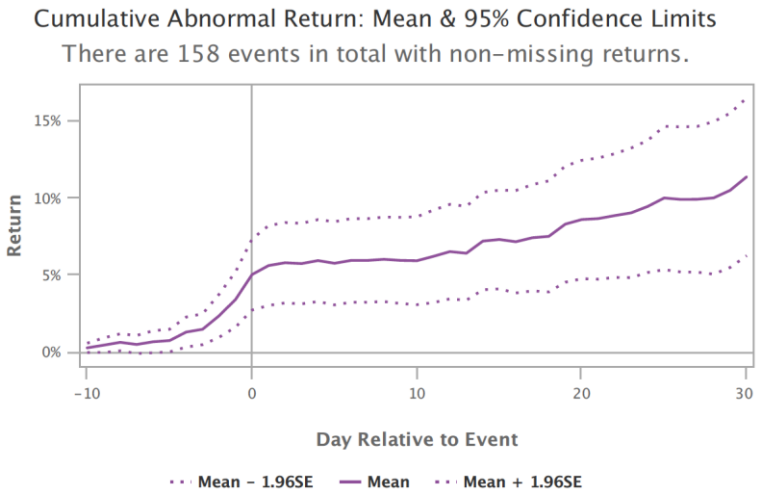

Figure 26: Event study results on loans used for leveraged Buyouts, 1996-2019

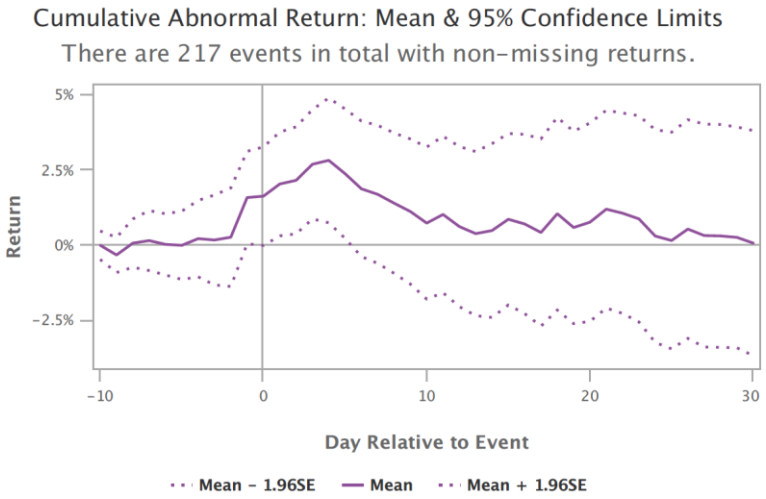

Figure 27: Event study results on loans used to Pay Fees and Expenses, 1996-2019

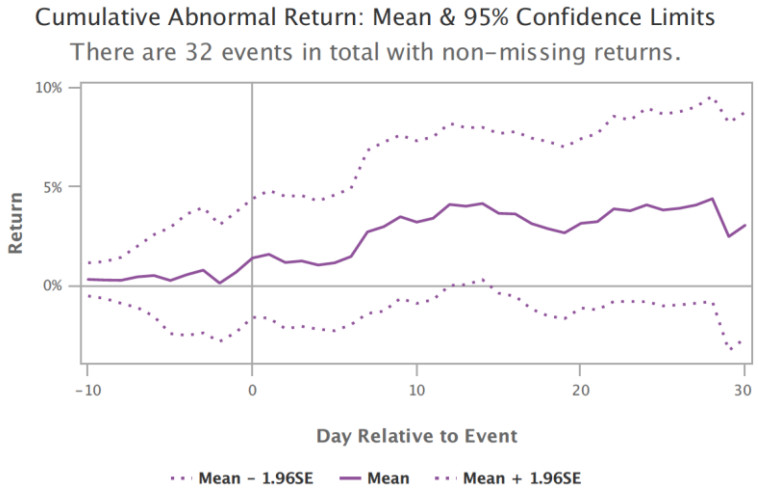

Figure 28: Event study results on loans used for recapitalization, 1996-2019

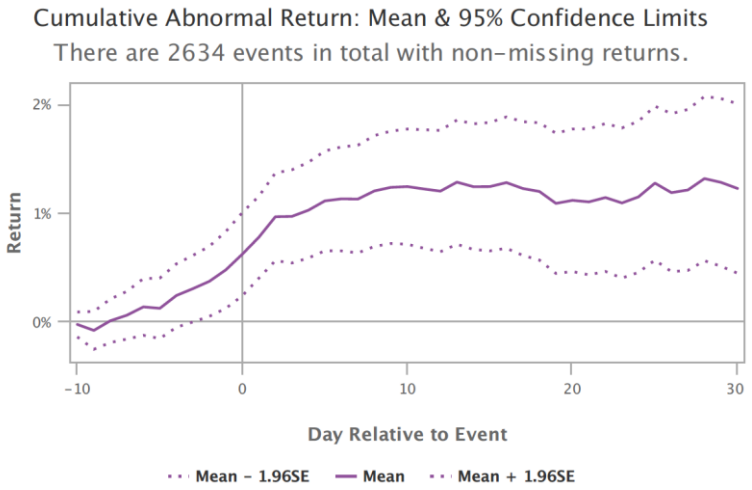

Figure 29: Event study results on loans used on Refinancing, 1996-2019

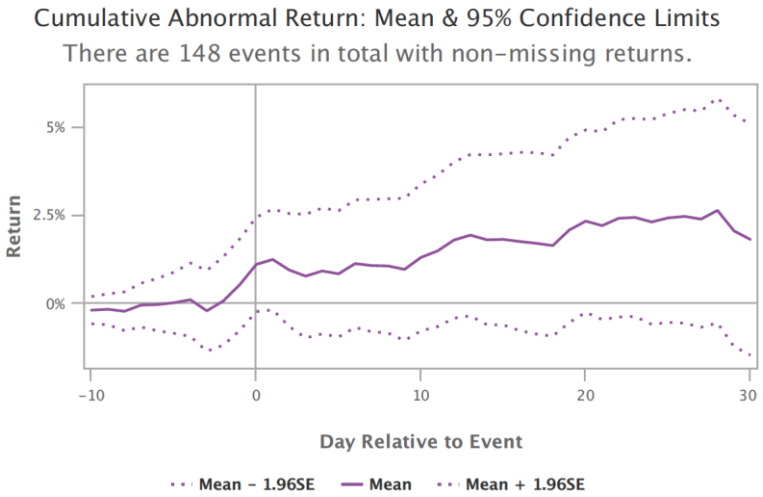

Figure 30: Event study results on loans used on Stock Repurchase, 1996-2019

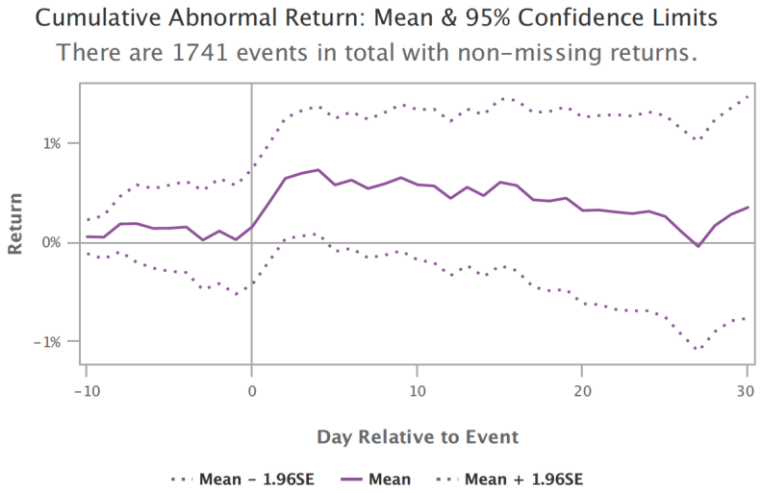

Figure 31: Event study results on loans used on Working Capital, 1996-2019

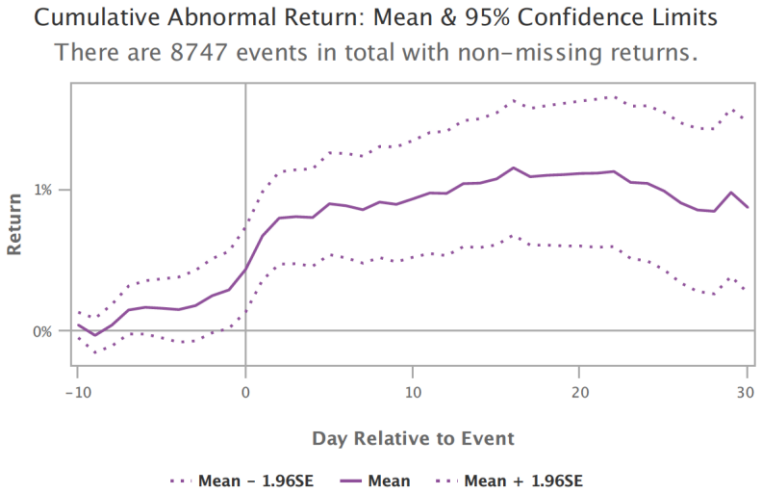

Figure 32: Event study results on secured loans, 1996-2013

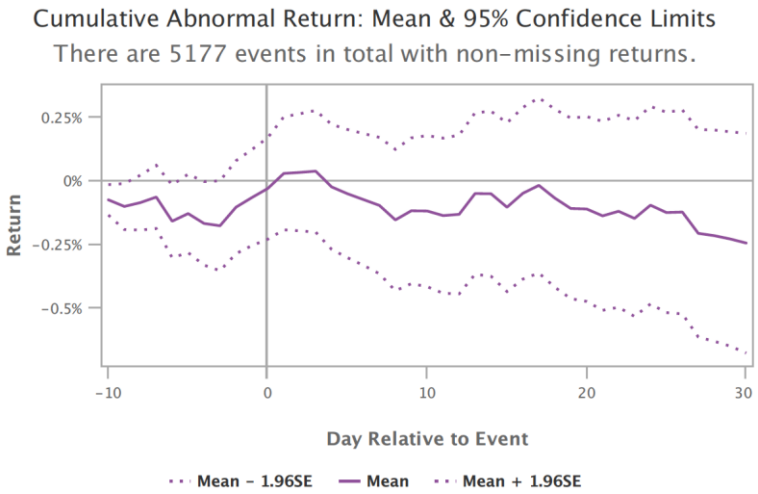

Figure 33: Event study results on unsecured loans, 1996-2013

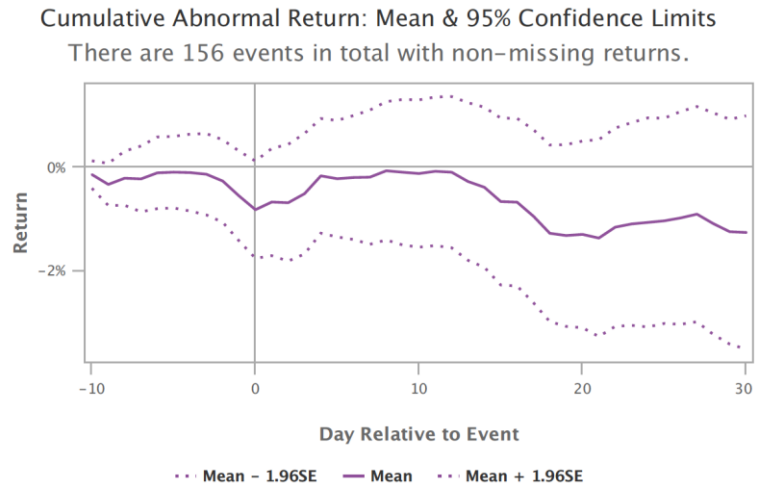

Figure 34: Event study results on senior loans, 1996-2013

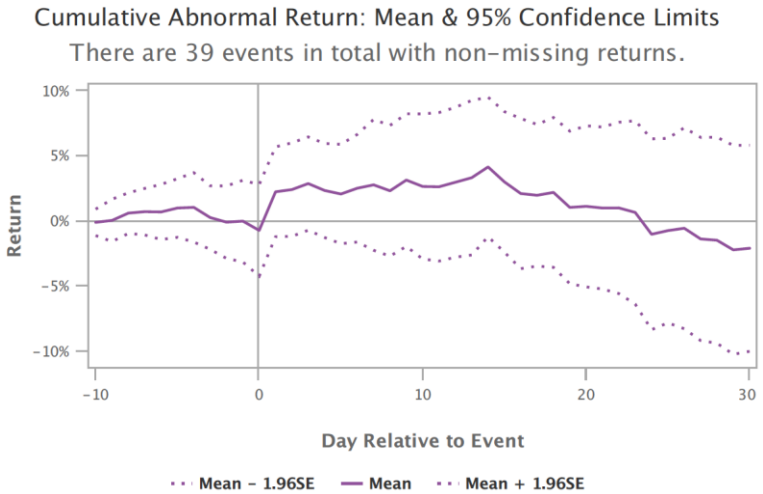

Figure 35: Event study results on senior subordinated loans, 1996-2013

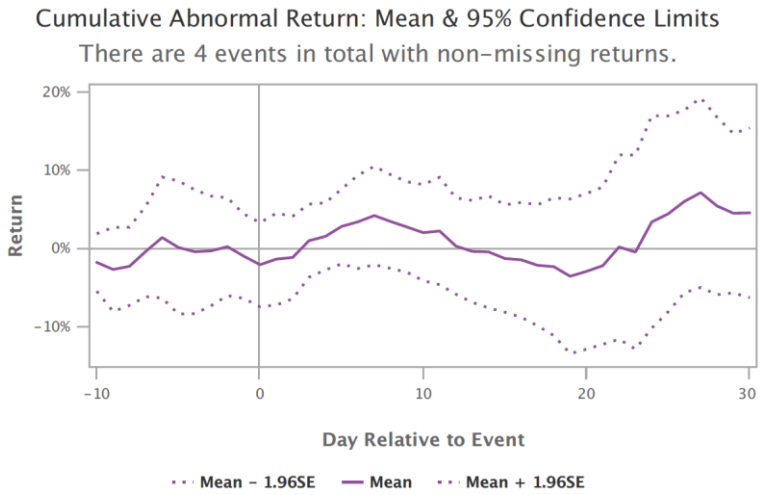

Figure 36: Event study results on junior loans, 1996-2013

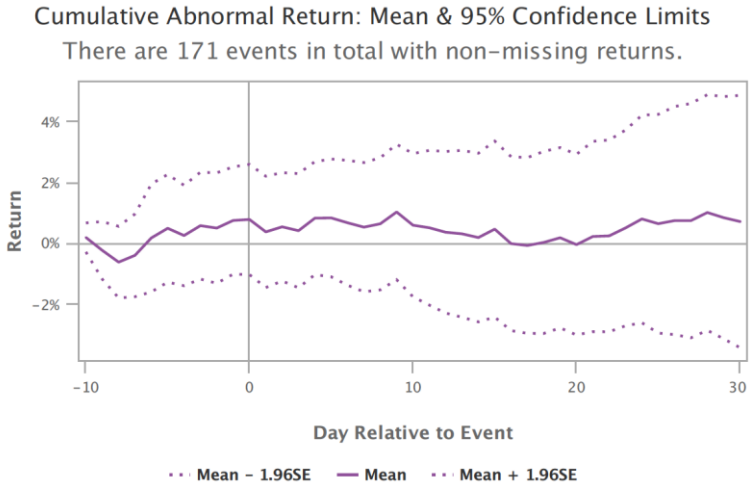

Figure 37: Event study results on junior & subordinated loans, 1996-2013

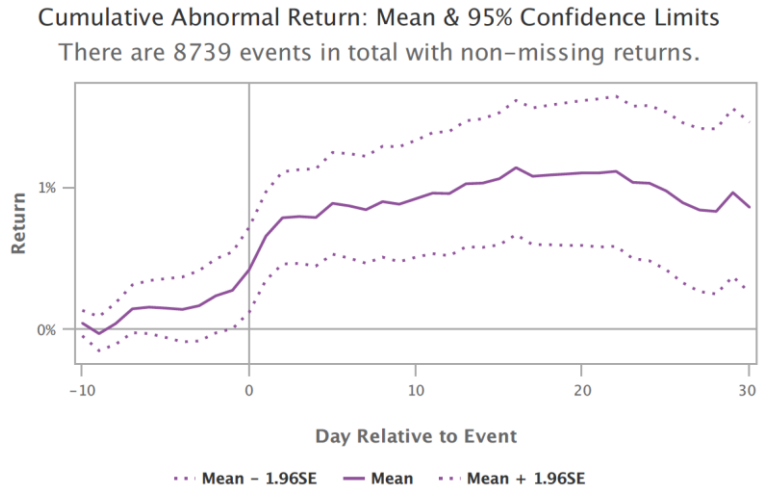

Figure 38: Event study results on senior & secured loans, 1996-2013

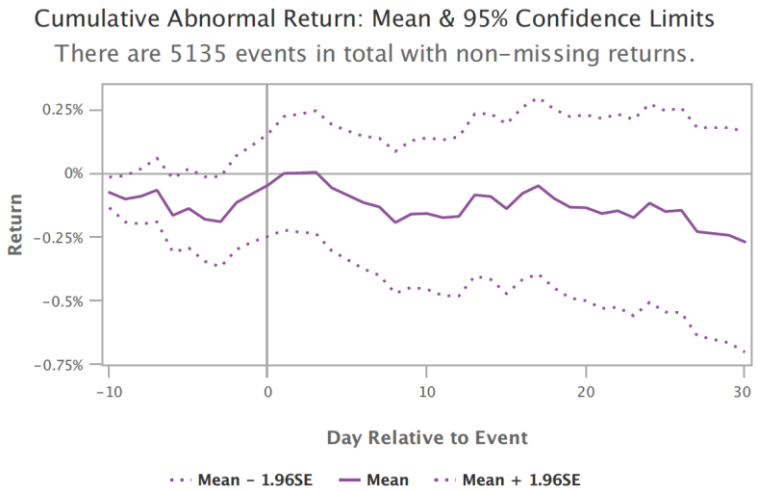

Figure 39: Event study results on senior &unsecured loans, 1996-2013

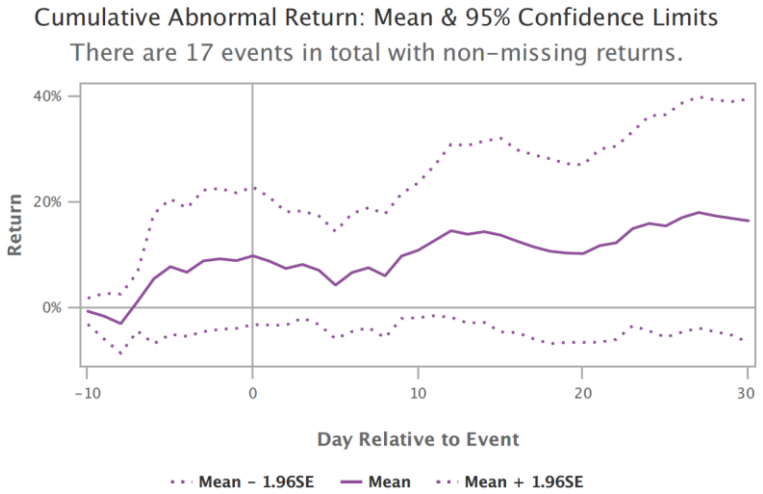

Figure 40: Event study results on junior subordinated & secured loans, 1996-2013

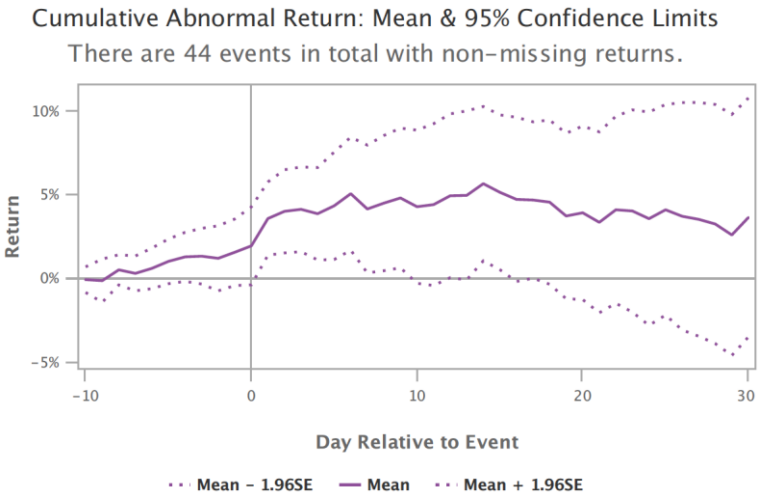

Figure 41: Event study results on subordinated & unsecured loans, 1996-2013

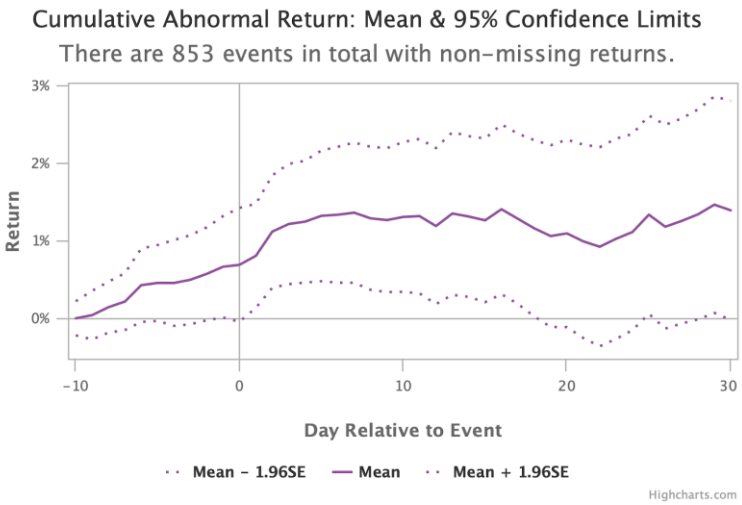

Figure 42: Event study results on loans – Revolving Credit Lines Facility & Retiring Debt, 1996-2019

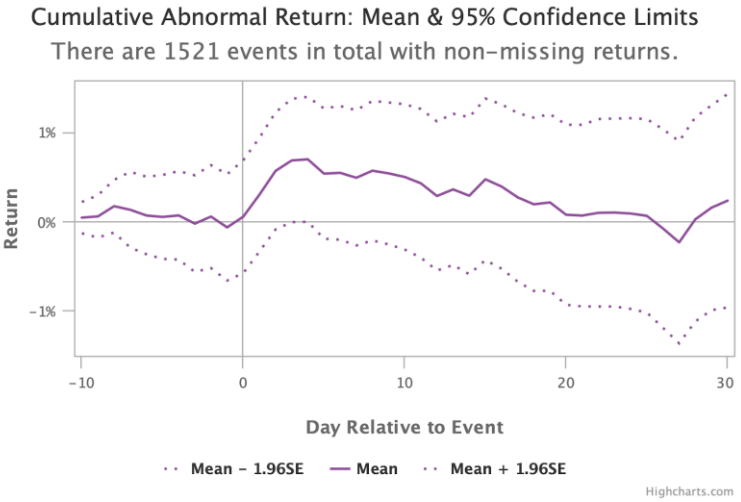

Figure 43: Event study results on loans – Revolving Credit Lines Facility & Working Capital, 1996-2019

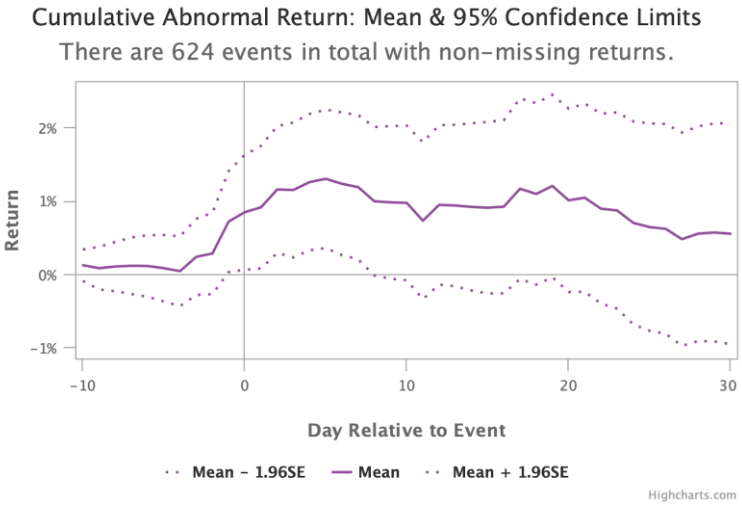

Figure 44: Event study results on loans – Revolving Credit Lines Facility & Acquisition, 1996-2019

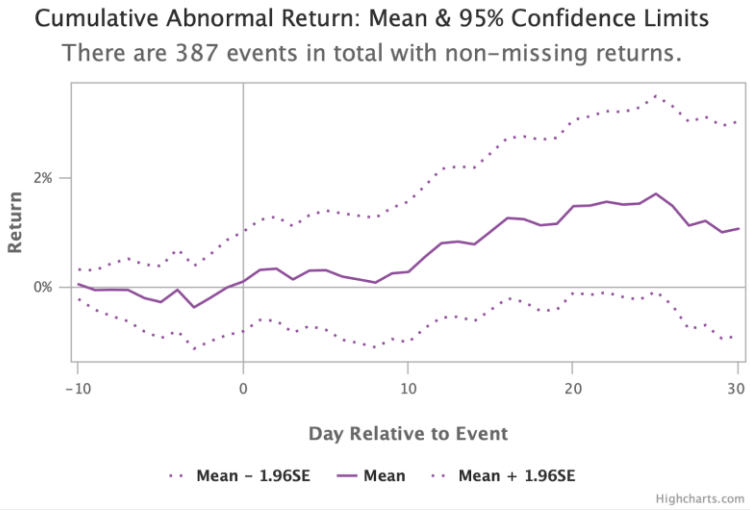

Figure 45: Event study results on loans – Revolving Credit Lines Facility & Future Acquisition, 1996-2019

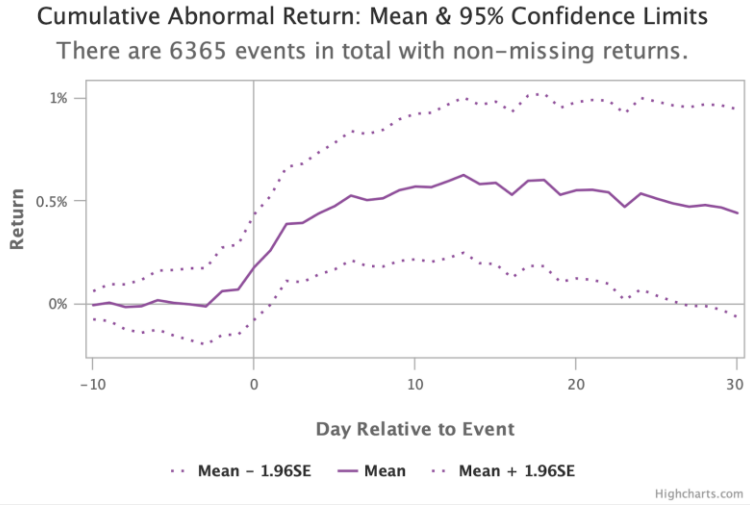

Figure 46: Event study results on loans – Revolving Credit Lines Facility & General Corporate Purpose, 1996-2019

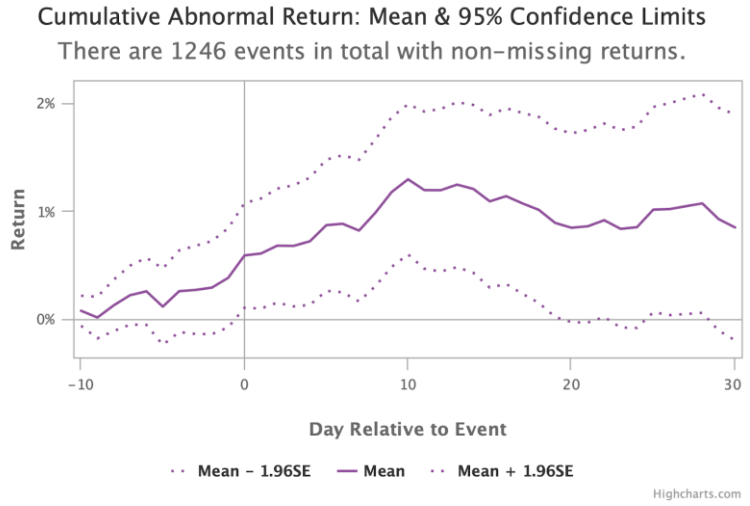

Figure 47: Event study results on loans – Revolving Credit Lines Facility & Refinancing, 1996-2019

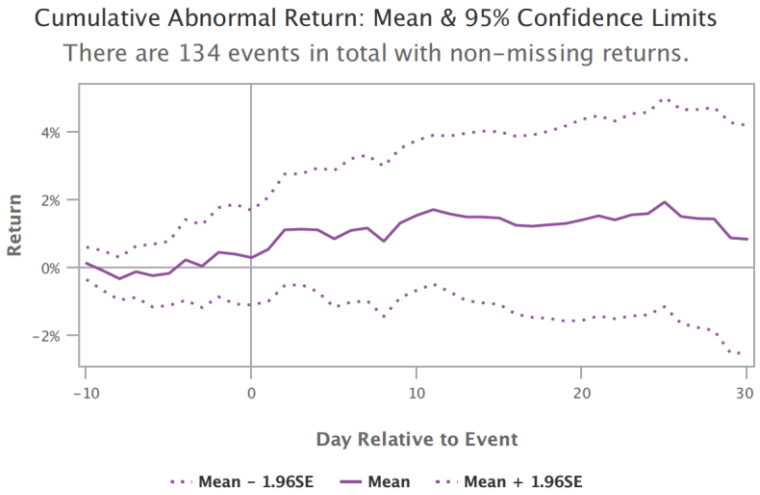

Figure 48: Event study results on loans – Revolving Credit Lines Facility & Acquisition Finance, 1996-2019

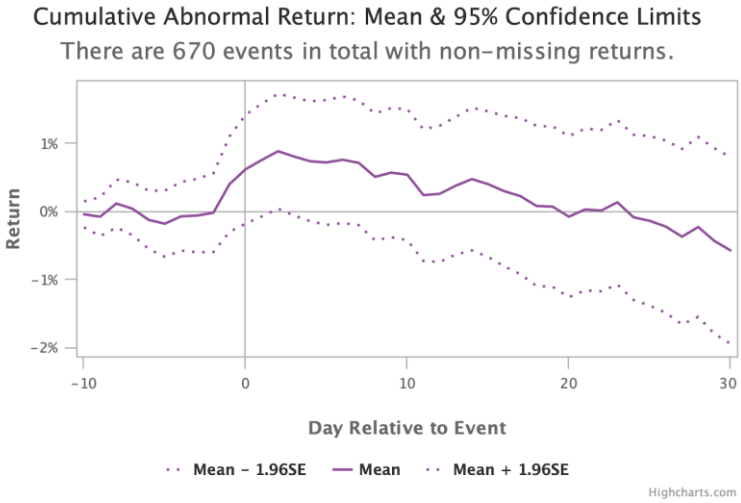

Figure 49: Event study results on loans – Revolving Credit Lines Facility & Future Acquisitions, 1996-2019

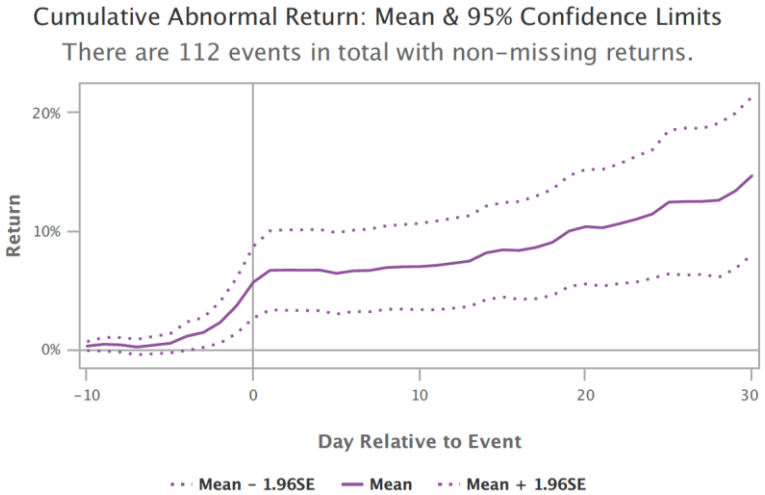

Figure 50: Event study results on loans – Term Loans & Leveraged -2019

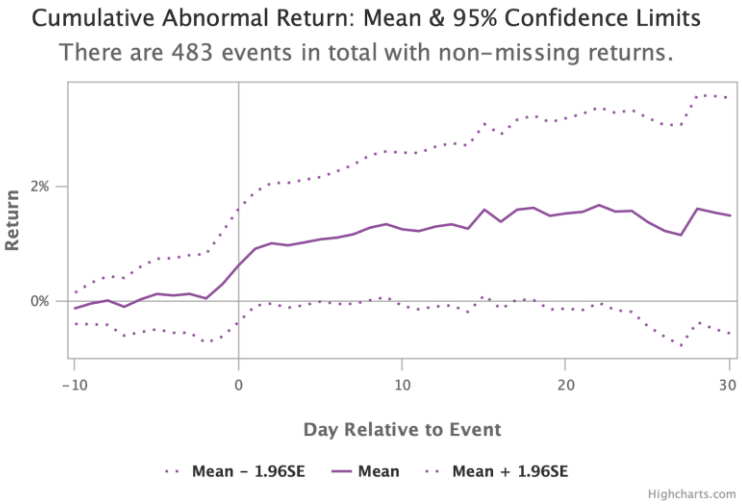

Figure 51: Event study results on loans – Term Loans & Leveraged -2019

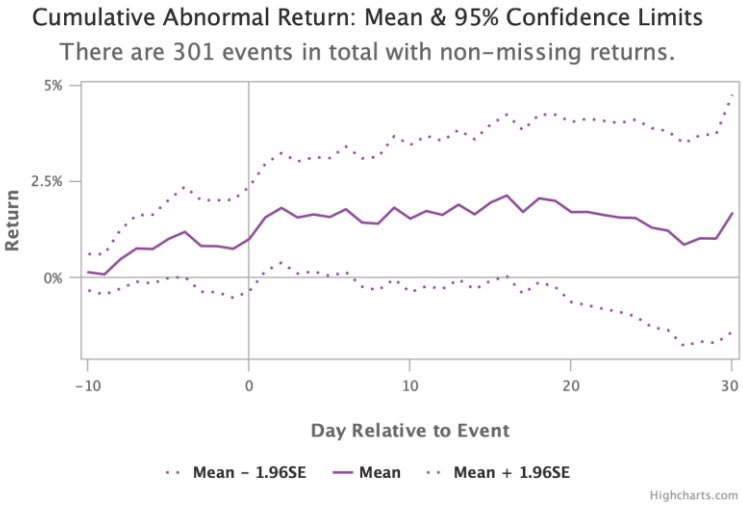

Figure 52: Event study results on loans – Term Loans & Working Capital, 1996-2019

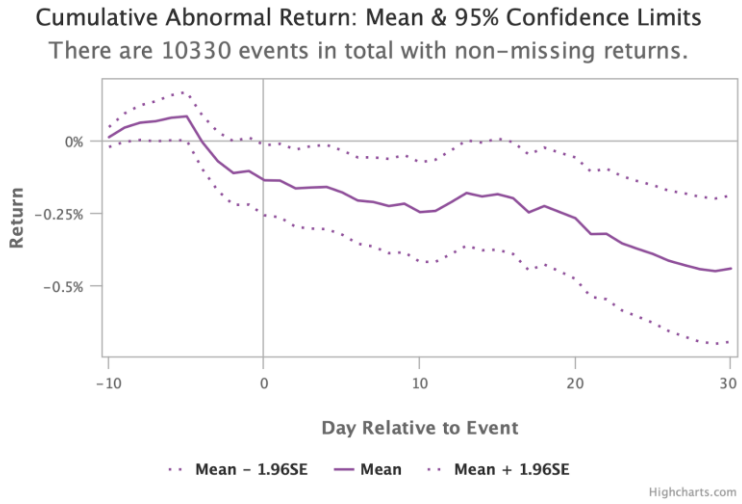

Figure 53: Event study results on all corporate bonds, 1996-2019

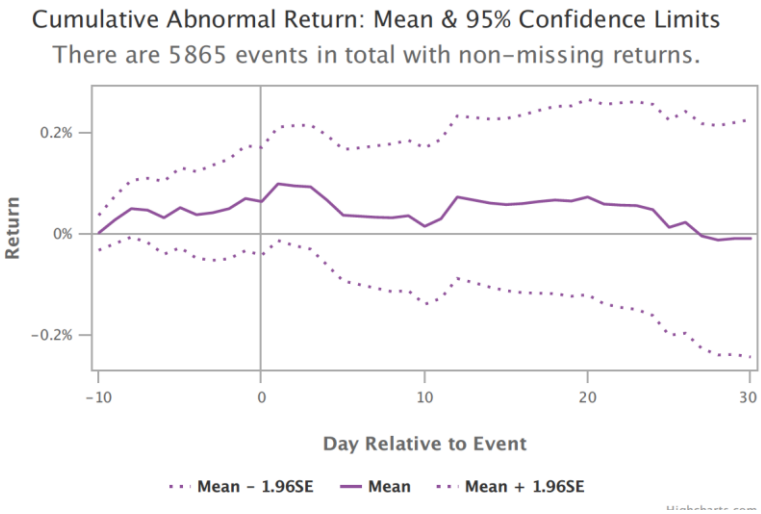

Figure 54: Event study results on investment graded bonds, 1996-2019

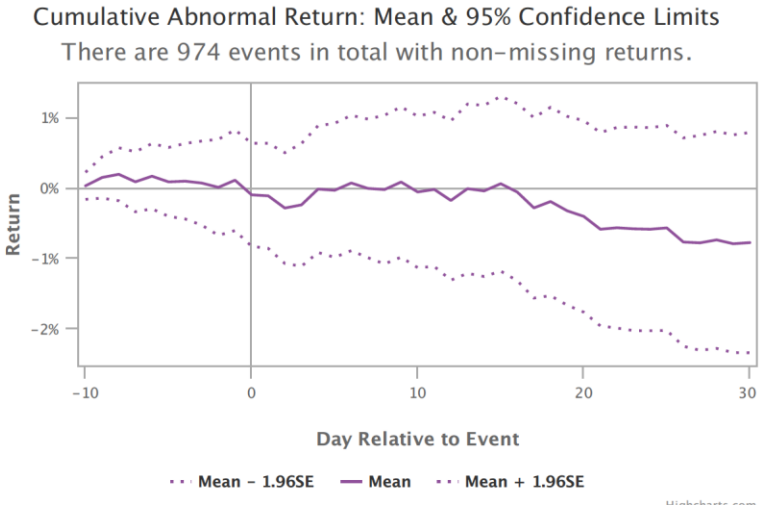

Figure 55: Event study results on high yield bonds, 1996-2019

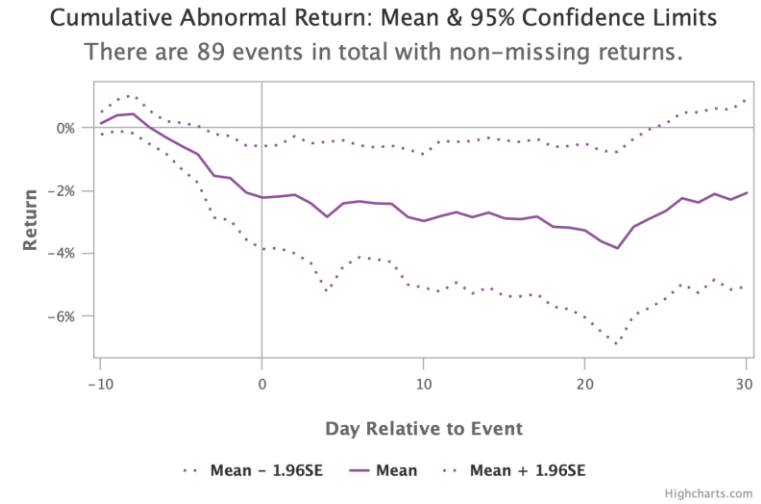

Figure 56: Event study results on junior bonds, 1996-2013

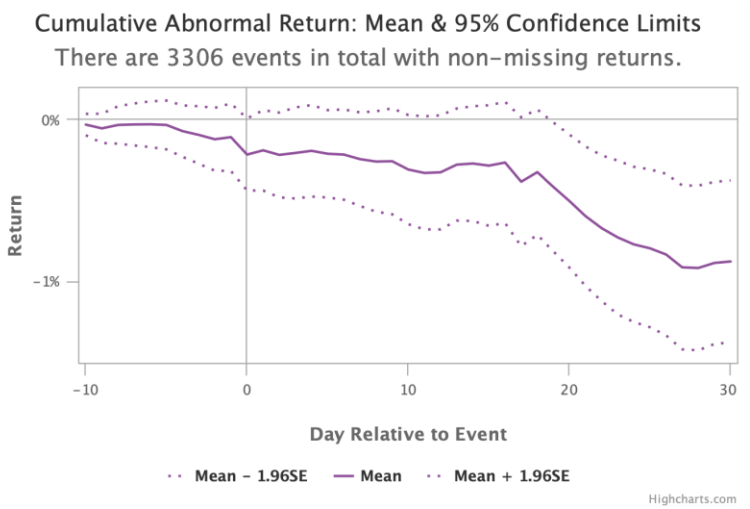

Figure 57: Event study results on senior bonds, 1996-2013

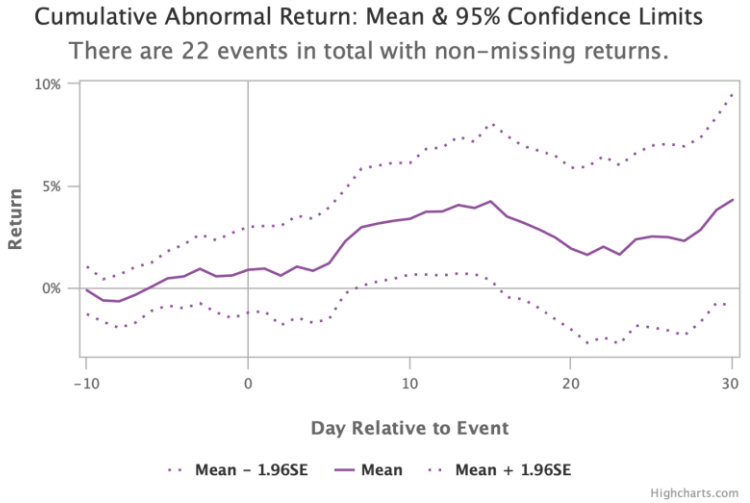

Figure 58: Event study results on subordinated bonds, 1996-2013

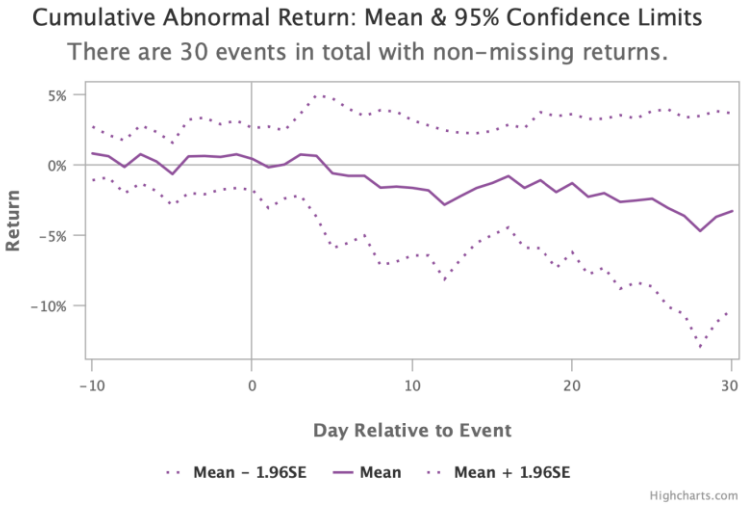

Figure 59: Event study results on secured bonds, 1996-2013

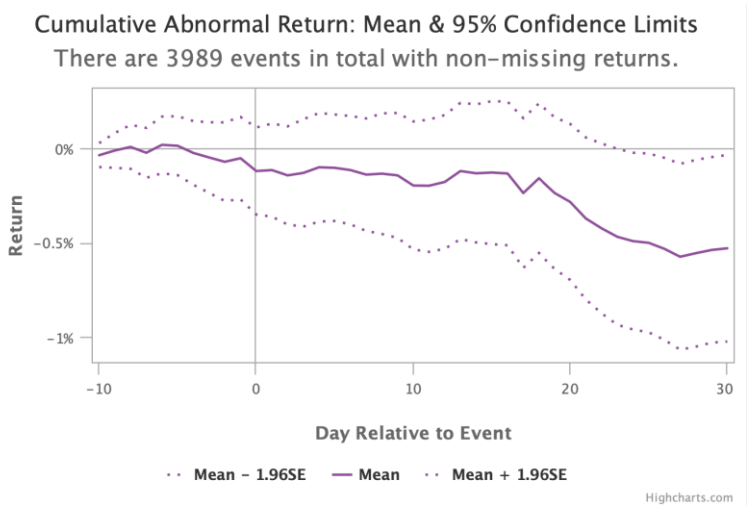

Figure 60: Event study results on unsecured bonds, 1996-2019

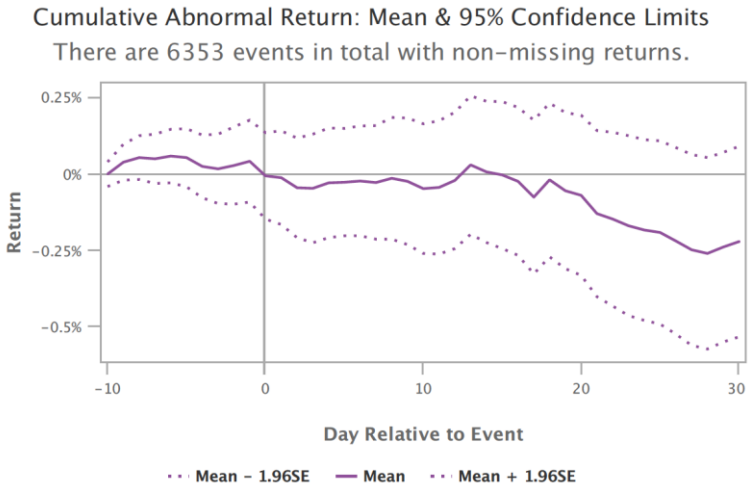

Figure 61: Event study results on bonds used for general purposes, 1996-2019

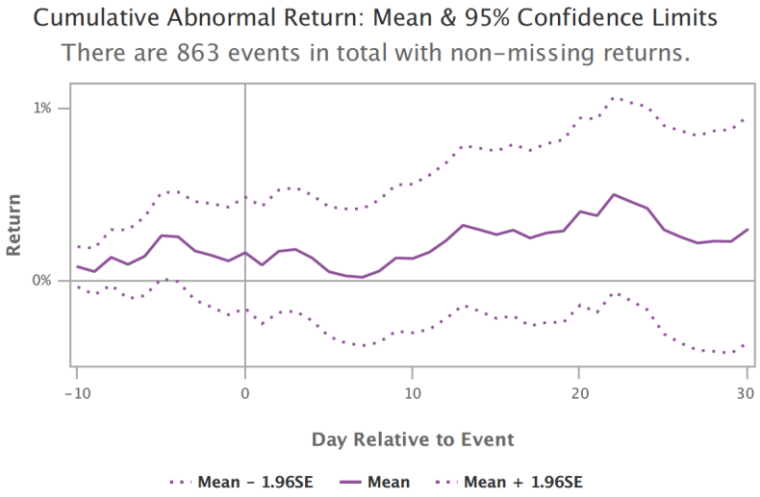

Figure 62: Event study results on bonds used for M&As, 1996-2019

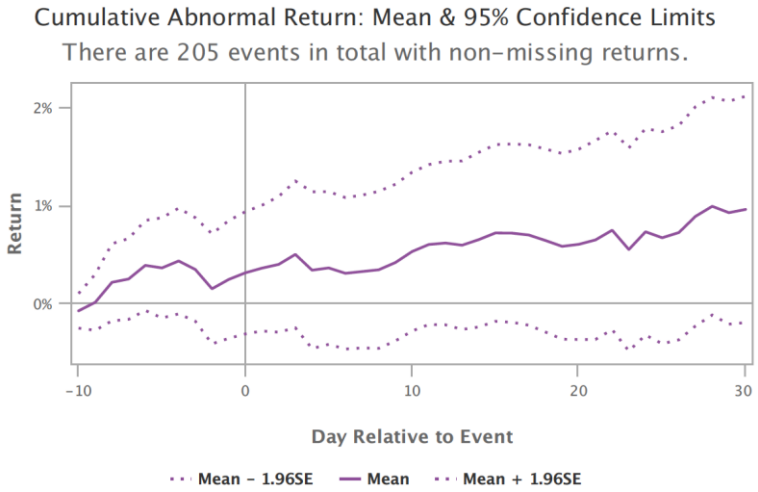

Figure 63: Event study results on bonds used to redeem existing bonds or securities, 1996-2019

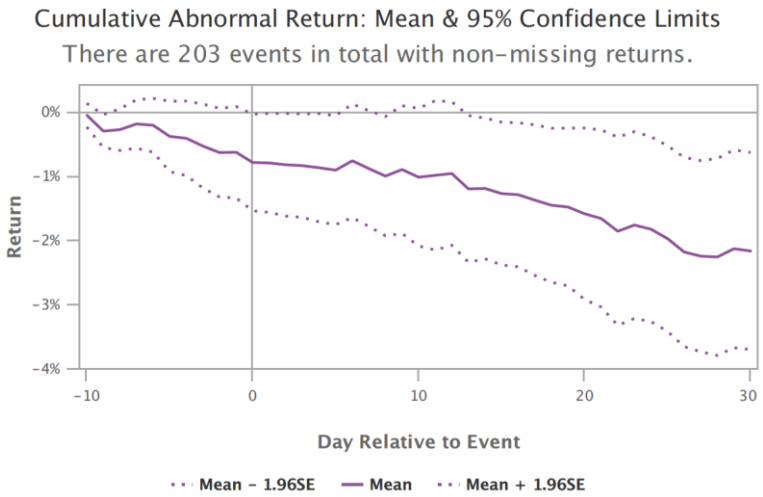

Figure 64: Event study results on bonds used for refinancing, 1996-2019

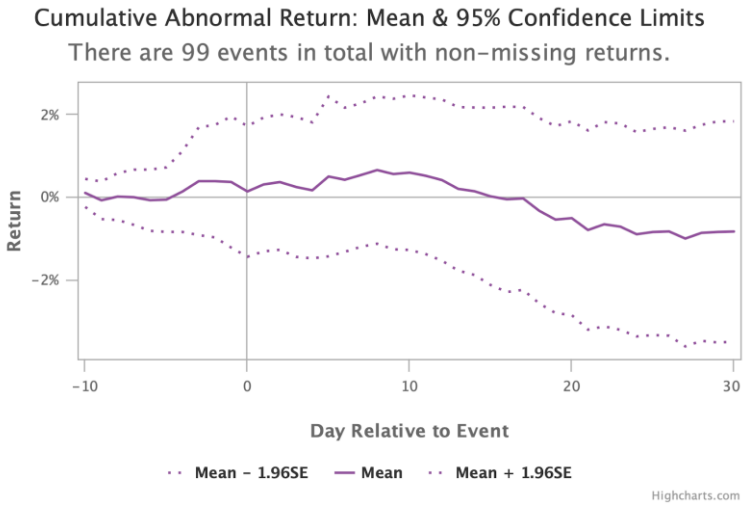

Figure 65: Event study results on bonds used to repay bank debt or bridge financing, 1996-2019

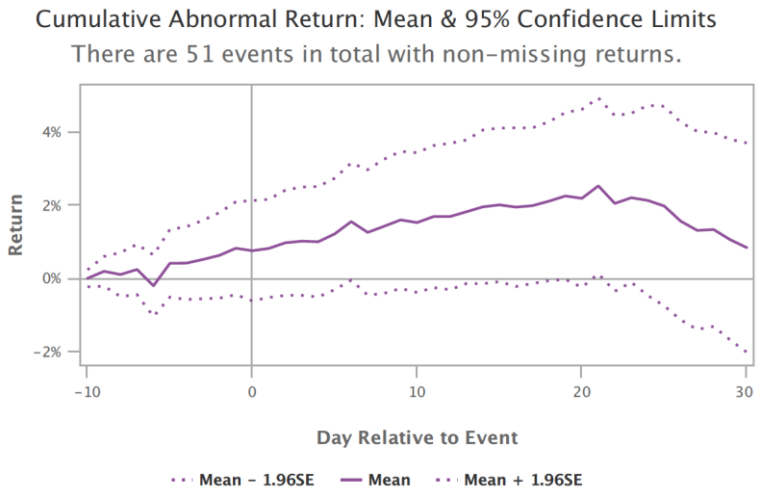

Figure 66: Event study results on bonds used for stock repurchase, 1996-2019

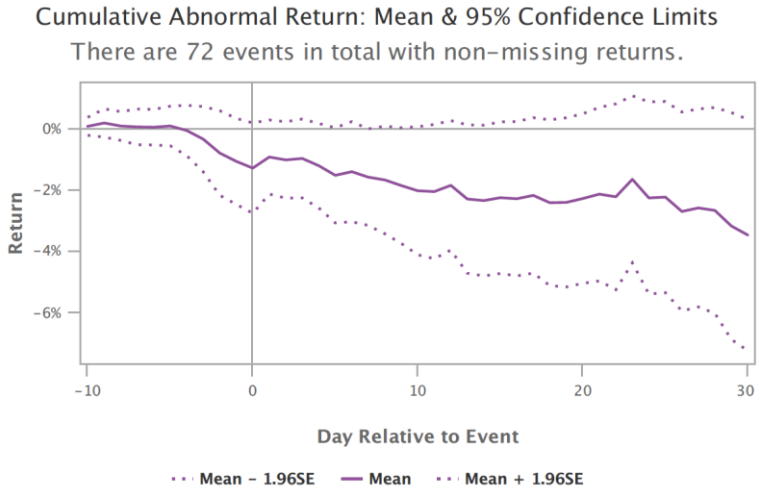

Figure 67: Event study results on bonds used as working capital, 1996-2019

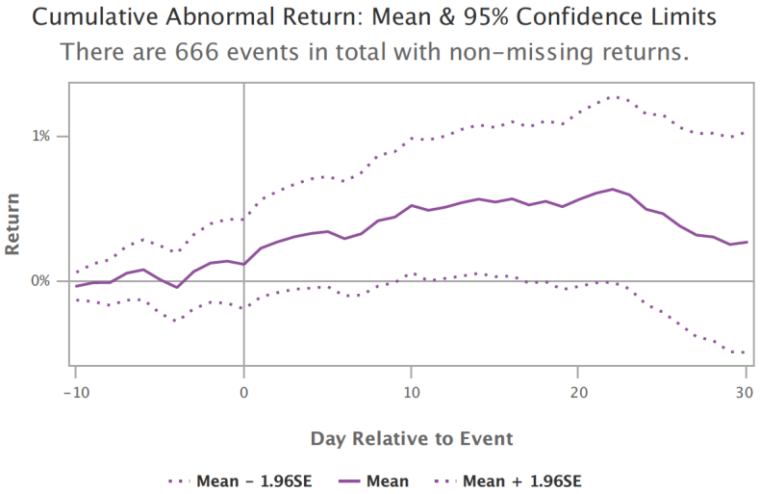

Figure 68: Event study results on bonds with fixed margin over index coupons, 1996-2019

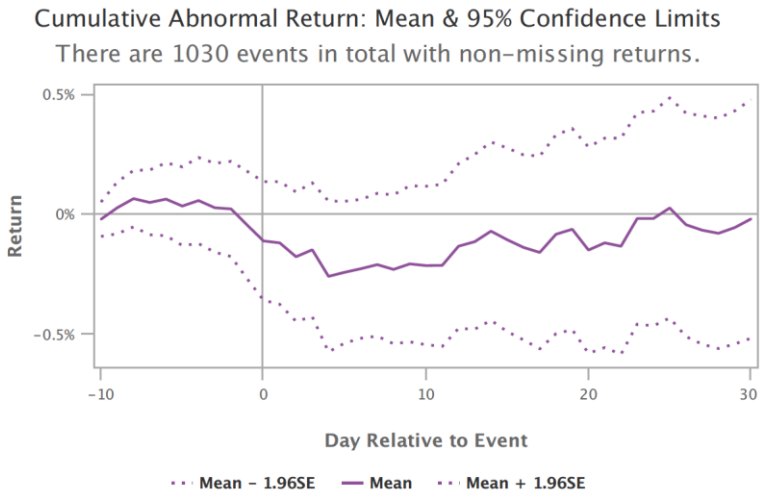

Figure 69: Event study results on bonds with fixed then floating coupons, 1996-2019

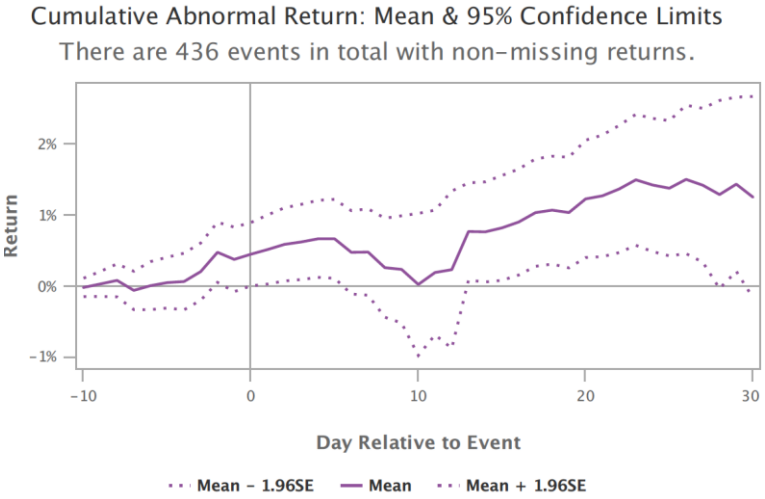

Figure 70: Event study results on bonds with other/complex floating rate coupons, 1996-2019

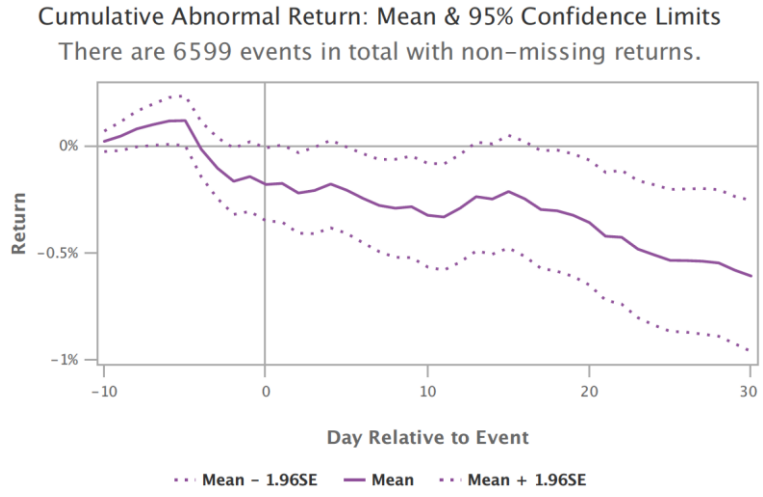

Figure 71: Event study results on bonds with plain vanilla fixed coupons, 1996-2019

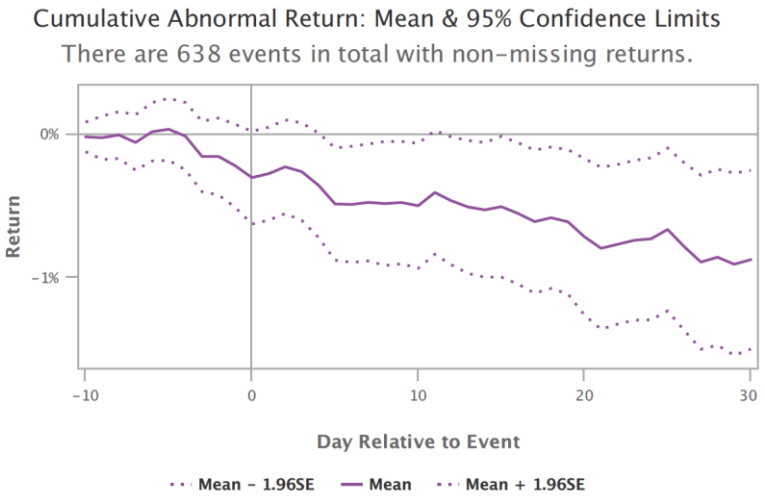

Figure 72: Event study results on bonds with range coupons, 1996-2019

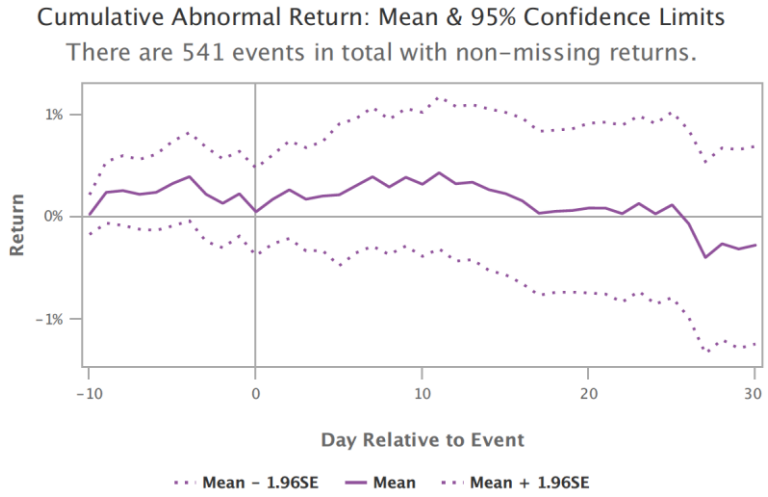

Figure 73: Event study results on bonds with step up/step down coupons, 1996-2019

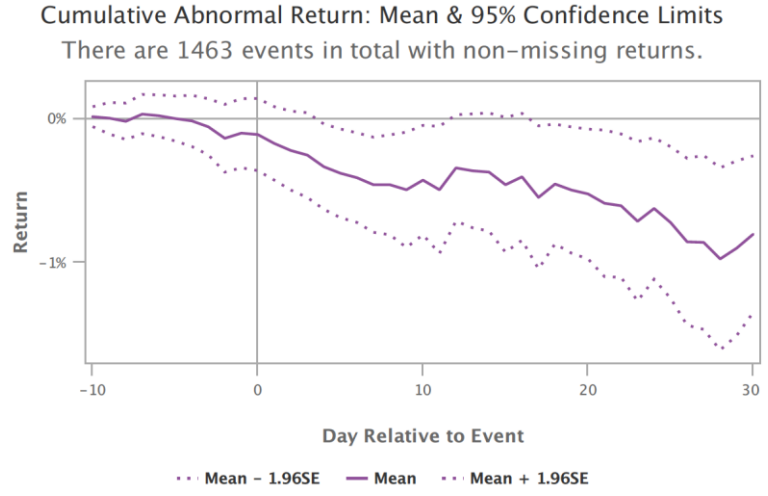

Figure 74: Event study results on bonds with zero coupons, 1996-2019

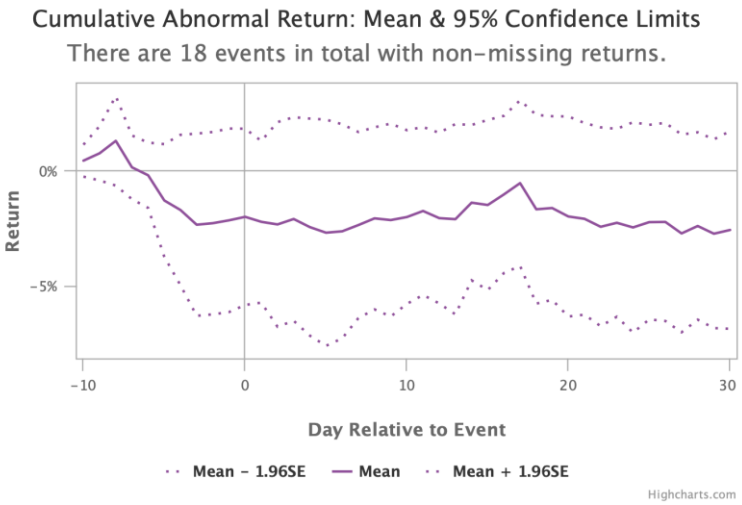

Figure 75: Event study results on junior (+ subordinated) unsecured bonds, 1996-2013

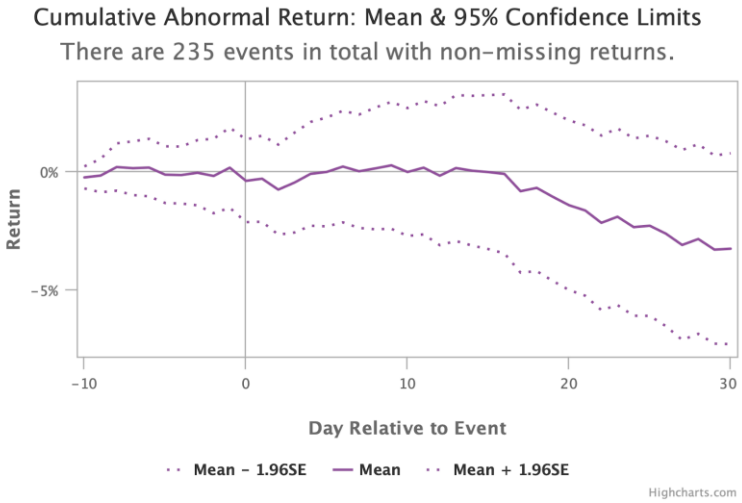

Figure 76: Event study results on senior (+ subordinated) unsecured bonds, 1996-2013

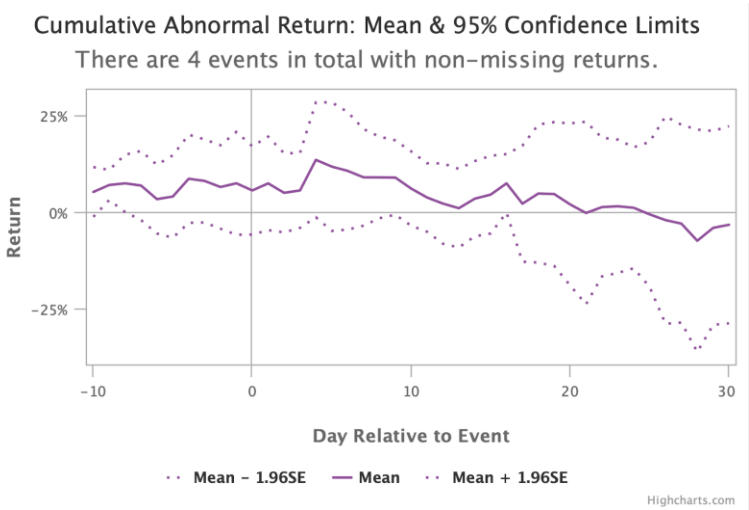

Figure 77: Event study results on senior secured bonds, 1996-2013

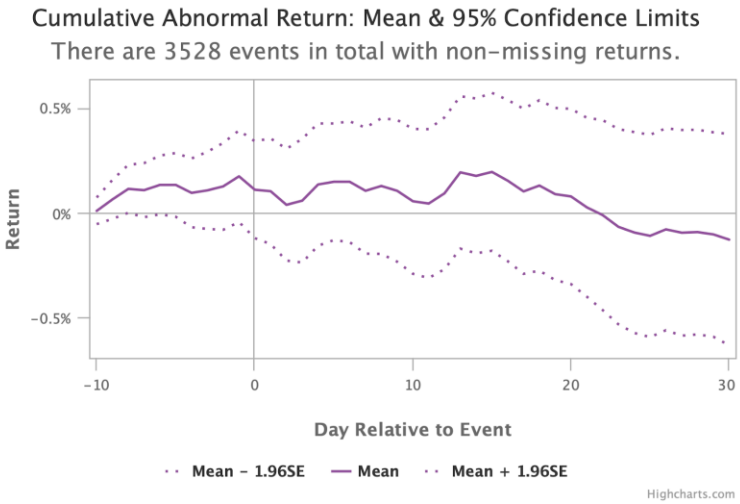

Figure 78: Event study results on bonds with plain vanilla fixed coupons used for general purposes, 1996-2019

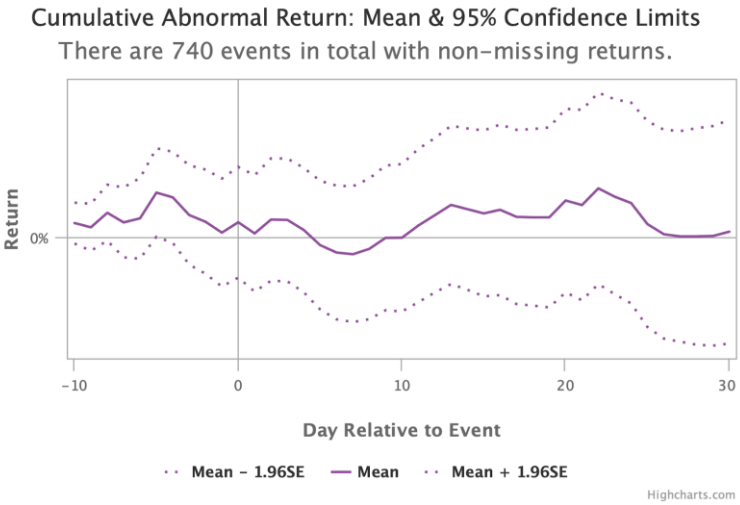

Figure 79: Event study results on bonds with plain vanilla fixed coupons used for general purposes, 1996-2019

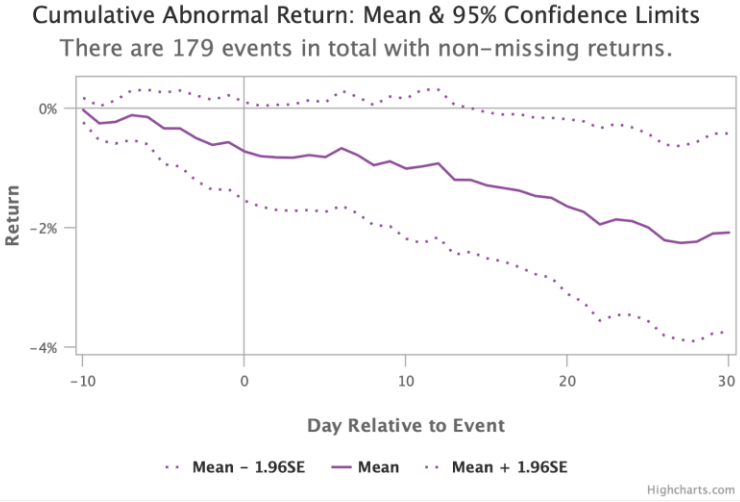

Figure 80: Event study results on bonds with plain vanilla fixed coupons used for general purposes, 1996-2019

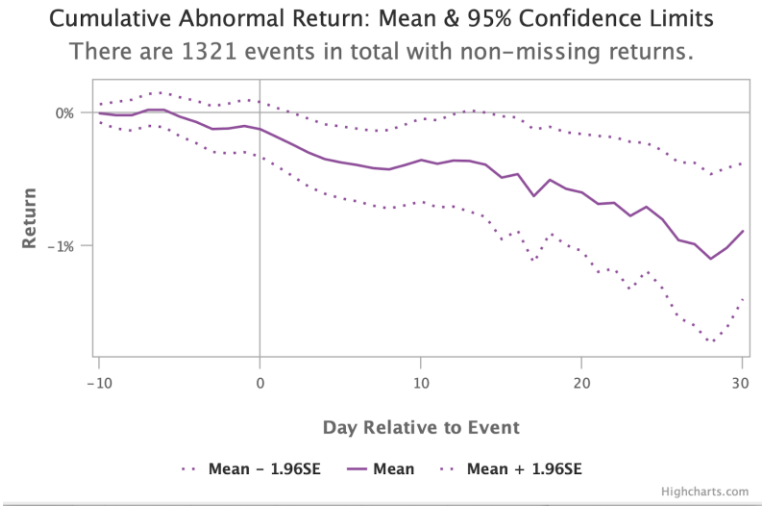

Figure 81: Event study results on bonds with zero coupons used for general purposes, 1996-2019

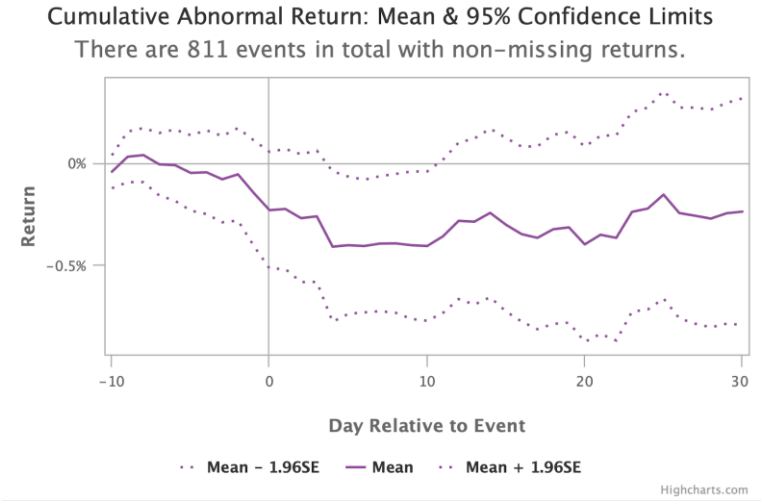

Figure 82: Event study results on bonds with fixed then floating coupons used for general purposes, 1996-2019

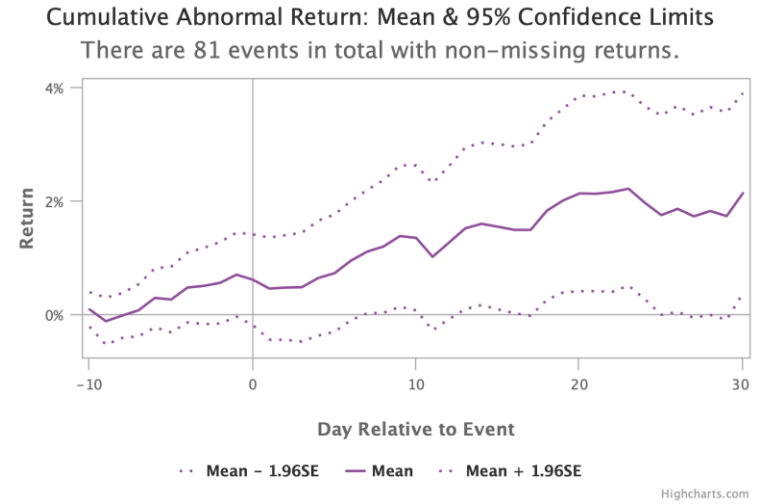

Figure 83: Event study results on bonds with fixed then floating coupons used for acquisitions, 1996-2019

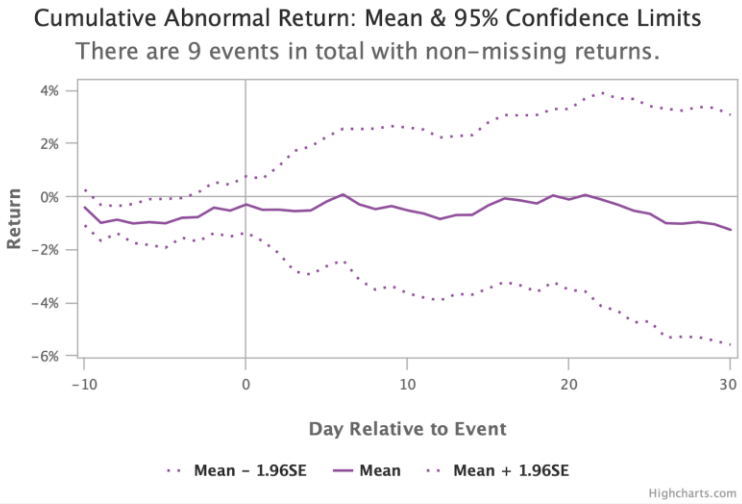

Figure 84: Event study results on bonds with fixed then floating coupons used for refinancing, 1996-2019