An Empirical Study on Market Response to Corporate Debt Announcements♣

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Abstract

James (1987) finds a positive relationship between stock price change and bank loan announcements and a non-positive relationship between stock price change and public traded debt announcements. Other studies also confirm that the stock market prefers bank loan announcement to public debt announcement and find some driving factors for the difference. In this paper, we empirically test the relationship between stock price change and debt announcement using the most recent ten-year data based on SEC filings, Dow Jones News Retrieval Service and Standard & Poor's corporate ratings. Using market model to get the abnormal returns for event firms and building correlations between the abnormal returns and potential driving factors, we find that market responds differently from 20 years ago.

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1. Introduction

The Modigliani-Miller theorem arguably forms the basis for modern thinking on capital structure. The basic theorem states that in an efficient market without taxes, bankruptcy costs, agency costs and information asymmetry, the value of a firm is unaffected by how that firm is financed. Later in 1963, Modigliani-Miller suggest that debt financing brings tax benefit to the firm due to the interest tax shield provided by interest deductible tax payment, which can increase the value of a firm. Based on Modigliani-Miller's findings, many other researchers studied on the impact it might bring to the stock prices caused by debt announcements. According to their conclusions, there is significant difference between bank loan announcement and public debt announcement. It is showed that market always response positively to bank loan announcement which results in a positive abnormal stock return after the announcement, while non-positively abnormal stock return for public debt announcements.

The previous conclusions are derived from the data in 1970s and 1980s. During the past 20 years, the global economic environment and financial capital market developed a lot. Emerging market brings a lot of changes and opportunities to the public. In addition, the financial crisis during 2007 and 2008 had a great negative impact on global economics and financial market. For these reasons, it is reasonably to believe that the public investors would change their attitude for debt financing announcements during the most recent ten years. In our analysis, we intend to test if the results from 1970s and 1980s still hold under current circumstances and find the potential driving factors for the different responses from the market. Our findings can give some implications for debt financing firms and stock investors. For debt financing firms, knowing the possible market attitude and react to their debt announcements can make them more careful when choosing the type of debt financing. For stock investors, knowing the preference of the debt type for financing firms provides them some hint about the

information of the firm. How firms choose to finance can reveal some inside information about the expectation of the management.

2. Literature Review & Hypotheses

Modigliani-Miller (1958) demonstrate that given a efficient market the value of firm is invariant to capital structure in absence of tax, bankruptcy costs, agency costs and asymmetric information. However, this invariant relationship could be challenged when tax, bankruptcy costs, agency costs and imperfect market are taken into consideration. Modigliani-Miller (1963) later state that debt financing brings tax advantage to the firm. The value of firm increases due to interest deductible tax payment. They report a positive relationship between the value of firm and the leverage level.

While Scott (1976) argues that bankruptcy costs including lawyer costs, consulting costs and management time costs have a significant impact on the value of firm. As the possibilities of these costs increase, the value of firm decreases. He reaches a negative relationship between the value of firm and the leverage level. Though debates remained, it is clear that capital structure does affect the value of firm. This effect on the value of firm can be reflected by changes on firm's security prices.

Masulis's (1980) analysis testifies that capital structure change has impact on major security prices. He studies pure capital structure changes between mid-1962 and mid-1976. The pure capital structure changes such as intrafirm exchange offers and recapitalizations involve no cash flow within the firm but cause significant change in firm's capital structure. He observes the initial exchange offer to increase or decrease leverage level has a dramatic impact to common stock price. Analyzed exchange offers, Masulis (1983) further demonstrate that leverage level change has a positive impact on both stock prices and firm value, and a negative impact on nonconvertible senior security prices. He studies exchange offers maintaining assets structure relatively unchanged between 1963 and 1978. This analysis also reveals that leverage level change indicates information disclosures and revisions in firm earning expectation.

Shah (1994) confirms such relationship between leverage level change and stock price change. He examines the stock price change surrounding the exchange offers between 1970 and 1988. He plots average cumulative market adjusted returns and concludes that redemption of equity or securities convertible into equity results in stock-price increases, whereas issue of equity or securities convertible into equity results in stock-price decreases. He contributes this impact to "information effect". Leverage-increasing offers can lower outside investors' assessment of the risk of firm's common stock but maintain their expectation of firm's future cash flow. While leverage-decreasing offers lower outside investors' expectation of firm's future cash flow but maintain their assessment of the risk of firm's common stock. This asymmetry persists even after controlling for factors that may influence the findings, such as corporate control events, corporate default, calendar-period clustering, and the classes of securities issued and retired. The patterns of leverage changes, capital outlays, and dividends surrounding the offers also reveal other unexpected asymmetries, which support the contention that the two types of offers convey different information.

To maximize the value of firm, managers need to choose among financing sources and thus build optimal capital structure. Myers and Majluf (1984) bring a "pecking order" theory considering financing resource choice. When a firm needs to finance new project, it will first turn to internal resource, then low-risk debt, and finally issuing equity. Even risky debt is preferred to equity. The equity tends to be undervalued when new investors are less well informed about the true value of the firm than the current inside investors. Issuing equity to finance new project would enhance such underpricing. Under this circumstance, new investors gain more than the NPV of the new project, resulting in a net loss of the existing shareholders. In this case the project will be rejected even if its NPV is positive. To avoid such underinvestment, managers are inclined to financing new project with capital causing less undervaluation of the firm. Internal resource, for example, involves no undervaluation. Low-risk debt brings less undervaluation

than equity does. This is the "pecking order" in financing resource.

Besides, Ross (1977) builds a model to demonstrate that debt sends a positive signal to outside investors. In this model, firm return distributions are in first order stochastic dominance. Managers know the true distribution of firm returns, but outside investors do not. Managers get benefits when firm is overvalued by market but are penalized when the firm goes bankruptcy. Low return firm has higher possibilities of bankruptcy and thus has higher marginal expected bankruptcy costs. This cost is invariant to debt level. Thus managers of low return firm do not imitate high return firm by increasing leverage level. Outside investors respond positively to debt issuing, because they take leverage increase as a signal of high quality.

Krasker (1986) confirms the "pecking order" and the quality signal. He allows firm to decide the number of new issuing equity and thus relates the number of new shares with the firm's stock price change. He shows that the larger the stock issues the worse the signal and the more decrease in the firm's stock price.

As mentioned above, increasing in leverage sends positive signal to market and increases both common stock price and value of firm. Debt is preferred to equity when financing new project. It also raises the question: how to choose between different debt resources? Fama (1985) gives a distinction between outside debt and inside debt. He defines inside debt as a contract that allows the debtholder to get access to inside information from the borrower, which is not available to the public. In other words, the debtholder can not only get information about the organization's decision process, but may even have the right to participate in the decision process, which means the debtholder may have influence on decision-making and know much more than public. In contrast, outside debt is publicly traded debt, thus the debtholder only gets publicly available information provided by the borrower or information purchased by the organization, such as independent audits and bond ratings. With the definition, we can treat bank loans and other types of debt commonly classified as private placements as inside debt,

while publicly traded bonds, commercial paper, bankers acceptances and bank CD's as outside debt. Firms choose between public loans and private loans based on several aspects.

Diamond (1991) shows that monitoring factor plays an important role in choosing between bank loans and directly placed debt because reputation effects are crucial to firm. Borrowers want to borrow repeatedly and thus they take into account the future information generated by their actions. A borrower gains credit record when it is financed and monitored by banks. This record functions even when the borrower borrows later on without monitoring. While monitoring in directly placed debt such as nonconvertible notes is costly and inefficient, default risk increases and credit record is hardly gained. He demonstrates that borrowers choose to build its reputation by receiving monitoring and then switch to issue public loans. As a consequence, new borrowers are inclined to rely on bank loans. Also, the middle-rated firms are most incentive to borrow from banks. Because high-rated firms have reputation high enough to eliminate moral hazard and low-rated firms have reputation low enough to fail to use monitoring effect.

However, Rajan (1992) discovers that small and medium growth firms, which are supposed to benefit from bank borrowing, actually diversify away from bank financing. He states that the monitoring provided by banks carries not only benefits but also costs. Since banks are monolithic creditors, they have big bargain power against firm and are able to control managers' decisions. In the process of monitoring, banks could decrease managers' incentives. In the short-term bank loan, bank requires repayment after the state is realized. This repayment demand forces the firm to share the surplus of the ongoing project, decreasing managers' incentives as well as project returns. In the long-term bank loan, bank requires repayment when the project is completed. In this case, bank urges managers to finish project earlier and is reluctant to finance project continuously. Monitoring results lower returns in both short-term and long-term bank loan as stated above. Such offset should be considered when choose public loan or private loan.

Chemmanur and Fulghieri (1994) examine the choice between bank loan and public traded debt considering financial distress and relating renegotiations. They conclude that firms of higher bankruptcy possibilities choose bank loans over public traded loans, though the cost of this capital is higher. Firms of lower bankruptcy possibilities choose public traded loans to avoid high costs. This derives from banks' flexibility when confronted with firms in financial distress. Similar to borrowers, lenders especially those long-term players such as banks in debt market need to build their reputation of flexibility. Lenders need to evaluate whether to go liquidation or renegotiation if a firm is in financial distress. Banks not only have more resources but also are more incentive to renegotiate debt than public traded debtholders. Banks build this reputation as a commitment device to promise certain resources to future potential lenders. Thus, banks make better liquidation versus renegotiation decisions when lenders face financial distress.

Because of the different features of public debt and private debt mentioned above, stock market reacts differently to public debt and private debt announcements. James (1987) shows that commercial banks provide certain lending services, which cannot be obtained from other lenders. He randomly selects 300 companies and records their public debt offerings, private placements of debt and bank borrowing agreements during 1974 to 1983. He examines the abnormal stock returns surrounding the publicly announced bank credit agreements, private placements, and publicly placed straight debt announcement. He confirmed that abnormal performance is positive and statistically significant for bank loan announcements and non-positive for publicly placed straight debt issues.

Chemmanur and Fulghieri (1994a) present a model to show that banks have different skills and abilities to identify true firm values. They regard banks with better abilities and skills in identifying true firm values as "more reputable". Thus, they conclude that revised loans from more reputable banks always give more favorable information and better signals compared to those from less reputable ones.

Furthermore, Lummer and McConnell (1989) make a distinction between new bank loans and loan renewals. The results show significant differences for different kind of loans. The excess stock return for new loan announcement is not significantly different from zero. For favorable loan revisions, the excess stock return is significantly positive. The results suggest that there is no evidence on positive response for new loan announcement while there is for favorable loan revisions. A new loan involves bigger information asymmetry than a renewal loan. This reveals that information asymmetry played an important role in stock price change effect.

Datta, Iskandar-Datta and Patel (2000) study stock price changes surrounding initial public debt announcement from 1971 to 1994. They use initial public debt not only because it changes debt ownership but also because it extends debt maturity dramatically. Moreover, results are more accurate at first issuance. They find that the negative stock price change responded to initial public debt announcement is much more significant than to seasoned debt offering. This negative impact is invariant to the default risk, the effect on leverage and the purpose of the bond offer. They contribute this negative relationship mainly to debt maturity and information asymmetry. Since the average maturity of public debt is 12 years, debt initial public offering significantly increases firm's debt maturity. Also, results show that firms with less information asymmetry or experiencing an increase in bank monitoring are less adversely affected by the offering.

Aintablian and Roberts (2000) study bank loan announcements of firms traded on the Toronto Stock Exchange during the period from 1988 to 1995. They test the market response to private loan announcements in Canada, where the banking system is different from US, to see whether the reaction in Canada is the same as the reaction in US. They conclude that bank loan announcements bring more positive abnormal returns than non-bank financial institutions loan announcements do. This effect is particularly significant when bank monitoring is

intense. Also, when banks have in-depth information about the borrower, such the cases as renewals of loans and new loans to existing customers, the abnormal returns caused by the loan announcements are higher.

Compared to public traded loans, bank loans obtain monitoring from intermediations during the process, reducing information asymmetry. Several studies have testified the importance of information asymmetry in stock price impact. Lummer and McConnell (1989) compare the difference abnormal return between new bank loans and renewal loans to prove the importance of information asymmetry. James (1987) states that banks have access to inside information, thus bank loan is considered as inside debt. Moreover, empirical studies mentioned above show that public traded loan announcements negatively affect stock price while bank loan announcements bring positive abnormal return. Thus, we draw our first and main hypothesis:

Hypothesis 1: Bank loan announcements have less adverse impact on stock prices than public traded loan announcements.

The different market responses to bank loan announcements and public traded loan announcements are derived from the different characteristics bank loan and public traded loan had. In this paper, we mainly discuss two characteristics: monitoring and maturity.

In previous studies, monitoring from banks decreases information asymmetry thus benefit firms that lend from banks. However, such monitoring benefits vary among firms. Slovin, Johnson and Glascock (1992) make a hypothesis that the stock market response differently to bank loan announcement from large firms and small firms. For large firms, banks have less advantage competing with the external financial intermediaries relative to stock markets because large firms have already acquired good reputations and are often well monitored. While moral hazard and adverse selection problems are more severe in small firms due to their shorter corporate histories, less reputation is gained from the public and less public information is available for investors. Under this circumstance, small firms

receive greater benefit from bank's monitoring. If monitoring in borrowing process does affect stock market, abnormal returns generated from bank loan announcements of small firms would be more positive than that of big firms. This leads to our second hypothesis:

Hypothesis 2a: Small firms stocks respond more positively to bank loan announcements than large firm stocks

Monitoring also involves another factor that we need to look at: information asymmetry. Studying the difference in abnormal returns surrounding initial loan announcements and seasoned loan announcements shows the information asymmetry matters. Another factor revealing the importance of information asymmetry is the time horizon of public existence. Firms with longer public existence have greater and more opportunities to accumulate debt-related reputation. Moreover, market knows better of long public existence firms than short public existence firms. Datta, Iskandar-Datta and Patel (2000) also test the relationship between time horizon of public existence and abnormal return brought by loan announcements. They find that older firms suffer less adversely from debt initial public offering announcements. In this case, we want to reach our next hypothesis:

Hypothesis 2b: Firms with longer public existence respond less adverse stock price change to debt announcement.

When researchers discuss monitoring, they always discuss the maturity of the loan at the same time. Easterbrook (1984) conclude that high quality firms reduce their agency cost of monitoring by issuing short maturity debt. In addition, Flannery (1986) argues that the choice of maturity is a signal about management's assessment of earning prospects from the firm itself. He states that, manager who believes their firm is undervalued by the capital market can give out signals of the true value of the firm by issuing short-term debt. On the other hand, overvalued firms find that it is more expensive to issue a short-term debt because of the transaction costs associated with new debt issues. Hence, the repeating

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refinancing costs can offset the cost savings from issuing short-term debt and might cost more than the savings.

Merton (1974) and Ho and Singer (1982) suggest that short-term loan may be less risky than long-term loan. In particular, Ho and Singer demonstrate that holding the market value of loan constant, the increase of maturity of the loan will make the value of the bond more elastic with respect to the value of the firm. Thus, increase the uncertainty of the future ability to pay off the loan.

Myers (1977) argues that a long maturity debt issued by the firm indicates that the firm is not confident enough to have future growth. Myer's underinvestment problem suggests that firms with future growth options are less willing to issue long maturity debts because long-term debt would force them to share the benefits from future growth with debtholders. He suggests that firms should match the maturities of their assets and liabilities, scheduling debt repayments to correspond to the decline in future value of assets currently in place.

Moreover, as documented by James (1987) bank loans always have shorter maturity than public debt. He also points out that bank loans are typically of shorter maturities than other types of borrowings and this allows banks to exercise greater monitoring power and control over the borrower. However, he reveals that there is no significant relationship between firms' abnormal returns responded to the debt announcement and the maturity of the debt. He uses weighted least squares to estimate the relationship and the result is not statistically significant. But this result does not disclaim that maturity has impact on stock price changes.

Hence, we argue that shorter maturity loans should be associated with more positive announcement effects than longer maturity loans.

Hypothesis 2c: *The stock market responds more positively to announcements from shorter maturity loans.*

3. Description of the sample and methodology

In order to find how the market responses to different loan announcements and explain the reasons behind that, this paper will use a two-step approach. Firstly, we use market model for event study to get the abnormal stock returns of the loan announcements. Secondly, we strive to find the correlation between potential abnormal stock return driving factors and analyze the reasons why they are correlated. In the following parts of this section, we will present how we select data and describe the models we used to get the abnormal returns and the correlations with potential driving factors.

3.1 Data selection

In our analysis, we mainly focus on two different types of data, the loan announcement information and stock returns from 2005 to 2014. We record both public debt and bank loan announcements information and for each of them, we collect the name of the borrower, the date of the announcement, the book value of the borrower's asset size, equity size and debt size in the end of the fiscal year prior to the announcement year, the maturity of the debt, the borrower's IPO date, the borrower's credit rating and also lender's credit rating. For the stock returns, we collect daily returns for estimation window and event window (day t). Estimation window includes daily returns from day $t-121$ to day $t-1$.

For public debt announcement, we obtain the relative information from the U.S. Securities and Exchange Commission's company filings. By reading through the descriptions of filing types carefully, we decide that there are two types of filings that are related to public debt announcement, S-1 and 8-A12B. Searching from 2005 to 2014, we got *20,344* filings in total. Among all these filings, we pick out public debt offerings offered by public traded firms. If there are more than one event happens at the same time or has a very short gap between events, it would be hard to decide which event drives the abnormal stock return and thus, the explanation of the correlation between the debt announcement and abnormal stock

return would be more complex. In order to get a better and clearer estimation of the impact from the debt announcement, we double-check the news to exclude the filings that involve with management change announcement, earnings announcement and dividend announcement especially. If there is any other announcements that can have potential influence on stock returns released less than 14 trading days ahead the debt announcement, we exclude it. By excluding all the filings that might cause the impact on stock return for more than one reasons, we got *173* public debt announcement events. However, some firms have gone private by the time we did our research. Thus, their stock's history prices are no longer available on Yahoo Finance and Google Finance. Meanwhile, some firms haven't gone public by the time they issued debt. After excluding these unavailable data, we finally got *109* useful public debt announcement events. Since the bank loan issuance is not required by SEC, there are no filings about bank loan issuance announcements on the SEC website. To obtain bank loan announcement information, we use the Factiva, one of the biggest business information and research tool owned by Dow Jones & Company. With Factiva, we search using key words "line of credit", "credit line", "credit facility", "credit agreement", "credit extension", "new loan", "loan agreement", "loan renewal", "loan revision", "loan extension", "finance company loan", "term loan", "commercial loan" and "bank loan". After entering key words, we also exclude the subjects of "Political/ General News", "Sports/ Recreation" and "Content Types". Debt financing for mergers and acquisitions are also ignored. We obtain *55* useful bank loan announcement stories out of *23,250* stories in total. Same as the public debt announcement, we also double-check for other important information announcements that might have impact on the stock returns and exclude those stories. Finally, we got *51* useful bank loan announcement events.

For stock returns, we use the close price change to calculate the stock returns, which can reflect the attitude of the market. We collect the daily stock price from Yahoo Finance and Google Finance. In order to get the abnormal return, we also

need to find the corresponding market return. Since most of our firms are listed in the US stock market, we mainly use S&P 500 return as the market return. For firms that are not listed in the US, we find the corresponding local market index returns, such as HSI for Hong Kong and FTSE 100 for London.

3.2 Data selection for potential driving factors

In previous studies, bank monitoring is considered to reduce the information asymmetric thus would benefit firms borrow from banks. In general, large firms have longer developing time than small firms, which gives more time for large firms themselves to establish a better self-monitoring system and gives them more time to be known by public. When differentiating the size of the firm, we chose book value of the asset instead of market cap. The book value of the asset is a relatively steady value of a firm, while the market cap is a relatively volatile value that is partially decided by the stock price. Our analysis aims to find the relationship between the size of a firm and the change of the stock, thus using a factor related to stock price would be less appropriate than the book value of assets. We look for the annual report from the prior fiscal year to the get the asset size.

Other than asset size, the time horizon of the public existence can be another driving factor, which can reflect the information asymmetric degree. The longer the firm traded in public, the more information about the firm exposed and the less information asymmetric exists. Also, traded in public market means the firm would get more monitored by the public and itself. Thus, the firm has longer public existence is expected to have a more positive abnormal stock return after the debt announcement. We trace the firm's IPO date from Yahoo Finance and calculate the number of days it is traded till the date of the debt announcement as the measure of public existence.

According to existing literatures, maturity is an important factor that can reflect the quality of the monitoring degree of a firm. The shorter the maturity of the debt, the more confident about the ability to repay the debt from the management and

also the more positive signal revealed. Furthermore, the undervalued firm would also choose to issue a short-term debt to transmit the undervalued information to the capital market. For all the reasons, it is reasonable to link the maturity of the debt to the abnormal stock return caused by the debt announcement. The information of the maturity is always included in the SEC filings and the debt announcement news.

Also, borrower's credit has a strong relationship with debt-related reputation and the degree of information asymmetry, both of which are correlated with stock price change. Thus, we collect the borrower's corporate credit rating from Standard & Poor and Fitch. Then we give each rating a quantitative value.

The leverage ratio is an indicator of the capital structure and we assume the different leverage ratio can give different signal to the market. When choosing leverage ratio, we decide that debt-to-equity is a better estimate than other leverage ratios since debt-to-equity ratio has a stronger power to show the proportion of debt financing in a capital structure compare to equity financing. Under our assumption, if the debt-to-equity ratio were below the optimal point before the debt announcement, the market would have a positive response to the announcement; thus, a positive abnormal stock return is generated. On the other hand, if the debt-to-equity ratio were above the optimal point before the announcement, the market would have a negative response causing a negative abnormal stock return. Furthermore, the debt-to-equity ratio that can have impact on the market's attitude would be the one from the fiscal year before the announcement. We believe it is the debt-to-equity from the prior fiscal year can be the signal to the market and reflect the potential financial distress risk by issuing more debt. For this reason, firms have lower debt-to-equity ratio before the announcement would get more positive market response than those have relatively higher debt-to-equity ratio. To obtain the debt-to-equity ratio, we collect data from the prior fiscal year's balance sheet of the annual report for each firm. The equity is very easy to get, we just use the "total equity" on the balance sheet.

When deciding the amount of the debt, we choose to use only short-term debt and long-term debt with interest because we think these are two kind debt on the balance sheet that as same as the debt announcement. So summing these two together can have a better reflection of the impact from the debt announcement.

3.3 Methodology

In order to get the relationship between stock return and debt announcement, the event study is the most appropriate method. There are three crucial assumptions in an event study: 1) model for normal price is well-specified. In the absence of the event, price of event firm would be close to "normal" price after the event; 2) no anticipation assumptions, which means that the relevant information on the event is not transmitted into stock price before official event and 3) market efficiency, suggests that the relevant information is instantaneously transmitted to stock price after official event. However, it is difficult to guarantee these assumptions are simultaneously correct.

There are two major reasons to do event study in practice: 1) to test the null hypothesis that the market efficiently incorporates information and 2) with the hypothesis of market efficiency, event study is used to examine the impact of some event on the wealth of the firm's stock holders. In this paper, we use event study to test whether the debt announcement has impact on the stock return and find the potential reasons for the impact.

The market model is used to get the estimates of abnormal stock returns around the announcement of the firm's financial events. The announcement day is defined as the date of the first publishing of the debt agreement or offering according to the *Wall Street Journal*. In our analysis, we obtain the estimates for "normal" stock return to get the abnormal returns. The one-day event window [-1,0] is defined as stock price from the day before the announcement ($t=-1$) and the day of the announcement ($t=0$) and get a one-day return. Under this definition, we recognize the following day ($t=1$) as the day of the announcement ($t=0$) if the announcements are published after trading hours. We use the true return between

these two days and the expected returns to get the abnormal return for the event firm. The market model is estimated on daily stock returns for the period beginning 120 trading days before the event date and ending at the day before the event date. To get the estimates for abnormal stock return, we first use the stock return and market return from the estimate window:

$$R_{i\tau} = \alpha_i + \beta_i R_{m\tau} + \varepsilon_{i\tau}$$

where $R_{i\tau}$ is the rate of return of stock i over period τ, and $R_{m\tau}$ is the rate of return of market over period τ.

Running OLS regressions for each firm, we get two event-firm estimators $\hat{\alpha}_\iota$ and $\hat{\beta}_\iota$, which we can use to calculate the abnormal stock return caused by the debtannouncement for each event firm. The abnormal stock returns are calculated as follow using the real stock return and market return from the event window:

$$\widehat{AR_{\iota t}} = R_{it} - (\hat{\alpha}_\iota + \hat{\beta}_\iota R_{mt})$$

where R_{it} is the rate of return of stock i over period t, R_{mt} is the rate of return of market over period t, and $\hat{\alpha}_\iota$ and $\hat{\beta}_\iota$, are ordinary least squares estimates of firm i's market model parameters.

Then the daily abnormal stock returns are averaged over all firms within public debt group and bank loan group:

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it}$$

where N is the number of firms in each group.

To test the significance of the average abnormal stock return, we use z-statistic. Z-test is often used to refer specifically to the one-sample location test comparing the mean of a set of measurements to a given constant. In our analysis, $\bar{X}$ is the average abnormal stock return AAR_t; μ_0 equals to zero, since our null hypothesis is that the average abnormal stock return is equal to zero; standard error of the sample $SE = \sqrt{\sigma^2/N}$, where N is the number of firms in each group and σ^2 is

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the sample variance of each group. The z-statistic can be computed:

$$Z = \frac{\bar{X} - \mu_0}{SE}$$

If the z-statistic is significant, then we can reject our null hypothesis, i.e. the debt announcements do have impact on the stock market and can generate abnormal stock return.

To test the significance of the difference between two sub-samples' average values, we use t-statistic.

3.4 Data Description

A sample of public traded debt offerings and bank loans during the 10-year period, 2005 to 2014, is obtained from U.S. Securities and Exchange Commission and Dow Jones News Retrieval Service. These offerings are screened to ensure that the announcement dates are not confounded by any other announcements such as dividend and profit, which affect the stock price. For each offering, we record available information about offering date, borrower's asset size in the end of that fiscal year, borrower's IPO date, loan maturity and borrower's credit rating. The final sample consists of *109* public traded debt offerings and *52* bank loans.

"Abnormal Return" is the announcement day (day t) excess return to estimate return, computing with market model using daily returns over the time period day t-121 to day t-1. Borrower's and lender's credit is recorded from Standard & Poor, and converted to quantitative value. Firms with non-investment rating (lower than BBB-) are assigned with 0, with rating above and included BBB- are assigned from 1 to 10. Table 3 shows the details of conversion.

Table1 displays the frequency distribution of debt announcement year, borrower's asset size, debt-to-equity ratio, public existence, maturity and borrower's credit rating. As shown, during 2005 to 2014, debt announcements are intensive in the first five years. We attribute this to the financial crisis during 2007 and 2008. Debt announcements after 2008 are only half of that during 2005 and 2008. After financial crisis debt financings are declining and there is no sign of recovery.

Table 2 shows the descriptive statistics of our total sample and two sub-samples. We cross-tabulate the borrowers' public existence time and their credit ratings in Table 4 and the borrowers' equity-to-debt ratio and their credit ratings in Table 5.

3.4.1 Asset Size

We notice that firms choosing debt financing are relatively large in size. 96.88% of the sample firms have book asset over 100 million dollars. 14.38% of the sample firms have book asset over 100 billion dollars. The average asset size of total sample is near 84 billion dollars. The average asset size of public traded debt sample and bank loan sample are 108,583 million dollars and 31,301 million dollars respectively. Compared two sub-samples, we find that the average asset size of public traded debt sample is significantly larger than that of bank loan sample. The Welch's t-statistics of these two sub-samples is 2.1071, indicating the difference of the average asset size of these two sub-samples is significant under 95% confidence level. This is consistent with the reputation theory. As Slovin, Johnson and Glascock (1992) stated, large firms already acquired good reputation and are well-monitored. On the other hand, small firms have more severe moral hazard and adverse selection problems. Thus, small firms need to build reputation through bank monitoring before turn to cheaper public debt. In this case, small firms prefer bank loans than public traded debt.

3.4.2 Debt-to-Equity Ratio

In our sample, we find 41.88% of the firms have debt-to-equity ratio larger than 1. Moreover, 5.63% of the firms have debt-to-equity ratio larger than 10 and 1.88% of the firms have negative equity. These firms are severely leveraged. The average debt-to-equity ratio of total sample is 2.76, a high leverage ratio. The average debt-to-equity ratio of public traded debt sample and bank loan sample are 3.73 and 0.69 respectively. The Welch's t-statistics of these two sub-samples is 3.3438, indicating the difference of the average debt-to-equity ratio of these two sub-samples is significant under 99% confidence level. This finding indicates that firms with higher leveraged level prefer public debt against bank loan. It

contradicts to our expectation. When firms face bankruptcy, banks are more willing to go renegotiation, while public investors would prefer liquidation. To avoid high costs of liquidation, firms with higher bankruptcy would choose bank loans over public debts. One possible reason for this contrary is that banks become more strictly with loan offerings. This makes firms with high leverage level hard to borrow from banks due to their higher possibilities to having financial distress or going bankruptcy. Another possible explanation is that bankruptcy debt-to-equity ratio varies across industries. High debt-to-equity ratio does not necessarily present high bankruptcy possibilities.

3.4.3 Public Existence

Public existence is calculated by the difference between firm's IPO date and debt announcement debt. This indicator reveals how long the firm has presented itself on the market when it finances debt. We discover that firms in this sample have relatively long public existence time. 78.13% of the sample firms have public existence more than 5 years. The average public existence of total sample is 14.16 years. The oldest firm when financing debt has public existence of 46 years. The average public existence of public traded debt sample and bank loan sample are 14.56 and 13.30 respectively. The former is slightly longer than latter. Diamond (1991) demonstrates that borrower needs to build reputation before it turns to cheaper public traded debt. Credit record and reputation can be gained from bank financing and monitoring. Firms with shorter public existence have less market exposure and more information asymmetry. Therefore, it is reasonable to infer that firms with shorter public existence and thus less debt-related reputation are inclined to bank loans. However, the t-statistics of these two sub-samples is 0.6930, stating the difference is insignificant.

Also, in Table 3 we cross tabulate the public existence and credit rating. It is obvious that the proportion of high rating spectrum is higher in firms with longer public existence years than those with shorter public existence years. 100% of firms with public existence between 41 years and 50 years are rated with

investment grade, while 37.14% of firms with public existence less than 5 years are rated with investment grade. Datta, Iskandar-Datta and Patel (2000) demonstrate that firms with longer public existence have less information asymmetry and greater opportunity to accumulate debt-related reputation. It is confirmed with our sample that firms with longer public existence have better debt-related reputation since their credit ratings are higher.

3.4.4 Maturity

On the other hand, the maturity of debt is short in overall. More than half of the sample firms (with available information) finance debt with maturity less than 5 years. The average maturity of total sample is 12.51 years. The average maturity of public traded debt sample and bank loan sample are 15.71 years and 4.36 years respectively. The average maturity of public traded debt sample is much longer than that of bank loan sample. The t-statistics of these two sub-samples is 7.2935, stating the difference is significant under 99% confidence level. It confirms our assumption that bank loans have shorter maturity than public traded debt.

In addition, we cross-tabulate the borrower's debt-to-equity ratio and maturity. We find that firms with high leverage level prefer short-term maturity debt while firms with low leverage level issue long-term maturity debt. 100% of the firms with negative equity have debt maturating within 5 years. On the other hand, 42.86% of the firms with debt-to-equity ratio between 0 and 1 have debt maturating within 5 years, and 10.71% of those have debt maturating between 31 and 60 years. This is consistent with theory brought by Merton (1974) and Ho and Singer (1982). They suggest that long-term debt is more risky than short-term loan because long-term debt is more elastic to the value of the firm. Thus long-term debt increases the uncertainty of the future ability to pay off the debt. More risky firms have to offer less risky debt to appeal investors.

3.4.5 Borrower's Credit

The credit ratings of the debt financing firms are robust. More than half of the rated sample firms have ratings above BBB-, an investment grade. We use

quantitative value to display the descriptive statistics of credit rating. Ratings that above and included BBB- are assigned from 1 to 10 respectively and ratings that below BBB- are assigned 0. The average credit rating of total sample is 2.75, which is between BBB and BBB+. The average credit rating of public traded debt sample and bank loan sample are 2.84 and 2.46 respectively. The average borrower's credit of public traded debt sample is slightly higher than that of bank loan sample. Firms with lower credit and less debt-related reputation are more likely to borrow from bank, while firms with higher credit and well-built reputation are inclined to issue public traded debt to avoid high costs. However, the t-statistics of these two samples is 0.6474, indicating the difference is insignificant.

Table 1 Frequency Distribution of Debt Announcement

Panel A: Frequency Distribution of debt announcements by Offer Year					
Year	Frequency	Percentage %	Year	Frequency	Percentage %
2005	35	21.88	2010	7	4.38
2006	21	13.13	2011	7	4.38
2007	33	20.63	2012	3	1.88
2008	28	17.50	2013	5	3.13
2009	17	10.63	2014	4	2.50

Panel B: Frequency Distribution by Asset Size		
Assets ($ million)	Frequency	Percentage %
0-100	5	3.13
101-1,000	46	28.75
1,001-10,000	43	26.88
10,001-100,000	43	26.88
100,001-1,000,000	20	12.50
Above 1,000,000	3	1.88

Panel C: Frequency Distribution by Debt-to-Equity Ratio					
D/E	Frequency	Percentage %	D/E	Frequency	Percentage %
0	9	5.63	10< D/E≤100	9	5.63
0<D/E ≤1	84	52.50	D/E<0	3	1.88
1<D/E≤10	55	34.38			

Panel D: Frequency Distribution by Existence Year					
Existence Year	Frequency	Percentage %	Existence Year	Frequency	Percentage %
0-5	35	21.88	21-30	30	18.75
6-10	36	22.50	31-40	10	6.25
11-20	43	26.88	41-50	6	3.75

Panel E: Frequency Distribution by Maturity					
Maturity	Frequency	Percentage %	Maturity	Frequency	Percentage %
0-5	70	43.75	31-60	12	7.50
6-10	26	16.25	Varied	12	7.50
11-20	11	6.88	N.A.	13	8.13
21-30	16	10.00			

Panel F: Frequency Distribution by Borrower's Credit		
Credit Rating	Frequency	Percentage %
AAA ≤ Credit ≤AA-	8	5.00
A+≤ Credit ≤BBB-	64	40.00
Below BBB-	36	22.50
Unrated	52	32.50

Table 2 Descriptive Statistics for Debt Announcements

	Mean	Median	Minimum	Maximum	No. of observations
Panel A: Total Sample Characteristics					
Abnormal Return	-0.40%	0.11%	-111.77%	82.50%	160
(z-statistics)	*(-0.4390)*				
Asset Size ($ million)	83,950	4,616	5	2,354,226	160
D/E	2.76	0.86	-5.58	80.38	160
Public Existence	14.16	12.52	0.04	46.87	160
Maturity	12.51	5.00	1.00	60.00	135
Borrower's Credit	2.75	3	0	10	108
Panel B: Public Traded Debt Characteristics					
Abnormal Return	-0.23%	0.16%	-111.77%	82.50%	109
(z-statistics)	*(-0.1763)*				
Asset Size ($ million)	108,583	8,245	5	2,354,226	109
D/E	3.73	0.97	-5.58	80.38	109
Public Existence	14.56	12.84	0.16	46.87	109
Maturity	15.71	9.00	1.00	60	97
Borrower's Credit	2.84	3	0	10	82
Panel C: Bank Loan Characteristics					
Abnormal Return	-0.77%	-0.01%	-22.99%	10.45%	51
(z-statistics)	*(-1.0898)*				
Asset Size ($ million)	31,301	960	66	847,585	51
D/E	3.70	0.41	0.00	5.55	51
Public Existence	13.30	11.07	0.04	43.36	51
Maturity	4.36	5.00	1.00	7.00	38
Borrower's Credit	2.46	2	0	10	26

Table 3 Credit Rating Conversions

AAA	AA+	AA	AA−	A+	A	A−
10	9	8	7	6	5	4
BBB+	BBB	BBB−	BB+	BB	BB−	B+
3	2	1	0	0	0	0
B	B−	CCC+	CCC	CCC−	CC	C
0	0	0	0	0	0	0

Table 4 Relationship between Public Existence and Borrower's Credit

Public Existence	AAA≤ Rating ≤AA-	A+≤ Rating ≤BBB-	Below BBB-	Unrated	Total
0-5	0	13	6	16	35
	0.00%	*37.14%*	*17.14%*	*45.71%*	
6-10	1	19	3	13	36
	2.78%	*52.78%*	*8.33%*	*36.11%*	
11-20	0	10	15	18	43
	0.00%	*23.26%*	*34.88%*	*41.86%*	
21-30	2	15	9	4	30
	6.67%	*50.00%*	*30.00%*	*13.33%*	
31-40	2	7	0	1	10
	20.00%	*70.00%*	*0.00%*	*10.00%*	
41-50	3	3	0	0	6
	50.00%	*50.00%*	*0.00%*	*0.00%*	

Table 5 Relationship between Debt-to-Equity Ratio and Maturity

D/E	0-5	6-10	11-20	21-30	31-60	Varied	N.A.	Total
0	3	3	0	1	0	0	2	9
	33.33%	*33.33%*	*0.00%*	*11.11%*	*0.00%*	*0.00%*	*22.22%*	
0<D/E ≤1	36	7	6	9	9	9	8	84
	42.86%	*8.33%*	*7.14%*	*10.71%*	*10.71%*	*10.71%*	*9.52%*	
1<D/E≤10	25	15	3	3	3	3	3	55
	45.45%	*27.27%*	*5.45%*	*5.45%*	*5.45%*	*5.45%*	*5.45%*	
10< D/E≤100	3	1	2	3	0	0	0	9
	33.33%	*11.11%*	*22.22%*	*33.33%*	*0.00%*	*0.00%*	*0.00%*	
D/E<0	3	0	0	0	0	0	0	3
	100.00%	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	

4. Results

As Masulis (1983) and Shah (1994) demonstrate, increasing leverage level has a positive impact on stock price. However, the average abnormal return of our total sample presents a negative result, -0.4%. But the z-statistics is -0.4409, whose absolute value is not high enough to reject the null hypothesis. The z-statistics indicates that the average abnormal return of total sample is insignificant from zero. It demonstrates that debt announcements do not have significant impact on stock price. This is inconsistent with previous researches. Our main hypothesis is rejected. We want to explain this result using two sub-samples.

From sub-sample, we get both negative average abnormal return, -0.23% and -0.76% for public traded debt and bank loan respectively. It indicates that stock price is more server impacted by bank loan announcements than public traded debt announcements. However, the Welch's t-statistics is 0.3636, indicating the difference is quite insignificant. This is also inconsistent with previous researches. James (1987) proves the abnormal return is positive and statistically significant for bank loan announcement and non-positive for public traded loan. Aintablian and Roberts (2000) state that bank loan announcements bring more positive abnormal returns than non-bank financial institutions loan announcements do in Canada. The z-statistics are -0.1763 and -1.0976 respectively, indicating the average abnormal return is insignificant from zero in public traded debt sample but relatively significant from zero in bank loan sample. However, this significance is below 90% confident level.

For public traded debt announcements, their impacts on stock price are not statistically significant. We infer the reason to be the offset between information asymmetry and lower bankruptcy possibility signal. Public traded debt offerings involve with more information asymmetry. While banks can get inside information from the firm and even get involved in the decision process, public debt investors only have public information. Myer and Majluf (1984) conclude

that financing with higher information asymmetry enhances the underpricing of equity. This adversely affects stock price. On the other hand, we presume that firms choosing public debt over bank loans have lower bankruptcy possibilities. As Chemmanur and Fulghieri (1994) concluded, firms with higher bankruptcy possibilities are prefer to bank loan. Because when firms face bankruptcy, public debtholders are inclined to liquidation while banks are willing to renegotiation. Firms with high bankruptcy possibilities keep away from public debt to avoid the high costs of liquidation. Thus firms issuing public debt send signal of lower bankruptcy to market. This signal has positive effect on stock price. We conclude that those two effects counteract each other, resulting insignificant abnormal returns by public traded debt announcements.

Bank loan announcements bring relatively significant negative abnormal returns. This is derived from two effects. As demonstrated above, firms choosing bank loans have higher bankruptcy possibilities. This signal has a negative impact on stock price. Moreover, we think that the costs of monitoring are higher than the benefits. Banks have more bargain power over small and medium firms. In our bank loan sample, the asset size is much smaller than that in public traded debt sample. When dealing with relatively small firms, banks gain more power and even have possibilities to change managers' decisions. Under this circumstance, monitoring during the financing process decreases managers' incentives. Rajan (1992) builds two models to testify the negative influence of monitoring. He confirms that a strong bank deteriorate firm's performance and thus decrease its return. This worsens stock price.

Compared to previous findings, we discover that in the past ten years market is more insensitive to debt announcements. The abnormal returns brought by debt announcements are relatively smaller and statistically insignificant. Moreover, the costs of bank monitoring are surplus to benefits. Market becomes susceptive to bank loan announcements and reacts negatively.

Table 6 Regression Models for Driving Factors and Abnormal Returns

Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
ln(Assets)	-0.009*	-0.007	-0.008	-0.008	-0.006	-0.005
Debt-to-Equity				0.000		-0.001
Public Existence	0.001		0.001	0.001	0.001	0.001
Maturity		0.001	0.001	0.001	0.001	0.001
Borrower's Credit					-0.004	-0.004
R-square	0.029	0.018	0.023	0.024	0.034	0.037

We noted that R-square is quite low in our models, indicating that our models do not have the predictive power for the abnormal return. Looking into the potential driving factors, it is interesting to know there are some inconsistencies with previous researches.

As shown in the Table 6, we get a negative relationship between asset size and abnormal return. Also the significance level is relatively low, but still at an acceptable level. Our hypothesis 2a is confirmed by the regression model. In consistence with Slovin, Johnson and Glascock (1992), the larger the asset size of a firm, the more negative abnormal return is generated, which means that the market prefers debt issuance from small firms rather than large firms. For small firms financing with bank loans, it is quite reasonable for them to get better response from the market. Small firms have less reputation and more severe moral hazard problems comparing to large firms, thus the success of issuing a bank loan indicates the approval from the bank, which can get access to private information that are not available for the public, thus transmits a positive signal to the market to generate a positive abnormal return. Our result is consistent with the monitoring theory for bank loan. In addition, the stock market prefers small size firm rather than large size firm for public debt announcements either. Although issuing public debt cannot reflect the monitoring degree of the firm, it does reduce the information asymmetry. Issuing public traded debt requires filings for SEC. These filings reveal some inside information of the firm and decrease information asymmetry. Because information asymmetry is more serve in small firms than in

large firms, information asymmetry decreases to a lower level in small firms. Thus, we infer that small firms gain more benefits from public debt filings than large firms. Consequently, the relationship between asset size and abnormal return is negative.

However, besides asset size we didn't get any other significant relationships between abnormal return and driving factors. Not only the estimated variables are very small, but also are the significances very low. Our hypothesis 2b and hypothesis 2c are rejected by the regression models. There is no significant relationship between abnormal return and firm's other characteristics, such as debt-to-equity ratio, public existence and credit rating.

5. Conclusion

In this paper, we analyze the abnormal returns brought by debt announcements from 2005 to 2014. Contrary to previous researches, the abnormal returns are slightly negative and also not statistically significant. Using two sub-samples, we further find that bank loan announcements result more adverse and significant abnormal returns than public traded debt announcements. But the difference is also insignificant.

The results imply that corporate debt announcements do not have significant impact on stock market. Also, there is no significant difference between public debt announcement effect and bank loan announcement effect. Still, the abnormal return derived from bank loan announcements has changed its sign from previous studies. We suggest this is because monitoring costs are higher than its benefits in the past ten years. First, the benefits from bank monitoring have decreased. Due to information technology, market efficiency has improved. Moreover, public investors have more resources to get information about public firms. This makes information asymmetry between bank-monitored firms and other public firms smaller. Thus, the importance of bank monitoring has decreased. Second, the costs of bank monitoring have increased. Since the benefits of bank monitoring are decreasing, firms that are well self-monitored would shift away from bank borrowings to public debt. Thus, banks gain much larger bargain power over the firms who have to borrow from them. Such bargain power can hurt the borrowers and increase the costs of monitoring.

Moreover, we confirm that large firms prefer to public traded debt while small firms are inclined to bank loans. It is consistent with reputation theory. Smaller firms have more severe moral hazard and adverse selection problems. They have to build reputation through bank monitoring before turn to cheaper public debt. In addition, we find a strong relationship between debt-to-equity ratio and maturity. Firms with high leverage level prefer short-term debt while firms with low

leverage level issue long-term debt. This is because long-term debt is more elastic to the value of the firm and thus more risky. Risky firms choose to offer less risky debt to appeal investors.

6. Implications and suggestions for further research

The findings and conclusions of this paper have implications for investors and firms in real world. In addition, based on our findings, which are inconsistent with the previous conclusions, additional questions and reasons are worth of discussion. Lastly, we recognize several places of potential refinement in the methodology used in this paper.

6.1 Implication

According to our conclusion that the difference of abnormal return between public debt and bank loan is not significant, we suggest that when firms are going to use debt financing, the impact from announcement on stock price can be ignored since the difference between bank loan and public debt is not significant. Because of the insignificance, the potential gain from stock change made by the announcement would be unpredictable. As a result, firms can focus more on other aspects for the type of debt financing, such as the processing time of the debt and the agency costs.

6.2 Limitations

We recognize some limitations in our thesis, which can be refined for further research.

First, we did not leave a gap between the estimation window and the event window. Without gap we might include some event effect in the estimation window and have an effect on our calculation for abnormal return. Leaving a gap between these two windows can give us a better estimation of the abnormal return.

Second, we use a one-day return in the event window, which might decrease the significant level of the results. In previous studies, a two-day event window is used. Under the circumstance that the market efficiency has improved during the past 20 years, we tried a shorter event window for the abnormal return after debt

announcement. Under the assumption that the market responds to the announcement more quickly than 20 year ago, a one-day event window is reasonable, while it would be better if we also check the result for a two-day event window.

Third, we have a small sample size in our thesis. When selecting data, we set a strict criterion for the debt announcements. In previous studies, researches only control for dividend announcement around the debt announcement date to prevent the impact from dividend announcement. However, in our research, we also exclude the debt announcements for merger and acquisition purposes. The reason why we exclude these announcements is that we believe the market would care more about the M&A activity instead of the debt announcement itself. We want to focus on the react for the debt, so we want to exempt the impact from other events. Moreover, the most recent financial crisis also has a great impact on the sample size. From panel A of table 1 we can see that the number debt announcements decreased a lot after 2008, especially for years after 2010. Due to the financial crisis, banks and public investors are less willing to borrow money for firms, which makes it harder for firms to raise debt.

6.3 Potential topics for future research

Our findings in this paper end in different results with previous studies. Inconsistent with previous researches, we find that the debt announcements have no significant impact on stock prices for the most recent ten years, while 20 years ago, the stock market responses significantly positive to bank loan announcements and non-positive to public debt announcements. Looking into the results of our sub-samples, we find that the stock market responses negatively to bank loans but no special react on public debt. We owe first inconsistency to the offset from information asymmetry and lower bankruptcy possibilities of public debt financing firms; and second inconsistency to higher bankruptcy possibilities of bank loan financing firms and strong bargain power and decision-making influence of banks'. Based on previous findings, benefits of bank monitoring are

prevailing and contributed to the positive impact on stock price. But we suggest that costs of bank monitoring exceed benefits. Further research can be conducted to find out the reasoning.

Moreover, we make our conclusion mainly based on monitoring theory and reputation theory. Other changes in the capital market during the past ten years may cause such inconsistencies. Taking 2007-2008's financial crisis for example, it had wide influence on global economic and financial market. Such influence can change the way people treat debt-financing market. Thus, studies on the influence from the financial crisis can be a meaningful topic. Also, a cross-section analysis for different industries might be interesting. Looking at the change after the financial crisis for different industries can give some implications for both firms and public investors.

Last but not least, a comparison between different markets might also be interesting and a test on whether different markets have similar market response to debt announcements can help firms have a better sense for future debt financing.

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A. Appendix

Table 7 Estimate Alpha and Beta for Public Debt Sub-Sample

Public Debt	Alpha	Beta
DRESS BARN INC	-0.0004	-1.1219
GOODYEAR TIRE & RUBBER COMPANY	-0.0009	-1.7656
LIQUIDMETAL TECHNOLOGIES INC	0.0068	-0.1439
QUICKSILVER RESOURCES INC	-0.0030	-0.8922
RICHARDSON ELECTRONICS LTD/DE	0.0014	-0.3112
RICHARDSON ELECTRONICS LTD/DE	0.0031	-0.8210
SEACOR HOLDINGS INC	-0.0019	-0.6162
UNISOURCE ENERGY CORP	-0.0015	-0.3729
Boardwalk Pipeline Partners, LP	-0.0014	-0.4627
CHS INC	-0.0005	0.2000
LSB INDUSTRIES INC	-0.0040	-0.4044
MDC PARTNERS INC	-0.0013	0.6075
WESCO DISTRIBUTION INC	-0.0040	-1.2117
BSC Columbus LLC	-0.0055	-1.8975
CACI INTERNATIONAL INC /DE/	0.0017	-1.0706
CYBERONICS INC	-0.0001	-1.4419
FINISAR CORP	0.0093	-1.5786
LSB INDUSTRIES INC	-0.0030	-1.8189
VERISIGN INC/CA	-0.0015	-1.0177
American Water Capital Corp.	-0.0002	-0.5145
VeriFone Holdings, Inc.	-0.0013	-1.2687
American Water Capital Corp.	-0.0014	-0.5203
ENVIRONMENTAL POWER CORP	-0.8547	-0.8547
SECURITY FEDERAL CORP	0.0036	-0.1917
AMERICAN EXPRESS CREDIT CORP	0.0002	-0.8019
CATERPILLAR INC	0.0065	-0.9054
CHESAPEAKE ENERGY CORP	-0.0031	-1.2841
CHESAPEAKE ENERGY CORP	-0.0013	-1.3001
CHESAPEAKE ENERGY CORP	0.0001	-0.9273
FEDERAL AGRICULTURAL MORTGAGE CORP	-0.0011	-1.0425
GOLDMAN SACHS GROUP INC	-0.0017	-1.2663
HSBC Finance CORP	0.0002	-0.5064
HSBC Finance CORP	0.0000	-0.4891
HSBC Finance CORP	0.0004	-0.5615
MDC HOLDINGS INC	-0.0010	-1.5960
MORGAN STANLEY	-0.0001	-1.0850
SLM CORP	-0.0002	-1.1653

Public Debt	Alpha	Beta
TELEPHONE & DATA SYSTEMS INC /DE/	0.0006	-0.4887
TENET HEALTHCARE CORP	0.0003	-0.5951
TEXTRON FINANCIAL CORP	-0.0007	-1.0368
AMERICAN EXPRESS CREDIT CORP	0.0003	-1.0363
CATERPILLAR FINANCIAL SERVICES CORP	0.0018	-1.5989
CHESAPEAKE ENERGY CORP	0.0016	-1.4080
CHESAPEAKE ENERGY CORP	0.0011	-1.3056
GOLDMAN SACHS GROUP INC/	0.0000	-1.7793
HARTFORD FINANCIAL SERVICES GROUP INC/DE	-0.0001	-0.0664
HSBC HOLDINGS PLC	-0.0005	-0.6727
INTERNATIONAL BUSINESS MACHINES CORP	-0.0004	-0.8579
MARKEL CORP	-0.0004	-0.0004
PACCAR FINANCIAL CORP	0.0001	-1.2541
PRIMUS GUARANTY LTD	0.0001	-0.4432
PULTE HOMES INC	0.0027	-1.9126
SELECTIVE INSURANCE GROUP INC	0.0004	-1.3773
TENET HEALTHCARE CORP	0.0018	-0.6900
Viacom Inc.	0.0005	-1.1207
AT&T INC.	-0.0007	-0.8528
CBS CORP	-0.0002	-1.0496
CHESAPEAKE ENERGY CORP	-0.0001	-0.9018
CHESAPEAKE ENERGY CORP	0.0006	-0.9560
COLGATE PALMOLIVE CO	0.0002	-0.4096
Domtar CORP	0.0030	-1.2266
GEORGIA POWER CO	0.0000	0.0783
HSBC Finance CORP	0.0004	-0.7915
HSBC Finance CORP	0.0008	-0.7628
HSBC Finance CORP	0.0006	-0.7418
HSBC HOLDINGS PLC	0.0002	-0.8071
INTERNATIONAL BUSINESS MACHINES CORP	-0.0006	-0.8009
JOHNSON & JOHNSON	-0.0002	-0.4634
MYLAN LABORATORIES INC	0.0007	-0.6479
NVR INC	0.0027	-1.4870
AT&T INC.	-0.0014	-0.9259
CHESAPEAKE ENERGY CORP	-0.0044	-0.8290
FLOTEK INDUSTRIES INC/CN/	0.0061	-1.9220
GEORGIA POWER CO	0.0013	0.0952
HSBC HOLDINGS PLC	-0.0001	-0.9905
INTERNATIONAL BUSINESS MACHINES CORP	0.0013	-0.6575
MYLAN INC.	0.0004	-1.0626
Philip Morris International Inc.	0.0001	-0.8326
Philip Morris International Inc.	-0.0006	-0.3442
Philip Morris International Inc.	-0.0011	-0.2036

Public Debt	Alpha	Beta
PROTECTIVE LIFE INSURANCE CO	0.0008	-0.9916
PRUDENTIAL FINANCIAL INC	0.0027	-1.2901
XCEL ENERGY INC	-0.0001	-0.7798
AMERIPRISE FINANCIAL INC	0.0003	0.0003
AT&T INC.	0.0007	-0.7684
CHESAPEAKE ENERGY CORP	0.0069	-1.8412
CLECO POWER LLC	0.0002	-0.5673
DEERE JOHN CAPITAL CORP	0.0028	-1.1919
GOLDMAN SACHS GROUP INC	0.0042	-1.4241
LORILLARD, INC.	-0.0018	-0.2178
PACCAR FINANCIAL CORP	-0.0007	-1.4488
PROTECTIVE LIFE CORP	-0.0012	-2.9813
WEINGARTEN REALTY INVESTORS /TX/	0.0044	-2.4379
KAR Auction services	-0.0023	-0.2642
Accuride Corporation	0.0010	-0.7680
COMMUNITY WEST BANCSHARES	-0.0015	0.2141
Consumer Portfolio Services	0.0062	-0.4985
Horizon Lines	0.0164	-0.5059
U.S. Concrete	0.0049	-0.9040
FRIENDFINDER NETWORKS INC.	0.0139	-1.1390
YRC Worldwide Inc.	0.0494	0.4929
ATLANTIC POWER CORPORATION	0.0010	-0.8136
Consumer Portfolio Services, Inc.	0.0032	0.4972
Environmental Solutions Worldwide, Inc.	0.0196	0.1883
IMPERIAL HOLDINGS, INC.	0.0001	-0.6734
MULTIBAND CORPORATION	-0.0001	-0.5085
ZAZA ENERGY CORPORATION	0.0047	-1.1436
TravelCenters of America LLC	0.0000	-1.3219
ARAMARK Corporation	-0.0039	-0.8009

Table 8 Estimate Alpha and Beta for Bank Loan Sub-Sample

Bank Loan	Alpha	Beta
Gruma, S.A. de C.V.	-0.0025	-0.1250
Imperial Energy	0.0037	0.5745
Nissan	0.0011	-0.9395
Sempra Energy	0.0003	-0.4595
Olympic Steel Inc.	0.0027	-1.4303
Alcoa	0.0013	-1.0265
IDT	0.0006	-0.7065
FMC	-0.0006	-1.6096
FRANKLIN RESOURCES, INC.	-0.0007	-1.1824
ONEOK	-0.0015	-0.8670
Mad Catz Interactive	0.0078	-0.5786
Pacific Sunwear of California	0.0021	-1.5506
Merge Healthcare (Nasdaq: MRGE)	-0.0002	-0.7659
John B. Sanfilippo& Son, Inc.	0.0000	-0.3858
Dover Downs Gaming & Entertainment Inc.	0.0017	-2.2513
Gasco Energy Inc.	0.0047	-1.3610
Murphy Oil Corp	-0.0004	-1.1011
Krispy Kreme Doughnuts	0.0021	-1.1136
Silver Wheaton	-0.0008	-2.1004
EBay	0.0005	-1.0215
PowerSecure International Inc.	0.0004	-1.5333
Warren Resouces Inc.	0.0000	-1.0670
Goodrich Petroleum Corp.	0.0034	-1.0801
CAL DIVE INTERNATIONAL	0.0025	-0.9892
Martin Midstream Partners L.P.	0.0013	-0.2885
Nautilus, Inc.	0.0074	-1.5551
Textainer Group Holdings Limited	-0.0003	-0.6260
Griffon Corporation	0.0038	-1.1754
Sanderson Farms, Inc.	-0.0020	-0.8835
Urstadt Biddle Properties Inc.	0.0012	-1.4641
Abercrombie Fitch Co.	0.0000	-1.2474
MGP Ingredients, Inc.	0.0010	-1.2333
DUKE ENERGY CORP	-0.0010	-0.0146
Sempra Energy	-0.0003	-0.4020
Mindspeed Technologies, Inc.	-0.0042	-1.1457
Hercules Technology Growth Capital, Inc.	0.0012	-1.2549
Northwest Pipe Company	-0.0014	-1.0041
Lawson Products, Inc.	0.0005	-1.1794
Yingli Green Energy Holding Company Limited	0.0099	-2.0250
Universal Stainless Alloy Products, Inc.	0.0086	-1.3391
Big Lots, Inc.	-0.0002	-1.2657
King	0.0029	-1.8244

Bank Loan	Alpha	Beta
British land	-0.0006	-0.9483
Alcatel-Lucent	0.0040	-1.1669
Chesapeake Energy	0.0064	-1.5938
Electra Private Equity	0.0088	-0.9559
Rusal	0.0051	-0.2570
Eurazeo	0.0000	0.5781
TAQA	-0.0001	-0.0295
BP	0.0034	-0.9936
AIG	-0.0040	0.0301

Table 9 Difference between Estimate Return and Real Return for Public Debt Sub-Sample

Public Debt	Event Return	Event Market Return	Abnormal Return
DRESS BARN INC	2.26%	0.46%	2.81%
GOODYEAR TIRE & RUBBER COMPANY	0.73%	0.61%	1.89%
LIQUIDMETAL TECHNOLOGIES INC	-1.79%	0.28%	-2.42%
QUICKSILVER RESOURCES INC	-0.11%	-0.26%	-0.05%
RICHARDSON ELECTRONICS LTD /DE	-1.78%	-0.11%	-1.95%
RICHARDSON ELECTRONICS LTD /DE	4.36%	0.65%	4.59%
SEACOR HOLDINGS INC	1.11%	0.24%	1.45%
UNISOURCE ENERGY CORP	0.57%	-0.07%	0.69%
Boardwalk Pipeline Partners, LP	2.45%	-0.25%	2.48%
CHS INC	0.00%	0.14%	0.03%
LSB INDUSTRIES INC	-4.49%	0.26%	-3.98%
MDC PARTNERS INC	1.44%	-0.64%	1.96%
WESCO DISTRIBUTION INC	1.11%	0.12%	1.65%
BSC Columbus LLC(CALGON CARBON CORPORATION)	-1.84%	-1.42%	-3.98%
CACI INTERNATIONAL INC /DE/	-3.63%	-0.04%	-3.84%
CYBERONICS INC	-0.36%	-0.01%	-0.36%
FINISAR CORP	5.93%	-0.13%	4.79%
LSB INDUSTRIES INC	-1.14%	-0.85%	-2.38%
VERISIGN INC/CA	-0.06%	-0.49%	-0.41%
American Water Capital Corp.	1.85%	-1.25%	1.23%
VeriFone Holdings, Inc.	-4.46%	-3.41%	-8.66%
American Water Capital Corp.	-0.44%	0.76%	0.09%
ENVIRONMENTAL POWER CORP	0.00%	-3.48%	82.50%
SECURITY FEDERAL CORP	0.00%	2.50%	0.12%
AMERICAN EXPRESS CREDIT CORP	-0.07%	-0.76%	-0.70%
CATERPILLAR INC	0.65%	0.00%	0.00%
CHESAPEAKE ENERGY CORP	3.69%	0.03%	4.04%
CHESAPEAKE ENERGY CORP	0.89%	0.23%	1.32%
CHESAPEAKE ENERGY CORP	1.44%	-0.64%	0.84%
FEDERAL AGRICULTURAL MORTGAGE CORP	-2.25%	-0.74%	-2.91%
GOLDMAN SACHS GROUP INC	-1.26%	-0.30%	-1.47%
HSBC Finance CORP	0.16%	-0.84%	-0.28%
HSBC Finance CORP	0.31%	-0.33%	0.16%
HSBC Finance CORP	-0.70%	-0.55%	-1.05%
MDC HOLDINGS INC	2.14%	-0.81%	0.95%
MORGAN STANLEY	-0.12%	0.06%	-0.05%
SLM CORP	1.61%	0.28%	1.96%
TELEPHONE & DATA SYSTEMS INC /DE/	0.75%	-0.09%	0.64%

Public Debt	Event Return	Event Market Return	Abnormal Return
TENET HEALTHCARE CORP	1.12%	0.94%	1.65%
TEXTRON FINANCIAL CORP	-1.10%	-1.45%	-2.53%
AMERICAN EXPRESS CREDIT CORP	3.22%	0.14%	3.33%
CATERPILLAR FINANCIAL SERVICES CORP	-0.25%	0.20%	-0.10%
CHESAPEAKE ENERGY CORP	2.07%	0.63%	2.80%
CHESAPEAKE ENERGY CORP	4.71%	-0.09%	4.48%
GOLDMAN SACHS GROUP INC/	1.47%	0.17%	1.76%
HARTFORD FINANCIAL SERVICES GROUP INC/DE	0.35%	0.25%	0.37%
HSBC HOLDINGS PLC	-0.80%	-0.39%	-1.01%
INTERNATIONAL BUSINESS MACHINES CORP	-0.18%	-0.51%	-0.58%
MARKEL CORP	-1.39%	0.21%	-1.35%
PACCAR FINANCIAL CORP	-1.06%	-0.13%	-1.23%
PRIMUS GUARANTY LTD	-1.85%	0.72%	-1.54%
PULTE HOMES INC	0.61%	-0.39%	-0.41%
SELECTIVE INSURANCE GROUP INC	1.83%	0.25%	2.14%
TENET HEALTHCARE CORP	-1.33%	-0.07%	-1.56%
Viacom Inc.	0.51%	-0.34%	0.07%
AT&T INC.	0.16%	-0.32%	-0.04%
CBS CORP	-1.31%	-0.65%	-1.96%
CHESAPEAKE ENERGY CORP	0.68%	-0.11%	0.59%
CHESAPEAKE ENERGY CORP	0.72%	0.55%	1.18%
COLGATE PALMOLIVE CO	0.72%	1.14%	1.17%
Domtar CORP	-4.31%	-1.32%	-6.23%
GEORGIA POWER CO	3.80%	0.58%	3.75%
HSBC Finance CORP	0.04%	-141.21%	-111.77%
HSBC Finance CORP	-0.42%	-0.04%	-0.53%
HSBC Finance CORP	-0.92%	-2.01%	-2.48%
HSBC HOLDINGS PLC	-0.62%	0.02%	-0.62%
INTERNATIONAL BUSINESS MACHINES CORP	0.91%	1.71%	2.34%
JOHNSON & JOHNSON	0.88%	-1.43%	0.24%
MYLAN LABORATORIES INC	-1.92%	-1.14%	-2.73%
NVR INC	-1.68%	-1.40%	-4.03%
AT&T INC.	1.38%	0.16%	1.67%
CHESAPEAKE ENERGY CORP	-3.87%	0.40%	-3.09%
FLOTEK INDUSTRIES INC/CN/	5.82%	0.81%	6.77%
GEORGIA POWER CO	4.13%	6.93%	3.34%
HSBC HOLDINGS PLC	0.06%	0.69%	0.75%
INTERNATIONAL BUSINESS MACHINES CORP	-3.70%	-5.21%	-7.26%
MYLAN INC.	0.63%	0.63%	1.25%
Philip Morris International Inc.	-0.16%	-2.58%	-2.31%
Philip Morris International Inc.	-1.29%	-2.99%	-2.26%

Public Debt	Event Return	Event Market Return	Abnormal Return
Philip Morris International Inc.	0.24%	0.13%	0.38%
PROTECTIVE LIFE INSURANCE CO	3.28%	0.82%	4.01%
PRUDENTIAL FINANCIAL INC	-2.71%	-0.84%	-4.06%
XCEL ENERGY INC	0.92%	-0.47%	0.57%
AMERIPRISE FINANCIAL INC	-1.94%	-1.35%	-1.96%
AT&T INC.	1.52%	0.54%	1.87%
CHESAPEAKE ENERGY CORP	3.70%	-0.68%	1.77%
CLECO POWER LLC	-1.56%	-2.57%	-3.04%
DEERE JOHN CAPITAL CORP	0.35%	0.14%	0.23%
GOLDMAN SACHS GROUP INC	6.23%	-0.68%	4.85%
LORILLARD, INC.	-1.52%	0.23%	-1.29%
PACCAR FINANCIAL CORP	5.05%	-0.75%	4.04%
PROTECTIVE LIFE CORP	1.62%	0.57%	3.43%
WEINGARTEN REALTY INVESTORS /TX/	0.17%	1.03%	2.25%
KAR Auction services	0.00%	0.08%	0.25%
Accuride Corporation	2.31%	-0.55%	1.79%
COMMUNITY WEST BANCSHARES	0.00%	-0.33%	0.22%
Consumer Portfolio Services	-1.11%	-0.37%	-1.91%
Horizon Lines	4.55%	1.03%	3.43%
U.S. Concrete	-1.79%	-1.18%	-3.34%
FRIENDFINDER NETWORKS INC.	-6.06%	2.04%	-5.12%
YRC Worldwide Inc.	0.00%	0.62%	-5.25%
ATLANTIC POWER CORPORATION	-0.08%	0.48%	0.21%
Consumer Portfolio Services, Inc.	2.88%	-0.57%	2.84%
Environmental Solutions Worldwide, Inc.	0.00%	0.55%	-2.06%
IMPERIAL HOLDINGS, INC.	-0.25%	0.72%	0.23%
MULTIBAND CORPORATION	0.00%	-0.83%	-0.41%
ZAZA ENERGY CORPORATION	2.83%	0.27%	2.67%
TravelCenters of America LLC	2.12%	0.29%	2.49%
ARAMARK Corporation	-0.18%	-0.18%	0.07%

Table 10 Difference between Estimate Return and Real Return for Bank Loan Sub-Sample

Bank Loan	Event Return	Event Market Return	Abnormal Return
Gruma, S.A. de C.V.	-0.75%	0.49%	-0.44%
Imperial Energy	1.54%	0.63%	0.80%
Nissan	-0.11%	-2.32%	-2.40%
Sempra Energy	-0.75%	0.41%	-0.59%
Olympic Steel Inc.	0.39%	-0.65%	-0.81%
Alcoa	0.59%	0.46%	0.93%
IDT	0.50%	0.64%	0.90%
FMC	0.72%	0.11%	0.96%
FRANKLIN RESOURCES, INC.	-1.93%	-1.07%	-3.13%
ONEOK	-0.24%	0.88%	0.67%
Mad Catz Interactive	-2.63%	-0.07%	-3.46%
Pacific Sunwear of California	-2.13%	0.05%	-2.26%
Merge Healthcare (Nasdaq: MRGE)	0.69%	0.12%	0.81%
John B. Sanfilippo& Son, Inc.	-0.43%	0.20%	-0.35%
Dover Downs Gaming & Entertainment Inc.	1.58%	-0.12%	1.15%
Gasco Energy Inc.	2.78%	0.27%	2.67%
Murphy Oil Corp	0.12%	-0.12%	0.03%
Krispy Kreme Doughnuts	0.43%	1.07%	1.41%
Silver Wheaton	-4.33%	-2.33%	-9.15%
EBay	0.85%	-2.65%	-1.92%
PowerSecure International Inc.	-5.22%	1.16%	-3.48%
Warren Resouces Inc.	-0.55%	-0.59%	-1.18%
Goodrich Petroleum Corp.	-4.30%	-0.59%	-5.27%
CAL DIVE INTERNATIONAL	-1.24%	-1.50%	-2.97%
Martin Midstream Partners L.P.	-1.75%	0.15%	-1.83%
Nautilus, Inc.	5.71%	-1.11%	3.25%
Textainer Group Holdings Limited	2.00%	0.29%	2.21%
Griffon Corporation	-2.93%	0.57%	-2.64%
Sanderson Farms, Inc.	2.42%	1.73%	4.15%
Urstadt Biddle Properties Inc.	1.94%	0.09%	1.95%
Abercrombie Fitch Co.	0.81%	0.46%	1.39%
MGP Ingredients, Inc.	4.10%	0.37%	4.45%
DUKE ENERGY CORP	-1.02%	5.42%	-0.84%
Sempra Energy	0.95%	0.42%	1.15%
Mindspeed Technologies, Inc.	-8.65%	-3.85%	-12.65%
Hercules Technology Growth Capital, Inc.	0.70%	0.37%	1.04%
Northwest Pipe Company	-14.07%	-9.03%	-22.99%
Lawson Products, Inc.	-6.08%	-1.25%	-7.61%
Yingli Green Energy Holding Company Limited	6.90%	0.56%	7.03%

Bank Loan	Event Return	Event Market Return	Abnormal Return
Universal Stainless Alloy Products, Inc.	8.08%	2.41%	10.45%
Big Lots, Inc.	-0.63%	2.17%	2.14%
King	-3.84%	-0.94%	-5.84%
British land	0.75%	0.70%	1.48%
Alcatel-Lucent	6.45%	1.19%	7.44%
Chesapeake Energy	4.79%	-1.10%	2.39%
Electra Private Equity	-1.36%	-0.54%	-2.77%
Rusal	-1.31%	0.02%	-1.81%
Eurazeo	-7.41%	-4.38%	-4.88%
TAQA	1.53%	-0.80%	1.52%
BP	-0.91%	1.25%	-0.01%
AIG	-0.76%	0.08%	-0.36%