Master's Thesis

The effect of private debt securities on company performance

Issuing private debt securities is one of the options some companies have, when making a capital structure decision. These debt securities are issued to the public as private debt. I examine the effect the issuance of private debt securities on return on assets and stock returns. The research uses a regression analysis and an event study to examine the effect of issuing debt securities on company performance. The data used is data on first time issuers from 2001 until 2020. This study also controls for whether an asset purchase program is active during the time of issuance. The study finds some evidence that return on assets are positively affected by the issuance of private debt securities. Stock prices are found to react significantly positively to the issuance of private debt securities. This could mean that the market expects a better performance after the issuance of a private debt security.

Stefan Koolen

Supervisor: M. Tyagi

s1007423

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Content

1. Introduction

Companies have different possibilities when trying to raise capital. They can issue stock, get a loan by a bank, or use the help of venture capitalists. Another way to raise capital is by issuing debt securities. In the past years, this final option has become a more popular option among companies, when it comes to raising capital. According to the Securities Industry and Financial Market Association (SIFMA) the value of outstanding corporate bonds in the United States has increased drastically over the past years. In 1980, this value was 467.9 billion dollars, while this value has increased to 10439.4 billion dollars in 2020, this can be seen in figure 1 (SIFMA, 2021).

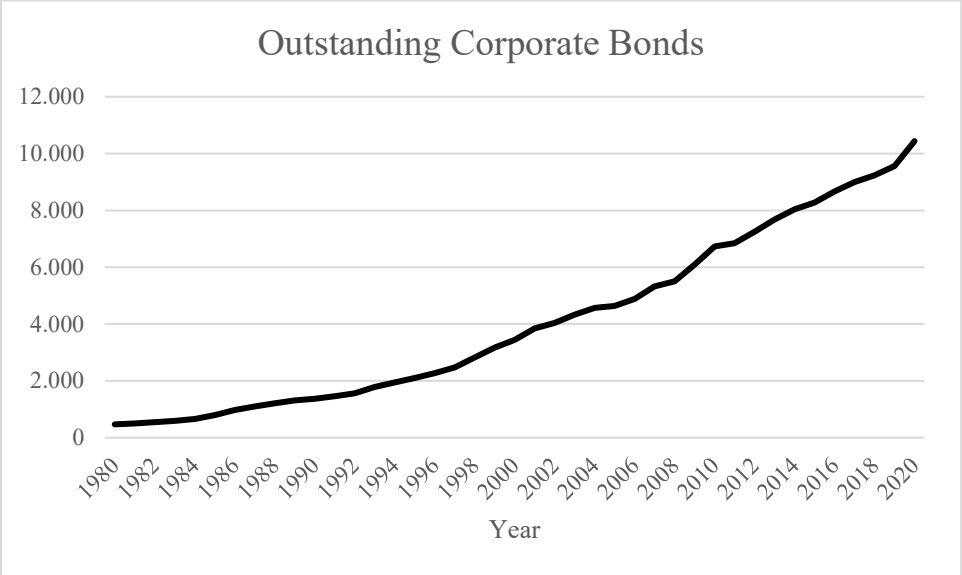

Figure 1: The value of all outstanding corporate bonds in the United States over the years
Source: SIFMA

These private debt securities consist of a lot of smaller loans, with a given interest rate, that will be paid back at a later point in time. Private debt securities can come in multiple forms, this can be in the form of corporate bonds for a maturity of more than one year, or commercial paper, when the maturity is less than a year (SEC, 2013).

Research by Didier et al. (2014) shows that issuing corporate bonds has a positive effect on the value of assets of a company. Growth rates of issuing firms are found to be larger than the growth rates of non-issuing firms. On the other hand, they find that a small percentage of companies actually issues corporate bonds, and that the top 5 of issuers control over 60% of the market.

The pecking order theory is a which describes the capital structure choices of a company. It describes that debt financing is preferred over equity financing, due to the lower information asymmetry. It also describes how equity holders receive less dividend payments after the issuance of debt, because debt holders get paid before equity holders. So, the expectation is that after the issuance of extra debt, equity holders will receive less payments, and stock prices will drop (Myers and Maljuf, 1984). The

literature on this topic is diverse, with some studies confirming this theory, while other studies contradict this with their findings (Datta et al., 2000, Spiess and Graves, 1999).

In the past years, there have been interventions in asset markets by multiple central banks to help the economy recover from the financial distress of several crises. The first of these crises was the Lost Decade in Japan, where the Bank of Japan decided to intervene in the market to prevent market failure due to deflation. This was followed by the 2008 financial crisis and the European Sovereign debt crisis, where the Federal Reserve, the European Central Bank, the Bank of England, and the Bank of Japan all decided to intervene with asset purchase programs. More recently, due to the COVID-19 crisis, the Federal Reserve decided to restart its asset purchasing program again, while the other central banks had never stopped in the first place (Siklos, 2020, Fisher, 2010, Bernanke, 2009, Iwata, 2012, Federal Reserve, 2020).

This is interesting for the private debt securities market, because all the above-mentioned central banks intervened in this market as part of their asset purchase programs. With this extra demand for corporate bonds and commercial paper, bond prices and quantity are expected to rise. According to the study by Zaghini (2019), the purchase program by the European Central Bank had this effect. Companies can use this information to their advantage, by issuing bonds, because they know the demand for their bonds is higher due to the asset purchase program.

Although the Modigliani and Miller (1958) model shows that the way a company is financed should not influence its value, research on financial performance and stock returns has shown that the issuance of private debt securities does have an influence on these variables (Didier et al., 2015, Nzao et al, 2019, Datta et al., 2000). This has led to the following research question of this study: "What effect does the issuance of private debt securities have on company performance?"

This research focuses on the effects of the issuance of debt securities on a company's financial performance and their stock returns but also on how this effect changes when an asset purchase program is implemented by a central bank.

Although research has been conducted on the effect of private debt issuance on company performance, it is only done in a small number of studies. Especially the research field on the effect on financial performance is very slim, and often only researches a very niche dataset, like Abor (2005) and Nzao et al. (2019) who investigate the market in Ghana and Kenya, respectively. This research aims to add knowledge in the effects of the issuance of private debt securities on both financial performance and stock returns by looking at the more prominent markets in the world.

The results of this study show that the issuance of private debt securities has a positive influence on company performance. The findings show that 6 months after issuance, financial performance is

positively affected. The positive effect on stock prices can be seen sooner, as stock prices rise significantly in the quarter of issuance.

The results on financial performance are comparable to the existing literature as other studies in the field find that issuing debt securities leads to an increase in financial performance. The literature on stock price reactions is more diverse, some studies find a negative reaction while others find a positive reaction in stock prices.

The findings of this study confirm that raising more capital leads to an increase in profitability, because an entrepreneur can use more capital to benefit the growth of their company. This could take a few months, as the effect might not be noticeable immediately. The positive influence on stock prices can be explained using the increased profitability. Investors might expect an increase in profitability in the future, so they will invest in the stock now, which results in a quick rise in stock prices.

This research continues with a review of the existing literature, followed up by a methodology section, where the data, method and variables will be discussed. After that, the results of this study will be presented. The research concludes with a discussion and a conclusion.

2. Literature

2.1. Capital Structure

In 1958, Modigliani and Miller were the first to research a firm's capital structure. One of their findings is that the market value of any firm is independent of its capital structure and is completely dependent on its expected return on assets. This is seen as the first proposition in the Modigliani-Miller model. But this does only hold in a perfect market without taxes and other imperfections (Modigliani & Miller, 1958).

Modigliani and Miller continued their research in 1963 by looking at the effect of these imperfections on their earlier propositions. Modigliani and Miller correct their 1958 study and find that when interest can be deducted from tax payments, an optimal capital structure can be achieved. This correction now implies that debt financing is a superior method than financing through equity. However, Modigliani and Miller state that financing a company completely with debt is not always the optimal capital structure. Under certain circumstances, financing through equity can be better than financing through debt (Modigliani & Miller, 1963).

Kraus and Litzenberger (1973) created a model that trades the cost of financial distress of to the tax benefits of financing through debt. This has led to the conclusion that the market value of a levered firm is equal to the unlevered value, plus the tax rate times the firm's debt, minus the tax rate times the present value bankruptcy costs. This function can be maximised which will lead to the optimal capital structure of a firm.

The pecking order theory describes the capital structure decision of a company by looking at the cost of information asymmetry certain ways of raising capital bring. This theory states that internal finance is preferred over both debt financing and equity financing, while debt is preferred over equity. This is all because equity brings the highest amount of information asymmetry costs, followed by debt and internal finance. Debt capacity also plays a big role in the capital structure decision, as this determines how much a company can finance through debt before they will have to resort to equity (Lemmon & Zender, 2010).

2.2. Corporate Bonds

A bond is a debt obligation, so investors who buy corporate bonds are lending money to the company they bought the bond from. In return for this money, the company pays the original amount back when this is due, plus interest payments during the duration of the bond. This is different from stocks, stocks give the investor partial ownership and dividend payments in return for the invested amount. The three major differences are firstly, the fact that bonds have a maturity date, while stocks do not. Secondly, bonds pay back the initial investment, stocks do not. And finally, interest payments of bonds are predetermined, so not dependent on how good or bad the company is doing. Stocks on the other hand pay dividends based on the net income of the past period, so they can fluctuate (SEC, 2013).

One of the major risks of bonds is the default risk. This is the risk that the issuer of the bond cannot fulfil its payment obligation and the investor will not receive its interest payment or principal payment. This is where credit rating agencies come into play. These agencies rate bonds based on the risk of default. These credit ratings determine the return investors want to receive on their bonds. Highly rated bonds yield a small interest payment but have low risk. While so called "junk bonds" have high risk, but also yield a high return (SEC, 2013, S&P, n.d.).

Around the world, there are three major credit rating agencies. These are Standards & Poor (S&P), Moody's Investor Service and Fitch Ratings. These three cover 95% of all ratings of bonds around the world. These agencies all use different ratings, but they are very alike. The highest rated, low risk bonds will receive an AAA or Aaa rating, while the lowest rated bonds will receive a D or C rating. These ratings are based on the risk that a company is not able to pay their obligations in time, or default risk. (White, 2010, IMF, 2010).

2.3. The effect of debt securities on financial performance

Research by Didier et al. (2015) has shown that companies who issue corporate bonds have a higher growth rate than companies who do not issue corporate bonds. Another finding is that smaller issuing firms grow larger than large issuing firms, although large firms are more likely to issue debt securities. Assets, sales, and the number of employees are found to increase after the issuance of corporate bonds.

Abor (2005) researches the effect of capital structure on company performance on the Ghana stock exchange. The results show that there is a positive relationship between short-term debt and company profitability. However, this research finds that long-term debt is negatively related to the return on equity.

Nzao et al. (2019) support the results of Didier et al. (2015) and somewhat contradicts Abor (2005) with their study on the Nairobi Security Exchange. They find that issuing bonds has a positive effect on a company's Return On Assets (ROA). It is also found that issuing bonds with a higher yield to maturity is associated with a higher ROA. Evidence from these three studies has led to the following hypothesis:

$H1_0$: Issuing private debt securities does not lead to higher ROA after the issuance than the ROA before the issuance.

$H1_a$: Issuing private debt securities leads to higher ROA after the issuance than the ROA before the issuance.

2.4. The effect of debt securities on stock prices

When a company becomes more profitable, its stock price is expected to increase, because shareholders will receive higher dividends in the future, due to the higher net income. So, if the issuance of debt

securities increases profitability, the stock price of that company is expected to rise after the announcement of the issuance of the debt security.

This is confirmed by Miller and Puthenpurackal (2002), Johnson (1995) and Spiess and Graves (1999). All studies find that the announcement of debt security offerings have a positive effect on stock prices in certain cases. Miller and Puthenpurackal (2002) find that this holds in case of Yankee bonds, which are bonds sold by foreign firms in the United States. Johnson (1995) finds that debt securities positively affect stock prices in case of low-growth low-dividend firms. Spiess and Graves (1999) find that the long run stock price reactions are positive after the issuance of a debt security, what suggests that the market does not immediately react to the issuance of a debt security.

However, debt securities can also negatively affect stock prices. This is because debt holders will always receive payments before equity holders, as is described in the pecking order theory. If the amount of debt increases, the amount that can be paid toward equity holders is expected to decrease, decreasing dividend payment, which will decrease the stock price (Myers & Maljuf, 1984).

This is confirmed by Datta et al. (2000), Pilotte (1992) and Lebelle et al. (2020), who all find that debt offerings have a negative effect on stock price returns. Pilotte (1992) finds that mature firms experience a drop in stock prices after the announcement of straight bond offerings. While Datta et al. (2000) find that bond IPO's will result in negative stock price reactions. Lebelle et al. (2020) have investigated this effect on the issuance of green bonds and find that the market reacts negatively on the issuance of green bonds.

A positive stock reaction is only found in case of very specific types of bonds, while a negative reaction in the stock market is seen in more general cases. This leads to believe that the pecking order theory out shadows the theory which states that stock prices will rise. This has led to the following hypothesis:

$H2_0$: A company's stock price is not lower after the issuance of private debt securities than before the issuance.

$H2_a$: A company's stock price is lower after the issuance of private debt securities than before the issuance.

2.5. The effects of asset purchase programs

As a response to the financial crisis in 2008, the European Central Bank (ECB), the Federal Reserve (Fed), the Bank of England (BoE) and the Bank of Japan (BoJ) have started an asset purchasing program. These programs were implemented to stimulate the economy by purchasing financial assets to expand economic activity in their respective jurisdictions (Federal Reserve, 2008, Gonzalez-Páramo, 2009, Bank of England, 2009, Bank of Japan, 2010). These measures are often seen as unconventional, but

according to these central banks, quantitative easing is the best measure to help their economies bounce back from a recession.

Different central banks have used their asset purchasing programs in different ways. The Fed started by purchasing commercial paper with a maturity of less than three months. Commercial papers are short term debt securities, not backed by any collateral. The Fed started the purchase of these commercial papers under its Commercial Paper Funding Facility (CPFF) from October 27th, 2008, until April 26th, 2010. The CPFF had the goal of providing liquidity to businesses who needed to obtain credit but could not obtain it due to the challenging times for firms (Adrian, 2010).

The BoE also started their Asset Purchase Facility (APF) by purchasing commercial paper and corporate bonds. Both at issuance and from the secondary market. This was done to provide liquidity to the corporate sector, while also reducing liquidity premia on high-quality bonds. This program ran from January 2009 until November 2012 but was reintroduced in August 2016 as a response to the economic instability due to Brexit. In the meantime, from February 2009 forward, the BoE has purchased gilts (British Government Debt) to stimulate the economy (Bank of England, 2009, Bank of England, 2020).

The two other large central banks started by purchasing government debt, but the BoJ followed the Fed quickly by starting its Outright Purchase of Commercial Paper and Corporate Bonds (OPCPCB) on October 5th, 2010, on top of its asset purchasing program started in December 2008. This, however, was not the first time the BoJ has initiated an asset purchasing program. Because from March 2001 until March 2006, the central bank of Japan used quantitative easing to increase inflation, as Japan was experiencing a period of deflation (Bank of Japan, 2010, Iwata, 2012).

The ECB did not add the purchase of commercial paper or corporate bonds as quickly to their asset purchase programs. The central bank implemented a quantitative easing program in response to the financial crisis of 2008, the ECB started its asset purchase programme with longer-term refinancing operations in March 2008 but started its quantitative easing in January of 2015 and added their Corporate Sector Purchase Program (CSPP) in June 2016 (Siklos, 2020).

This shows that different central banks use their means differently to reduce the effects of crises on their economies. However, all four have one thing in common, they are still purchasing corporate bonds to this day, and there are no plans to stop this in the near future.

Fisher (2010) stated that the purchase of corporate bonds by central banks has a positive effect on the amount of corporate bonds issued. Zaghini (2019) builds upon this research with the conclusion that bond prices rise during asset purchase programs. Both these findings are confirmed by the research of Todorov (2020), who has found that during the CSPP of the ECB, bond yields have fallen, and bond liquidity has risen significantly.

Combining these three findings on the effect of asset purchase programs led to the following hypothesis:

$H3_0$: Companies who issue debt securities during times of asset purchase programs do not have higher firm performance than firms who issue debt securities in times without asset purchase programs.

$H3_a$: Companies who issue debt securities during times of asset purchase programs have higher firm performance than firms who issue debt securities in times without asset purchase programs.

To summarize all hypotheses that will be tested in this research;

- *H1: Issuing private debt security leads to higher ROA after the issuance than the ROA before the issuance.*
- *H2: A company's stock price is lower after the issuance of private debt securities than before the issuance.*
- *H3: Companies who issue debt securities during time of asset purchase programs have higher firm performance than firms who issue debt securities in times without asset purchase programs.*

3. Methodology

3.1. Data

To test the three hypotheses, this study uses data which is obtained from database Eikon. Eikon has a large supply of financial data, including data on commercial paper and corporate bonds. The data obtained is data on the issuance of the private debt security, data on a company's financial performance and stock price data.

The data collected is from companies in the United States, the United Kingdom, Japan, and countries within the European Union, and ranges from January 2001 until December 2020. The companies that are analysed are all listed companies who have only issued exactly one debt security in their entire existence. The data on Return on Assets consists of quarterly data one year before and one year after the issuance of every listed firm that has issued private debt securities. Stock return data that is used are the available quarterly stock returns of the company from a January 2001 and December 2020.

3.2. Method

3.2.1. Regression Analysis

To estimate the effect of the issuance of bonds on firm performance, an OLS regression model and an event study are used. A regression model tries to estimate the effect of independent variables on the dependent variable and checking whether this effect is significant. An event study is an empirical method to assess the impact on an event on the value of a firm. In this case, the event is the issuance of private debt securities. In an event study, the period before the event is used to estimate a benchmark for the period after the event. Then, the actual results are compared to this benchmark, to see whether there is a significant difference (Fama et al. 1969).

The regression model is used to estimate the ROA based on the fact whether private debt securities were issued in the period that is examined. Lagged variables are also included to investigate whether the issuance of debt securities influences ROA in a later period in time, this is done because Didier et al. (2015) find that the issuance of debt securities still influences company performance periods after the issuance. This results in the following regression equation:

$$(1)\ ROA_{\{i,t\}} = \beta_0 + \beta_1 ROA_{\{i,t-1\}} + \beta_2 DS_{\{t\}} + \beta_3 DS_{\{t-1,t-2,t-3\}} + \beta_4 APP_{\{t\}} + \beta_5 TTM_{\{s\}} + \beta_6 S_{\{i,t\}} + \beta_7 I_{\{i\}} + \beta_8 C_{\{i\}} + \beta_9 Y_{\{t\}} + \epsilon.$$

In the regression equation, $ROA_{\{i,t\}}$ is the Return on Assets of company i at time t. β_0 is a constant, $\beta_1 ROA_{\{i,t-1\}}$ is company i's RAO one period before the period examined. $\beta_2 DS_{\{t\}}$ is a dummy variable which asks whether the company has issued a private debt security at time t. $\beta_3 DS_{\{t-1,t-2,t-3\}}$is a term that combines various dummy variables which ask whether a private debt security is issued in a period before time t. $\beta_4 APP_{\{t\}}$ is an interaction of two dummy variables, which asks whether the debt

security is issued in a period when an asset purchase program was active multiplied by whether a debt security was issued at t or one of the periods before t. This way, the presence of an asset purchase program only affects the results when a debt security is actually issued. $\beta_5 TTM_{\{s\}}$ is a variable which describes the time to maturity on debt security s. $\beta_6 S_{\{i,t\}}$ is a variable which describes the size of the company at time t. $\beta_7 I_{\{i\}}$ is a combination of dummy variables which asks in which industry the company is active in. $\beta_8 C_{\{i\}}$ is a combination of dummy variables which asks in which country the company is located in. $\beta_9 Y_{\{t\}}$ is a combination of dummy variables which asks what year is in consideration. The final variable is ϵ which is the error term. The variables are explained in more detail in the variables section.

3.2.2. Event Study

For the event study, first an estimation of the stock return is made. This is done by using the Capital Asset Pricing Model (CAPM). CAPM uses the company's beta in comparison to the biggest stock index in the period of consideration and the returns of the biggest stock index in the country the company is listed in. The formula CAPM uses to estimate stock returns is the following: $ER_{\{u,t\}} = R_{f\{t\}} + \beta\left(R_{m\{t\}} - R_{f\{t\}}\right)$. Where $ER_{\{u,t\}}$ is the expected return of stock u at time t, $R_{f\{t\}}$ is the yield on a 10-year treasury bond at time t. $R_{m\{t\}}$ is the return of the largest stock index in a country, and β is a number which includes information on the riskiness of a stock compared to the market (Merton, 1973).

In the event study the expected returns that have been estimated by CAPM are compared to the actual returns at time t. The difference between these two are the abnormal returns, these are the returns which cannot be explained by the movement of the market. These abnormal returns suggest that there is something that has happened that has changed the perception on the stock.

The actual returns are calculated using the following formula: $R_{\{u,t\}} = \ln\left(\frac{P_{\{u,t\}}}{P_{\{u,t-1\}}}\right)$. In this formula R_t is the return of a stock at time t. $P_{\{u,t-1\}}$ and $P_{\{u,t\}}$ are the closing prices of the stock at time t-1 and time t, respectively. After this, the abnormal returns are be calculated by using the following formula: $AR_{\{u,t\}} = R_{\{u,t\}} - ER_{\{u,t\}}$.

Finally, a Welch's t-test is conducted to test whether the abnormal returns in the period just before and just after the issuance of the debt security is significantly different than the returns during other times. A Welch's t-test is a type of t-test which checks whether two groups have different results but assumes that the two groups have different variances (Welch, 1947). This test is conducted comparing different increments of time, to see the differences between these times.

3.3. Variables

The main variable in the regression analysis is the dependent variable, Return On Assets. ROA expresses how a company uses its assets to generate revenue. Because ROA uses both equity and debt, rather than only equity in Return On Equity, ROA is preferred over ROE (Crosson et al, 2008).

The first variable in the regression analysis is the lagged ROA variable. This is done because research shows that ROA shows signs of autocorrelation, so the return on assets of a previous period can be used to predict current ROA (Mwambuli, 2016).

The most important independent variable in the regression is the second variable, the variable which asks whether a debt security was issued in the period that is in consideration. If this variable is significant, this will imply that the issuance of private debt securities has a significant influence on ROA. The third independent variable researches the same thing, does the issuance of private debt securities influence ROA? The term to describe this in the regression equations is a combination of dummy variables because there are multiple dummies which ask whether the issuance was one, two, or three periods before. The conclusions that can be formulated from these variables will tell whether the first hypothesis should be rejected or not.

The fourth term is the dummy which asks whether an asset purchase program was active when a debt security was issued at time t. This will give an answer to the question whether asset purchase programs have an influence on the ROA or stock returns when a debt security is issued. This variable helps with describing whether the third hypothesis should be rejected or not.

The variables which follow β_5 until β_9 are control variables for time to maturity on the security, the size of the firm, the industry the company is active in, the country the company is located in, and the year that is in consideration, respectively. These variables all look if these factors can have an influence on ROA or stock returns and make sure the results of the other variables are not influenced by these factors.

Time to maturity is measured by the difference in the years between the issue date of the debt security and its maturity date. Size is measured by taking the logarithmic function of the company's revenues at time t. The industry a company is active in is based on the different Standard Industrial Classification (SIC) codes, and its appropriate division.

4. Results

Data on all variables was collected and is summarized in table 1.

	N	Mean	Standard Deviation	Median	Minimum	Maximum
Return on Assets	4956	0.0882	6.947	0.6	-263.5	80.3
ROA in issue period	703	-0.2025	9.553	0.6	-196.9	80.3
ROA one period after issuance	579	0.1245	4.246	0.6	-59.3	15.6
ROA two periods after issuance	571	0.5170	3.804	0.8	-19.6	17
ROA three periods after issuance	446	0.2031	4.277	0.7	-30.8	25.7
ROA in periods before issuance	2657	0.0458	7.468	0.6	-263.5	48.9
ROA in periods of an Asset Purchase Program	1132	0.1615	7.522	0.7	-196.9	80.3
Size	4956	5.8027	0.9381	5.8901	0	9.4565
Years to Maturity	4956	7.980	6.224	7	0.0389	60.1056
Returns	39522	0.0033	0.243	0.0133	-2.592	4.987
Expected Returns	39522	0.0284	4.472	0.0791	-156.659	581.775
Abnormal Returns	39522	-0.0252	4.474	-0.0791	-582.023	157.015

Table 1: Descriptive Statistics on Return on Assets, Size, Years to Maturity, and the different Returns
Return on Assets is expressed in percentages, size is the logarithmic function of a company's revenue. Returns are calculated by the formulas given in the methodology section.

Table 1 shows the descriptive statistics on ROA, size, years to maturity and the various stock returns. The data on ROA is divided in the multiple periods that were investigated in this research. It shows the ROA in the period before the issuance of the private debt security, in the period that the security was issued and the three periods after the issuance. Table 1 also shows the data on ROA for periods where an asset purchasing program was active.

What can be noted is that the average ROA is higher two periods after the issuance of a private debt security, while the lowest ROAs are found in the period of issuance. The standard deviations also show similar values. It is lowest for the ROA's two periods after the issuance, while the standard deviation is highest in the period of issuance.

The returns are split up in three different sections, first the actual returns which are calculated using $R_{\{u,t\}} = \ln\left(\frac{P_{\{u,t\}}}{P_{\{u,t-1\}}}\right)$. Secondly, the expected returns are calculated using the CAPM formula. And finally, the abnormal returns which are calculated using $AR_{\{u,t\}} = R_{\{u,t\}} - ER_{\{u,t\}}$.

What can be noticed is that the extreme values for the expected returns and the abnormal returns are very large compared to the actual returns. This can be explained by the fact that the CAPM formula which is used in the calculation of the expected returns relies heavily on a company's historical beta. However, when a company has just gone public, its beta is hard to estimate, so this will result in a very

high beta, and thus a very high expected return. But these values are very rare and do not affect the results, as can be seen in the upcoming robustness tests.

4.1. Regression Analysis

Explanatory Variable	Controlling for Industry	Controlling for Country	Controlling for Year	Controlling for Industry and Country	Controlling for all
Lagged ROA	0.245***	0.242***	0.236***	0.232***	0.219***
	(16.11)	(15.92)	(15.52)	(15.16)	(14.31)
Issuance of Debt Security	-0.492	0.0016	1.000	-0.0063	0.052
	(-1.42)	(0.00)	(0.33)	(-0.02)	(0.17)
Issuance of Debt Security with one period lag	-0.068	0.437	0.459	0.427	0.460
	(-0.19)	(1.19)	(1.41)	(1.16)	(1.42)
Issuance of Debt Security with two periods lag	0.285	0.638*	0.709**	0.630*	0.642**
	(0.81)	(1.77)	(2.17)	(1.75)	(1.96)
Issuance of Debt Security with three periods lag	-0.196	0.100	0.140	0.081	0.086
	(-0.52)	(0.26)	(0.39)	(0.21)	(0.24)
Asset Purchase Program	0.684**	-0.263		-0.251	
	(2.29)	(-0.77)		(-0.74)	
Years to Maturity	0.016	0.033*	0.0064	0.0205	0.0018
	(0.92)	(1.87)	(0.33)	(1.16)	(0.09)
Size	1.490***	1.440***	1.435***	1.632***	1.696***
	(12.22)	(12.19)	(12.23)	(13.08)	(13.51)
Constant	-8.189***	-7.741***	-8.563**	-8.582***	-8.420*
	(-5.20)	(4.41)	(-2.12)	(-3.77)	(-1.84)
Observations	4253	4253	4253	4253	4253
Adjusted R-Squared	0.1177	0.1174	0.1232	0.1226	0.1298
F	36.47	25.59	24.89	20.17	14.21
P	0.00	0.00	0.00	0.00	0.00

Table 2: Regression analyses on Return on Assets
Controlling for the different control variables
*Notes: * Significant at 10% level*
*** Significant at 5% level*
**** Significant at 1% level*

Table 2 shows the regression analyses conducted using regression equation 1. The five different columns show the five different regressions that have been conducted. The first column shows an analysis which controls for industry differences only. The second column controls for country differences only, while the third regression controls for year differences. The fourth analysis controls for both industry and country variables. The final regression includes all three control variables.

It can be noted that when the year variables are included as control variables, the asset purchase program variable is left out of the analysis, this is done to prevent multicollinearity. The issuance of debt securities and the lagged variants of this variable are dummy variables, their reference category is the periods before the issuance of the debt security.

When looking at the coefficients shown in table 2, it can be noted that in all cases the lagged ROA is significant at the 1% level, with a coefficient of respectively 0.245, 0.242, 0.236, 0.232, and 0.219, so all positive effects. This means that Return on Assets from one period before can be used to predict the current ROA. The issuance of debt securities does not have a direct impact on ROA in all cases. However, when controlling for country differences, year differences, country and industry differences, and all variables at once, the issuance of debt securities two periods earlier is found to have a positive significant impact on ROA, with a coefficient of 0.638, 0.709, 0.630, and 0.642, respectively. In the first two analyses with a 10% significance, in the latter two, with 5% confidence

The next variable that has been found to have a significant influence on ROA is the years to maturity on the debt security, but only at the 10% significance level in the regression which controls for industry differences only. When controlling for industry effects only, the asset purchase program is found to a positive impact on ROA at the 5% confidence level, with a coefficient of 0.648. In the other regressions, both these variables do not show a significant impact on ROA.

The last variable in the regression is highly significant in all cases, this variable is the size variable, with coefficients of 1.490, 1.440, 1.435, 1.632, and 1.696, and are all significant at the 1% confidence level. This shows that size has a positive effect on the ROA, no matter what control variables are used.

The final values of the model show the explanatory power and the fit of the model. First the adjusted R-squared, which shows the explanatory power of the model. In all five cases, the adjusted R-squared is just above 10%, which is comparable to similar research on private debt security.

The fit of the model is described by the F-value and its probability. All five models have a high F-value, all with a significance level of 1%. This shows that the variables chosen in the analyses have a good fit when explaining the Return on Assets in periods before and after the issuance of debt securities.

4.2. Event Study

Table 3 until 7 show the different Welch t-tests that have been conducted. In every test, the abnormal returns from different time intervals are compared to the abnormal returns in the other time intervals.

	N	Mean	Standard Deviation
Abnormal Return in other periods	34259	-0.0444	4.704
Abnormal Return around time t	5263	0.0993	2.504
T-statistic	-3.3516		
P	0.0008		

Table 3: Welch t-test comparing abnormal returns from 4 periods before issuance until 4 periods after issuance to other abnormal returns. (Two tailed)

	N	Mean	Standard Deviation
Abnormal Return in other periods	36496	-0.0369	4.570
Abnormal Return around time t	3026	0.1152	3.080
T-statistic	-2.4982		
P	0.0125		

Table 4: Welch t-test comparing abnormal returns from 2 periods before issuance until 2 periods after issuance to other abnormal returns. (Two tailed)

	N	Mean	Standard Deviation
Abnormal Return in other periods	36915	-0.0346	4.611
Abnormal Return around time t	2607	0.1081	1.545
T-statistic	-3.6963		
P	0.0002		

Table 5: Welch t-test comparing abnormal returns from the period of issuance until 4 periods after issuance to other abnormal returns. (Two tailed)

	N	Mean	Standard Deviation
Abnormal Return in other periods	37840	-0.0309	4.559
Abnormal Return around time t	1.682	0.1024	1.637
T-statistic	-2.8810		
P	0.0040		

Table 6: Welch t-test comparing abnormal returns from the period of issuance until 2 periods after issuance to other abnormal returns. (Two tailed)

	N	Mean	Standard Deviation
Abnormal Return in other periods	38900	-0.0275	4.506
Abnormal Return at time t	622	0.1185	1.478
T-statistic	-2.2982		
P	0.0218		

Table 7: Welch t-test comparing abnormal returns from the period of issuance to other abnormal returns. (Two tailed)

As can be seen in the tables above, in all cases the abnormal returns are higher for the periods around the issuance of a private debt security than the abnormal returns in other periods. The most significant effect is seen in table 5, which examines the abnormal returns from the period of issuance until one year after issuance with the other abnormal returns. This test gives the highest Welch t-statistic of -3.6963 and is significant at the 1% level.

Two more Welch t-tests show results that are significant with a 1% confidence level. One of these tests is the test which compares the abnormal returns from one year before issuance until one year

after issuance with other abnormal returns, which gives a Welch t-statistic of -3.3516. The other test with a one 1% significance level is the test in table 6, which gives a t-statistic of -2.8810. This test compares the abnormal returns from 6 months before issuance until 6 months after issuance to the other abnormal returns. The two Welch t-tests in table 4 and table 7 show significant results at the 5% confidence level with t-statistics of -2.4982 and -2.2982, respectively.

These results show that the abnormal stock returns are significantly higher in the periods around the issuance of private debt securities, than the abnormal returns in other periods.

4.3. Robustness Tests

The following section presents the results of different robustness checks that have been done in this research. These robustness checks will validate whether the results collected in the previous section are justifiable.

Explanatory Variable	Controlling for Industry	Controlling for Country	Controlling for Year	Controlling for Industry and Country	Controlling for all
Lagged ROE	0.318***	0.322***	0.323***	0.311***	0.308***
	(21.72)	(21.98)	(22.06)	(21.07)	(20.79)
Issuance of Debt Security	0.310	1.240	0.635	1.202	0.637
	(0.39)	(1.49)	(0.90)	(1.45)	(0.90)
Issuance of Debt Security with one period lag	1.237	2.083**	1.550**	2.047**	1.517**
	(1.48)	(2.42)	(2.05)	(2.39)	(2.00)
Issuance of Debt Security with two periods lag	1.781**	2.507***	2.054***	2.461***	2.011***
	(2.17)	(2.99)	(2.70)	(2.94)	(2.64)
Issuance of Debt Security with three periods lag	1.158	1.665*	1.438*	1.592*	1.261
	(1.32)	(1.88)	(1.71)	(1.80)	(1.49)
Asset Purchase Program	0.215	-1.407*		-1.321*	
	(0.31)	(-1.78)		(-1.67)	
Years to Maturity	0.035	0.054	0.024	0.041	0.024
	(0.88)	(0.172)	(0.54)	(1.02)	(0.53)
Size	2.056***	2.060***	2.000***	2.276***	2.331***
	(7.43)	(7.67)	(7.45)	(8.03)	(8.12)
Constant	-9.611***	-11.577***	-12.796	-10.920**	-10.757
	(-2.70)	(-2.91)	(-1.39)	(-2.12)	(-1.03)
Observations	4055	4055	4055	4055	4055
Adjusted R-Squared	0.1451	0.1413	0.1397	0.1467	0.1448
F	44.00	29.99	27.32	23.47	15.30
P	0.00	0.00	0.00	0.00	0.00

Table 8: Regression analyses on Return on Equity Controlling for the different control variables
*Notes: * Significant at 10% level*
*** Significant at 5% level*
**** Significant at 1% level*

Table 8 describes different analyses on Return on Equity. These regressions are completely similar to the regressions described in table 2 and regression equation 1, with the only difference being that ROA has been replaced by ROE. As can be seen in table 8, the variables for the lagged ROE and size are still highly significant. Just like in table 2, ROE is significantly higher two periods after issuance, however in these analyses the effect is even more significant. In four out of five analyses, ROE is also significantly higher for one period after issuance, this was not the case in the analyses on ROA.

One thing that is interesting to notice is the effect of the Asset Purchase Program on ROE. In the analysis in table 2 which controlled for industry differences only, a positive significant effect on ROA could be observed. In the analyses in table 8, two of the three analyses show a negative significant effect of an Asset Purchase Program on ROE.

Explanatory Variable	**Period of Issuance**	**One period after Issuance**	**Two periods after Issuance**	**Three periods after Issuance**
Lagged ROE	0.219***	0.220***	0.219***	0.219***
	(14.31)	(14.33)	(14.30)	(14.31)
Issuance of Debt Security	-0.145			
	(-0.51)			
Issuance of Debt Security with one period lag		0.338		
		(1.11)		
Issuance of Debt Security with two periods lag			0.548*	
			(1.78)	
Issuance of Debt Security with three periods lag				-0.099
				(-0.29)
Years to Maturity	0.003	0.003	0.003	0.004
	(0.17)	(0.15)	(0.13)	(0.18)
Size	1.694***	1.693***	1.697***	1.695***
	(13.50)	(13.49)	(13.53)	(13.50)
Constant	-8.037*	-8.167*	-8.276*	-8.101*
	(-1.75)	(-1.78)	(-1.81)	(-1.77)
Observations	4253	4253	4253	4253
Adjusted R-Squared	0.1294	0.1296	0.1300	0.1293
F	15.04	15.06	15.11	15.03
P	0.00	0.00	0.00	0.00

Table 9: Regression analyses on Return on Assets
Using different lags after issuance
*Notes: * Significant at 10% level*
*** Significant at 5% level*
**** Significant at 1% level*

Table 9 shows another robustness test on the regression analyses that have been conducted and reported in table 2. The analyses in table 9 are regressions which investigate the effect of the issuance of debt securities on the ROA in different periods in time, separately. The regression models control for all three control variables, just like the last regression in table 2.

What can be seen from table 9 is that the lagged ROA and size variable are still highly significant on the ROA at time t. The different time variables show similar results to the results in table 2. ROA is significantly higher two periods after issuance, while the other time variables remain insignificant. This confirms the results presented in table 2. So, using the previous two regressions, the results from table 2 can be seen as robust.

	N	Mean	Standard Deviation
Abnormal Return in other periods	33499	-0.8240	0.010
Abnormal Return around time t	5233	0.0824	0.016
T-statistic	-8.6767		
P	0.0000		

Table 10: Welch t-test comparing abnormal returns from 4 periods before issuance until 4 periods after issuance to other abnormal returns. (Without outliers) (Two tailed)

	N	Mean	Standard Deviation
Abnormal Return in other periods	35729	-0.0734	0.010
Abnormal Return around time t	3003	0.0980	0.021
T-statistic	-7.4157		
P	0.0000		

Table 11: Welch t-test comparing abnormal returns from 2 periods before issuance until 2 periods after issuance to other abnormal returns. (Without outliers) (Two tailed)

	N	Mean	Standard Deviation
Abnormal Return in other periods	36141	-0.0713	0.010
Abnormal Return around time t	2591	0.0961	0.022
T-statistic	-6.8997		
P	0.0000		

Table 12: Welch t-test comparing abnormal returns from the period of issuance until 4 periods after issuance to other abnormal returns. (Without outliers) (Two tailed)

	N	Mean	Standard Deviation
Abnormal Return in other periods	37062	-0.0674	0.009
Abnormal Return around time t	1670	0.101	0.027
T-statistic	-5.7995		
P	0.0000		

Table 13: Welch t-test comparing abnormal returns the period of issuance until 2 periods after issuance to other abnormal returns. (Without outliers) (Two tailed)

	N	Mean	Standard Deviation
Abnormal Return in other periods	38114	-0.0633	0.009
Abnormal Return at time t	618	0.1318	0.045
T-statistic	-4.2194		
P	0.0000		

Table 14: Welch t-test comparing abnormal returns from the period of issuance to other abnormal returns. (Without outliers) (Two tailed)

Tables 10 to 14 are similar tables to tables 3 to 7. Tables 10 to 14 present the results of different Welch t-tests conducted on the abnormal returns close to the period of issuance and the abnormal returns in other periods. The only difference in these tests is that 2% of the previous observations have been dropped. These observations are the 1% lowest abnormal returns and the 1% highest abnormal returns. These returns are dropped because there were some very low and very high abnormal returns as can be seen by the minimum and maximum value in table 1. This was due to the high betas in some cases.

The results of tables 10 to 14 show that the outliers which were included in tables 3 to 7 did not alter the results. The differences in abnormal returns are even more significant after the exclusion of the outlier. So, the results from the event study on abnormal returns can be seen as robust.

A final robustness test that has been done is a stationarity test. A stationarity test tests for a unit-root in the data. If the data is non-stationary, it cannot be used in a regression analysis, but if there is no unit-root, so the data is stationary, it can be used in regression analyses.

A Fisher type unit-root test has been conducted on the Return on Assets which is based on augmented Dickey-Fuller tests. This test performs unit-root tests on all panels in the data separately and combines the p-values to check whether the panel series contains a unit-root. In the case of the Return on Assets, the test shows a p-value of 0.00, which means that the data does not contain a unit-root and is stationary. It can thus be used in regression analyses.

5. Discussion

This research investigates how the issuance of private debt securities can affect company performance. This study has done this by distinguishing between two types of company performance, being Return on Assets and stock returns. The effect of issuing debt securities on ROA has been tested with regression analyses, while the effect on stock returns has been measured using an event study.

When comparing the results of this research to the conclusions of earlier studies, the results on the return on assets are somewhat similar to what has been found in earlier research. This research finds that the ROA of a company is significantly higher 6 months after issuance. This is also what was expected to be found as can be seen from hypothesis 1, which states that ROA is higher after issuance than before. This hypothesis is partly valid, because only 6 months after issuance, the ROA are significantly higher. However, this study has found a significant impact on ROA after issuance, so this hypothesis cannot be rejected. This result is also confirmed by the robustness tests. When testing the different lags after issuance, ROA is seen to be significantly higher 6 months after issuance. The robustness test on ROE confirms this as well, this test has even found significantly higher ROE 3 months and 9 months after issuance.

To compare this to existing literature, Didier et al. (2015) show that companies who issue private debt securities have a higher company growth, which is confirmed by the fact that ROA is found to be higher in periods after the issuance of debt securities. However, where Didier et al. see this result immediately, this study only finds a higher ROA 6 months after the issuance of debt securities.

Abor (2005) finds that short term debt issuance has a positive influence on ROA, while long term debt has a negative impact. This study finds that issuing debt has a positive influence on ROA, but that the time to maturity on the debt security has a no significant impact on the ROA in most cases. Finally, Nzao et al. (2019) find that issuing private debt securities has a positive influence on ROA, something that is confirmed by the results in this study.

So, what was found in earlier research is confirmed in this study. After the issuance of private debt securities, companies have more funds to expand their business, and this is visible after a period of 6 months. This means that the profitability of a company does increase after the issuance of a debt security, but not immediately.

The second part of this research has focused on how stock returns are affected by the issuance of debt securities. The results show that the abnormal stock returns are significantly higher around the time of issuance, than in other periods. When referring to hypothesis 2, which is the hypothesis which stated that stock returns would be lower after the issuance of debt securities, the findings of this study contradict this hypothesis. So based on the findings of this research, which state stock prices will be higher after issuance, this hypothesis is rejected. The robustness tests also confirm this. Without outliers

due to high betas, the abnormal returns around the period of issuance are even more significantly higher than the results in other periods.

Looking back at the literature on stock price reactions, it is very diverse, with evidence being found for both positive and negative stock reactions after issuance. This study has found a positive effect and thus confirms the findings by Miller and Puthenpurackal (2002), Johnson (1995) and Spiess and Graves (1999).

The results of this study do however contradict the pecking order theory formulated by Myers & Maljuf (1984). This theory states that when debt increases, stock prices will decrease due to the fact that equity holders will receive less payment, because debt holders will be paid out before equity holders. Even though, the pecking order theory has been confirmed by research by Datta et al. (2000), Pilotte (1992) and Labelle et al. (2020), the findings in this study contradict this and conclude that the stock returns after issuance of a private debt security are not lower but are in fact higher than in other periods.

The results of this study might suggest that investors do not care about the fact that there are more payments to debt holders, so less payment to them. The market might see that the issuance of a private debt security will lead to a higher profitability in the future, as can be seen from the results of this study. The market might play into this, by buying shares early, which will lead to an increase in the stock price at the moment of issuance. This might not lead to higher returns for the investors in the short-run, but it can be profitable in the long-run, due to the increase in profitability of the company in a later period in time.

The final hypothesis that has been formulated in this study is the hypothesis on how return on assets is affected when a debt security is issued in times when an asset purchase program is active. The hypothesis on this topic stated that ROA is higher after issuance if this happened during times of a purchase program than in times without an asset purchase program. The results of the regression analyses on ROA show that the asset purchase program has a positive impact on the Return on Assets after issuance in one of three cases, however the robustness check with ROE instead of ROA shows that in two out of three regressions, the effect is actually significantly negative. Thus, the results of this study on this topic are inconclusive and will require more investigation in future research.

When looking at the results of this research as a whole, it can be seen that during all times, issuing private debt securities positively influences company performance. This shows that it is wise to issue at least one private debt security as an entrepreneur. Even though the results regarding the asset purchase program are inconclusive, it can still be beneficial to issue a debt security during times of an asset purchase program, because the other results of this study show a positive relationship between issuing and performance.

The two major limitations of this study lie within the data that has been used. The first limitation comes from the fact that this study uses data on companies who have issued only one private debt security in their existence. The results found in this study might not hold for companies who issue debt securities more often might be affected different than one-time issuers.

The second limitation of the study is the fact that quarterly data is used for the stock price returns. According to the efficient market hypothesis, stock prices should react immediately to new information in the market, so not three months later (Fama, 1970). This study is only able to capture the long-run effect of the issuance of debt securities, not the extremely short-term effect which is described by the efficient market hypothesis. The short-term effect might be different from the long run effect and might suggest that the pecking order theory actually does hold. This can be investigated in future research.

6. Conclusion

Over the past years, the number of outstanding private debt securities has risen substantially. This in combination with the asset purchase programs that multiple central banks have implemented, have made private debt securities a more popular way of raising capital for companies. This research tries to investigate how the issuance of private debt securities affects company performance. This is done by investigating how a company's return on assets and its stock return are affected by the issuance.

Past literature has shown mixed results regarding both topics. The literature on performance has shown that short-term debt always has a positive influence on company performance, while long-term debt is shown to have both a negative and a positive influence on performance. Literature on stock returns is even more inconclusive. Some research suggests a positive influence on stock returns, while other research shows negative stock returns after issuance. Lastly, there is evidence that stock returns are unaffected by the issuance of private debt securities. Research on the direct effect of asset purchase programs on performance and stock returns is very scarce, although evidence suggests that bond issuance and bond prices rise in time of an asset purchase program.

This research has used two methods to investigate the effects on company performance. First, multiple regression analyses have been conducted to see how the issuance of a debt security influences return on assets, while controlling for different variables. These analyses have shown that the ROA of a period earlier and company size are significantly influential on ROA. The analysis also shows that 6 months after issuance, the ROA are significantly higher than periods before issuance. Robustness tests have also confirmed these findings.

The second method used to investigate company performance is an event study on how stock returns are affected by the issuance of private debt securities. This study has found a positive relationship between the issuance of debt securities and abnormal stock returns in all cases. Once again, robustness tests confirm these findings.

The final topic that has been discussed in this research is how return on assets is affected when a debt security is issued in times when an asset purchase program is active. In one of the three regressions, a significant positive influence of asset purchasing program during issuance on ROA has been found. However, the robustness test on this topic finds that the asset purchasing program has a significant negative influence on ROE. So, this topic can be investigated more in future research, to find what effect asset purchasing programs do have on the performance of issuing companies, if there is actually any effect.

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