Erasmus University Rotterdam
Erasmus School of Economics

Master Thesis Financial Economics

The direct and indirect effects of the Corporate Sector Purchase Programme

Jasmijn van Kempen
457663

Supervisor: dr. T. Eisert
Second assessor: -
Date: July 28, 2018

Abstract

This study examines the direct and indirect effects of the Corporate Sector Purchase Programme. In the first part I have investigated whether eligible non-financial companies started substituting bank debt for bond debt. My results show significance evidence for a bond-loan substitution channel after the announcement of the program. Thereafter I explored whether this substitution increased the availability of credit to lend to non-eligible companies. I could not find support for a credit reallocation channel. Moreover, I have investigated both channels by looking at different samples based on company status and location. I show that mainly companies incorporated in non-GIIPS countries are affected by the Corporate Sector Purchase Progamme.

Key words: Corporate Sector Purchase Programme, bond-loan substitution, credit reallocation

Table of contents

1. Introduction

In the aftermath of the Global Financial Crisis and the Sovereign Debt Crisis the European Central Bank (ECB) lowered their key interest rates to the zero lower bound. This conventional measure did not succeed to take the inflation to its targeted lower but close to 2%. When conventional measures become ineffective, the central bank can stimulate the economy with unconventional monetary policies. In 2009 the first asset purchase programme of the ECB started. A turning point was the 'whatever it takes' speech of Mario Draghi in 2012 (Draghi, 2012). He announced the start of the Outright Monetary Transactions (OMT), which expanded their lending operations and restored the financial instability in the euro area. In 2015 the ECB started buying assets directly at the market. The Asset Purchase Program (APP) was introduced, allowing the ECB to buy government bonds (PSPP), asset-backed securities (ABSPP), and covered bonds (CBPP3).

Although these first asset purchase programs have decreased inflation in euro area (Koijen et al., 2016), non-financial firms were still facing financing constraints. In the first asset purchase programs the ECB mainly bought government bonds, which do have a limited indirect impact on corporate bond yields. According to the portfolio balance channel investors rebalance their portfolio to more risky securities as result of the lowered yield of the bought securities, but corporate bonds were perceived too risky and considered imperfect substitutes (Greenwood et al., 2016; Tobin, 1969). Second, according to the bank-lending channel the ECB purchases assets from financial institutions and increase the bank reserves and bank deposits in return the financial institutions will increase the availability of bank loans. (Yellen, 2012; Bernanke, 2012). But the gross of the securities purchased under the first programs were not purchased from euro-area financial institutions but from foreign investors, which limited the pass-through of the financing conditions (Koijen et al., 2016). And if securities were purchased from financial institutions, the proceeds were used the recapitalize due to the new regulations, which made it difficult for banks to increase their lending (Demertzis & Wolff, 2016).

Therefore on 10 March 2016 the ECB announced an expansion of the APP, the Corporate Sector Purchase Programme (CSPP). The aim of the programme was to strengthen the pass-through of the Eurosystems assets purchases to the financing conditions of the real economy and to provide additional monetary policy accommodation (ECB, 2016). The CSPP was meant to lower the yield on non-financial corporate bonds eligible to the program and as spillover to influence prices on more risky assets like non-eligible corporate bonds. In addition, the decreased yields on eligible bonds would encourage the issuance of bonds in the

primary market and increase the liquidity of corporate bonds in the secondary market. Moreover, the increased access to the debt market would stimulate the euro-area growth in general (ECB, 2017).

Since companies would increase their bond issuance, the CSPP might directly influence the debt capital structure of eligible non-financial companies. When companies start finance themselves with bond debt, they might shift from bank debt to bond debt. This way, the CSPP would cause a bond-loan substitution in the debt capital structure of non-financial eligible companies. This might increase the availability of credit to lend to non-eligible companies. Banks will start to reallocate their supply in loans from eligible to non-eligible non-financial companies. This way, non-financial companies with little or no access to bond markets may have indirectly benefited from the CSPP. In this paper I will investigate these direct and indirect effects of the CSPP.

I created a dataset with 475 companies, which have bond debt outstanding the day before the announcement of the CSPP for the period of Q1 2015 – Q4 2016. I used this sample to asses the direct impact of the CSPP on the debt capital structure between eligible an non-eligible companies. I divided the sample in several subsamples on order to distinguish the effect of the announcement of the CSPP on public, private, GIIPS and non-GIIPS companies separately. I find that the CSPP has a significant direct impact on the amount of the bond debt of eligible firms and provide evidence for a bond-loan substitution channel. From the several samples I found that the CSPP mainly impacted the public companies and the companies incorporated in non-GIIPS countries. Generally, this study provides evidence for a bond-loan substitution channel after the announcement of the CSPP.

In the second part I created a dataset with 477 firms, which received a loan in the period Q1 2015 – Q4 2016. I constructed an indicator which indicates if firms received loans from a bank with a large share of non-financial eligible borrowers in its total term loan portfolio in the period of 2010-2014 or not. I used this sample to assess the indirect impact of the CSPP on the amount of term loans a firm receives from a bank with a large share of eligible firms in its portfolio. In this manner I will investigate whether banks with a large share of eligible firms in their portfolio before the announcement of the CSPP shift lending to non-eligible firms as results of the substitution between bank debt and bond debt by eligible firms. I do not find a positive significant spillover to non-eligible firms exposed to a bank with a large share of eligible firms in their portfolio. In contrary, I found that the amount of term loans a company receives decreases after the announcement of the CSPP from banks with a high share compared to banks with a low share. Since it takes to time to negotiate and retrieve a term loan, I extended the model with loan information until Q4 2017. In this sample I also found evidence of a decrease in the amount of term loans a company

receives of a bank with a high share of eligible firms in its portfolio. From the split in samples I found that the CSPP mainly impacted the private companies incorporated in non-GIIPS companies, although these results are also negative. Therefore this study does not support a credit reallocation channel after the announcement of the CSPP[1].

To the best of my knowledge no prior study has investigated the bond-loan substitution channel and distinguished the effect on different samples. According to the credit reallocation channel Grosse-Rueschkamp et al. (2017) already investigated the effect on public and private companies separately. Although to the best of my knowledge no prior study distinguished the effect on companies incorporated GIIPS and non-GIIPS countries separately in the whole, public and private sample. This study contributes to general literature concerning impact of central banks asset purchase programs. And more specifically to the growing literature on the effects of the CSPP.

The remaining of this paper is organized as follows: in section (3) I discuss the literature review on the transmission channels of the monetary policy and the corporate sector purchase programme. In section (4) I discuss the data gathering and the descriptive statistics. In section (5) I will present my research methodology, the following results are presented in section (6) and in section 7 I provide my conclusion.

2. Literature Review

This study is part of the literature that investigates the impact of central bank asset purchase programs. In this section I will review the existing literature on the transmission channels of unconventional monetary policy, the developments of the unconventional monetary policy by the ECB and in more detail the CSPP.

2.1 Transmission channels of unconventional monetary policy

Macroeconomic literature predicts that central bank asset purchase programs should not have an effect on the macro-economy (Wallace, 1981; Woodford, 2012). Within a frictionless economy public and privately held assets are perfect substitutes. The central bank assets purchases would represent an allocation of assets from private investors to the central bank and would not affect the asset prices. Therefore the asset purchases programs would be irrelevant. Accordingly, the level of the current and the expected nominal short-term interest rates could describe the impact on the asset prices. Once market participants are aware

[1] I used the terminology of Arce et al. (2017) concerning the transmission channels of the direct and indirect effects.

of these asset prices they will adjust instantaneously. However, central bank asset purchases could have an impact in asset purchases. The existing literature discusses two main transmission channels through which the asset purchases could affect asset prices.

The portfolio balance channel could impact asset prices since the asset purchases by the central bank change the portfolio of assets held by investor. Within the portfolio balance channel the literature discusses theories of market segmentation, imperfect assets substitutability and preferred habitat investors (Tobin, 1969; Brunner and Meltzer 1973; Gertler and Karadi, 2011). The portfolio balance channel assumed that different financial assets are imperfect substitutes in an investors' portfolio. This way, changes in the supply of one asset will affect the yield of this asset, but also the yields of assets with similar characteristics (Bernanke, 2010). Vayanos and Villa (2009) explain the existence of preferred habitat investors; some investors have a preference for a specific part of the bond market. For example, investors prefer to hold bonds with long maturities. If central banks start to purchase these longer maturity bonds, there will be imperfect asset substitution between investors because of this market segmentation. This way asset purchases only reach the investors, who are willing to sell their corporate bonds. Since the preferred habitat investors refuse to sell, the decrease in bond yields is less extensive since they drive the scarcity of the targeted bonds. The signaling channel describes how the announcement of or the future commitment to asset purchases programs will affect market expectations directly in advance of the actual purchases (Krisnamurthy and Vissing- Jorgensen, 2011; Bauer and Rudebusch, 2014). The announcement of a new asset purchase program will be immediately incorporated in the market, thereby lower yields and the expectations for the future short-term interest rates. Generally, the central bank will provide market a signal before the announcement of their policy changes.

A part of the existing literature studies the effect of the asset purchase programs on asset prices. Krishnamurthy and Vissing-Jorgensen (2011) and Bauer and Rudebusch (2014) find that announcement of asset purchasing programs by the fed change the bond yields before the programs were implemented. The study of Gagnon et al (2011) found that by reducing the net supply of assets with long duration the Fed has reduced the term premium. In addition, Christensen and Rudebusch (2012) and Mclaren et al. (2014) found evidence for the signaling channel by investigating the announcement of asset purchasing programs by the Bank of England (BoE). Andrade et al (2016) found that the ECB was effective in easing the further stance of monetary policy. They found a reduction in the sovereign yields and long-term bonds as results of the APP. Moreover they found that asset prices of banks increased in order to the amount of sovereign bonds in their holdings. Joyce et al. (2011) also finds a decrease in government bond yields by investigating the announcements of the asset purchasing programs of the BoE. Georgiadis and Grab

(2016) investigated the impact of the announcement of the APP and found that this benefits the global financial markets by increasing equity prices in the euro area and globally.

Some literature focuses on the effect of the asset purchase programs on bank lending. They try to identify the impact of the asset purchase programs through a bank lending channel. The bank lending channel explains how asset purchase programs lower the yields and increase the prices of the current holdings in a banks' balance sheet. Through these improved balance sheet conditions, banks start to increase their lending to the real economy (Yellen, 2012; Bernanke, 2012). Albertazzi et al. (2016) investigated the transmission of monetary policy on the cost of credit in the euro area. They found that both conventional and unconventional monetary policy led to a reduction in lending rates. Di Maggio et al. (2016) made an effort to quantify the pass-through of unconventional monetary policy by looking at the mortgage market. They showed that the asset purchase programs worked through a refinancing channel. The programs improved the availability of credit and lowered the interest rates for affected households. Rodnyansky and Darmouni (2017) show that banks with a relative large share of the targeted asset on their balance sheet will expand lending after QE1 and QE3. In addition, Chakraborty et al. (2017) finds that banks increase their mortgage lending if they have benefited from MBS asset purchases by the Fed. However, in turn these banks will reduce their commercial lending. Cahn et al. (2017) found that targeted unconventional monetary policy can be used to increase lending to private firms, especially for firms with only a single bank relationship. And Kandrac and Schlusche (2017) find that the bank reserves created by the fed as a results of the two asset purchase programs increased loan growth and the amount of risky loans in the banks' portfolio.

Other literature focuses on the effect of the purchases on the capital structure decisions of firms and the substitution between bank loans and bond debt. There is some existing literature about capital structure decisions and the substitution between bank loans and bond debt. The research Kashyap et al. (1994) looks at firms financing decisions when there is a tight monetary policy on the supply of credit. They propose that if a firm stops borrowing due to a reduction in investment opportunities, there should be a decrease in other sources of financing. If a monetary policy decreased only the supply of credit and not the demand, there should be an increase in other sources of financing concerning that firms are able to substitute sources of financing interchangeably. Peek and Rosengren (2000) looked at the effect loan supply shocks caused by the Japanese banking crisis on the U.S. economy. They find that when the supply of bank loans is low, it might be hard for firms to substitute bank debt for other sources of funding. The research of Leary (2009) finds that a firms' capital structure is affected by the credit supply and the segmentation of the market for corporate bonds. He finds that the leverage ratio of a firm which cannot

access the bond market increased more than the leverage ratio for a firm which do has access to the corporate bond market when there is a increase in availability of bank loans. The paper provides evidence on firm's financing decisions, choosing the relatively cheaper source of funding in response to a friction in the credit demand and supply. In line with Peek and Rosengren (2009), Chava and Purnanandam (2011) find that even profitable firms were not able to substitute their bank loans in reaction to a loan supply shock. The research of Becker and Ivashina (2014) provides evidence on the substitution of bank debt by bond debt, when there is a contraction in bank credit supply due tight monetary policies and poor bank performance. Further there is some literature which research looked at the substitution of bank loans with bond debt due to the announcement of the CSPP. The research of Arce et al. (2017) focus found that for spanish firms that already have access to the bond market start substituting loans with bond debt after the announcement of the CSPP. Moreover the research of Grosse-Rueschkamp (2017) also finds evidence for substitution between loans and bonds for large European firms after the announcement of the CSPP.

2.2 Unconventional monetary policy by the ECB

The burst of the housing bubble in the U.S. spilled over to countries, which were exposed to assets in the U.S. market (Dakic, 2014). European banks did not invest extensively in U.S. assets but were largely dependent of the dollar supply. Subsequently the crisis did also hit Europe. (Lane, 2012)

In July, 2009 the ECB started the first Covered Bond Purchase Programme (CBPP1). After the collapse of Lehman brothers people started to worry about the health of the banking sector, which led to an increase in funding cost for banks and a hold on the debt market. In order to support the banking sector, the ECB initiated the CBPP to prevent a dry up in lending and restore liquidity in the interbank market. In May, 2010 the ECB started the Securities Markets Program (SMP). The SMP started shortly after the revelations about conditions of the Greek economy. The purchases mainly consisted of sovereign bonds of countries with high yields and risk premia, in order to stabilize the prices in the medium term. In October, 2011 the ECB announced the second covered bond purchase programme (CBPP2). The aim of the program was the ease funding conditions for credit institutions and enterprises and to encourage credit institutions to maintain and expand their lending to customers. The CSPP2 was announced with a volume of EUR 40 billion but at the end of the program the ECB only bought covered bonds for an amount of EUR 16.4 billion due to high market demand and low supply (ECB, 2011; 2012). In 2012 the ECB did not manage to restore the stability in the euro area and the Italian and Spanish sovereign bonds spreads increased sufficiently. In July, 2012 the ECB announced that within their mandate, they will do whatever it takes to preserve the euro (Draghi, 2012) and announced the Outright Monetary Transactions program

(OMT). In order to start the OMT the previous SMP will be terminated. Within the OMT the ECB bought sovereign bonds of Eurozone countries in the secondary market (ECB, 2012). Strangely, the OMT worked without spending money, since due legal issues the OMT could not be implemented until March 2015 (Fuertes et al., 2015). But the OMT helped to decrease the sovereign bond spread in the GIIPS countries. Through the high sovereign bond spreads also the European banking system suffered from macroeconomic uncertainty. Most of the European banks had a large share of sovereign debt on their balance sheets, which increased concerns about the health of their balance sheets. Due this macroeconomic uncertainty and the stressed balance sheets the ECB announced in December, 2011 an liquidity injection through Longer-Term Refinancing Operations (LTRO). The aim of this LTRO was to enhance provision of credit to households and non-financial corporations (ECB, 2017). In June, 2014 the ECB announced the Targeted Longer-Term Refinancing Operations (TLTRO) they were targeted with the same goal as the LTRO. In October, 2014 the ECB announced the Asset-Backed Securities Purchase Program (ABSPP) together with the third Corporate Bond Purchase Program (CBPP3) (ECB, 2014). The aim of the programs was to increase banks' incentive to lend to the real economy (ECB, 2017). In the program banks could securitize loans and sell them in order to get new funds. In January, 2015 the ECB announced the Asset Purchasing Program (APP), also known as quantitative easing (QE), with the aim to recharge the economy and maintain price stability in the euro area. The earlier ABSPP and the CPP3 were added to the APP. And together with and as part of the APP the ECB announced the Public Sector Purchase Program (PSPP), in which the ECB started to purchase public debt. The PSPP was the largest measure by ECB until then, with holdings of EUR 900 billion. Together with the PSPP the ECB also announced to expand their monthly purchases to EUR 60 billion. In march, 2016 the ECB announced CSPP which is the main focus of this study. On the same day the ECB announced the CSPP they also announced to extend the APP from EUR 60 billion to EUR 80 billion (ECB, 2017a). Moreover, the CSPP is one of the first targeted measures to directly stimulate the asset markets and the financing conditions of the real economy. Figure 1 presents the share of the APP holdings by the ECB. From the beginning of the program until the end of May 2018 the ECB has purchased EUR 2.4 trillion under the APP.

2.3 Corporate Sector Purchase Programme

On 10 March 2016 the ECB announced the start of the CSPP on 8 June 2016. The program enables the direct purchase of corporate sector bonds by the ECB in the primary and secondary markets, if they meet the corresponding eligibility criteria. At the time of the announcement the Eurozone still faced a slightly negative inflation and relatively weak real GDP growth. The CSPP was part of a set policy measures of the ECB' aim to gain price stability. Moreover, the CSPP is one of the Eurosystem's first targeted

measures to bypass the banking sector and transmit monetary policy stimulus directly to support asset markets and the financing conditions of the real economy (Allen & Overy, 2016).

In order to be eligible under the CSPP corporate sector bonds have to comply with certain criteria. These eligibility criteria are based on the ECB collateral eligibility framework, the rules which lay down what assets are justified as collateral for monetary policy credit operations (ECB, 2016). Further details about the CSPP were presented in April 2016. The ECB has established seven conditions corporate sector bonds have to comply with in order to be eligible under the CSPP. These requirements are defined in the Guidelines on the implementation of the Euro system monetary policy framework (ECB/2014/60). The corporate sector bonds involved have to be:

i. Denominated in euros
ii. Considered as investment-grade and a minimum best credit rating of at least credit quality step 3 (rating of BBB-/BB+) by at least one major external credit assessment institution (Standard & Poor's, Moody's, FitchRatings, DBRS).
iii. A remaining maturity of at least six months up to a maximum of 31 years and 364 days at the time of the purchase.
iv. Issued by a corporation in the euro area, i.e. the issuer of the bond has to be incorporated in a Eurozone country. If a corporation is incorporated in the Eurozone issues a corporate sector bond, but their ultimate parent company is based outside of the Eurozone, the bond is also eligible for purchase under the CSPP.
v. Issued by a non-credit institution.
vi. Issued by a corporation which ultimate parent company is not an credit institution.
vii. Issued by a corporation that is not an assets management vehicle, an investment firm, or a fund established to support financial sector restructuring and/or resolution. Conclusively, the issuer has to be a non-financial corporation.

Further, corporate sector bonds are not eligible for purchase if a corporation or its subsidiaries are under the supervision of the Single Supervisory Mechanism. If they are under supervision outside the euro-area, they also will be excluded. (ECB/2014/70).

The Euro system aims to distribute the CSPP in a market-neutral manner, they considered the potential impact of the CSPP on market functioning and liquidity conditions. Accordingly the ECB designed some rules to minimize distortion on the corporate bond market. They will set a maximum to the amount of

purchases per international security identification number (ISIN). And apply an issue share limit of 70% of the outstanding amount per ISIN. This issue share limit differs for specific cases like instruments which are issued by public undertakings, which will be purchased similar as under the PSPP. Further, there is no minimum issuance volume for the debt securities to be eligible, which ensures that bonds issued by small companies can be purchased, since they are more likely to issue small volumes. Lastly, the eligible corporate sector bonds must be bought above the deposit facility rate at the moment of issuance. All these limits were determined to ensure that the portfolio under the CSPP would be heterogeneous in terms of issuers, jurisdictions, sector, credit quality and risk (ECB, 2017).

The CSPP will start on June, 8 2016 and is being carried out by the ECB in coordination with six national central banks (Nationale Bank van België/ Banque Nationale de Belgique, Deutsche Bundesbank, Banco de Espana, Banque de France, Banca d'Italia and Suomen Pankki/Findlands Bank.). Each national central bank is assigned to a market segment, where they are responsible to buy corporate sector bonds. The national central banks are allowed to purchase public and private bonds in the secondary market. But they are also allowed to purchase bonds of private companies directly at issuance, in the primary market (ECB, 2016). The six national central banks will publish ex post the volume of the corporate sectors bond' holdings on a weekly and monthly basis. They will disclose which individual instruments they purchased, identified by ISIN, but not the amounts they purchased per instrument. In addition, they will provide a breakdown of the purchases within the primary and secondary market. They post their holdings ex post because this enables them to adjust the monthly purchases to abrupt market shocks and difference issuance activity. Figure 2 shows that the monthly purchases fluctuate from around EUR 3 to 10 billion. The purchases will be low in months with low market liquidity and primary market issuance and high otherwise (De Santis, et al., 2018).

In October 2017 the ECB announced to recalibrate the APP, the purchases made under the APP will continue at a monthly pace of 60 billion and from January 2018 the purchases are continued at a monthly pace of EUR 30 billion until September 2018, or beyond if necessary (ECB/2017/7). Figure [x] shows that from its start, up until the end of May 2018 the ECB has purchased around EUR 156 billion in corporate bonds which constitutes about 17% of the eligible bond universe and about 6% of the total APP (ECB, 2018).

The aim of the CSPP was to strengthen the pass through to financing conditions in the real economy. The CSPP was welcome in the euro-area since there was a lack in bank lending (Macchiarelli et al, 2017). Figure 3 the volumes of new euro-dominated loans to non-financial corporations in the euro-area. The

amount of loans shows a decrease in the year preceding to the announcement of the CSPP, suggesting that bank lending was not improving. According to Demertizis et al. (2016) banks are still recovering from the Sovereign Debt Crisis and implementing the new regulatory requirements, therefore they were not likely to increase their bank lending to NFC companies in the eurozone. Right after the announcement I see a sharp decrease in lending which could be attributed to the Brexit[2] referendum, which caused turmoil in the markets. Thereafter the amount of lending seems to be approximately stable. This would indicate that the financing conditions have improved.

The announcement of the CSPP had impact on the cost of financing of euro area corporations. Figure 4 shows the bond yields of non-financial and financial corporations. The bond yields of non-financial corporations have fallen since the announcement of the CSPP. In the year up to the announcement the yields increased distinctly. The subsequent decrease is a result of the improvement in bond financing conditions due to the CSPP. Since the yields declined on non-financial corporate bonds, investors want to rebalance their portfolio towards assets with same risk and expected return. Therefore the yields did not only decline for non-financial but also for financial corporate bonds owing to the spillovers from the CSPP. Accordingly, Abidi et al. (2016) finds that bond yield spreads have declined after the announcement of the CSPP for both eligible and even non-eligible bond-issues being close to the eligibility threshold. Zaghini (2017) also found evidence for a decline in the bond yield spread, in his research he concentrated on the effects of the CSPP within the primary bond market. He found a more pronounced effect on eligible bonds, but the spreads did also decline for ineligible bonds. Also Cecchetti (2017) investigated the corporate bonds spreads after the announcement and used the information embedded in Credit Default Swaps (CDS). They disentangled the decline in the corporate bond spreads in the effect of expansionary monetary policy measures which tend to increase the risk appetite of investors and in the reduction of expected default losses by improving investors' expectations about the economic and financial conditions of the issuer. They found that the reduction in the spread is more attributed to the reduction in risk premia. The decline in corporate bond spreads have contributed to improved bond-financing conditions, especially for eligible issuers. Directly after the announcement non-financial companies start taking advantage from the exceptionally good market conditions and start issuing corporate bonds. Figure 5 shows an increase in the net issuance after the announcement. Accordingly, Abidi et al. (2016) found that bond issuances increased significantly after the announcement, especially for firms close to the eligibility threshold.

[2] On June 24, 2016, after a vote in a referendum it became clear that the U.K. would be breaking away from the European Union

The increase in bond issuance suggests a shift from bank debt to bond debt funding. Non-financial companies whose bonds are eligible to be purchased by the ECB appear to have substituted bank debt with bond debt to some degree. This way the CSPP has an impact on the debt capital structure of Eurozone non-financial companies. Since eligible corporates increasingly finance themselves by bond debt, the CSPP may freed up credit to lend to non-eligible firms. This way non-financial corporates with little or no access to bond markets may have indirectly benefited from the CSPP, as banks have increased their supply in loans to these companies (ECB, 2017/3). Although it is difficult to attribute changes in bank-lending behavior to the CSPP, some evidence supports the conclusion that the CSPP may have increased bank lending to non-financial non-eligible Eurozone firms, particularly smaller firms. But the outflow of loans by eligible, investment-grade firms on the banks' balance sheet cannot totally be filled up with loans by non-eligible firms, in terms of the risk-weighted assets the bank has to hold for these loans. Grosse-Rueschkamp et al. (2017) found evidence for a substitution between bank loan and bond debt for public eligible firms. Moreover, they show a rise in credit volume from banks, which have a large share of investment-grade firms in their portfolio before the announcement, than in banks with a smaller share of such borrowers. Accordingly Arce et al. (2017) analyzed the effect of the CSPP in Spain. They find that firms, which have eligible bonds outstanding, reduce their demand for bank loans. Following that the freed up balance sheet capacity is allocated to small firms, which couldn't issue bonds. Galema and Lugo (2018) contribute to this research by showing that within the eligible universe, financing decisions of firms which were actually bought by the ECB are stronger impacted by the CSPP. Actually bought eligible firms increase their bond debt and their bond debt compared to total debt significantly more than eligible firms, which are not bought. In addition, they do not find a significantly large increase in total debt for eligible firms which bonds have been purchased, which provides evidence for a substitution effect between bonds and other forms of debt capital.

3. Data

In this section I will discuss the gathering of the data and the descriptive statistics

3.1 Data

For the first part of this study I will focus on the sample of bonds with available information the day before the announcement (i.e. March 9th, 2016). From Bloomberg I collect all bonds, which are incorporated in the Eurozone and are dominated in euros. I exclude all covered and convertible bonds since they are not eligible to the CSPP and exclude all financials with SIC code 6000-6999. From this

sample of bonds I collect information that includes bond level characteristics such as Issue date, Amount outstanding, Maturity, ISIN, Ratings. Further I matched every bond with its issuer and ultimate parent company. This way I know which companies did have bond debt outstanding before the announcement. I will separate my sample in public and private companies. According to Arce et al (2017) I use the status of the ultimate parent company to include the company in the public or private sample. Since bonds are issued through a finance subsidiary from the parent company, the finance subsidiary has a private status but the decision of issuing is taken by the parent company not at subsidiary level. Consider Abengoa Finance S.A.U., since this is a private company I should add the bond to the private sample. But the company was only formed to issue debt for the purpose of financing corporate purposes of Abengoa. Therefore the company should be included in the public sample.

Since I want to know how the CSPP announcement changed the debt capital structure, I gain deeper understanding about the debt amount outstanding using the CAST data in Bloomberg. For the public non-financial companies which have bonds outstanding the day for the announcement, I hand matched the quarterly data on debt capital structure data for the period Q1 2015 – Q4 2016. This way I know how the bond debt fluctuates for eligible and non-eligible companies before and after the announcement. I supplement the data with firm-level information from Compustat Global like size, profitability. The bonds included in the sample, which are issued by a private firm, are hand matched with the Amadeus – Bureau van Dijk database. For companies with a private equity and investment firms as a parent company I collect the ID of the issuer. Since the financial information of the financial entity would not say anything about the bond debt of the company. In the same trend I used the issuer company when the company is privately owned by the government. Equally the financing conditions of the state would not give a clear image about the bond debt behavior of the private company. From Amadeus I collect firm-level information like total assets, total debt and other balance sheet items.

Since I used quarterly data for our public sample, I tried to retrieve quarterly data for our private sample. But almost all private firms report their financials on semi-annually or annually basis. It is common practice to use the linear interpolation method, but I noticed that in my database it might influence the results. Therefore I used the last reported value repeatedly until a new value is available. In both samples I erased companies for which was not all information available. This way, I constructed a quarterly firm level panel dataset for debt capital structure.

For the second part of this study I obtain loan-level data from the Thomas Reuters LPC Dealscan database. I start with collecting the CompanyID's of all non-financial Eurozone companies in the

database. These CompanyID's are indicators for all non-financial borrowers in the Eurozone. Within the database each loan has a FacilityID which contains information like the type of loan, the borrower and lender. With the obtained CompanyID's I can retrieve all facilities made to non-financial Eurozone companies between Q1 2015 – Q4 2016. There are several types of facilities within the database but according the Berg et al. (2016) credit lines and bonds are not close substitutes, so I will focus in this study on term loans. Therefore I will only remain the FacilityID's of term loans in the dataset. Subsequently I will use these FacilityID's to obtain al lenders. Most of the term loans are issued by more than one lender. In this syndicate of the term loan there are several roles assigned to the lenders. According to Ivashina et al. (2010) I will focus on the lead arrangers. These are the lenders who maintain the relationship with the borrowers, perform the due diligence and have the monitoring responsibilities. I will identify the lead arrangers by using Dealscan's lead arranger feature. Dealscan also reports the total facility amount. Since the credit reallocation is not available for every facility, I will split the facility amount by the number of lead arrangers according to Sufi (2007). Further I will aggregate all lenders to their parent company and control for all lenders, which are not incorporated in the Eurozone. In order to get firm level data I used the Dealscan-Compustat linking table for the public companies in our sample (Roberts, 2008). Concerning the private companies within the sample, I hand matched the companies with the Amadeus-Bureau van Dijk database. I collect firm-level information like total assets, total debt and other balance sheet items. I excluded firms, which did not have information for any quarter within the sample.

I will construct according to Grosse-Rueschkamp et al (2017) a variable, *Bank eligible share (BES)*, which is the share of non-financial eligible borrowers in bank j's loan portfolio before the introduction of the CSPP and before the start of the sample period. I will use all non-financial Eurozone CompanyID's to obtain all facilities issued between Q1 2010 – Q4 2014. In a similar way as set out above I identified the lenders, the lead arrangers and aggregate the lenders to their parent company. I only have to derive the BES_j for the lenders incorporated in the Q1 2015 – Q4 2016 sample. Therefore I will match the Q1 2010 – Q4 2014 lenders to all the identified lenders in the period of Q1 2015 – Q4 2016 and remove all the lenders, which do not match.

I identified all the eligible borrowers with all known eligible companies from the first part of this analysis and the ISIN codes provided by the ECB. The BES_j is constructed as follows:

$$BES_j = \frac{\sum Term\ loan\ amount\ bank_j\ to\ eligble\ borrowers\ 2010-2015}{\sum Term\ loan\ amount\ \ bank_j\ to\ non-financial\ eurozone\ borrowers\ 2010-2015}$$

Since I want to know if company *i* does get a new loan and how large it is depending on how exposed the lenders were to eligible companies. I construct a weighted BES, which I assign to every company in the sample. I multiplied every loan a firm *i* receives from a bank *j* with the BES assigned to bank *j*. Thereafter I added all the loans the company *i* received in this time span and divide these two. This way I get the weighted BES for every company. I am not taking into account from which bank the loan is granted, only the weighted BES the firm is exposed to.

$$\text{Weighted } BES_i = \frac{\sum BES_j * Loan_{ij}}{\sum Loan_i}$$

Thereafter I consolidate my dataset to firm level and assigned every weighted BES to a firm.

3.2. Descriptive statistics

The empirical research is conducted using two datasets. Table 13 shows the descriptive statistics for the bond-loan substitution sample over the period Q1 2015 – Q4 2016. First I show the statistics of the whole sample. I winsorized the variables bond debt to total assets, bond debt to total debt and total debt to total assets at the 5st and 95th percentile. The average bond debt to total assets ratio is 21%, where the bond debt to debt is on average is 30%. The amount of debt consists on average for 70% out of total assets. Thereafter, in table 1, I split the sample into eligible and non-eligible firms and into before and after the announcement of the CSPP. Eligible firms tend to be larger and have a higher profitability. These results are similar to Grosse-Rueschkamp et al. (2017). My three main dependent variables show that for eligible firms the bond debt compared to assets and debt increases after the announcement, where for non-eligible firms they approximately stay the same. Also the leverage increased for eligible firms and approximately stays the same for non-eligible firms. The main observation that emerges form the table is that the announcement of the CSPP has not much effect on the debt capital structure of the non-eligible firms, where for the eligible firms in the sample the dependent variables increased. Since along with the bond debt also the leverage increased I cannot find any evidence confirming a bond-loan substitution channel after the announcement. To align my sample with the general information in figure 5, I plotted the mean

of the amount of bond debt in my sample in figure 6. From the tables I determine that my sample has approximate the same trend as presented in figure 5.

In table 14 I show the descriptive statistics for the credit reallocation sample over the period Q1 2015 – Q4 2016. I winsorized the ratio of loan to total assets at the 1^{th} and 99^{th} percentile. On average the amount of loans compared to assets companies receive is 5.4%. Further the average chance of getting a loan is 14% and the average natural logarithm of the loan amount companies receive is 0.60 million. Thereafter, in table 2, I split the sample into companies which received loans from banks with a high BES and companies which received loans from banks with a low BES and into before and after the announcement of the CSPP. Companies in both samples tend to have the same size. But the companies in the high BES sample have a higher profitability and a lower leverage. The main three dependent variables show an increase in the amount of term loans companies received from banks, although the increase seems larger for companies, which received term loans from banks with a low BES. This would indicate a positive spillover from the CSPP since lending to companies increased, but would not provide evidence for a credit reallocation channel. I will also try to align this sample with the general information provided by the ECB. In figure 3 I showed the volumes of new euro-dominated loans to non-financial corporations. In figure 7 I show the mean of the amount of term loans received by my sample. They both follow a downward trend, although in my sample the mean increases slightly in the second and third quarter of 2016. Since my sample consist of only term loans, this could indicate that there is an increase due to the announcement of the CSPP and an existence of a credit reallocation channel.

These results in tables 1 and 2 and figures 6 and 7 should be interpreted with caution, since they represent average values of the samples. The results should be interpreted as directives for the behavior of the market. I will further investigate these directions on firm-level in the following sections.

4. Methodology

In this section I explain the methods that are used. The empirical strategy relies on two pillars. Firstly, I focus on the change in bond debt and the leverage of non-financial Eurozone companies after the announcement. In the second part I will investigate if banks with a large share of eligible firms in their portfolio before the announcement, increase their lending to firms other than eligible firms after the announcement.

4.1 Bond-loan substitution channel

In this analysis I will look at panel data, where companies are the individuals ($i = 1,..., n$) and are measured at multiple points in time ($t = 1,\ldots, t$). There are two techniques to use and analyze panel data, which are fixed and random effects. In order to decide whether to use fixed or random effects I start running a Hausman Test where the null hypothesis prefers a random effects model (Green, 2008). The Hausman Test indicates whether the unique errors are correlated with the regressors. According to the results in table 16 I reject the null hypothesis in two specifications and I will use a fixed effects model. According to the Hausman test the error term is correlated with independent variables, which implies there are some variables within the company that affect the dependent variable but are not included or cannot be measured. With fixed effects I can control for this time-invariant heterogeneity. I want to know whether the announcement of the CSPP has an influence on eligible and non-eligible companies, therefore I compare their debt structure before and after the announcement. The difference between the changes in debt structure of a company in the two periods is the estimate for the announcement effect of the CSPP, assuming nothing else will change. To estimate the overall announcement effect, the model will take the differences for every company and take the average. This way the model will control for all the effects, which do not vary over time within a company and assess the net effects of the independent variables on the debt capital structure. As regards to the firm variables, which do change over time I can include firm-level control variables. Since larger firms will take on more debt, I will include a variable controlling for size (Frank and Goyal, 2009). Further, Titman and Wessels (1998) find that past profitability affects the capital structure; therefore I will include a proxy for profitability in my analysis.

Moreover, I will also extend the model by controlling for country and industry[3] specific time invariant characteristics. My model consists of firms incorporated in different countries, firms will be affected by country level macro factors in a given country like growth expectations, inflation, political environment. However, some firms are in retail and others an industrial, it may be that some industries are suffering from more regulation, lower profitability or can provide more collateral (Barclay and Smith, 1995). Therefore I will control for these time invariant country and industry effects.

Further I want to investigate whether we need to control for time fixed effects in the regression. I will perform a Wald test, which is a joint test to see if all the dummies for all time parameters are equal to zero. The null hypothesis states that the coefficients for all years are jointly zero, the alternative hypothesis that they are not. Table 16 shows that I can and cannot reject the null hypothesis. But with

[3] I used the two-digit SIC code as often done in research to capture unobserved heterogeneity among industries.

using fixed effects, researchers make not only a methodological but also a substantive choice (Bell and Jones, 2015). In every analysis whether or not to include the variables in the models should depend more on theoretical reasoning than on the result of a significance test. Including time fixed effects in my model will control for the estimated effect on the debt capital structure for quarterly specific characteristics and thereby captures the time trend. Since the model covers a time period of eight quarters, there could be changes in the general economic environment. Therefore, I will include time fixed effects in my model.

Further I will perform a Modified Wald test and a Woolridge test to detect heteroskedacity and serial correlation. As presented in table 16 for both tests I could reject the null hypothesis and deduce that heteroskedacity and serial correlation are present in the model. In the model standard errors determine how accurate your estimations are. If heteroskedacity is detected it indicates that the variance in standard errors is greater in some firms than other firms. And with the presence of serial correlation it biases the standard errors and causes the coefficients to be less efficient. To control for both, I will cluster my data on individual level (Torres-Reyna, 2007). With clustering at firm level I believe that observations for a given firm are not independent over time. In the sample we look at the debt capital structure of a particular firm *a* over time. It would be justified to believe that there is a correlation between bond debt in the first quarter and the successive quarters. However another firm *b* in the sample will depend little on how many bond debt firm *a* has in the same year.

Lastly, table 16 shows the variance inflation factors (VIF), which estimate how much of the variance of a coefficient is inflated because of linear dependence with other predictors. If I look at the first row a VIF of 1.53 tells me that the variance of the interaction term is 53% larger than it would be if the variables was completely uncorrelated with all the predictors. In the literature the limit for the VIF differs, but overall a VIF < 10 would be accepted according to Hair et al. (1995) and Ringle et al. (2015), where a VIF > 10 meaning that the coefficients are poorly estimated due to multicollinearity. With a mean VIF of 1.53, there is no multicollinearity in the model.

I want to know if the announcement of the CSPP has influence on the amount of bond debt and leverage of non-financial Eurozone companies by using a difference in differences method (DiD). This method aims to ensure that any changes in the debt capital structure that I estimated are due to the CSPP and not due to unobserved trends. The most common set up is one where effects are observed for two groups for two time periods. One of the groups is exposed to a treatment in the second period but not in the first period. In my model, one group of companies would be eligible to be bought by the ECB and the other

group would not. Therefore the two groups here are eligible and non-eligible companies. The two time periods are the period before and after the announcement of the CSPP.

I obtain all non-financial Eurozone firms, which have bond debt the day before the announcement of the CSPP. I identify the treatment group according to the CSPP's eligibility criteria[4]. And the control group is the remaining Eurozone non-financial firms, which have public debt before the announcement of the CSPP. I will use public and private firms in our sample, since the ECB has the ability to purchase corporate bonds from both. According to Woolridge (2015) I will use the following DiD specifications:

(1) $$Bond\ debt_{it} = \beta_0 + \delta_1 Announcement_t\ x\ Eligible_i + \beta X'_{it-1} + a_i + a_t + u_{it}$$

(2) $$Bond\ debt_{it} = \beta_0 + \beta_1 Eligible_i + \delta_1 Announcement_t\ x\ Eligible_i + \beta X'_{it-1} + a_c + a_d + a_t + u_{it}$$

Where $Bond\ debt_{it}$ can take several forms[5]: *Total bond debt/Assets,* which is the total bond debt relative to total assets, *Total bond debt/Debt,* which is the total bond debt relative to the total debt and *Leverage,* which is total debt relative to total assets. All these forms denote firm *i* in quarter *t*. $Announcement_t$ is the dummy variable for the announcement of the CSPP, $Eligible_i$ is a dummy variable which indicates if a firm *i* is eligible to be bought by the CSPP or not. The interaction term $Announcement_t\ x\ Eligible_i$ will indicate if due to the announcement of the CSPP the trend in the amount of bond debt will differ between eligible and non-eligible firms. X'_{it-1} denotes a sets of firm-level control variables like profitability and size. Furthermore a_i are firm specific effects, a_c are country specific effects, a_d are industry specific effects, a_t are time fixed effects and u_{it} is the error term.

I will use the firm fixed effects apart from the country and industry fixed effects since I assume that the firm fixed effects take the heterogeneity among countries and industries already in account. In equation (1) I do exclude the variable for eligibility since it would be collinear with the firm fixed effects. In both equations (1) and (2) I exclude the indicator for the announcement since it would be collinear with the time fixed effects.

[4] A firm is added to the eligible sample if at least one of the outstanding bonds is eligible to the CSPP.
[5] All the variables are included in terms of euro millions.

4.2 Credit reallocation channel

In the second part I will investigate whether banks with a large share of eligible firms in their portfolio before the announcement have shifted more capital to other than eligible firms after the announcement than banks with a smaller share of eligible firms in their portfolio. This way, non-eligible firms with no access to the bond market are indirectly benefited by the CSPP.

I will look at a panel dataset, where companies are the individuals (i=1,…,n) and are measured on multiple points in time (t=1,…,n). For the second part I also performed some specification tests. In table 17 I show the results for the Hausman test. According to the results I can reject the null hypothesis in column (1) and I cannot reject the hypothesis in column (2) and (3). But since I believe there are some variables omitted and correlated with the variables included in the analysis I will use a fixed effects model. To elaborate, I want to know whether companies receive more loans from banks with a high BES compared to banks with a low BES after the announcement of the CSPP compared to the pre-announcement period. According to the Hausman test the error term is correlated with the independent variables and a fixed effects model allows me to control for variables, which are not included in the model or cannot be measured. In addition I will include firm-level control variables. Larger companies will take on more debt, therefore I will include a variable for size (Frank and Goyal, 2009). Moreover, Titman and Wessels (1998) find that past profitability affects the capital structure I will include a proxy for profitability. In addition, for a relative highly levered firm it is more difficult to attract debt since there is a larger chance that they could not fulfill the interest payments and go in financial distress. Therefore I will also include a variable for leverage. In addition, I will, according to the first part of the analysis, extend the model by including country and industry specific effects.

I will also test whether time fixed-effects are present in the regression, and table 17 shows that I cannot reject the null hypothesis that the coefficients for all years are jointly zero and therefore should not include time fixed effects. But according to economic reasoning, it would be logical to include time fixed effects. Our model consists of eight quarters, accordingly the model could be affected by a influences from general changes in the economic climate. Further I will also perform a Modified Wald test and a Woolridge test to detect heteroskedacity and serial correlation. In column (2) I detect the presence of heteroskedacity and there is no serial correlation in the model. In order to control for heteroskedacity, I will cluster my data on firm level (Torres-Reyna, 2007). Lastly, table 17 shows the variance inflation factors, with a mean VIF of 1.55 indicating there is no multicollinearity in the model.

I want to know if firms received more loans after the announcement of the CSPP from banks with a high share of eligible firms in their portfolio before the CSPP by using a DiD. According to the previous part of this study, I will look at two groups for two time periods. I construct an indicator, which is one for banks with a weighted BES above the median and zero for banks with a weighted BES below the median. I identify the treatment and control group according to the BES indicator, where the treatment group is the firms with a BES indicator equal to one. The two time periods will be the period before and after the announcement of the CSPP. I will use the following DiD specifications:

(3) $$Loan_{it} = \beta_0 + \delta_1 Announcement_t \; x \; BES_i + \beta X'_{it-1} + a_i + a_t + u_{it}$$

(4) $$Loan_{it} = \beta_0 + \delta_1 Announcement_t \; x \; BES_i + \beta X'_{it} + a_i + a_{ct} + a_{dt} + u_{it}$$

Where the dependent variable, $Loan_i$, can take several forms for a firm *i* during time *t*. I will look at the received loan amount scaled to total assets, I will take the natural logarithm of the received loan and I will create a dummy variable which equals one of a company receives a loan in the respective quarter. $Announcement_t$ is the dummy variable for the announcement of the CSPP, BES_i is a dummy variable indicating if a firm has a high weighted BES or not, X'_{it} denotes a sets of firm-level control variables like profitability, size and leverage. I can interpret δ_1 as the change in loan amount a firm receive from a bank with a high weighted BES compared to firms who receive loans from banks with a low weighted BES after the announcement. Furthermore a_i are firm specific effects, a_{ct} are country x time specific effects, a_{dt} are industry x time specific effects, a_t are time specific effects and u_{it} is the error term.

In both equations (3) and (4) I exclude the variable for a high weighted BES since it would be collinear with the firm fixed effects. In equation (3) I will exclude the indicator for announcement since it would be collinear with the time fixed effects. And in equation (4) the country x time and industry x time fixed effects would be collinear with the indicator for announcement.

4.3 Various samples

I will test both models for various samples. I look at their country of incorporation and make a distinction between GIIPS and non-GIIPS. Further I will split the sample in public and private companies.

A firm receives a public status when it is listed on a stock exchange. There are differences in funding for private and public firms. According to Saunders et al. (2011) private firms have higher borrowing cost due

to higher cost of information production, lower bargaining power and different ownership structures. And according to Acharya et al (2014) private firms face significant loan cost disadvantages compared to public firms. Public firms are less relying on bank debt because they have easier access to other sources of financing (Badertscher et al., 2015) therefore, I expect the announcement to only have an effect on public firms in terms of bond-loan substitution. Private firms will not switch from funding that often as public firms, therefore I expect a smaller effect for private firms. Moreover, private firms are more reliant on bank debt, since they could not always get funding on the bond market. Therefore I expect a higher increase in lending to private firms.

If a firm is incorporated in Greece, Italy, Ireland, Portugal or Spain I will assign them to the GIIPS sample. I will look at the GIIPS separately because these countries were severely hit by the sovereign debt crisis. Credit supply tightened more for these countries than for others in the Eurozone (Acharya et al., 2015). Horny et al. (2016) showed that corporate bonds issued in Italy and Spain have higher yields than similar bonds issued in France and Germany. Since corporate bondholders required higher yields for bonds issued in Italy and Spain, these companies faced increased costs of funding. This fragmentation in the corporate bond market decreased since the OMT but remained until June, 2015. Assuming that all eligible corporate bond yields decreased as a results of the announcement of the CSPP, then the decrease in yields on GIIPS bonds was sharper. Indicating that companies in GIIPS countries could profit from an even larger decrease in yields, and more attractive bond markets. The research of Zaghini (2016) finds no evidence for market fragmentation in the years before the financial crisis, but after the burst there was a significance difference in cost of funding of four countries, which were severely hit by the crisis, Ireland, Italy, Portugal and Spain, with respect to the German corporate bonds. But they argue that the corporate funding for euro area countries returned to a level playing field after the QE programs of the ECB. Further according to the study of Almeida et al (2014) GIIPS countries were less able to substitute from bonds to loans than comparable firms incorporated in non-GIIPS countries as response to the contraction in credit supply. This can be explained by the lower depth and liquidity of their bond markets accompanied with high sovereign risk. Therefore I would expect that companies incorporated in GIIPS countries are less able to substitute bond and bank debt, but would profit more from the allocation of funds.

5. Results

In this section I will report the main results of my empirical analysis. First, I will analyze how the CSPP directly influences the debt capital structure of our sample. I want to see if eligible firms start issuing more bond debt after the announcement of the CSPP. And most importantly if leverage remains the same or if

companies substitute their bond debt for other types of debt. In the second part I will analyze whether the CSPP has an indirect effect on non-eligible firms. I will determine whether non-eligible firms will receive more term loans from banks with a high share of eligible firms in their portfolio, since the eligible firms have shifted from bank debt to bond debt.

5.1 Bond-loan substitution channel

I will present the results for various samples in order to determine a bond-loan substitution channel. The tables show the influence of the announcement of the CSPP on the debt choice of the non-financial Eurozone companies. First, for the dependent variable I look at the total bond debt, which includes senior bonds, subordinates bonds and commercial paper, compared to total assets. This way, I test whether the firms increase their bond amount outstanding following the announcement. Subsequently I will test whether the portion of bond debt within total debt increased. Thirdly, I will look at leverage of the companies, in order to determine if in an increase in bond debt leads to an increase in leverage or leaves the leverage ratio unchanged. The latter would indicate that firms start substituting other forms of debt with bond debt.

5.1.1 Whole sample

Table 3 presents the results from the whole[6] sample. In column (1), (3) and (5) I included firm and time specific effects and in column (2), (4), (6) I controlled for country, industry and time specific effects. Including only firm and time fixed effects to the regression increases the explanatory power extensively. In line with my expectation the firm specific effect will capture all industry and country time invariant heterogeneity. Therefore in further samples, I will look at the specification only including firm and time specific effects. In column (1) and (3) the control variables give insignificant results. Within a firm an increase in size or profitability has no effect on the amount of bond debt compared to assets and debt. In column (5) I found a significant effect of profitability on the amount of leverage. Indicating that within a firm an increase in profitability will decrease the amount of leverage. Which is in line with Titman and Wessels (1988) who find that profitable firms rather finance themselves with their internal funds instead of depending on the debt market. In column (1) I find a significant effect, indicating that eligible firms will increase their bond debt compared to assets with 1.4% compared to non-eligible firms after the announcement compared to the pre-announcement period. These results are similar to the study of Grosse-Rueschkamp (2017) and in line with my expectations. In addition I could look at the effect of the

6 Both public and private firms are incorporated in the sample.

announcement of the CSPP on the amount of bond debt compared to total debt. To test whether the amount bond debt incorporated in their total debt increases. The column shows significant effects, meaning that the announcement of the CSPP shows a significant increase of 1.84% on the amount of bond debt compared to total debt for eligible companies compared to non-eligible companies and the pre-announcement period.

I want to know whether the increase in bond debt goes along with a decrease in bank debt. In order to identify the degree of substitution between loans and bonds for the firms in the sample, I include leverage as dependent variable. Column (5) and (6) show whether the increase in bond debt goes along with an increase leverage, indicating that the additional bond debt is used for additional funding on the firms' balance sheet. Or whether an increase in bond debt leaves the leverage unchanged or decreased. In column (5) I find the results for the leverage of eligible companies after the announcement compared to non-eligible companies and the pre-announcement period. The results are not significant, indicating that the announcement of the CSPP has no effect on the leverage of companies.

All in all, the observed results indicate that after the announcement there is a significant increase in the bond debt compared to assets and debt for the eligible firms included in my sample. Since the announcement has no significant effect on the leverage, I can conclude that eligible firms substituted bank debt with bond debt after the announcement of the CSPP.

5.1.2 Company status

In the CSPP there are distinctions in the allowance of purchasing corporate bonds between publicly listed and privately owned companies. The central banks are allowed to buy private bonds in both the primary and secondary market, where they could buy public bonds only in the secondary market. Therefore I split the sample in two samples, one including only publicly listed companies and the other only privately owned companies. The split allows us to examine the effect of the announcement of the CSPP on the debt structure of eligible non-financial Eurozone firms of the public and private companies separately.

Table 4 shows the results for the public and private sample separately. Surprisingly, column (1) shows an insignificant increase, therefore the announcement of the CSPP has no influence on the bond debt scaled to assets of public eligible firms in comparison the public non-eligible firms. This is not in line with my expectations. However, column (2) shows a significant increase in the portion of bond debt compared to total debt for public eligible companies compared to non-eligible companies after the announcement. In

addition column (3) shows an insignificant decrease in leverage for eligible public companies after the announcement compared to publicly listed non-eligible companies. From these results I can obtain that that the portion of bond debt compared to debt increased by 2.2% leaving the leverage unaffected. This could be due to a substitution of bank debt by bond debt. However, these results should be interpreted with caution, since the increase in bond debt scaled to assets is not significant.

In addition I look at the debt capital structure of privately owned companies. Columns (4) and (5) show insignificant results, indicating that the announcement of the CSPP has no significant effect on the bond debt of privately owned eligible companies compared to private non-eligible companies. Private firms tend not to profit from the more favorable bond markets, they face higher financing costs (Saunders et al., 2011) and therefore might not react the announcement of the CSPP. However in column (6) I find a positive significant result for leverage, indicating that private firms do take on more debt after the announcement. Conclusively, eligible privately owned firms did not profit from the more favorable bond markets, but do increase their leverage by 1.72% due to the announcement of the CSPP. This could indicate that the CSPP seems to ease financing conditions and stimulate private firms to attract more capital.

5.1.3 Company location

After the sovereign debt crisis companies incorporated in a GIIPS country face tighter capital markets and there were more constrained (Acharya et al., 2016). I split the sample in companies incorporated in a GIIPS country and companies incorporated in a non-GIIPS country. The split allows me to examine the effect of the announcement of the CSPP on the debt structure of eligible non-financial Eurozone firms incorporated in a GIIPS and non-GIIPS country separately. The results are presented in table 5.

In columns (1), (2) and (3) I find that the announcement of the CSPP has no significant effect on the three dependent variables for eligible GIIPS companies compared tot non-eligible GIIPS companies. Therefore I can conclude that the CSPP has no direct effects on the GIIPS companies incorporated in the sample. This could be explained by the overall economic conditions. Since the countries were severely hit by the sovereign debt crisis there are still a few opportunities for investment and therefore GIIPS companies could be more reluctant to issue bond debt. Moreover, since these countries were more financially constrained, probably if companies received a loan do want to substitute the loan for bond debt after the announcement. In addition I look at the effects of the CSPP on the companies incorporated in non-GIIPS countries. In column (4) and (5) I find significant effects on the amount of bond debt scaled to assets and

debt, indicating that the amount of bond debt to assets increases with 1.44% and the amount of bond debt scaled to debt increases with 2.26%. Moreover, I find that the announcement has no significant effects on the leverage of eligible companies incorporated in non-GIIPS countries compared to non-eligible companies. Therefore I conclude that eligible companies incorporated in non-GIIPS countries start substituting other types of debt with bond debt.

These results are similar to those of the full sample with the announcement increasing the bond debt scaled to assets by 1.50% and the bond debt scaled to debt with 1.95%. I can conclude from table 5 that the direct effect of the CSPP mainly benefits Eurozone companies which are not incorporated in the distressed countries. These findings could be relevant for European policy makers, since they are not benefiting the countries, which might need the help the most.

5.2 Credit reallocation channel

According to my previous results I found that eligible companies start substituting other forms of debt for bond debt. Especially eligible companies, which are incorporated in non-GIIPS countries. However, since eligible companies start substituting bank debt for bond debt, non-eligible companies could be indirectly affected by the CSPP through a shift in lending. In this section I will determine if non-eligible firms received more loans after the announcement of the CSPP from banks with a high share of eligible firms in their portfolio before the CSPP. I will present the results for various samples in order to determine this credit reallocation channel.

5.2.1 Whole sample

In table 6 the results for the whole sample are presented. From the table I see that the interaction term is not significant for column (1), (2), (3), (4), (5) indicating that the announcement of the CSPP has no significant effect on the amount of loans a company receives from a banks with a high share of eligible firms in their portfolio compared to companies exposed to banks with a low BES. In column (6) I found a significant decrease in the natural logarithm of loans a company received from banks with a high share of eligible firms in their loan portfolio compared to companies, which have not. This is in contrast to my expectations. From table 2 I know that the decrease in the loan amount is possibly driven by a sharper increase in loan amount to companies exposed to low BES banks. Since according to Abidi et al (2017) not only eligible but also non-eligible firms close to the investment-grade boundary started issuing bonds due to the announcement, a possible reason could be that these non-eligible firms where more

incorporated in portfolio's of banks which lend to firms incorporated in the low BES sample. If this would be the case, this would provide the evidence of a credit reallocation channel. Moreover, in this analysis I only focus on term loans since they are close substitutes to bond debt (Berg et al., 2016). But maybe firm started receiving more credit lines instead of term loans. At last, from table 2 I noticed that companies incorporated in the treatment group are on average less levered but more profitable. As the CSPP eased the financing conditions in general, it could be that high levered and less profitable firms increased lending since they become less constrained or want to recapitalize against more favorable conditions.

In column (6) I also find a significant positive coefficient for size and leverage. Indicating the larger the firm, the more loans the firm will receive, which is in line with economic theory (Frank and Goyal, 2009). Moreover, the higher the leverage the higher the loan amount a company receives after the announcement which might indicate that firm are using the received loans to recapitalize. The specifications in column (2), (4) and (6) including firm, country x time and industry x time fixed effects increases the explanatory power extensively. Therefore I will use this specification in order to investigate the effects of the announcement in the further subsamples.

I could only identify eight eligible firms in the sample. It is only possible to run the regression for the non-eligible firms, since there are too little observations for eligible firms. In table 18 I can not find any significant result for the effect of the announcement of the CSPP on non-eligible firms. Since there are only eight eligible firms in the sample, I will interpret the following subsamples as effects on non-eligible firms. Moreover I can conclude that there is no shift in lending to non-eligible firms due to the announcement of the CSPP and therefore due to the substitution of bank debt with bond debt by eligible firms.

5.2.2 Company status

The aim of the CSPP was to strengthen the pass through of assets purchases to the financing conditions of the economy. According to the Macchiarelli et al. (2017) there has been some positive spillover effects supporting bank lending the private firms. When mainly eligible and public firms increasingly finance themselves by issuing bonds instead of bank loans, this would release capacity in the balance sheet of banks for potential lending to smaller private firms. Especially for banks with a large share of eligible firms in their portfolio in the period before the announcement, should shift their lending to private firms according to the predictions. Therefore, I split the sample in two subsamples, one including only publicly listed companies and the other only privately owned companies. This split allows me to examine the effect

of the announcement of the CSPP on the shift in lending of bank to non-financial Eurozone public and private companies separately. The results are presented in table 7. In the table I find no significant results for the effect of the announcement of the CSPP on the amount of loans a company receives from banks with a high BES relative to companies, which receive loans from banks with a low BES.

5.2.3 *Company location*

In our previous sample I found no significant effect of a substitution channel for companies incorporated in GIIPS countries. Therefore I split the sample in companies incorporated in GIIPS and non-GIIPS countries, the results are presented in table 8. From table 8 I also cannot find any significant results indicating that the announcement of the CSPP has no effect on the loan amount. In table 9 I further separated the public and private sample in GIIPS and non-GIIPS samples in order to find an effects of the announcement of the CSPP. Unfortunately, I cannot find any effect of the CSPP on the amount of loans companies receive from banks with a high BES.

According to Demertiz and Wolff (2016) banks are still in the process of recapitalizing their balance sheets after the crisis, therefore they do not increase their balance sheets significantly in the future. Which might explain the insignificance. Moreover I can argue that this transmission does not work since three quarters after the announcement is too short for the post-announcement period. It takes time to negotiate and retrieve a (syndicated) term loan and this could also be a possible explanation for the lack of significance. To test whether the time period is too short to find a credit reallocation channel I will extend my sample with loan information until Q4 2017.

5.3 Extended sample

In this section I will use the extended sample with loan information until Q4 2017. Since there is no balance sheet information available for the whole period of Q1 2015 – Q4 2017, I will use a specification without controlling for firm-level control variables. Since the control variables will not fluctuate much I do not expect this to affect my regressions majorly. In table 10 I present the descriptive statistics for this extended sample. The chance of getting a loan and the natural logarithm of the received loan amount are on average higher for the treatment group. But both dependent variables decreased for the treatment group after the announcement, where they on average increased for control group. From table 10 I also expect a decline the received loans for the treatment group. I specified the following regression in order to investigate the longer time span.

(5) $$Loan_i = \beta_0 + \delta_1 Announcement_t \; x \; BES_i + a_i + a_{ct} + a_{dt} + u_{it}$$

Where the dependent variable, $Loan_i$, can take two forms for a firm *i* during time *t*, I will take the natural logarithm of the received loan and I will create a dummy variable which equals one of a company receives a loan in the respective quarter. $Announcement_t$ is the dummy variable for the announcement of the CSPP, BES_i is a dummy variable indicating if a firm has a high weighted BES or not. Furthermore a_i are firm specific effects, a_{ct} are country x time specific effects, a_{dt} are industry x time specific effects and u_{it} is the error term.

In table 11 I present the results for all the samples. In columns (1) and (2) there is a significant result for the whole sample. The loan amount received will decrease for all companies, which receive loans from banks with a high share of eligible firms in their portfolio after the announcement of the CSPP. Since I could only identify ten eligible companies in this sample, I can conclude that there is no positive spillover to non-eligible firms. To test whether the announcement has effect on the status of the company, I split the sample in public and private firms. If I look at the results for public companies in column (3) and (4), the announcement has no significant effect on the loan amount they receive from banks with a high BES. This in in line with my predictions, public firms are less dependent on bank debt since they have access to other sources of debt. Therefore they will be less indirectly benefited by the CSPP. In column (5) and (6) the amount of loans received decreases significantly for private companies after the announcement. In line with my expectations the CSPP has an effect on the private sample, but in contrary to my expectations the announcement has a negative spillover to private companies. Indicating that private companies would receive less lending after the announcement of the CSPP. Further I split the sample in companies incorporated in GIIPS and non-GIIPS countries. I find in column (7) and (8) that the announcement of the CSPP has no significant effects on companies incorporated in GIIPS countries. To elaborate on that, in my previous sample I found that there is also no direct effect on companies incorporated in GIIPS countries. This might be interesting for policy purpose, since the CSPP seems not to benefit the companies incorporated in the GIIPS countries directly or indirectly. One of the main goals of the CSPP was to strengthening of financing conditions, and some would argue that companies incorporated in GIIPS countries need this strengthening the most. In columns (9) and (10) I found a significant decrease in loans received by companies incorporated in non-GIIPS companies from banks with a high BES contrary to banks with a low BES. Which indicates that companies incorporated in non-GIIPS countries received less term loans from banks with a high share of eligible companies in their portfolios contrary to companies in non-GIIPS countries, which received loans from banks with a low share of eligible companies in their

portfolio. To more specifically determine which companies are affected by the announcement I further divided the samples and split my private and public sample in GIIPS and non-GIIPS samples. The results can be found in table 12. In columns (7) and (8) I found that only private companies incorporated in non-GIIPS countries are affected by the announcement of the CSPP. I find a negative effect indicating that private companies in non-GIIPS countries receive less term loans from banks which have a high share of eligible firms in their portfolio contrary to private companies incorporate in non-GIIPS companies which received term loans from banks which have a low share of eligible firms in their portfolio.

The extended sample gives me approximately the same results as the sample until Q4 2016. Only the extended sample enabled me to identify that mainly private companies incorporated in non-GIIPS countries were affected, in terms of received loans, by the announcement of the CSPP. This is line with my expectations, although I did not predict that the indirect effect would be negative. In order to find evidence for a credit reallocation channel I would recommend to not only to define the amount of eligible firms in the portfolio of a bank but also investigate which companies in the portfolio started to issue bond debt this would give a better view of the existence of a credit reallocation channel. Further it would also be interesting to include loans other than term loans in the sample in order to see if firms did receive more loans other than term loans. At last, the decrease could be due to firms, which did receive loans in the pre-announcement period but started issuing bond debt and therefore received less loans in the post-announcement period. It could be interesting to see whether the firms included in the sample are non-eligible firms, which also started issuing bond debt after the announcement.

All in all, I found evidence that private companies incorporated in non-GIIPS countries are significantly affected by the announcement of the CSPP. I found that evidence that these countries received less term loans from banks with a high share of eligible firms in their portfolio contrary to companies, which received loans from banks with a low share of eligible firms in their portfolio.

6. Conclusion

On 10 March, 2016 the ECB announced the CSPP. I investigated the direct and indirect effects of this program. Other research has found that companies started to increase their bond issuance after the announcement of the program. When companies start finance themselves with bond debt, they might shift from bank debt to bond debt. The CSPP would cause a bond-loan substitution in the debt capital structure

of non-financial eligible companies. This way, the CSPP might directly influence the debt capital structure of eligible non-financial companies.

I found significant evidence that eligible firms started substituting bank debt by bond debt after the announcement of the CSPP in comparison to non-eligible firms. To examine the effect of the announcement on different samples I divided my sample in several subsamples according to company status and the country of incorporation. To the best of my knowledge, no prior study in order to find a bond-loan substitution channel, has distinguished between the impact of the CSPP on private, public, GIIPS or non-GIIPS companies. I found significant evidence that eligible companies incorporated in non-GIIPS countries mostly explain the substitution channel. In other words, the announcement of the CSPP mainly directly affects eligible companies incorporated in non-GIIPS countries. This finding could be useful for policymakers, since they aim to distribute the CSPP in a market-neutral manner. Moreover, companies in GIIPS countries are overall more financially constrained, therefore they might need the more attractive financing conditions the most.

According to results of the first section I found that eligible companies started substituting other forms of debt for bond debt. Thereafter, I investigated if non-eligible companies could be indirectly affected by the CSPP through a shift in lending. To examine the effect of the announcement on different samples I divided my sample in several subsamples according to company status and the country of incorporation. To the best of my knowledge, no prior study in order to find a credit reallocation channel, has distinguished between the impacts of the CSPP on GIIPS or non-GIIPS companies. I found a significant decrease in the natural logarithm of loans received from banks with a high share of eligible firms in their portfolio compared to companies who received loans from banks with a low share of eligible firms in their portfolio after the announcement, but the significance disappeared when I further divided the samples. Since banks are still in the process of recapitalization (Demertiz and Wolff, 2016) and it would take a longer time period to negotiate and receive a term loan I investigated a longer time span. In this second dataset I also found a significant negative effect on the amount of term loans received by companies from bank with a high share of eligible firms in their portfolio contrary to companies which received loans from banks with a low share of term loans in their portfolio. Further, I found that especially private companies incorporated in non-GIIPS countries are affected by the announcement. Also in this part, mainly companies incorporated in non-GIIPS countries are indirectly affected by the CSPP, this could be interesting for policymakers since non-GIIPS companies are either not directly or indirectly affected by the CSPP, since these countries need the easing financing conditions the most. All in all, I found no evidence for a credit reallocation channel. Although, it is difficult to attribute the changes bank-lending

behavior to the announcement of the CSPP. Further research would be necessary to examine the indirect effects of the program in order to look at bank portfolios, other types of lending or identify other types of firms.

7. References

Abidi, N., Miquel Flores, I., & Eterovic, N. A. (2017). Who Benefits from the CSPP? A Difference-in-Discontinuities Approach.

Acharya, V., Almeida, H., Ippolito, F., & Perez, A. (2014). Credit lines as monitored liquidity insurance: Theory and evidence. *Journal of Financial Economics*, *112*(3), 287-319.

Acharya, V. V., Eisert, T., Eufinger, C., & Hirsch, C. W. (2016). Real effects of the sovereign debt crisis in Europe: Evidence from syndicated loans.

Allen & Overy (2016), Eurosystem's Corporate Sector Purchase Programme (CSPP) enters the next stage: Start of securities lending activity and weekly disclosure of holdings. Retrieved from: *http://www.allenovery.com/SiteCollectionDocuments/CSPP%20Securities%20Lending.PDF*

Almeida, H., Campello, M., Cunha, I., & Weisbach, M. S. (2014). Corporate liquidity management: A conceptual framework and survey. *Annu. Rev. Financ. Econ.*, *6*(1), 135-162.

Albertazzi, U., Becker, B., & Boucinha, M. (2016). Portfolio Rebalancing and the Trans- mission of Large–Scale Asset Programmes: Evidence from the Euro Area.

Altavilla, C., Giannone, D., & Lenzaa, M. (2016). The Financial and Macroeconomic Effects of the OMT Announcements. *International Journal of Central Banking*.

Altavilla, C., & Giannone, D. (2016). The Effectiveness of Non–Standard Monetary Policy Measures: Evidence from Survey Data. *Journal of Applied Econometrics*.

Almeida, H., Campello, M., Cunha, I., & Weisbach, M. S. (2014). Corporate liquidity management: A conceptual framework and survey. *Annu. Rev. Financ. Econ.*, *6*(1), 135-162.

Andrade, P., Breckenfelder, J. H., De Fiore, F., Karadi, P., & Tristani, O. (2016). The ECB's asset purchase programme: an early assessment.

Arce, Ó., Gimeno, R., & Mayordomo, S. (2018). The effects of the Eurosystem's corporate sector purchase programme on Spanish companies.

Badertscher, B., Givoly, D., Katz, S. P., & Lee, H. (2015). Private ownership and the cost of debt: Evidence from the bond market. *Unpublished Results, Columbia Business School*.

Barclay, M. J., & Smith Jr, C. W. (1995). The maturity structure of corporate debt. *the Journal of Finance*, *50*(2), 609-631.

Bauer, M. D., & Neely, C. J. (2014). International channels of the Fed's unconventional monetary policy. *Journal of International Money and Finance*, 44, 24–46.

Bauer, M. D., & Rudebusch, G. D. (2013). The signaling channel for Federal Reserve bond purchases. *International Journal of Central Banking*, 10, 233289.

Becker, B., & Ivashina, V. (2014). Cyclicality of credit supply: Firm level evidence. *Journal of Monetary Economics*, *62*, 76-93.

Becker, B., & Ivashina, V. (2014). Financial repression in the European sovereign debt crisis. Working Paper.

Bell, A., & Jones, K. (2015). Explaining fixed effects: Random effects modeling of time-series cross-sectional and panel data. *Political Science Research and Methods*, *3*(1), 133-153.

Berg, T., Saunders, A., Steffen, S., & Streitz, D. (2016). Mind the gap: The difference between US and European loan rates. *The Review of Financial Studies*, *30*(3), 948-987.

Bernanke, B. S. (2013). A century of US central banking: Goals, frameworks, accountability. *Journal of Economic Perspectives*, *27*(4), 3-16.

Bolton, P., & Freixas, X. (2000). Equity, bonds, and bank debt: Capital structure and financial market equilibrium under asymmetric information. *Journal of Political Economy*, *108*(2), 324-351.

Brunner, K., & Meltzer, A. H. (1972). Money, debt, and economic activity. *Journal of political Economy*, *80*(5), 951-977.

Cahn, C., Duquerroy, A., & Mullins, W. (2017). Unconventional monetary policy and bank lending relationships

Chakraborty, I., Goldstein, I., & MacKinlay, A. (2017). Monetary stimulus and bank lending.

Cecchetti, S., Griffoli, M. T. M., & Narita, M. M. (2017). *Does prolonged monetary policy easing increase financial vulnerability?*. International Monetary Fund.

Cecioni, M., Ferrero, G., & Secchi, A. (2011). Unconventional monetary policy in theory and in practice. Bank of Italy Occasional Papers 102.

Chamberlain, G. (1984). Panel data. Handbook of econometrics, 2, 1247–1318.

Chava, S., & Purnanandam, A. (2011). The effect of banking crisis on bank-dependent borrowers. *Journal of Financial Economics*, *99*(1), 116-135.

Chava, S., & Roberts, M. R. (2008). How does financing impact investment? The role of debt covenants. *The Journal of Finance*, *63*(5), 2085-2121.

Chen, L., Lesmond, D. A., & Wei, J. (2007). Corporate yield spreads and bond liquidity. The Journal of Finance, 62(1), 119–149

Christensen, J. H., & Rudebusch, G. D. (2012). The response of interest rates to US and UK quantitative easing. The Economic Journal, 122 (564), 385–414

Ciccarelli, M. & Osbat, C. (2017). Low inflation in the euro area: Causes and consequences

Congalton, R. G., & Green, K. (2008). *Assessing the accuracy of remotely sensed data: principles and practices*. CRC press.

Correia, S. (2015). Singletons, cluster-robust standard errors and fixed effects: A bad mix. *Technical Note,*

Duke University.

Curdia, V., & Woodford, M. (2009). Conventional and unconventional monetary policy.

D'Amico, S., & King, T. B. (2013). Flow and Stock Effects of Large–Scale Treasury Pur- chases: Evidence on the Importance of Local Supply. *Journal of Financial Economics*, 108(2), 425–448.

Dakić, M. (2014). Global Financial Crisis–Policy Response. *Journal of Central Banking Theory and Practice*, *3*(1), 9-26.

De Santis R., Geis A., Juskaite A. and Cruz L. (2018). The impact of the corporate sector purchase programme on corporate bond markets and the financing of euro area non-financial corporations, European Central bank

Demertzis, M., & Wolff, G. B. (2016). The Effectiveness of the European Central Bank's Asset Purchase Programme. Bruegel Policy Contribution, 10.

Draghi, M. (2012, July 26). Verbatim of the remarks made by Mario Draghi. Speech at the Global Investment Conference, London.

Draghi, M. (2014, September 4). Introductory statement to the press conference (with Q&A). European Central Bank.

Draghi, M. (2014, November 21). Monetary policy in the euro area. Speech at the Frank- furt Banking Congress, Frankfurt am Main.

Galema, R., & Lugo, S. (2017). When central banks buy corporate bonds: Target selection and impact of the European Corporate Sector Purchase Program.

Greenwood, R., Hanson, S. G., & Stein, J. C. (2016, August). The Federal Reserve's balance sheet as a financial-stability tool. In *Designing Resilient Monetary Policy Frameworks for the Future," Jackson Hole Symposium: Federal Reserve Bank of Kansas City*.

Grosse-Rueschkamp, B., Steffen, S., & Streitz, D. (2017). Cutting Out the Middleman? The ECB as Corporate Bond Investor. *Available at SSRN*.

ECB (European Central Bank) (2010, May 10). ECB decides on measures to address severe tensions in financial markets [Press release].

ECB (2010, June 30). Covered bond purchase programme completed [Press release].

ECB (2011, November 3). ECB announces details of its new covered bond purchase pro- gramme (CBPP2) [Press release].

ECB (2012, September 6). Technical features of Outright Monetary Transactions [Press release].

ECB (2013, February 21). Details on securities holdings acquired under the Securities Markets Programme [Press release].

ECB (2014, July 3). ECB announces further details of the targeted longer–term refinanc- ing operations [Press release].

ECB (2016, March 10). ECB adds corporate sector purchase programme (CSPP) to the asset purchase programme (APP) and announces changes to APP [Press release].

ECB (2016, April 21). ECB announces details of the corporate sector purchase programme (CSPP) [Press release].

ECB (2017a). Key ECB interest rates. Retrieved from https://www.ecb.europa.eu/

ECB (2017b). Decision (EU) 2017/100 of the European Central Bank of 11 January 2017 amending Decision (EU) 2015/774 on a secondary markets public sector asset purchase programme (ECB/2017/1). Official Journal of the European Union, 16, 51–52.

ECB (2017c). FAQs on the Eurosystem's asset–backed securities purchase programme (ABSPP). Retrieved from https://www.ecb.europa.eu/

Fawley, B. W., & Neely, C. J. (2013). Four stories of quantitative easing. Federal Reserve Bank of St. Louis Review, 95 (1), 51–88.

Ferrando, A., Popov, A. A., & Udell, G. F. (2015). Sovereign stress, unconventional monetary policy, and SME access to finance. ECB Working Paper.

Frank, M. Z., & Goyal, V. K. (2009). Capital structure decisions: which factors are reliably important?. *Financial management*, *38*(1), 1-37.

Fratzscher, M., Lo Duca, M., & Straub, R. (2016). On the international spillovers of US quantitative easing. The Economic Journal.

Gagnon, J., Raskin, M., Remache, J., & Sack, B. (2011). The Financial Market Effects of the Federal Reserve's Large–Scale Asset Purchases. International Journal of Central Banking, 7(1), 3–43.

Gambacorta, L., Hofmann, B., & Peersman, G. (2014). The effectiveness of unconven- tional monetary policy at the zero lower bound: A cross–country analysis. Journal of Money, Credit and Banking, 46(4), 615–642.

Georgiadis, G., & Gräb, J. (2016). Global financial market impact of the announcement of the ECB's asset purchase programme. *Journal of Financial Stability*, *26*, 257-265

Gertler, M., & Karadi, P. (2011). A model of unconventional monetary policy. *Journal of monetary Economics*, *58*(1), 17-34.

Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the academy of marketing science*, *40*(3), 414-433.

Hausman, J. A. (1978). Specification tests in econometrics. Econometrica: Journal of the Econometric Society, 1251–1271.

Horny, G., Manganelli, S., & Mojon, B. (2016). Measuring financial fragmentation in the euro area corporate bond market.

Ivashina, V., & Scharfstein, D. (2010). Loan syndication and credit cycles. *American Economic Review*, *100*(2), 57-61.

Joyce, M., Lasaosa, A., Stevens, I., & Tong, M. (2011). The Financial Market Impact of Quantitative Easing in the United Kingdom. International Journal of Central Banking, 7(3), 113–161.

Joyce, M., Miles, D., Scott, A., & Vayanos, D. (2012). Quantitative easing and uncon- ventional monetary policy – an introduction. The Economic Journal, 122(564).

Kandrac, J., & Schlusche, B. (2017). Quantitative easing and bank risk taking: evidence from lending.

Kashyap, A. K., & Stein, J. C. (2000). What do a million observations on banks say about the transmission of monetary policy?. *American Economic Review*, *90*(3), 407-428.

Khwaja, A. I., & Mian, A. (2008). Tracing the impact of bank liquidity shocks: Evidence from an emerging market. *American Economic Review*, *98*(4), 1413-42.

Koijen, R. S., Koulischer, F., Nguyen, B., & Yogo, M. (2016). Quantitative Easing in the Euro Area: The Dynamics of Risk Exposures and the Impact on Asset Prices.

Krishnamurthy, A., & Vissing–Jorgensen, A. (2011). The effects of quantitative easing on long–term interest rates. *Brookings Papers on Economic Activity*, 2, 215–265.

Lane, P. R. (2012). The European sovereign debt crisis. *Journal of Economic Perspectives*, *26*(3), 49-68.

Leary, M. T. (2009). Bank loan supply, lender choice, and corporate capital structure. *The Journal of Finance*, *64*(3), 1143-1185.

Macchiarelli, C. (2017), "What is the EU-UK relation all about? Tracking the European path from monetary integration to 'ever closeness'" in The Economics of the UK-EU Relationship: From the Treaty of Rome to the Vote for Brexit by N. Campos and F. Coricelli (Eds.), Palgrave Macmillan.

Maggio, M. D., Kermani, A., & Palmer, C. (2016). *How quantitative easing works: Evidence on the refinancing channel*(No. w22638). National Bureau of Economic Research.

McLaren, N., Banerjee, R. N., & Latto, D. (2014). Using changes in auction maturity sectors to help identify the impact of QE on gilt yields. *The Economic Journal*, *124*(576), 453-479.

Peek, J., & Rosengren, E. S. (2000). Collateral damage: Effects of the Japanese bank crisis on real activity in the United States. *American Economic Review*, *90*(1), 30-45.

Peek, J., Rosengren, E., & Tootell, G. M. (2009). Is financial stability central to central banking?. *Prepared for After the Fall: Re-evaluating Supervisory, Regulatory and Monetary Policy*.

Rodnyansky, A., & Darmouni, O. M. (2017). The effects of quantitative easing on bank lending behavior. *The Review of Financial Studies*, *30*(11), 3858-3887.

Sarstedt, M., Ringle, C. M., Smith, D., Reams, R., & Hair Jr, J. F. (2014). Partial least squares structural equation modeling (PLS-SEM): A useful tool for family business researchers. *Journal of Family Business Strategy*, *5*(1), 105-115.

Saka, O., Fuertes, A. M., & Kalotychou, E. (2015). ECB policy and Eurozone fragility: Was De Grauwe right?. *Journal of International Money and Finance*, *54*, 168-185.

Saunders, A., & Steffen, S. (2011). The costs of being private: Evidence from the loan market. *The Review of Financial Studies*, *24*(12), 4091-4122.

Sufi, A. (2007). Information asymmetry and financing arrangements: Evidence from syndicated loans. *The Journal of Finance*, *62*(2), 629-668.

Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. *The Journal of finance*, *43*(1), 1-19.

Tobin, J. (1969). A general equilibrium approach to monetary theory. *Journal of Money, Credit and Banking*, 1(1), 15–29.

Torres-Reyna, O. (2007). Panel data analysis fixed and random effects using Stata (v. 4.2). *Data & Statistical Services, Priceton University*.

Wallace, N. (1981). A Modigliani-Miller theorem for open-market operations. *The American Economic Review*, *71*(3), 267-274.

Woodford, M. (2012). Methods of policy accommodation at the interest-rate lower bound. *The Changing Policy Landscape*, *185*, 288.

Vayanos, D., & Vila, J. L. (2009). *A preferred-habitat model of the term structure of interest rates* (No. w15487). National Bureau of Economic Research.

Wooldridge, J. M. (2015). Introductory econometrics: A modern approach. Nelson Education.

Yellen, J. L. (2012). Revolution and evolution in central bank communications. *Speech given at the University of California Haas School of Business, Berkeley, California November*, *13*(0)

Zaghini, A. (2016). Fragmentation and heterogeneity in the euro–area corporate bond market: Back to normal? *Journal of Financial Stability*, 23, 51–61.

Zaghini, A. (2017). A tale of fragmentation: Corporate funding in the euro–area bond market. *International Review of Financial Analysis*, 49, 59–68.

8. Appendix

8.1 List of tables

Table 1. Descriptive statistics for the bond-loan substitution channel

	Eligible			Non-eligible		
	Mean	Median	SD	Mean	Median	SD
Before *(Q1 2015 - Q1 2016)*						
Bond debt / Assets	0.2362	0.1947	0.1671	0.1959	0.1333	0.1883
Bond debt / Debt	0.3492	0.3205	0.2173	0.2784	0.1959	0.2461
Debt / Assets	0.6692	0.6748	0.1524	0.7003	0.7019	0.1502
Ln (Assets)	9.3233	9.317	1.4218	6.7395	6.7543	1.9205
Profitability	0.0227	0.0254	0.0413	0.0192	0.0213	0.0572
After *(Q2 2016 - Q4 2016)*						
Bond debt / Assets	0.2459	0.2159	0.1691	0.1929	0.1315	0.1855
Bond debt / Debt	0.3652	0.3496	0.2153	0.2764	0.1933	0.2477
Debt / Assets	0.6738	0.6815	0.1557	0.6988	0.6999	0.1522
Ln (Assets)	9.3465	9.3633	1.4192	6.761	6.784	1.9087
Profitability	0.0299	0.0264	0.0333	0.0188	0.0217	0.0627

Table 1 represents the descriptive statistics for the main dependent and the control variables of the bond-loan substitution sample. The main dependent variables are winsorized at 5% in both the distribution tails. I divided the sample in both eligible and non-eligible companies and in before and after the announcement.

Table 2. Descriptive statistics for the credit reallocation channel

	High BES			Low BES		
	Mean	Median	SD	Mean	Median	SD
Before *(Q1 2015 - Q1 2016)*						
Loan	0.0511	0	0.2036	0.0475	0	0.1747
New loan	0.1397	0	0.3469	0.1243	0	0.33
Ln loan	0.6472	0	1.6743	0.5144	0	1.4329
Ln (Assets)	5.82	5.6676	2.1217	5.4126	5.2841	1.7652
Profitability	0.0372	0.0264	0.076	0.0165	0.0172	0.0944
Leverage	0.6749	0.6641	0.3672	0.7355	0.7394	0.2583
After *(Q2 2016 - Q4 2016)*						
Loan	0.0637	0	0.2378	0.0617	0	0.1971
New loan	0.1405	0	0.3477	0.1523	0	0.3595
Ln loan	0.6285	0	1.6193	0.6483	0	1.5941
Ln (Assets)	5.9612	5.7543	2.0085	5.5046	5.3787	1.5515
Profitability	0.0419	0.0271	0.0939	0.0252	0.0205	0.0869
Leverage	0.7191	0.6696	0.8839	0.7522	0.7474	0.2559

Table 2 represents the descriptive statistics for the main dependent and the control variables of the credit reallocation sample. The main dependent variable Loan is winsorized at 1% in both the distribution tails. I divided the sample in both companies with a high weighted BES and low weighted BES and in before and after the announcement.

Table 3. The bond-loan substitution channel

Independent variables	(1) Bond Debt / Assets	(2) Bond Debt / Assets	(3) Bond Debt / Debt	(4) Bond Debt / Debt	(5) Debt / Assets	(6) Debt / Assets
$Eligible_i$ x $Announcement_t$	0.0138*	0.0150**	0.0184*	0.0195*	0.0021	0.0046
	(1.92)	(2.05)	(1.82)	(1.89)	(0.50)	(0.93)
$Eligible_i$	(omitted)	0.1096***	(omitted)	0.1521***	(omitted)	-0.0096
		(5.40)		(5.65)		(-0.49)
$Announcement_t$	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)
$Ln\ Assets_{i,\ t-1}$	-0.0062	-0.0279***	-0.0256	-0.0321***	0.0434	-0.0117***
	(-0.39)	(-5.39)	(-1.05)	(4.77)	(4.69)	(-2.98)
$Roa_{i,\ t-1}$	-0.1219	-0.2969**	-0.0297	-0.1928	-0.0434***	-0.5118***
	(-0.97)	(2.13)	(-0.20)	(-1.09)	(-4.81)	(-5.85)
Firm Fixed Effects	YES	NO	YES	NO	YES	NO
Time Fixed Effects	YES	YES	YES	YES	YES	YES
Country Fixed Effects	NO	YES	NO	YES	NO	YES
Industry Fixed Effects	NO	YES	NO	YES	NO	YES
Observations	3782	3782	3782	3782	3782	3782
Number of firms	473	473	473	473	473	473
R-squared	0.8982	0.3388	0.8781	0.2928	0.9366	0.3401

This table represents the results from running the regression as discussed in section 5.1. The main dependent variables are the amount of bond debt scaled by total assets, the amount of bond debt scaled by total debt and the amount of total debt scaled by total assets. The independent variables are a dummy variable *Eligible* which equals one if a company is eligible to the CSPP and a dummy variable *Announcement*, which equals one after Q1 2016. Further I added some control variables *Ln Assets*, which is the natural logarithm of total assets and *Roa* which is the return on assets. Both control variables are included with a lag of one quarter. The regressions could include firm, time, country and industry fixed effects. The standard errors are adjusted for heteroskedacticity and autocorrelation and clustered at firm-level. Significance levels: * ($p<0.10$), ** ($p<0.05$), *** ($p<0.01$)

Table 4. The effect of company status on **t**he bond-loan substitution channel

	Public			Private		
	(1)	(2)	(3)	(4)	(5)	(6)
Independent variables	Bond Debt / Assets	Bond Debt / Debt	Debt / Assets	Bond Debt / Assets	Bond Debt / Debt	Debt / Assets
$Eligible_i$ x $Announcement_t$	0.0090	0.0220**	-0.0055	0.0242	0.0138	0.0172*
	(1.38)	(2.38)	(-1.18)	(1.36)	(0.56)	(1.84)
Ln $Assets_{i, t-1}$	-0.0158	0.0084	0.0257	-0.0033	-0.0371	0.0484***
	(-0.95)	(0.36)	(1.22)	(-0.16)	(-1.25)	(5.21)
$Roa_{i, t-1}$	-0.1257	-0.0052	-0.3057	-0.1343	-0.0066	-0.2257***
	(-0.98)	(-0.04)	(-2.04)	(-0.89)	(-0.04)	(-4.30)
Firm Fixed Effects	YES	YES	YES	YES	YES	YES
Time Fixed Effects	YES	YES	YES	YES	YES	YES
Observations	2512	2512	2512	1270	1270	1270
Number of firms	314	314	314	159	159	159
R-squared	0.8843	0.8837	0.9144	0.8962	0.8643	0.9580

This table represents the results from running the regression as discussed in section 5.1 and 5.3. I divided the sample in companies with a public and private status. The main dependent variables are the amount of bond debt scaled by total assets, the amount of bond debt scaled by total debt and the amount of total debt scaled by total assets. The independent variables are a dummy variable *Eligible*, which equals one if a company is eligible to the CSPP and a dummy variable *Announcement*, which equals one after Q1 2016. Further I added some control variables *Ln Assets*, which is the natural logarithm of total assets and *Roa* which is the return on assets. Both control variables are included with a lag of one quarter. The regressions could include firm, time, country and industry fixed effects. The standard errors are adjusted for heteroskedacticity and autocorrelation and clustered at firm-level. Significance levels: * ($p<0.10$), ** ($p<0.05$), *** ($p<0.01$)

Table 5. The effect of company location on the bond-loan substitution channel

	GIIPS			Non-GIIPS		
	(1)	(2)	(3)	(4)	(5)	(6)
Independent variables	Bond Debt / Assets	Bond Debt / Debt	Debt / Assets	Bond Debt / Assets	Bond Debt / Debt	Debt / Assets
$Eligible_i$ x $Announcement_t$	0.0083	0.0027	-0.0005	0.0144*	0.0226**	0.0026
	(0.68)	(0.15)	(-0.07)	(1.76)	(2.01)	(0.51)
Ln $Assets_{i, t-1}$	-0.0037	-0.0393	0.0575***	-0.0096	-0.0034	0.0217*
	(-0.18)	(-1.25)	(5.40)	(-0.37)	(-0.10)	(1.78)
$Roa_{i, t-1}$	-0.2488	-0.1520	-0.2392***	-0.0671	-0.0129	-0.1855***
	(-1.03)	(-0.53)	(-3.10_	(-0.50)	(-0.09)	(2.94)
Firm Fixed Effects	YES	YES	YES	YES	YES	YES
Time Fixed Effects	YES	YES	YES	YES	YES	YES
Observations	1087	1087	1087	2695	2695	2695
Number of firms	136	136	136	337	337	337
R-squared	0.8653	0.7949	0.9269	0.8937	0.8812	0.9275

This table represents the results from running the regression as discussed in section 5.1 and 5.3. I divided the sample in companies, which are incorporated in GIIPS and non-GIIPS countries. The main dependent variables are the amount of bond debt scaled by total assets, the amount of bond debt scaled by total debt and the amount of total debt scaled by total assets. The independent variables are a dummy variable *Eligible*, which equals one if a company is eligible to the CSPP and a dummy variable *Announcement*, which equals one after Q1 2016. Further I added some control variables *Ln Assets*, which is the natural logarithm of total assets and *Roa* which is the return on assets. Both control variables are included with a lag of one quarter. The regressions could include firm, time, country and industry fixed effects. The standard errors are adjusted for heteroskedacticity and autocorrelation and clustered at firm-level. Significance levels: * ($p<0.10$), ** ($p<0.05$), *** ($p<0.01$)

Table 6. Credit reallocation channel

Independent variables	(1) Loan /Assets	(2) Loan /Assets	(3) New Loan	(4) New Loan	(5) Ln Loan	(6) Ln Loan
BES_i x $Announcement_t$	-0.0024	0.0004	-0.0301	-0.0455	-0.1698	-0.2450*
	(-0.19)	(0.02)	(-1.25)	(-1.42)	(-1.61)	(-1.69)
$Announcement_t$	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)
BES_i	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)
Ln $Assets_{i, t-1}$	0.0068	0.0090	0.0274***	0.0288***	0.1190***	0.1182***
	(0.89)	(1.03)	(3.55)	(2.61)	(3.32)	(2.58)
$Roa_{i, t-1}$	0.0893	0.0898	-0.0204	-0.0971	0.0579	-0.2876
	(0.89)	(0.82)	(-0.17)	(-0.71)	(0.11)	(-0.47)
$Leverage_{i, t-1}$	0.0316***	0.0321***	0.0368***	0.0368***	0.1973***	0.2023***
	(2.90)	(2.88)	(4.02)	(3.58)	(4.35)	(4.28)
Firm Fixed Effects	YES	YES	YES	YES	YES	YES
Country x Time Fixed Effects	NO	YES	NO	YES	NO	YES
Industry x Time Fixed Effects	NO	YES	NO	YES	NO	YES
Time Fixed Effects	YES	NO	YES	NO	YES	NO
Observations	3816	3816	3816	3816	3816	3816
Number of firms	477	477	477	477	477	477
R-squared	0.0989	0.2058	0.0210	0.1452	0.0444	0.1646

This table represents the results from running the regression as discussed in section 5.2. The main dependent variables are the amount of received term loans scaled to assets, a dummy variable which, equals one if a company receives a term loan in the respective quarter and the natural logarithm of the received term loan. The independent variables are a dummy variable *Announcement*, which equals one after Q1 2016 and a dummy variable *BES* which equals one if a company receives term loans from banks with a weighted BES above the mean. Further I added some control variables *Ln Assets*, which is the natural logarithm of total assets, *Roa*, which is the return on assets and *Leverage*, which is the total amount of debt scaled to the total amount of assets of the company. All control variables are included with a lag of one quarter. The regressions could include firm, country x time, industry x time and time fixed effects. The standard errors are adjusted for heteroskedacticity and autocorrelation and clustered at firm-level. Significance levels: * ($p<0.10$), ** ($p<0.05$), *** ($p<0.01$)

Table 7. The effect of company status on the credit reallocation channel

Independent variables	Public			Private		
	(1) Loan /Assets	(2) New Loan	(3) Ln Loan	(4) Loan /Assets	(5) New Loan	(6) Ln Loan
Bes_i x $Announcement_t$	-0.0092	-0.0719	-0.3471	0.0085	-0.0335	-0.1972
	(-0.90)	(-0.90)	(-0.89)	(0.40)	(-0.91)	(-1.18)
Ln $Assets_{i, t-1}$	0.0180	0.1790	0.9754**	0.0081	0.0235**	0.0937**
	(1.26)	(2.07)	(2.18)	(0.87)	(2.03)	(2.08)
$Roa_{i, t-1}$	-0.0417	-1.0508	-7.8069	0.1034	-0.0115	0.1749
	(-0.23)	(-0.91)	(-1.37)	(0.91)	(-0.08)	(0.29)
$Leverage_{i, t-1}$	-0.0001	0.1150	0.7891	0.0301***	0.0293***	0.1681***
	(-0.01)	(0.49)	(0.58)	(2.64)	(2.68)	(3.12)
Firm Fixed Effects	YES	YES	YES	YES	YES	YES
Country x Time Fixed Effects	YES	YES	YES	YES	YES	YES
Industry x Time Fixed Effects	YES	YES	YES	YES	YES	YES
Observations	688	688	688	2976	2976	2976
Number of firms	86	86	86	372	372	372
R-squared	0.3100	0.3500	0.3473	0.2115	0.1469	0.1633

This table represents the results from running the regression as discussed in section 5.2 and 5.3. I divided the sample in companies with a public or a private status. The main dependent variables are the amount of received term loans scaled to assets, a dummy variable which, equals one if a company receives a term loan in the respective quarter and the natural logarithm of the received term loan. The independent variables are a dummy variable *Announcement*, which equals one after Q1 2016 and a dummy variable *BES* which equals one if a company receives term loans from banks with a weighted BES above the mean. Further I added some control variables *Ln Assets*, which is the natural logarithm of total assets, *Roa*, which is the return on assets and *Leverage*, which is the total amount of debt scaled to the total amount of assets of the company. All control variables are included with a lag of one quarter. The regressions could include firm, country x time and industry x time fixed effects. The standard errors are adjusted for heteroskedacticity and autocorrelation and clustered at firm-level. Significance levels: * ($p<0.10$), ** ($p<0.05$), *** ($p<0.01$)

Table 8. The effect of company location on the credit reallocation channel

Independent variables	GIIPS			non-GIIPS		
	(1) Loan /Assets	(2) New Loan	(3) Ln Loan	(4) Loan /Assets	(5) New Loan	(6) Ln Loan
Bes_i x $Announcement_t$	0.0197	-0.0523	-0.3045	-0.0224	-0.0615	-0.2709
	(0.84)	(-1.23)	(-1.57)	(-0.78)	(-1.17)	(-1.15)
Ln $Assets_{i, t-1}$	0.0127	0.0364**	0.1269*	0.0004	0.0130	0.0944
	(0.89)	(2.12)	(1.79)	(0.03)	(0.58)	(0.96)
$Roa_{i, t-1}$	0.0319	-0.0083	0.2660*	0.1855	-0.2532	-1.3225
	(0.26)	(-0.05)	(0.36)	(0.79)	(-0.73)	(-0.90)
$Leverage_{i, t-1}$	0.0357***	0.0365***	0.2041***	-0.0207	-0.0017	0.0787
	(4.56)	(3.42)	(4.09)	(-0.60)	(-0.03)	(0.31)
Firm Fixed Effects	YES	YES	YES	YES	YES	YES
Country x Time Fixed Effects	YES	YES	YES	YES	YES	YES
Industry x Time Fixed Effects	YES	YES	YES	YES	YES	YES
Observations	2056	2056	2056	1496	1496	1496
Number of firms	257	257	257	187	187	187
R-squared	0.2123	0.2056	0.2165	0.2985	0.2104	0.2231

This table represents the results from running the regression as discussed in section 5.2 and 5.3. I divided the sample in companies incorporated in GIIPS and non-GIIPS countries. The main dependent variables are the amount of received term loans scaled to assets, a dummy variable which, equals one if a company receives a term loan in the respective quarter and the natural logarithm of the received term loan. The independent variables are a dummy variable *Announcement*, which equals one after Q1 2016 and a dummy variable *BES* which equals one if a company receives term loans from banks with a weighted BES above the mean. Further I added some control variables *Ln Assets,* which is the natural logarithm of total assets, *Roa,* which is the return on assets and *Leverage*, which is the total amount of debt scaled to the total amount of assets of the company. All control variables are included with a lag of one quarter. The regressions could include firm, country x time and industry x time fixed effects. The standard errors are adjusted for heteroskedacticity and autocorrelation and clustered at firm-level. Significance levels: * ($p<0.10$), ** ($p<0.05$), *** ($p<0.01$)

Table 9. The effect of company location and status on the credit reallocation channel

Independent variables	Public						Private					
	GIIPS			non-GIIPS			GIIPS			non-GIIPS		
	(1) Loan /Assets	(2) New Loan	(3) Ln Loan	(4) Loan /Assets	(5) New Loan	(6) Ln Loan	(7) Loan /Assets	(8) New Loan	(9) Ln Loan	(10) Loan /Assets	(11) New Loan	(12) Ln Loan
Bes_i x $Announcement_t$	0.0026	0.0064	-0.0159	-0.0118	-0.1131	-0.4290	0.0398	-0.0174	-0.1521	-0.0326	-0.0728	-0.3402
	(0.18)	(0.06)	(-0.03)	(-0.91)	(-1.02)	(-1.02)	(1.38)	(-0.36)	(-0.70)	(-0.90)	(-1.19)	(-1.22)
Ln $Assets_{i, t-1}$	0.0010	0.1453	1.0931	0.0389	0.1998	1.2184	0.0115	0.0336*	0.1110	-0.0047	-0.0050	0.0218
	(0.03)	(0.93)	(1.54)	(1.47)	(1.20)	(1.33)	(0.77)	(1.86)	(1.49)	(-0.36)	(-0.22)	(0.23)
$Roa_{i, t-1}$	-0.2461	-2.2061	-12.6595	-0.1251	-0.5874	-8.2270	0.0376	0.0573	0.6267	0.1391	-0.2978	-1.3696
	(-0.94)	(-1.26)	(-1.14)	(-0.47)	(-0.38)	(-1.14)	(0.31)	(0.35)	(0.88)	(0.54)	(-0.78)	(-0.85)
$Leverage_{i, t-1}$	-0.0757	-0.3017	-1.8587	0.0674	0.5383	3.9309**	0.0351***	0.0342***	0.1963***	-0.0313	-0.0528	-0.1438
	(-1.12)	(-1.12)	(-1.38)	(1.34)	(1.54)	(2.18)	(4.55)	(3.26)	(3.96)	(-0.83)	(-0.94)	(-0.57)
Firm	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country x Time	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry x Time	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	272	272	272	384	384	384	1736	1736	1736	1064	1064	1064
Number of firms	34	34	34	48	48	48	217	217	217	133	133	133
R-squared	0.4350	0.5265	0.5016	0.3713	0.3990	0.3796	0.2103	0.1717	0.1814	0.3118	0.2109	0.2258

This table represents the results from running the regression as discussed in section 5.2 and 5.3. I divided the sample in companies with a public and private status. Thereafter I further divided the samples in private and public companies incorporated in GIIPS and non-GIIPS countries. The main dependent variables are the amount of received term loans scaled to assets, a dummy variable which, equals one if a company receives a term loan in the respective quarter and the natural logarithm of the received term loan. The independent variables are a dummy variable *Announcement*, which equals one after Q1 2016 and a dummy variable *BES* which equals one if a company receives term loans from banks with a weighted BES above the mean. Further I added some control variables *Ln Assets*, which is the natural logarithm of total assets, *Roa*, which is the return on assets and *Leverage*, which is the total amount of debt scaled to the total amount of assets of the company. All control variables are included with a lag of one quarter. The regressions could include firm, country x time and industry x time fixed effects. The standard errors are adjusted for heteroskedacticity and autocorrelation and clustered at firm-level. Significance levels: * ($p<0.10$), ** ($p<0.05$), *** ($p<0.01$)

Table 10. Descriptive statistics of the extended sample

	High BES			Low BES		
	Mean	Median	SD	Mean	Median	SD
Before *(Q1 2015 - Q1 2016)*						
New loan	0,1082	0	0,3107	0,0973	0	0,2964
Ln loan	0,3639	0	1,1096	0,2802	0	0,99345
After *(Q2 2016 - Q4 2017)*						
New loan	0,0966	0	0,2954	0,0996	0	0,2995
Ln loan	0,3421	0	1,1128	0,3029	0	0,9973

Table 10 represents the descriptive statistics for the main dependent and the control variables of the extended sample. I divided the sample in both companies with a high weighted BES and low weighted BES and in before and after the announcement.

Table 11. The effect of the extended sample on credit reallocation

	Whole		Public		Private		GIIPS		non-GIIPS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Independent variables	Ln Loan	New Loan	Ln Loan	New Loan	Ln Loan	New Loan	Ln Loan	New Loan	Ln Loan	New Loan
Bes_i x $Announcement_t$	-0.0764**	-0.0254**	-0.1919	-0.0661	-0.0726*	-0.0245**	-0.0225	-0.0046	-0.1245**	-0.0441***
	(-1.96)	-2.28	(-1.24)	(1.62)	(-1.77)	(-2.08)	(-0.37)	(-0.25)	(2.36)	(-2.97)
$Announcement_t$	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)
Besi	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)
Firm	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country x Time	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry x Time	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	17772	17772	1728	1728	15768	15768	8004	8004	9540	9540
Number of firms	1481	1481	144	144	1314	1314	667	667	795	795
R-squared	0.1056	0.0793	0.2997	0.2949	0.1088	0.0818	0.1321	0.1072	0.1394	0.1126

This table represents the results from running the regression as discussed in section 6.3. I divided the extended sample in companies with a public and private status and companies incorporated in GIIPS or non-GIIPS countries. The main dependent variables are the natural logarithm of the received term loan and a dummy variable, which equals one if a company receives a term loan in the respective quarter. The independent variables are a dummy variable *Announcement*, which equals one after Q1 2016 and a dummy variable *BES* which equals one if a company receives term loans from banks with a weighted BES above the mean. The regressions could include firm, country x time and industry x time fixed effects. The standard errors are adjusted for heteroskedacticity and autocorrelation and clustered at firm-level. Significance levels: * ($p<0.10$), ** ($p<0.05$), *** ($p<0.01$)

Table 12. The effect of company status and location of the extended sample for credit reallocation

	Public				Private			
	GIIPS		non-GIIPS		GIIPS		non-GIIPS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Independent variables	Ln Loan	New Loan	Ln Loan	New Loan	Ln Loan	New Loan	Ln Loan	New Loan
Bes_i x $Announcement_t$	-0,2033	-0,0389	-0,1901	-0,0858	-0,0066	-0,0052	-0.1351***	-0.0447***
	(-0.78)	(-0.57)	(-0.79)	(-1.35)	(-0.10)	(-0.28)	(2.42)	(-2.82)
Firm	YES	YES	YES	YES	YES	YES	YES	YES
Country x Time	YES	YES	YES	YES	YES	YES	YES	YES
Industry x Time	YES	YES	YES	YES	YES	YES	YES	YES
Observations	660	660	912	912	7200	7200	8484	8484
Number of firms	55	55	76	76	600	600	707	707
R-squared	0,4313	0,4510	0,3958	0,3754	0,1235	0,1039	0,1480	0,1183

This table represents the results from running the regression as discussed in section 6.3. I divided the sample in companies with a public and private status. Thereafter I further divided the samples in private and public companies incorporated in GIIPS and non-GIIPS countries. The main dependent variables are the natural logarithm of the received term loan and a dummy variable, which equals one if a company receives a term loan in the respective quarter. The independent variables are a dummy variable *Announcement*, which equals one after Q1 2016 and a dummy variable *BES* which equals one if a company receives term loans from banks with a weighted BES above the mean. The regressions could include firm, country x time and industry x time fixed effects. The standard errors are adjusted for heteroskedacticity and autocorrelation and clustered at firm-level. Significance levels: * ($p<0.10$), ** ($p<0.05$), *** ($p<0.01$)

8.2 List of figures

Figure 1. The breakdown of the APP

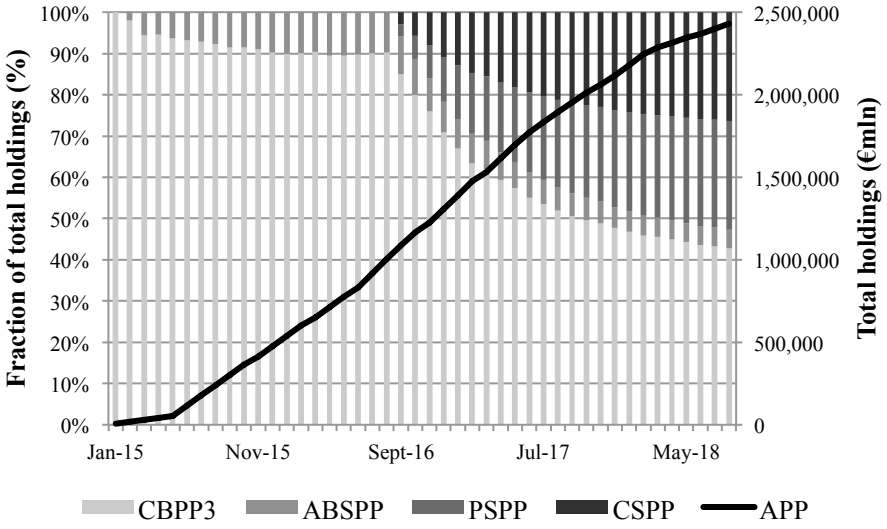

Figure 1 shows the fraction of the total holdings for the different programs under the APP on the left axe. Further on the right axe I show the cumulative total holdings of the APP.

Source: ECB data warehouse

Figure 2. Primary and secondary purchases

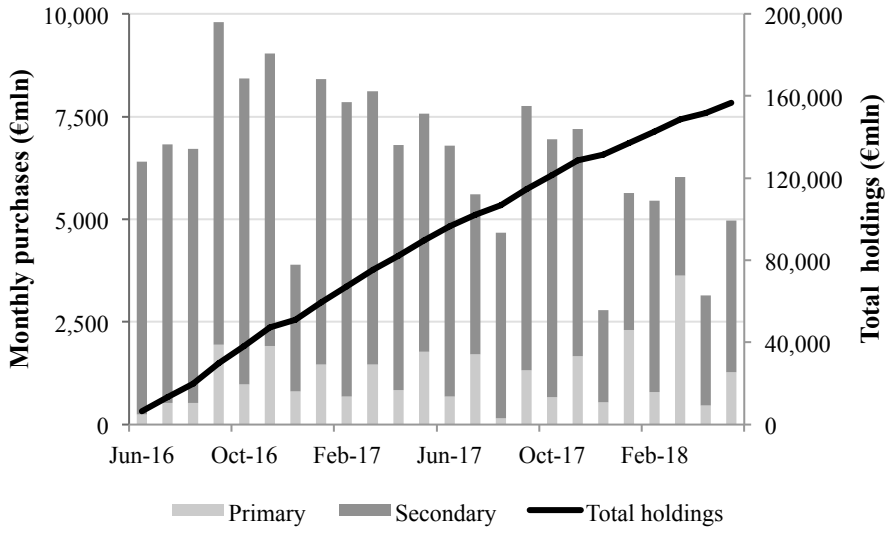

Figure 2 presents the monthly purchases in the primary and secondary market on the left axe. Moreover on the right axe you see the total holdings of the CSPP by the ECB.

Source: ECB data warehouse

Figure 3. Volumes of new euro-dominated loans to euro area to non-financial corporations

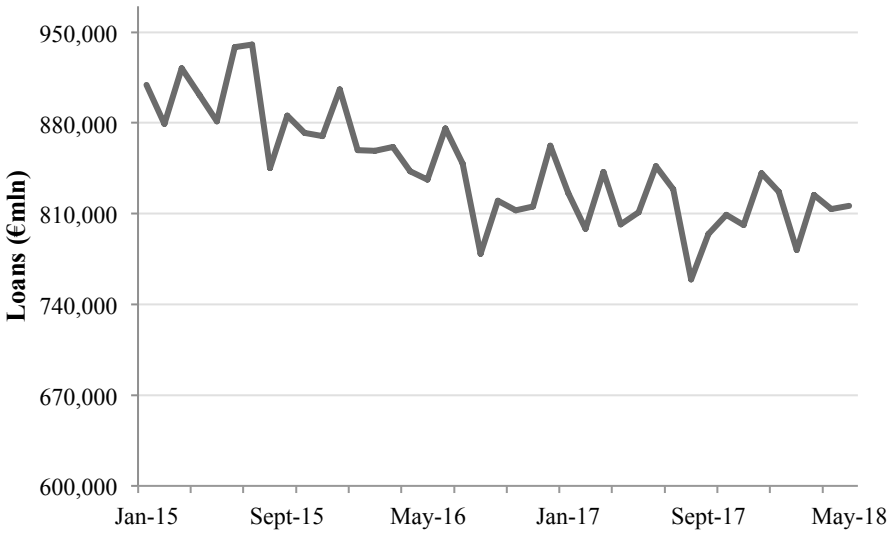

Figure 3 shows volume of new euro-dominated loans to non-financial companies in the euro-area.

Source: ECB data warehouse

Figure 4. Bond yields of euro-area non-financial and financial corporations.

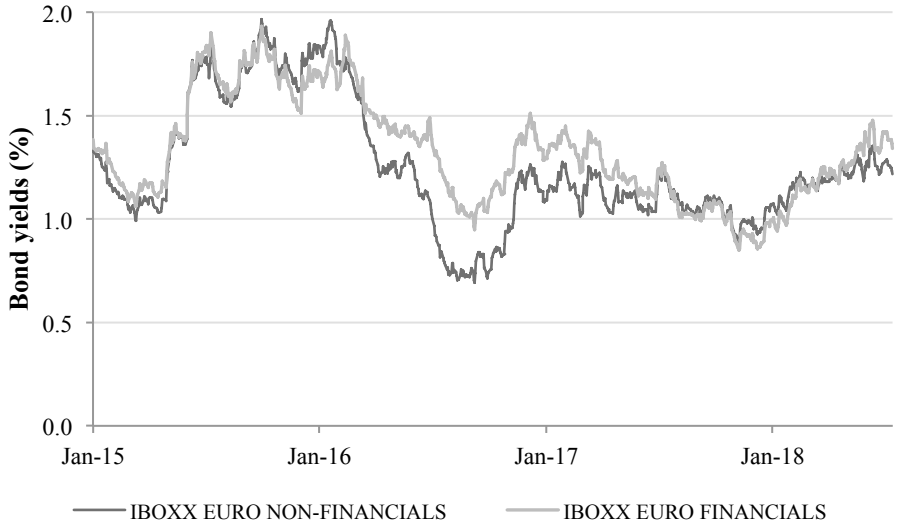

Figure 4 shows the bond yields of non-financial and financial corporations in the eur-area.

Source: Datastream

Figure 5. Net issuance and outstanding amounts of euro-dominated long-term debt securities by non-financial corporations

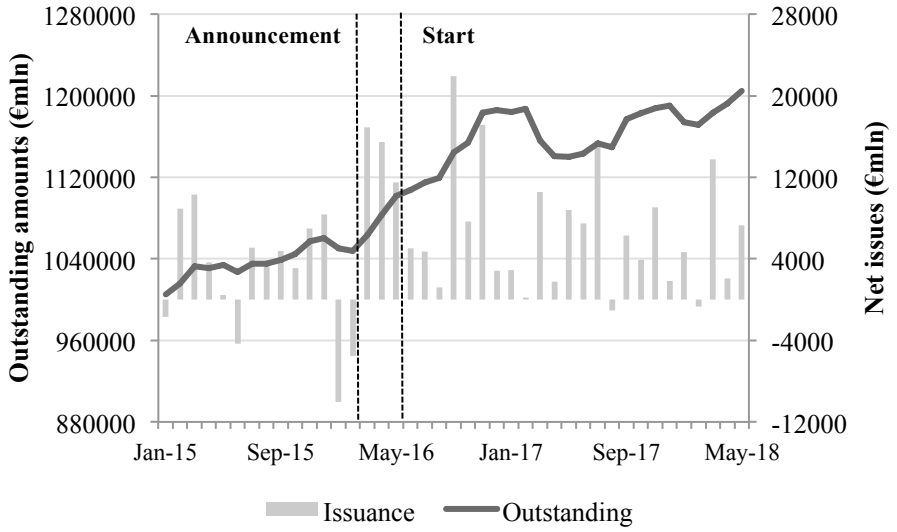

Figure 5 shows the outstanding amount of euro-dominated long-term debt securities by non-financial corporations on the left axe. Moreover, on the right axe shows the net montly issuance of euro-dominated long-term debt securities by non-financial corporations.

Source: ECB data warehouse

Figure 6. The mean of the total amount of bond debt

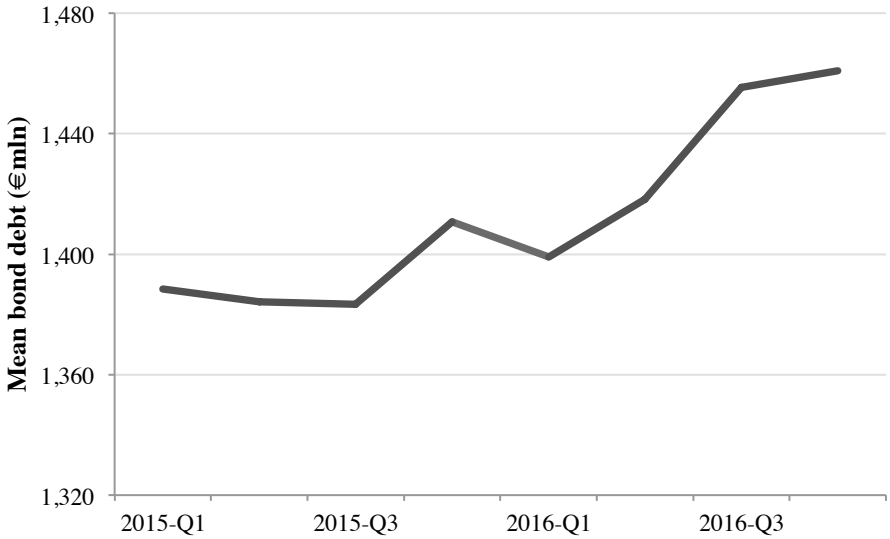

Figure 6 shows the mean of the total amount of bond debt in my dataset.

Source: Bloomberg

Figure 7. The mean of the total amount of received term loans

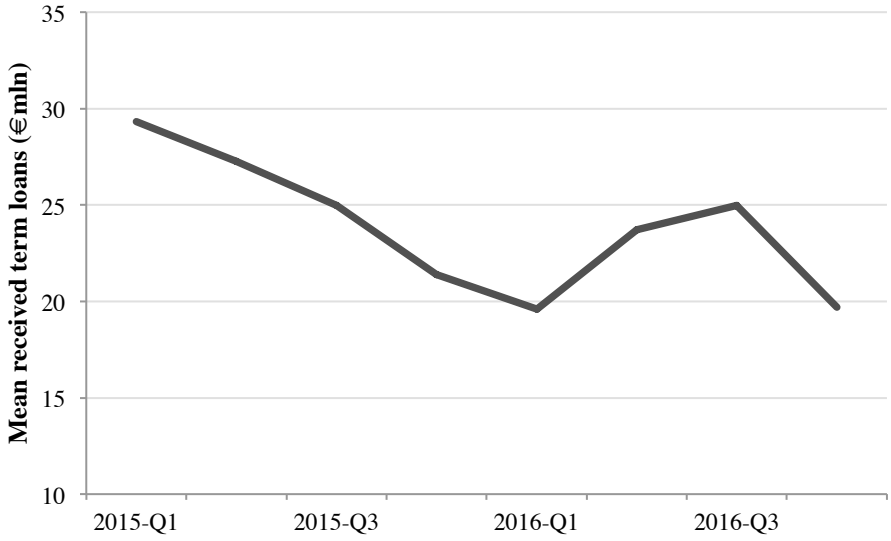

Figure 7 shows the mean of the total amount of term loans companies received in my dataset.

Source: Dealscan

8.3 List of complementary tables

Table 13. Descriptive statistics bond-loan substitution channel

	Mean	Median	Standard deviation	Observations
Bond debt / Assets	0.2059	0.1491	0.1836	3784
Bond debt / Debt	0.2968	0.2310	0.2419	3784
Debt / Assets	0.6935	0.6926	0.1519	3784
Ln (Assets)	7.5188	7.5188	2.1224	3784
Profitability	0.0206	0.0226	0.0550	3784

Table 13 represents the descriptive statistics for the main dependent and the control variables of the bond-loan substitution sample. The main dependent variables are winsorized at 5% in both the distribution tails.

Table 14. Descriptive statistics for the credit reallocation channel

	Mean	Median	Standard deviation	Observations
Loan	0.0543	0	0.2009	3880
New loan	0.1374	0	0.3443	3880
Ln loan	0.6023	0	1.577	3880
Weighted BES	0.0882	0.0816	0.04711	3880
Ln (Assets)	5.6587	5.4636	1.9051	3880
Profitability	0.0294	0.0224	0.0881	3880
Leverage	0.718	0.6985	0.4706	3880

Table 14 represents the descriptive statistics for the main dependent and the control variables of the credit allocation sample. The main dependent variable Loan is winsorized at 1% in both the distribution tails.

Table 15. Descriptive statistics for the extended sample

	Mean	Median	Standard deviation	Observations
New loan	0.1000	0	0.3001	17772
Ln loan	0.3223	0	1.0443	17772
Weighted BES	0.0966	0.0942	0.0558	17772

Table 15 represents the descriptive statistics for the main dependent the control variables of the extended sample.

Table 16. Diagnostics test bond-loan substitution

Hausman test	**Bond debt / Assets**		**Bond debt / Debt**		**Debt / Assets**	
H0: preferred model is random effects						
Chi-square	31.66		5.74		52.72	
Prob > Chi-square	0.0000		0.2190		0.0000	
Time-fixed effects test						
H0: dummies for all quarters are jointly equal to zero						
F(86 3441)	5.76		6.52		1.98	
Prob>F	0.000		0.0000		0.0646	
Modified Wald test for heteroskedacity						
H0: $\sigma^2 = \sigma^2$ for all i						
Chi-square	2.80E+09		5.40E+12		6.80E+09	
Prob > Chi-square	0.0000		0.0000		0.0000	
Woolrdige test for autocorrelation						
H0: no first-order autocorrelation						
F(1, 492)	202,721		240,053		88,648	
Prob > F	0.0000		0.0000		0.0000	
Uncentered variance inflation factors for multicollinearity						
$Eligible_i$ x $Announcement_t$	1.93	0.5046	1.93	0.5046	1.93	0.5046
$Announcement_t$	1.98	0.5180	1.98	0.5180	1.98	0.5180
$Eligible_i$	1.33	0.7208	1.33	0.7208	1.33	0.7208
Ln $Assets_{i, t-1}$	1.39	0.7525	1.39	0.7525	1.39	0.7525
$Roa_{i, t-1}$	1.01	0.9927	1.01	0.9927	1.01	0.9927
Mean VIF	1.53		1.53		1.53	

Table 16 presents the diagnostic tests performed on the regression models for *Bond debt/Assets*, *Bond debt/Debt*, *Debt/Assets*. The first section shows the results of the Hausman test, specifying whether a fixed or random effects model is preferred. The second section shows the results for a Wald test of time-specific fixed effects. The third section shows the results of a modified Wald test for heteroscedasticity. The fourth section provides the results of a Woolridge test for serial correlation. The fifth section provides a Variance Inflation Factor test to check for multicollinearity.

Table 17. Diagnostics tests credit reallocation

Hausman test	**Loan /Assets**	**New Loan**	**Ln Loan**
H0: preferred model is random effects			
Chi-square	53.92	6.21	8.83
Prob > Chi-square	0.0000	0.1843	0.1161
Time-fixed effects test			
H0: dummies for all quarters are jointly equal to zero			
F(7 3328)	0.8	0.76	0.64
Prob>F	0.5684	0.6049	0.7023
Modified Wald test for heteroskedacity			
H0: $\sigma^2 = \sigma^2$ for all i			
Chi-square	1.90E+08	8.12E+01	3.52E+04
Prob > Chi-square	0.0000	1.0000	0.0000
Woolrdige test for autocorrelation			
H0: no first-order autocorrelation			
F(1, 476)	1.663	1.715	0.543
Prob > F	0.1978	0.1910	0.4615

Uncentered variance inflation factors for multicollinearity	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF
Bes_i x $Announcement_t$	2.59	0.3863	2.59	0.3863	2.59	0.3863
$Announcement_{i,\ t-1}$	1.99	0.5023	1.99	0.5023	1.99	0.5023
Bes_i	1.63	0.614	1.63	0.614	1.63	0.614
Ln $Assets_{i,\ t-1}$	1.05	0.955	1.05	0.955	1.05	0.955
$Roa_{i,\ t-1}$	1.04	0.9634	1.04	0.9634	1.04	0.9634
$Leverage_{i,\ t-1}$	1.02	0.9836	1.02	0.9836	1.02	0.9836
Mean VIF	1.55		1.55		1.55	

Table 17 presents the diagnostic tests performed on the regression models for *Loan/Assets*, *New Loan*, *Ln Loan* The first section shows the results of the Hausman test, specifying whether a fixed or random effects model is preferred. The second section shows the results for a Wald test of time-specific fixed effects. The third section shows the results of a modified Wald test for heteroscedasticity. The fourth section provides the results of a Woolridge test for serial correlation. The fifth section provides a Variance Inflation Factor test to check for multicollinearity.

Table 18. The effect of eligibility on the credit reallocation channel

Independent variables	Non-eligible		
	(4)	(5)	(6)
	Loan /Assets	New Loan	Ln Loan
Bes_i x $Announcement_t$	0.0026	-0.0394	-0.2143
	(0.15)	(-1.22)	(-1.46)
Ln $Assets_{i, t-1}$	0.0091	0.0295	0.1232***
	(1.04)	(2.70)	(2.70)
$Roa_{i, t-1}$	0.0896	-0.1067	0.3334
	(0.82)	(-0.78)	(-0.54)
$Leverage_{i, t-1}$	0.0310***	0.0349	0.1925***
	(2.84)	(3.37)	(3.93)
Firm Fixed Effects	YES	YES	YES
Country x Time Fixed Effects	YES	YES	YES
Industry x Time Fixed Effects	YES	YES	YES
Observations	3656	3656	3656
Number of firms	457	457	457
R-squared	0.2059	0.1478	0.1659

This table represents the results from running the regression as discussed in section 5.2 and 5.3. I show the regression for only-non-eligible firms. The main dependent variables are the amount of received term loans scaled to assets, a dummy variable which, equals one if a company receives a term loan in the respective quarter and the natural logarithm of the received term loan. The independent variables are a dummy variable *Announcement*, which equals one after Q1 2016 and a dummy variable *BES* which equals one if a company receives term loans from banks with a weighted BES above the mean. Further I added some control variables *Ln Assets,* which is the natural logarithm of total assets, *Roa,* which is the return on assets and *Leverage,* which is the total amount of debt scaled to the total amount of assets of the company. All control variables are included with a lag of one quarter. The regressions could include firm, country x time and industry x time fixed effects. The standard errors are adjusted for heteroskedacticity and autocorrelation and clustered at firm-level. Significance levels: * ($p<0.10$), ** ($p<0.05$), *** ($p<0.01$)

Table 19. Variable descriptions

Variable	Source	Explanation
Bond debt / Assets	Bloomberg, Compustat Global, Bureau van Dijk's Amadeus	ratio of bond debt (senior bonds, subordinated bonds and commerical paper) to total assets
Bond debt / Debt	Bloomberg, Compustat Global, Bureau van Dijk's Amadeus	ratio of bond debt to total debt
Leverage	Compustat Global, Bureau van Dijk's Amadeus	ratio of the book value of debt to the book value of assets
Ln assets	Compustat Global, Bureau van Dijk's Amadeus	natural logarithm of total assets (€mln)
Profitability	Compustat Global, Bureau van Dijk's Amadeus	the ratio of EBITDA to total assets
Eligible (0/1)	Bloomberg	dummy variable that equals one if the bond of the company complies with the CSPP eligibility criteria
Announcement (0/1)		dummy variable that equals one for the quarters after Q1 2016
Loan / Assets	Dealscan, Compustat Global, Bureau van Dijk's Amadeus	ratio of the amount of loans received in quarter *t* to total assets
New Loan (0/1)	Dealscan	dummy variable that equals one if a company receives a loan in quarter *t*
Ln Loan	Dealscan	natural logarithm of the loan amount received in quarter *t* (€mln)
Weighted BES	Dealscan	share of non-financial eligible borrowers of a bank in its total term loan portfolio, measured of the 2010-2014 period
BES (0/1)	Dealscan	dummy variable that equals one if the weighted BES of a company is above median

Table 19 shows the description of the variables used in this study.