The CSPP impact on non-financial firms' cost of borrowing and debt choice *

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Abstract

In this study, we examine the impact of the European Central Bank's (ECB) corporate sector purchase programme (CSPP) on euro area non-financial firms' cost of borrowing and choice between bank and public debt. Using a large sample of corporate bonds and syndicated loans closed between 2000 and 2019, we find that the CSPP reduced corporate bond spreads significantly, in both announcement and implementation periods. Findings also suggest that the CSPP had a positive spillover effect into the syndicated loan market during the implementation period. Our results show that there is a substitution effect between eligible bonds and equivalent loans, with non-financial firms choosing to use more corporate bonds than syndicated loan deals after the CSPP announcement, and that this effect is more important for non-switchers, those that may have more difficulty in accessing the bond market. Finally, we provide evidence that, when controlling for the CSPP, borrowers that choose corporate bonds are larger, more profitable, and have larger growth opportunity sets; and switchers with high agency costs of debt prefer bank debt.

Key words: Quantitative easing; CSPP; cost of borrowing; debt choice; bonds and loans.
JEL classification: E52; G12; G15; G32

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Abstract

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1. Introduction

Following the 2008 global financial crisis, the European Central Bank (ECB) has undertaken numerous unconventional monetary policies, following the strategies pursued by other central banks (Fawley and Neely, 2013; Gambacorta *et al.*, 2014; Bernanke, 2020). Asset purchase programmes (APP) were among the most prominent.[1] In the last decade, the ECB has implemented two covered bond purchase programmes (CBPP) in 2009 and 2011 (CBPP1 and CBPP2), and it announced the third CBPP (CBPP3) and an asset-backed securities purchase programme (ABSPP) in 2014. Between 2014 and 2016, these two programmes were embedded in a broader APP, including public sector bonds (PSPP), in 2015, and the corporate sector purchase programme (CSPP), in 2016. After several extensions, on November 1, 2019, the Eurosystem restarted net purchases under the APP. Through direct purchases in primary and secondary markets, the ECB aimed to foster a decline in money market term rates, easing funding conditions, and to improve debt market liquidity, contributing to returning inflation rates to levels below, but close to, 2 % over the medium term.[2]

We contribute to a recent strand of the literature that examines the impact of the ECB's APP on euro area non-financial firms' funding conditions. So far, the literature has focused mostly on financial firms and the CBPP1 and CBPP2's effects on the secondary market, with mixed results regarding its effectiveness, especially for the second programme (Beirne *et al.*, 2011; Szczerbowicz, 2015; Gibson *et al.*, 2016; Markmann and Zietz, 2017; Gürtler and Neelmeier, 2018). For the Securities Markets Programme (SMP), Krishnamurthy *et al.* (2018) find large reductions in the sovereign bond yields of GIIPS (Greece, Italy, Ireland, Portugal, and Spain) countries. The main difference from these papers is that we use micro-level data, focusing on individual bonds/loans and on closing/primary market spreads, and we consider a long sample period (2000-2019), while controlling for non-financial firms' characteristics.

[1] The ECB responded to the global financial crisis by conducting a number of unconventional monetary policy measures in addition to lowering the policy rate and the APP. In particular, the ECB switched to regular open market operations with fixed rates and full allotment that were provided with longer maturities, relaxed collateral requirements, changed the modalities of its long-term refinancing operations and imposed a negative interest rate on its deposit facility. See, among others, Bluwstein and Canova (2016) and Markmann and Zietz (2017).

[2] Extant literature presents evidence supporting the effectiveness of APPs implemented outside of the euro area. See, among others, Gagnon *et al.* (2011), Hancock and Passmore (2011) and Joyce *et al.* (2011) for the UK, and Vissing-Jorgensen and Krishnamurthy (2011) for the US.

Recent Quantitative Easing literature related to our paper are the works of Miquel-flores and Abidi (2018), Grosse-Rueschkamp *et al.* (2019), Zaghini (2019), Todorov (2020) and Arce *et al.*, (2021), who examine the effectiveness and impact of the ECB's CSPP on prices, liquidity, and debt issuance of corporate bonds. These authors identify the reduction of corporate bond yields, not only for eligible bonds but also for non-eligible bonds, consistent with the portfolio balance channel (Zaghini, 2019). Grosse-Rueschkamp *et al.* (2019) also show that eligible firms substitute bank loans with bond debt, but the average spread on new loans increases *vis-à-vis* the pre-CSPP period for banks with significant exposure to CSPP-eligible firms. Under this framework, however, it is still necessary to address two research questions within this literature: *(i) are there spillover effects from the ECB's purchase of bonds under the CSPP to bank funding via syndicated loans?; and (ii) does the CSPP affect non-financial firms' choice between market and bank debt?* To the best of our knowledge, the analysis of the direct impact of the CSPP on corporate bond spreads as well as the indirect impact on syndicated loan spreads, taking into consideration non-financial firms' choice between these two debt subcategories, has not been examined in any other academic study. In addition, we believe our paper is the first to examine, using firm-level data, the impact of the CSPP on the placement structure of corporate debt and on firms' debt choice determinants.[3]

These analyses are of particular relevance because of three lines of reasoning. First, syndicated loans are an alternative funding instrument for firms that resort to the bond market (Altunbaş *et al.*, 2010; Marshall *et al.*, 2016), which might have been indirectly influenced by the CSPP. Second, extant literature shows that the choice of debt instruments influences the cost of borrowing in both private and public debt markets (Pinto and Santos, 2019; Marques and Pinto, 2020). Third, there is evolving evidence that the CSPP affected the non-financial firms' choice of funding, with the increase of bond placements denominated in euros (Todorov, 2020; De Santis and Zaghini, 2021), and a reallocation of credit previously given to bond issuers toward non-issuing firms (Grosse-Rueschkamp *et al.*, 2019; Arce *et al.*, 2021).

[3] Our analysis uses a dataset of debt instruments, developed based on a hand-matching procedure between corporate bonds and syndicated loans, extracted from DCM Analytics and Loan Analytics, respectively, and firms' characteristics drawn from Datastream.

Regarding the last perspective, we also contribute to the literature that studies the firms' choice between public and private debt, while controlling for the impact of the CSPP on this choice. Most of the existing literature focuses on the choice between public and private debt, with the main determinants of this decision related to information asymmetries and monitoring costs (Diamond, 1984, 1991; Boyd and Prescott, 1986; Houston and James, 1996; Krishnaswami *et al.*, 1999; Denis and Mihov, 2003; Fiore and Uhlig, 2011), economies of scale and transaction costs (Houston and James, 1996; Krishnaswami *et al.*, 1999), and renegotiation and liquidation of debt (Berlin and Loeys, 1988; Chemmanur and Fulghieri, 1994; Cantillo and Wright, 2000; Denis and Mihov, 2003).

To examine these impacts, we use a sample of euro-denominated bonds and syndicated loans closed by non-financial firms located in the euro area in the 2000-2019 period. Our sample contains information about 3,222 corporate bond deals (4,099 tranches, worth $2,335.4 billion) and 4,626 syndicated loan deals (11,611 tranches, worth $3,179.9 billion). We control for debt contractual characteristics, macroeconomic factors, and firms' characteristics in analysing both the pricing and choice determinants of bonds and loans.

We begin our analysis by examining the impact of the CSPP on credit spreads, making use of a reduced-form model, along the lines of existing pricing models for corporate bonds and loans (e.g., Campbell and Taksler, 2003; Gabbi and Sironi, 2005; Chen *et al.*, 2007; Marques and Pinto, 2020), at both tranche and deal level. The results indicate that there has been a significant reduction in corporate bond spreads due to the CSPP, with the implementation period strengthening the reduction in spreads verified during the announcement period, still with a weaker impact. The CSPP also appears to have fed through into syndicated loans, with a beneficial spillover effect of the CSPP on syndicated loan spreads during the implementation period. Overall, this confirms the empirical literature on the CSPP, implying that CSPP is not only an appropriate policy to reduce yields for the targeted corporate bonds, but it also decreases the spread for loans with equivalent characteristics. We also find that firms that use both debt instruments, the switchers, face lower borrowing costs in both bond and loan markets.

Next, we examine if the impact of the CSPP on credit spreads is affected by firms' debt choice, by employing endogenous switching regression models. Again, results show that the CSPP significantly reduced both corporate bond and syndicated loan deals weighted average spreads. Additionally, we find

that borrowers resorting to public *vis-à-vis* private debt are larger, have lower debt ratios and higher growth opportunity sets, corroborating both renegotiation and liquidation and information asymmetry hypotheses.

Finally, we examine the effect of the CSPP as well as firms' characteristics on the choice between bonds and loans. Our results show that there is a substitution effect between eligible bonds and equivalent loans, with non-financial firms choosing to issue more corporate bonds than syndicated loans after the CSPP announcement. We thus provide evidence consistent with the CSPP affecting firms' choice of funding: by promoting the issuance of eligible bonds by firms with access to this market, the CSPP stimulated the substitution of bank term loans with bond debt. In addition, we show that the substitution of bank term loans with bond debt is important for non-switchers, those that may have more difficulty in accessing the bond market. Our firm-level analysis is thus in line with Grosse-Rueschkamp *et al.* (2019) and Arce *et al.* (2021).

We find strong evidence that corporate bonds mitigate the deadweight costs of asymmetric information frictions: firms that choose market over bank debt are relatively larger and are looking for long-term financing. We also find that more profitable firms and those with a larger growth opportunity set are less likely to use syndicated loan deals rather than corporate bonds. Results seem to be consistent with the prediction that firms choose corporate bond deals for larger debt borrowing because of the potential economies of scale in relation to issuance costs, providing support for the flotation costs hypothesis. We only find evidence that the debt choice is related to a borrower's leverage level for switching firms. Finally, we show that with the announcement and implementation of the CSPP, firms' debt choice is affected by profitability only, with factors such as size or growth opportunities becoming irrelevant.

This paper is organized as follows. Section 2 reviews the literature and describes the research hypotheses. Section 3 describes the data, methodology and variables used in our tests. Section 4 presents the results of the CSPP impact on the pricing of corporate bonds and syndicated loans. Section 5 examines the impact of the CSPP and non-financial firms' characteristics on the choice between public and private debt. Section 6 concludes the paper.

2. Literature review and hypotheses

2.1. Asset purchase programmes and credit spreads

The literature on the impact of the ECB's APP on both credit markets and pricing of debt instruments is relatively scant (Markmann, 2018) and has focused mainly on covered bonds, specifically on the CBPP1 and CBPP2. Beirne *et al.*, (2011) present results corroborating that CBPP1 has fulfilled its primary objectives, by considerably stimulating the issuance of covered bonds in the primary market and improving funding conditions for the Eurozone banks. Szczerbowicz (2015) and Gibson *et al.* (2016) show evidence of CBPP1 and CBPP2 as effective mechanisms for lowering covered bond spreads. However, Schuller (2013) points out that the overall effect of CBPP2 on the spreads was different between core Europe and distressed European countries, where the primary market virtually ran dry. Similarly, Gürtler and Neelmeier (2018) find that while CBPP1 lowered the risk premiums of public covered bonds, a similar effect for CBPP2 is not seen. Markmann and Zietz (2017) use weekly data for European covered bond benchmark indexes and find a 10 to 11 bps tightening of covered bond spreads upon the announcement of CBPP1, while for CBPP2 and CBPP3, the results are mixed. Authors find CBPP2 has an insignificant or a significant positive impact on credit spreads, while for CBPP3 impacts are country driven. Szczerbowicz (2015) and Markmann (2018) explain the failure of the CBPP2 in reducing covered bond spreads based on two major aspects: (*i*) to mitigate the continued difficulty in banks to attain sufficient funding, the ECB announced two twelve-month longer term refinancing operations (LTRO) in October 2011, and expanded the December LTRO facility to 36 months to December and February 2012, respectively, which provided banks with a total liquidity of €842.5 billion; and (*ii*) between September 2011 and January 2012, the ECB increased the monetary base by 50%.[4] Concerning the CBPP3, Markmann (2018) points out that at the time of its announcement, market participants recognized that there was no need for a CBPP from a bank funding perspective, as spreads were mostly trading as tightly as in pre-crisis levels.

Outside the euro area, Kettemann and Krogstrup (2014) find a 10 bps tightening of Swiss covered bond spreads when the Swiss National Bank announced the 2009 purchase programme of

[4] Consequently, under CBPP2, the Eurosystem acquired only €16 billion of covered bonds (37% in the primary and 63% in the secondary market), despite the targeted purchase volume of €40 billion.

private sector bonds. Regarding the impact of asset purchases by central banks on securitization bond spreads, extant empirical literature has focused exclusively on the U.S. market. Krishnamurthy and Vissing-Jorgensen (2011) find that the Federal Reserve's Large-Scale Asset Purchases (LSAP) 1 has led to lower MBS and corporate yields.[5] Hancock and Passmore (2011) find that MBS and sovereign bond purchases lead to a tightening of MBS yields, while Bernanke (2020) shows that the LSAP1 announcement reduced bond spreads: -100 bps for 10-year Treasuries, -129 bps for MBS, and -89 bps for AAA corporate bonds.

Regarding corporate bonds, extant literature presents a significant improvement in the funding conditions of non-financial firms after the CSPP announcement. Among others, Grosse-Rueschkamp *et al.* (2019) show that the issuance of eligible corporate bonds after the CSPP announcement has notably lower yields than prior issuance. Miquel-flores and Abidi (2018) use a rating wedge and extend the analysis beyond the eligibility criteria, presenting evidence of CSPP's announcement decreasing bond yield spreads by 15 bps across the euro area. Both works find that these effects are especially strong for bonds located below, but close to, the 'BBB-Market' cut-off. Considering the primary market issuance of corporate bonds in the first year of purchases, Zaghini (2019) finds there is a significant impact of the CSPP on yield spreads, directly on purchased and targeted bonds but also indirectly on all other bonds, consistent with the portfolio balance channel. Similarly, Todorov (2020) finds that corporate bond yields drop, on average, 30 bps after the CSPP announcement, which is especially pronounced for bonds with lower ratings and longer maturities. With a focus on Spanish firms, Arce *et al.* (2021) show a significant decrease in bond yields for eligible bonds. Under this framework, we propose:

Hypothesis 1 (H1): The CSPP significantly reduced non-financial firms' cost of borrowing via the bond market.

Recent literature finds evidence of spillover effects from central banks' interventions on bond markets. Bauer and Neely (2014) and Bauer and Rudebusch (2014) show international spillover effects of the Federal Reserve LSAP on government bond yields. Albagli *et al.* (2019) find a spillover effect to international bond markets for Federal Open Market Committee actions. These effects for longer

[5] For further detail on the Federal Reserve's LSAP and monetary tools see Gagnon *et al.* (2011), Krishnamurthy and Vissing-Jorgensen (2011), Hamilton and Wu (2012), Fawley and Neely (2013), and Bernanke (2020).

term bonds have been magnified after the global crisis and are partially due to an exchange rate channel. Concerning the euro-zone, Krishnamurthy *et al.* (2018), who study the effect of ECB policies on sovereign bond yields and examine the channel through which they operate, find that the SMP and Outright Monetary Transactions (OMT) led to large reductions in sovereign bond yields mainly for Italy, Spain, and Portugal, and induced positive spillover effects on European Union stock markets.

Considering that unconventional monetary policy announcements lead to financial market responses, which are similar to conventional monetary shocks (Bluwstein and Canova, 2016), and that syndicated loans can be used as a closer substitute to corporate bond financing by allowing non-financial firms to raise larger amounts of funding, with closer maturities to that of corporate bonds (Altunbaş *et al.*, 2010), one would expect the CSPP to have beneficial spillover effects on syndicated loan spreads. We thus hypothesize:

Hypothesis 2 (H2): The CSPP effects spilled over to the syndicated loan market, significantly reducing loan spreads.

2.2. Choice of debt by non-financial firms and the CSPP

Prior research on firms' debt financing choice primarily highlights the coexistence of bank and bond financing (Diamond, 1984; Boyd and Prescott, 1986; Berlin and Loeys, 1988; Chemmanur and Fulghieri, 1994; Yosha, 1995; Bolton and Freixas, 2000; Fiore and Uhlig, 2011). While some authors argue that bank financing holds a significant advantage, Diamond (1991) and Rajan (1992) predict a hump-shaped relationship between firm quality and debt sources. This literature clusters around three main hypotheses. The flotation costs hypothesis, which posits that because small public debt issues are not cost-efficient, firms only issue public bonds to borrow larger amounts (Houston and James, 1996; Krishnaswami *et al.*, 1999; Esho *et al.*, 2001; Denis and Mihov, 2003; Marshall *et al.*, 2016). The renegotiation and liquidation hypothesis, which argues that borrowers with a higher probability of financial distress are far less likely to borrow publicly (Berlin and Loeys, 1988; Chemmanur and Fulghieri, 1994; Cantillo and Wright, 2000; Esho *et al.*, 2001; Denis and Mihov, 2003; Fiore and Uhlig, 2011). The information asymmetry hypothesis, which suggests that firms facing higher incentive problems from information asymmetry are expected to borrow privately (Boyd and Prescott, 1986; Krishnaswami *et al.*, 1999; Denis and Mihov, 2003; Fiore and Uhlig, 2011).

Empirically, Houston and James (1996), Johnson (1997), Krishnaswami *et al.* (1999), Cantillo and Wright (2000), Denis and Mihov (2003) and Altunbaş *et al.* (2010) examine the relationship between debt source preferences and borrowers' financial characteristics, such as size, leverage, liquidity, growth opportunities, and profitability. Johnson (1997) reports evidence of the systematic use of bank debt by firms with access to public debt markets, suggesting that the benefits of bank debt remain important for those firms. Cantillo and Wright (2000) and Denis and Mihov (2003) show that the major determinant of the debt source is the credit quality of the issuer. According to Cantillo and Wright (2000), higher-quality firms prefer public debt, while firms with poor prospects borrow from banks. Considering the choice among bank debt, non-bank private-debt, and public debt, Denis and Mihov (2003) argue that firms with higher credit risk prefer non-bank private sources, while firms with credit rating towards the middle of the spectrum borrow from banks, and those with the highest credit rating prefer public debt. Altunbaş *et al.* (2010) find that large firms and those with higher leverage ratios and liquidation values tend to choose syndicated loans, while firms with more growth opportunities prefer corporate bonds. More recently, Lin *et al*. (2013) study the effect of ownership structure on firms' debt choices, while Becker and Ivashina (2014) show that bank-credit supply determines firms' substitution between loans and bonds. Morellec *et al.* (2015) find that firms with more growth options and higher bargaining power in default, as well as those facing lower credit supply, prefer corporate bonds. Marshall *et al.* (2016) show that UK smaller firms or those with a large proportion of intangible assets are not able to finance themselves through corporate bonds and that syndicated loans have better funding conditions.

The CSPP also seems to have brought a change in the financing decisions and debt structure of firms. Non-financial firms with CSPP-eligible bonds have shifted from bank-based to market-based financing to some extent, while the same may not be verified for non-eligible firms (De Santis *et al.*, 2018). Grosse-Rueschkamp *et al.* (2019) hypothesize a "capital structure channel" of monetary policy, through which, as the bond purchases by central banks reduce corporate bond yields, firms will shift from bank loans into bonds. With the decline in loan demand from eligible firms, banks' financial constraints are relieved, allowing for the increase of lending to other companies, which enhances the bank lending channel.

Arce *et al.'s* (2021) results are also consistent with a substitution effect of bank loans by bond funding after the announcement of the programme. This shift from bank to bond financing, which tends to be stronger for larger firms, allows banks to extend credit to firms that are not able to issue bonds, which are typically smaller.[6] According to De Santis and Zaghini (2021) and Todorov (2020), changes in financing patterns also include a shift from bond placements in other currencies to euro-denominated debt, a more pronounced effect for firms issuing eligible bonds.

The purchases made through the CSPP were expected to stimulate the economy through three distinct channels: (*i*) direct pass-through, (*ii*) portfolio rebalancing; and (*iii*) signalling effect. Given that the CSPP was not expected by the markets, a large signalling effect is expected, representing an upsurge in bond issuance. This leads to a third hypothesis:

Hypothesis 3 (H3): The CSPP influenced non-financial firms' debt choices, increasing the likelihood of observing bonds rather than loans.

3. Data, methodology, and variable definition

3.1. Methodology

3.1.1. The impact of the CSPP on bond and loan spreads

To assess the impact of the CSPP on bond and loan primary market spreads, we use the model described in Eq. (1), a reduced-form model similar to existing loan and bond pricing models (Campbell and Taksler, 2003; Gabbi and Sironi, 2005; Chen *et al.*, 2007; Zaghini, 2019; Marques and Pinto, 2020; Alves *et al.*, 2021). We employ OLS regression techniques and adjust for heteroskedasticity. Due to time varying risk premia and cross-transaction differences, we estimate standard errors clustered by year and deal.

$$Spread_{i,t} = \alpha_0 + \beta_1 CSPP_{i,t} + \gamma\, Contractual\ characteristics_{i,t} + \varphi\, Macroeconomic\ factors_t + \delta\, Firm\ characteristics_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

where the subscripts refer to bond/loan tranche i at time t. $Spread_{i,t}$ is the dependent variable and it represents the bond/loan's credit spread in basis points, corresponding to the economic cost per tranche based on available information at the time of closing the loans or issuing the bonds. For bonds, the

[6] According to Arce *et al.* (2021), around 78% of the drop in loans extended to Spanish bond issuers before the CSPP was redirected to other firms.

spread is defined as the margin yielded by the security at issue above a corresponding currency treasury benchmark with a comparable maturity; i.e., the option adjusted spread. For syndicated loans, the credit spread corresponds to the all-in-spread-drawn (AISD) over Libor or Euribor. The AISD is the interest rate that the borrower pays to the lender on the amount drawn on the loan, measured as a markup over a benchmark.

This same equation will be used for a deal-level analysis, in which we aggregate bond and loan tranches at the deal level, and study the impact of the CSPP on non-financial firms' cost of borrowing. The dependent variable is the weighted average spread (WAS), computed as the weighted average between the tranche spread and its weight in the deal size. In this analysis, the standard errors are clustered by year and country.

3.1.2. Cost of borrowing and debt choice

As the choice between bond and loan funding may be endogenous to spreads, to test the robustness of our results we use an endogenous switching regression model (Lokshin and Sajaia, 2004) to study pricing, taking into consideration the potential self-selection by firms between issuing bonds and borrowing from banks. We perform a full information maximum likelihood (FIML) method on the spread samples of our model specifications simultaneously with a probit selection equation, where the choice between bonds and syndicated loans is a function of contractual and firm characteristics, and macroeconomic factors. The empirical model is specified as follows:

$$WAS\ B_{i,t} = \alpha_0 + \beta_1 CSPP_{i,t} + \gamma\ Contractual\ characteristics_{i,t} + \varphi\ Macroeconomic\ factors_t + \delta\ Firm\ characteristics_{i,t-1} + \varepsilon_{i,t} \quad (2)$$

$$WAS\ L_{i,t} = \alpha_0 + \beta_1 CSPP_{i,t} + \gamma\ Contractual\ characteristics_{i,t} + \varphi\ Macroeconomic\ factors_t + \delta\ Firm\ characteristics_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

$$I^*_{i,t} = \omega_0(WAS\ B_{i,t} - WAS\ L_{i,t}) + \beta_1 CSPP_{i,t} + \gamma\ Contractual\ characteristics_{i,t} + \varphi\ Macroeconomic\ factors_t + \delta\ Firm\ characteristics_{i,t-1} + u_{i,t} \quad (4)$$

where the subscripts refer to firm *i* at time *t*, and the last equation models the debt choice: if $I^*_i > 0$ firm *i* chooses to issue bonds, otherwise it chooses loan funding. $WAS\ B_{i,t}$ and $WAS\ L_{i,t}$ are the dependent variables for the first/second equation and it represents bond/loan *i*'s WAS, at closing. We adjust for

heteroskedasticity and due to time-varying risk premia and cross-country differences, we estimate standard errors clustered by year and country.

3.1.3. Borrowing choice

To examine how the CSPP affected the non-financial firms' choice between corporate bonds and syndicated loans, controlling for firms' characteristics, contractual features, and the macroeconomic environment, we estimate a logistic regression model in line with Denis and Mihov (2003), Altunbaş *et al.* (2010) and Gomes and Phillips (2012). The regression equation is as follows:

$$Choice\ of\ debt_{i,t} = \alpha_0 + \beta\ CSPP_t + \gamma\ Contractual\ characteristics_{i,t} + \varphi\ Macroeconomic\ factors_t + \delta\ Firm\ characteristics_{i,t-1} + \varepsilon_{i,t} \quad (5)$$

where the subscripts refer to firm *i* at time *t*, and the *Choice of debt*$_{i,t}$ is a binary dependent variable that takes the value of 1 if the firm chooses to issue corporate bonds and 0 if the firm decides to close a loan. In estimating equation (5), we adjusted for heteroskedasticity and standard errors are clustered by industry and country.

From the literature related to debt pricing and debt choice, we borrow several control variables. These include contractual characteristics, macroeconomic factors and non-financial firms' accounting and market variables. A discussion of the variables is presented in section 3.2. Table 1 provides the detailed definitions and sources for all the variables used, while Appendix A provides a literature review on the pricing determinants of bonds and loans.

****** Insert Table 1 about here ******

3.2. Variable definition

3.2.1. Core independent variables

To assess the impact of the CSPP on both spreads and debt choices, a dummy variable *CSPP* is included. For some of the models, this variable is then divided into two distinct dummy variables: *CSPP announcement* and *CSPP purchases*. The first takes the value of 1 for the period between the announcement of the programme and the day before the first asset purchase, and 0 otherwise; while the latter takes value 1 for the period from the day of the first asset purchase to the end of the sampling period, and 0 otherwise. These two variables allow us to separately examine the impact of the

announcement *vis-à-vis* the programme implementation (Kettemann and Krogstrup, 2014; Arce *et al.*, 2021).

3.2.2. Contractual controls

Following the logic established in earlier studies (Campbell and Taksler, 2003; Gabbi and Sironi, 2005; Carey and Nini, 2007; Chen *et al.*, 2007; Bae and Goyal, 2009; Maskara, 2010; Bharath *et al.*, 2011; Lin *et al.*, 2011; Mattes *et al.*, 2013; Lim *et al*, 2014; Marques and Pinto, 2020), this study considers the following contractual characteristics: (*i*) *maturity*; (*ii*) *transaction size*; (*iii*) *rated*; (*iv*) *rating*; (*v*) *callable* and *fixed* for bond tranches; (*vi*) *term loan* and *secured loan* for loan tranches; (*v*) *tranche to transaction;* (*vi*) *number of tranches;* (*vii*) and *number of banks*.

A positive relationship is expected between *maturity* and both the spread and the probability of choosing bonds over loans, due to the accrued risk of longer redemption horizons (Marshall *et al.*, 2016; Zaghini, 2019). Regarding the *transaction size*, we expect larger deals to have lower spreads as they typically have, *ceteris paribus*, lower uncertainty and higher liquidity compared to smaller deals (Gabbi and Sironi, 2005; Chen et al., 2007; Zaghini, 2019).

Credit ratings are a central determinant of bond and loan spreads. As the information on loan ratings provided by Loan Analytics is not available for several tranches, we include the dummy variable *rated*, equal to 1 if the bond/loan has a credit rating from S&P and/or Moody's and/or Fitch, and 0 otherwise. For those tranches, with at least one credit rating assigned by these 3 rating agencies, we converted credit ratings as follows: AAA=Aaa=1, AA+=Aa1=2, and similarly until D=22, following the procedure used by Gabbi and Sironi (2005) and Zaghini (2019). If a tranche has two or three credit ratings, we computed the average. Rating scales are inverse scales, so we expect spreads to increase as the rating decreases.

Contractual variables that are specific to bonds or loans are incorporated, such as dummy variables for the inclusion of a call option in bonds (*callable*) and if the bond has a fixed rate (*fixed rate*); and if a loan is secured (*secured loan*) or a term loan (*term loan*) – see Gabbi and Sironi (2005), Santos (2011) and Schwert (2020). While in the tranche level analysis, we control for the *tranche to transaction* ratio, this variable is replaced by the *number of tranche*s when performing a deal level

analysis. Finally, to control for bank structure, we use the *number of banks* (Sufi, 2007; Ivashina and Kovner, 2011).

3.2.3. Macroeconomic Factors

Extant literature on debt pricing presents market variables, like the slope of the yield curve, market volatility, the sovereign risk, and financial crises, which have a significant impact on bond and loan spreads (Kleimeier and Megginson, 2000; Campbell and Taksler, 2003; Krishnan *et al.*, 2005; Qian and Strahan, 2007; Bae and Goyal, 2009; Lin *et al.*, 2011; Marques and Pinto, 2020; Alves *et al.*, 2021). We thus control for European market *volatility* as in Miquel-flores and Abidi (2018) and Zaghini (2019); the term structure of interest rates, proxied by *EUSA5y-Libor3M* provided as the difference between the five-year Euro swap rate and the 3-month Libor rate (Marques and Pinto, 2020); and the *country risk*, proxied by the sovereign credit rating provided by Moody's. Finally, following Marques and Pinto (2020) and Gürtler and Neelmeier (2018), to examine the impact of the supply side conditions of the corporate debt market on credit spreads, we include dummies for *financial crisis* and *sovereign crisis*.

3.2.4. Firm characteristics

From debt pricing literature, we borrow several variables that proxy for size, asset tangibility, growth opportunities, leverage, profitability, and liquidity of borrowing firms (Campbell and Taksler, 2003; Chen *et al.*, 2007; Qian and Strahan, 2007; Bae and Goyal, 2009; Flannery *et al.*, 2012). Firm size and asset tangibility are proxied by the *total of assets* and *fixed assets to total assets*, respectively. The size of the issuer and its asset tangibility may affect its credit spread in a negative way, since larger firms are in a better position to reduce their risks (Zaghini, 2019; Marques and Pinto, 2020); and firms with higher fixed assets to total assets ratios have a higher proportion of tangible assets to use as collateral, increasing the probability of debt recovery for creditors (Santos, 2011), and of obtaining funds through public capital markets (Marshall *et al.*, 2016). Regarding the choice of debt, firm size and asset tangibility are surrogates for incentive problems related to information asymmetries (Denis and Mihov 2003; Altunbaş *et al.* 2010). Thus, we expect smaller firms and those with a lower degree of asset tangibility to prefer loans over bonds (Krishnaswami *et al.*, 1999; Fiore and Uhlig, 2011).

Firm profitability is measured by the *return on assets* (ROA), and we expect a negative impact of ROA on spreads (Santos, 2011). According to Denis and Mihov (2003), profitable firms are more

likely to utilize public debt to signal managerial prospects of future earnings. Therefore, we expect the ROA ratio to be positively related to the probability of bond issuance.

Firm leverage is measured by the *total debt to total assets* ratio, which proxies for borrowers' level of financial constraint (Houston and James 1996; Krishnaswami *et al.* 1999; Altunbaş *et al.*, 2010). We thus expect a negative relationship between a firm's leverage ratio and both spreads (Collin-dufresne *et al.*, 2001; Campbell and Taksler, 2003; Santos, 2011; Zaghini, 2019) and the probability of choosing bonds over loans (Cantillo and Wright, 2000; Esho *et al.*, 2001; Denis and Mihov, 2003; Fiore and Uhlig, 2011).

The *market to book* ratio is used to gauge a firm's growth prospects. We expect that firms with a higher growth opportunity set have a lower cost of funding (Santos, 2011; Marques and Pinto, 2020) and are more likely to use bonds over loans (Pinto and Santos, 2019). The *current ratio* is considered as a proxy for liquidity, with lower values indicating a higher risk of financial distress.

Finally, we use the dummy variable *switcher* to control for firms that close both corporate bonds and syndicated loans during our sample period.

3.3. Sample selection

We use DCM Analytics and Loan Analytics to select individual corporate bonds and syndicated loans closed by euro area non-financial firms in the 2000-2019 period. DCM Analytics provides comprehensive information on bond securities issued in debt capital markets, while Loan Analytics offers information on the syndicated loan market. From the several types of securities available, only bonds with a deal-type code of "corporate bond investment-grade" and "corporate bond high-yield", as well as "leveraged" and "investment grade" syndicated loans are selected. The unit of observation is a single tranche, so for a transaction-level analysis, the information of deals with several tranches is aggregated (e.g., credit spread, rating and maturity).

The bonds and loans selected are from firms located in euro area countries and are required to have the tranche size available and to be denominated in Euro. As we intend to examine non-financial firms' cost of borrowing and debt choices, firms with the General Industry Group of "Finance", "Insurance" and "Government" are excluded. Regarding corporate bonds, deals with perpetual bonds and bonds with additional features such as step-up, caps, or floors are excluded. Only bonds classified

as fixed rate bonds or variable rate bonds and with the information regarding the spread to benchmark are included. For syndicated loans, we have excluded loans with no tranche amount or deal amount available and deal status 'not closed' or 'not completed'. Since we wish to analyse the pricing of loans, we have selected those tranches with the AISD available. To take into account potential outliers, the data for the spread, the tranche size and transaction size is winsorized at the 1% and the 99% levels for each debt type (bonds and loans) separately.

Information on country credit rating is obtained from Moody's Ratings. The remaining macroeconomic information and the firms' accounting characteristics were drawn from Datastream database. As the company identification codes from DCM Analytics and Loan Analytics are different from the ones of Datastream, we hand-matched firms by using the company or parent company's name. We linked bond and loan to firms' characteristics using the fiscal year prior to the bond or loan closing date.

3.4. Univariate analysis

3.4.1. The full sample

The full sample consists of 4,099 bond tranches (3,222 deals, worth € 2,335.4 billion) and 11,611 loan tranches (4,626 deals, worth € 3,179.9 billion), respectively. Figure 1 illustrates the distribution of the full sample by volume and year, showing a steep increase in loan issuance until 2007, followed by a sharp fall, rising again from 2008 to 2011, but dropping from € 165.9 billion in 2011 to €50.6 billion in 2019. There is a somewhat consistent increase in the issuance of bonds throughout our sample period, exceeding loan volume for the first time in 2009, presenting a trend that is contrary to the evolution of loans until 2019. The volume of corporate bond issuance increased 467.9% in the 2000-2019 period, from €45.8 billion to €260.4 billion. Overall, it is possible to verify the opposite evolution in volume between these two types of debt funding: between 2000 and 2019, while the bond volume increased more than 5 times, the loan volume more than halved. This evidence is in line with the results reported by De Santis *et al.* (2018) and De Santis and Zaghini (2021), who verified a significant increase in bond issuance of non-financial firms, especially of euro-denominated bonds. However, De Santis *et al.* (2018) do not identify significant changes in the aggregate flow of bank credit.

****** Insert Figure 1 about here ******

Panel A of Table 2 presents the industrial distribution of the full sample of tranches, while Panel B details the tranche allocation to borrowers in a particular country. Panel A shows that both bonds and loans extended to euro area borrowers have similar patterns, with four industries concentrating more than 50% of the total volume: utilities (16.36% for bonds, 17.17% for loans), communications (13.35% for bonds, 14.63% for loans), services (10.10% for bonds, 13.51% for loans), and machinery and equipment (13.23% for bonds, 8.18% for loans). Concerning the geographic location of the borrowing firm, Panel B shows that both corporate bonds and syndicated loans exhibit a concentrated country pattern: while corporate bonds are concentrated in five countries, with issuers located in France (28.18%), the Netherlands (26.32%), Germany (12.45%), Luxembourg (9.52%), and Italy (7.59%) accounting for 84.06% of all corporate bond issuance by volume; Germany (26.41%), France (26.34%), Spain (15.78%), Italy (10.79%) and the Netherlands (9.38%) account for 88.71% of all syndicated loans closed in the 2000-2019 period by volume.

****** Insert Table 2 about here ******

Panel C provides information in relation to the purpose of debt funding.[7] In terms of corporate bonds, firms use the funding raised mainly for general corporate purpose, which represents 79.47% of total value, followed by capital structure purpose and corporate control, with 14.92% and 5.19% of total value, respectively. Syndicated loans reveal a less concentrated pattern, with capital structure (51.96%), corporate control (33.33%), and general corporate purpose (10.72%) receiving the highest shares.

Table 3 provides the descriptive statistics of the full sample of tranches by debt type (see Appendix B for a full descriptive statistic at the deal level). The contractual characteristics and some macroeconomic factors are compared between debt types using the nonparametric Wilcoxon rank-sum test for continuous variables and Fisher's exact test for discrete variables.

[7] We follow the classification of Kleimeier and Megginson (2000): (*i*) corporate control category, which includes funding used for acquisitions, leveraged and management buyouts, private placements or spin-offs; (*ii*) capital structure category, which entails borrowing for refinancing, debt repayment, recapitalization, dividend recapitalization and restructuring; (*iii*) fixed asset based proceeds are used for purchases of aircraft, shipping and general capital expenditures; (*iv*) general corporate purpose category, which includes funding with general corporate purpose stated as its purpose, credits for working capital, public finance and investments, as well as funding with an empty loan purpose code; and (*v*) project finance.

****** Insert Table 3 about here ******

The mean (median) spread is 245.18 bps (170.00 bps) for corporate bonds and 244.76 bps (225.00 bps) for syndicated loans. The Wilcoxon rank-sum test rejects the null hypothesis that the spread is identically distributed for bonds and loan tranches. However, it is important to note that these spreads are computed differently. The average maturity of bond tranches (8.02 years) is significantly higher than that of loan tranches (6.62 years). While the mean corporate bond tranches' rating (8.79 | BBB+) is significantly better than that for loan tranches (10.34 | BBB-), an average bond is issued in a country with a higher credit risk (2.58) than the corresponding value for the countries where borrowers of syndicated loans are located (2.30).

Loans typically include a larger number of tranches per deal than corporate bonds. Therefore, the tranche to transaction ratio is, on average, smaller for bonds (0.81) when compared to loans (0.44). The average number of banks participating in bond issuance is 5.92, which is significantly smaller than the average of 7.98 for syndicated loans, reflecting the need for increased monitoring and for sharing risks among participating banks in the loan market.

Bonds also exhibit a higher average tranche size of €574.3 million compared to the €305.8 million average tranche size of loans, which can be explained by the fact that a significantly larger number of tranches per transaction is issued in a syndicated deal. In fact, on average, a bond deal includes 1.19 tranches, while average loan deals have 2.11 tranches (see Appendix B). Similarly, the transaction size is higher for bonds *vis-à-vis* loans (€952.4 million and €676.5 million for bonds and loans, respectively).

37.84% of bond tranches (38.67% considering bond deals) were issued by switchers, firms that use both bond and syndicated loan markets during the sampling period. This percentage drops to 14.54% when considering loan tranches (19.19% for loan deals), which indicates that borrowers that use both types of funding tend to use more bonds compared to loans to raise debt funding. Additionally, 35.52% of the bond tranches were issued after the announcement of the CSPP, while only 11,22% of loan tranches were issued afterwards.

To assess the impact of the CSPP on potentially eligible bonds, a subsample is created considering the fulfilment of the ECB eligibility criteria, as in Zaghini (2019). The full requirements

for debt instruments to be eligible under the CSPP include the following[8]: (*i*) the issuer must be incorporated in a euro area country; (*ii*) the issuer cannot be eligible for the PSPP, or be a credit institution (or have a parent company which is a credit institution); (*iii*) must have a minimum remaining maturity of 6 months and a maximum of less than 31 years at the time of purchase; from March 18, 2020, if the initial maturity is of 365/366 days or less, have a minimum remaining maturity of 28 days at the time of purchase; (*iv*) must have at least a credit assessment of credit quality step 3, which is equivalent to BBB-, i.e., investment grade; and (*v*) must be denominated in euros. Therefore, the variable *eligible* takes the value of 1 for bonds that fulfil the eligibility criteria and 0, otherwise. This assessment also includes loans, selected following the same criteria used for bonds. Even if not directly acquired by the ECB, it is of interest to evaluate if there is a spillover effect on the loan market by using a subsample that can be seen as a substitute to eligible bonds. The sample that hypothetically meets the ECB eligibility requirements corresponds to 64.11% of the bonds and only 6.26% of the loans. This significant reduction in the loan subsample is due to the small number of loans with available credit ratings in Loan Analytics (12.06% for loans *versus* 87.75% for bonds).

A comparative analysis of bond and loan pricing factors in pre- *versus* CSPP period is presented in Appendix C. The average spread is significantly higher for corporate bonds before the CSPP announcement (259.6 bps versus 219.1 bps), while the opposite is verified for loans (237.4 bps *versus* 302.9 bps). This evolution of spreads can be analysed in more detail in Figure 2, which shows that the average spread of both bonds and loans increased significantly in the period of the 2008 financial crisis and the subsequent European sovereign debt crisis. Figure 2 also shows that the average spread for bonds and loans peaked in 2013 and 2014, respectively, with the spread on both subsequently slowly narrowing. The spreads of the two types of debt financing decrease in 2016, the year of the announcement and implementation of the CSPP, with the bond spread continuing this trend until 2019, while the loan spread saw a significant increase in 2019. This first analysis is consistent with the announcement effects identified not only in other studies for the CSPP, but also for other programmes (Beirne *et al.*, 2011; Altavilla *et al.*, 2015; Markmann and Zietz, 2017; Zaghini, 2019).

[8] Decision (EU) 2016/948 of the European Central Bank of 1 June 2016 on the implementation of the corporate sector purchase programme (ECB/2016/16).

****** Insert Figure 2 about here ******

3.4.2 The high-information sample

The high-information sample includes bonds and loans for which there is complete information on borrowing firms' accounting and market data. Our objective is to examine the relevance of these characteristics on bond and loan pricing as well as on firms' debt choice. Table 4 presents univariate analysis for the firms' characteristics that issue bonds and close syndicated loans in the 2000-2019 period. There are 3,088 deal-level observations, 1,832 for firms that issue bonds and 1,256 for firms that close loans.

****** Insert Table 4 about here ******

On average, bond issuers are larger, more leveraged and with lower liquidity compared to syndicated loan borrowers. In addition, the return on assets, fixed assets to total assets and market-to-book ratios do not differ significantly between firms that use bonds *vis-à-vis* loans.

4. The CSPP and non-financial firms' cost of borrowing

4.1. A tranche-level analysis

Tables 5 and 6 present the results of estimating equation (1) using each of the six samples discussed in sections 3.4.1 and 3.4.2. Models [1a], [2a] and [3a] for corporate bonds and models [4a], [5a] and [6a] for syndicated loans are then re-estimated by replacing the CSPP dummy variable per two variables, capturing the effect of both the announcement (*CSPP announcement*) and the implementation (*CSPP purchases*) of the programme.

****** Insert Tables 5 and 6 about here ******

Models [1a] and [4a] are largely consistent with the predictions made in H1 and H2. The CSPP has a significant negative impact on the spread for both bonds and loans closed by euro area non-financial firms, suggesting that this APP was successful in reducing the cost of funding of firms both through the direct pass-through transmission channel and the portfolio rebalancing channel, with a significant spillover effect to close substitute assets: syndicated loans (Gagnon *et al.*, 2011; Bernanke, 2020).

Model [1b] shows that bond spreads reduce significantly in both the announcement and purchasing periods, by 81.1 bps and 57.6 bps, respectively. Regarding loans, in model [4b], while the

announcement period does not impact spreads, they reduce significantly in the purchase period (69.3 bps). For bonds, the larger reduction in spreads in the period after the announcement when compared to the implementation period is similar to Beirne *et al.*'s (2011) findings for covered bonds during CBPP1. As pointed out by Bernanke (2020), this reflects the incorporation on bond prices of the effects of future purchases under the programme.

Similar results are obtained for eligible samples, suggesting that the CSPP is, on average, associated with 27.3 bps and 42.3 bps lower spreads for bonds and loans, respectively - models [2a] and [5a]. Again, results presented in column 4 of Table 5 show that during the announcement period bond spreads reduced, on average, by 48.8 bps, and that the implementation period added an additional negative effect, with the *CSPP purchases* dummy being associated with a 23.3 bps reduction in spreads. In addition, the CSPP spilled over to the syndicated loan market only during the implementation period, with a significant and negative relationship between the *CSPP purchase* dummy and loan spreads.

Finally, results are robust when controlling for non-financial firms' characteristics - models [3a] and [3b] for bonds and models [6a] and [6b] for loans: (*i*) corporate bond spreads drop, on average, 41.8 bps after the CSPP announcement, which is especially pronounced for the announcement period (73.5 bps) *versus* the implementation period (36.7 bps); and (*ii*) the CSPP had a beneficial spillover effect on syndicated loan spreads after the ECB started purchasing corporate bonds under this programme.

Overall, these results are in line with similar studies on the effectiveness of specific APP in Europe (Beirne *et al.*, 2011; Gagnon *et al.*, 2011; Szczerbowicz, 2015; Gibson *et al.*, 2016; Markmann and Zietz, 2017) and the US (Hancock and Passmore, 2011; Krishnamurthy and Vissing-Jorgensen, 2011; Bernanke, 2020); as well as for the impact of the CSPP on euro area eligible and non-eligible corporate bonds (Miquel-flores and Abidi, 2018; Grosse-Rueschkamp *et al.*, 2019; Zaghini, 2019; Todorov, 2020).

Focusing on the remaining independent variables, the impact of credit risk on credit spread is exactly as expected for all models in Tables 5 and 6; rated loans and bonds have lower credit spreads and the higher the credit risk the higher the credit spread. Our findings are in keeping with previous empirical studies, which find rating to be one of the most important determinants of corporate bond spreads. A linear positive relationship between spread and maturity appears strongly significant for

bonds and loans, in line with the intuition that lenders should get higher remuneration for being exposed to risk for a longer period.

The influence of transaction size on spread is different for bonds *versus* loans. For corporate bonds, while there is, as expected, a negative and significant impact on spreads in the full sample - models [1a] and [1b] -, this impact becomes positive for the eligible sample - models [2a] and [2b] - and insignificant when controlling for firms' characteristics - models [3a] and [3b]. On the contrary, the relationship between transaction size and spread is significant and negative for loans in models [6a] and [6b], suggesting that increasing the transaction size of a syndicated transaction by €100 million will reduce the required credit spread by 26.2 bps and 25.9 bps, respectively.

The variable *tranche to transaction* behaves differently for bonds *vis-à-vis* loans. While spread and this ratio are positively or insignificantly related for corporate bonds, they have a significantly negative relationship for syndicated loans. Our results show that loan tranching significantly affects spreads, which is in line with contractual finance (Maskara 2010; Cumming *et al*. 2020) literature: the design of different tranches with different risk-return profiles reduces loan spreads.

The *number of banks* has a negative impact on bond spreads for both the full and eligible samples. Similar results were obtained for syndicated loans in models [4a] and [4b] of Table 6, meaning that a larger number of banks involved may lower the spread if lenders associate a larger number of banks with an increase in the certification of the transaction.

As expected, the introduction of a call option on a corporate bond increases the spread for both the full and the eligible samples, while fixed rate bonds have higher spreads for all the models in Table 5. For loans, for all models in Table 6, there is a significant and positive relationship between secured loans and spreads, while term loans have higher spreads for both eligible and high information samples (contrary to our expectation, this relation is negative in models [4a] and [4b]). Interestingly, non-financial firms that close both bonds and loans in the 2000-2019 period - *switcher* - raise funds with lower spreads than those firms that issue bonds or close loans exclusively.

As expected, market *volatility* has a significant impact on spreads for bonds (but insignificant for loans, with the exception of models [5a] and [5b] for the eligible subsample), while *country risk* is significantly positively related to spreads for bonds (but insignificant for loans in all models). The slope

of the Euro swap curve, *EUSA5y-Libor3M*, is significantly negatively related for bonds, meaning a steeper Euro swap curve is associated with lower spreads. However, for loans this relationship is significant and positive for the full and high-information samples. Results in Tables 5 and 6 show that bonds and loans issued within the periods of the financial crisis and the sovereign debt crisis face significantly higher spreads.

Models [3a] and [3b] show that more profitable firms and those with higher asset tangibility face lower bond spreads. On the contrary, there is a significant and positive relationship between firms' total debt to total assets and current ratios and bond spreads. For syndicated loans, models [6a] and [6b] in Table 6, show that firms with higher ROAs and lower leverage face lower credit spreads. The result regarding the impact of the total debt to total assets ratio on loan spreads is contrary to expectations and might be explained by the significant reduction in our sample when controlling for borrowers' characteristics.

Additionally, it is important to note that the second series of TLTRO was announced on the same day as the CSPP - March 10, 2016. These operations, which translated into funding costs of banks inversely linked to the loans provided by banks to non-financial firms and households, were intended to encourage lending to the real economy, and started in June 2016 with four quarterly operations. A third series (TLTRO III) was later announced on March 7, 2019, with seven TLTROs starting in September 2019, also with a quarterly frequency. Hence, as these operations were announced and implemented in periods coinciding with the periods of the CSPP variables, it is difficult to separate the effects of the two measures implemented almost simultaneously by the ECB on the syndicated lending cost for non-financial firms.

4.2. A deal-level analysis

Since bond and loan deals have, on average, 1.19 and 2.11 tranches per deal (see Appendix B), in this section we aggregate tranches at the deal level and check whether our results concerning H1 and H2 hold. We use the deal WAS, computed as the weighted average between the tranche spread and its weight in the deal size, as a proxy of the deal's overall cost of debt. The robustness of our results is tested by using the model specified in equation (1), in which the dependent variable is the WAS, in

basis points. Tables 7 and 8 present the re-estimated results at deal level of the regressions presented in Tables 5 and 6, respectively.

****** Insert Tables 7 and 8 about here ******

In these regressions, the variables specific to each type of debt (*callable* and *fixed rate* for bonds, and *secured loan* and *term loan* for loans) are dropped, several variables are aggregated at the deal level like weighted average maturity - *WAMaturity* - and weighted average rating - *WARating* -, and the *tranche to transaction* is replaced by *number of tranches*.

The results are consistent with the tranche-level analysis, showing that the *CSPP* dummy variable has a significant and negative relationship with bond - models [7a], [8a] and [9a] in Table 7 - and loan spreads - models [10a], [11a] and [12a] in Table 8. Similarly, results for bonds in all samples indicate that the negative impact on spreads verified for the announcement period is amplified in the implementation period of the programme. Considering firms' cost of borrowing via syndicated loans, results in Table 8 show that there is a significant and positive relationship between the *CSPP announcement* and WAS variables for the sample of loans that comply with the same requirements of eligible bonds [11b]. However, our findings support a CSPP beneficial spillover effect on syndicated loan deals WAS after the ECB started purchasing bonds; i.e., firms face lower borrowing costs through syndicated loan deals during the CSPP's implementation period. Overall, our results clearly support H1 and H2.

For the remaining variables, almost all results are in line with the ones obtained at tranche-level analyses. Table 7 shows that the major bond WAS determinants, with a negative impact, are the *CSPP* dummies, if the deal has a credit rating for all the tranches and if the borrower raises funds via both bonds and loans in our sampling period. On the other hand, the variables that have a higher significant positive impact are the credit rating, and both the financial and sovereign crisis dummies. For the syndicated deals in Table 8, the main WAS drivers are the *number of tranches* and the financial and sovereign crisis dummy variables, with a positive impact, and the CSPP dummy as well as *rated* and *switcher*, with a negative relationship with WAS. Again, the yield curve slope influences bonds and loans differently: while it has a significant and negative impact on bond spreads, a steeper yield curve increases loan WAS.

When comparing regression results at tranche and deal level, the following main differences can be pointed out: (*i*) *transaction size* has a negative and significant impact on loan WAS for all samples; (*ii*) *maturity* loses significance for the eligible sample of bonds and for all samples of loans; (*iii*) the *current ratio* loses significance for bonds; and (*iv*) the ratio of *total debt to total assets* has no influence on the WAS for loan deals.

Considering the pricing equation estimation results for both the bond and syndicated loan samples, we find that the CSPP led to a significant reduction of euro area firms' cost of borrowing via corporate bonds and syndicated loans, which corroborates H1 and H2. When including the CSPP dummy variables separately to control for the announcement and the purchase of bonds, both variables impacted significantly and negatively bond WAS. When considering the loan sample, results show that only when the ECB started purchasing corporate bonds under the CSPP that there was a spillover effect on the syndicated loan market, with a significant reduction in loan WAS.

4.3. Cost of borrowing and the choice between bonds and loans

As shown in Table 3, 37.84% of bonds and 14.54% of loans are closed by switchers. Thus, non-financial firms can choose between corporate bonds and syndicated loans to fund their activities. As the choice between bond and loan deals may be endogenous to credit spreads, to test the robustness of our results we use an endogenous switching regression model (Lokshin and Sajaia, 2004) to study the impact of the CSPP on bonds and loans, taking into consideration the potential self-selection by firms between issuing bonds *versus* syndicated loans, as presented in section 3.1.2. We perform a full information maximum likelihood method on the credit spread samples of our model specifications – models [13] to [15] of Table 9 – simultaneously with a probit selection equation. Considering the Wald test statistics of independent equations, we reject the hypothesis of equations being independent for model [13], but not for models [14] and [15].

****** Insert Table 9 about here ******

In all specifications presented in Table 9, the *CSPP* dummy has a negative and significant impact on the WAS for both bonds and loans, confirming our previous results. In model [13], for the full sample, the *CSPP* dummy is associated with a 57.5 bps and a 31.5 bps reduction in WAS for bonds and loans, respectively. Similar results are obtained for the eligible samples of bonds (-33.2 bps) and

loans (-41.6 bps) in model [14]. Re-estimating these models by including firms' characteristics in specification [15], yields similar results, with a reduction of 43.8 bps for corporate bond deals and 55.9 bps for syndicated loan deals.

Some preliminary results can be drawn regarding the impact of the CSPP on the choice between bond and loan funding. Models [14] and [15] for eligible and high-information samples, respectively, indicate that the CSPP has increased the likelihood of a firm choosing to raise funds through bonds rather than loans, which is in line with H3. Results also show that euro area non-financial firms choose market over bank debt when they are looking for long-term financing and to borrow larger amounts of debt because of the potential economies of scale in relation to issuance costs for corporate bonds, which is in line with the flotation costs hypothesis. In addition, firms that employ both corporate bond and syndicated loan deals within our sample period, the switchers, are more likely to choose the latter when issuing new debt.

Concerning firms' characteristics, we find evidence corroborating both the renegotiation and liquidation hypothesis, as borrowers with a higher probability of financial distress are far less likely to borrow publicly, and the information asymmetry hypothesis, as larger firms prefer to issue corporate bonds *versus* closing syndicated loans. Finally, we show that firms using corporate bond deals tend to have a larger growth opportunity set. In the next section, we take a closer look at the firms' debt financing choice and how this choice was affected by the CSPP.

5. The CSPP and non-financial firms' debt financing choice

5.1. The choice between corporate bonds and bank loans

The models [16] to [18] of Table 10 report the results of the logistic equation (3) used to predict firms' choices of debt between corporate bond and syndicated loan deals. The same samples used for the endogenous switching regression model are employed for these estimations, with 7,845, 2,548 and 3,077 deals for the full, eligible, and high-information samples, respectively. The standard errors are clustered by country and year.

Column 1 of Table 10 shows that the CSPP did not affect the firms' choice for the full sample, meaning that the CSPP did not lead to a substitution between bond and loan deals in the full sample.

****** Insert Table 10 about here ******

However, in model [17], the *CSPP* dummy has the predicted effect: this APP increased the likelihood of firms choosing bond over syndicated loan deals. For a sample consisting of bonds that comply with the ECB eligibility criteria as well as syndicated loans with the same characteristics, and therefore considered as possible direct substitutes for such bonds, we show that the CSPP has indeed caused a substitution effect between loans and bonds, leading to increased use of market funding by euro area non-financial firms. Results are robust to the inclusion of firms' characteristics in model [18]: in column 3 of Table 10, findings still support the hypothesis that the CSPP influenced non-financial firms' debt choices, increasing the likelihood of observing bonds over loans. This conclusion is in line with De Santis *et al.* (2018), Grosse-Rueschkamp *et al.* (2019) and Arce *et al.* (2021), who examine the changes of firms' debt structure due to the CSPP and show an increase in the share of bonds in the debt of firms compared to bank loans, especially for firms that issued CSPP-eligible bonds. We thus corroborate H3.

Regarding the remaining independent variables in models [16] to [18], our findings also document that *WAMaturity* increases the probability of a firm choosing bond deals in all model specifications and are consistent with the prediction that firms use market over bank debt when looking for long-term financing. In addition, borrowing for shorter maturities can be renegotiated more easily, which is usually verified for bank debt (Johnson, 1997).

Transaction size increases the likelihood of borrowing from syndicated loan markets for all models. According to the flotation costs hypothesis, firms issue public bonds only to borrow large amounts (e.g., Esho *et al.*, 2001; Denis and Mihov, 2003). However, considering that syndicated loan markets allow firms to borrow considerably higher amounts than typical bilateral bank loans, these contradictory results may be due to the similar sizes of syndicated loan and corporate bond deals in our samples. Additionally, results also show that the 2008 financial crisis and the subsequent European sovereign debt crisis significantly increased the use of the corporate bond market to raise funds. This can be explained by the fact that during these periods, euro area banks lost significant capacity to lend, especially relatively large amounts because they would have had more impact on their balance sheet.

Considering the remaining macroeconomic variables, results show that a higher *country risk* increases the probability of a firm obtaining funding in bond markets. In model [17], a higher swap

curve slope increases the probability of a firm choosing syndicated loan deals instead of issuing bonds. Market *volatility* only affects significantly and negatively the firms' choice of market *versus* bank debt in the full sample.

Results in model [18] also indicate that relatively larger and more profitable firms, and those with more growth options are more likely to issue bonds over loans. Relatively smaller firms prefer syndicated loans *vis-à-vis* corporate bond deals, which supports the hypothesis that firms with more severe information problems are more likely to borrow privately. This relationship also corroborates the predictions of the flotation costs hypothesis (Houston and James, 1996; Krishnaswami *et al.*, 1999; Hadlock and James, 2002; Denis and Mihov, 2003).

Our results are in line with those of Cantillo and Wright (2000) and Denis and Mihov (2003), who report that profitable firms are more likely to issue public debt. The evidence of a significant and positive relation between growth opportunities and the likelihood of observing bond over loan deals contradicts the findings of Krishnaswami *et al.* (1999), but this is in line with the conclusions of Altunbaş *et al.* (2010) and Morellec *et al.* (2015), meaning that corporate bond arrangements may play an important role as a liquidity source, especially for borrowers with relatively higher growth options.

The fact that a firm borrows from both debt markets within the sample period seems to affect the probability of the firm issuing bonds over loans for the eligible sample. Coefficients of *fixed assets to total assets*, *total debt to total assets* and *current ratio* variables are not statistically significant in model [18].

To further examine the impact of the CSPP on the choice of debt financing, we re-estimated the model [18] for two subsamples, before and after the CSPP announcement. Results presented in models [18a] and [18b] show that there is a change in the firms' variables that affect the choice of market *versus* bank debt. In the pre-CSPP announcement period, the variables that determine the likelihood of observing a bond deal over a syndicated loan deal are *log total assets* and *market to book ratio*: firms choose to issue corporate bonds when they are relatively larger and have higher growth opportunity sets. With the announcement and implementation of the CSPP, firms' size and growth opportunities insignificantly affect this choice, while a firm's profitability becomes the unique characteristic affecting the propensity of a firm choosing bonds over loans. This can be explained by the fact that during the

implementation of the CSPP and as long as bonds meet the ECB eligibility criteria, factors such as size or growth opportunities of the sampled listed companies are no longer relevant. What becomes relevant is whether or not the firms will have the profitability necessary to pay the interest and principal associated with the debt service of the bonds issued.

5.2. A focus on switchers

The borrowing choice models presented in Table 10 are re-estimated for a sub-sample of observations from firms that issue both debt instruments, the switchers. Non-financial firms that switch between bonds and loans, those that in fact use both markets extensively, may provide interesting insights into the choice process. Additionally, a switcher-focused analysis will solve endogeneity concerns that may arise in the choice between market and bank debt as discussed in the previous sections. The number of observations for deals closed by switchers are 2,134 for the full sample, 1,199 for the eligible sample and 1,512 for the high-information sample. These firms are concentrated mainly in communications, services, and utilities industries, which is in line with the full sample distribution of tranches. Regarding the geographic distribution of these firms, they are concentrated in France, Germany, Italy, the Netherlands, and Spain. For detailed industrial, geographic and purpose distribution analyses, see Appendix D.

Models [19] and [20] in Table 11 show largely the same results as models [16] and [17]. The key difference appears in model [21] *vis-à-vis* model [18]. When controlling for switching firms' characteristics, there is no impact of the CSPP on the choice between bonds and loans. These results show that the findings presented by Grosse-Rueschkamp *et al.* (2019) and Arce *et al.* (2021) that the CSPP leads to a reduction in the demand for bank credit by bond issuers, which are usually large corporations, hold only for non-switchers; i.e., CSPP does not affect debt financing choices for firms that use extensively both bond and syndicated bank debt to fund their activities. Hence, the substitution of bank term loans with bond debt is important for non-switchers, those that may have more difficulty in accessing the bond market.

There is also a difference in the switching firms' characteristics that affects the probability of a firm issuing corporate bond instead of closing syndicated loan deals: while the coefficient on the ROA ratio loses significance, there is a significant and negative relationship between the total debt to total

assets ratio and the probability of observing a bond deal. Overall, switching firms that choose bond funding are larger, have lower leverage levels and larger growth opportunity sets than firms that choose loan funding (see Appendix E for an analysis of switching firms' characteristics). Results for switchers are thus in line with both the renegotiation and liquidation hypothesis and the information asymmetry hypothesis.

****** Insert Table 11 about here ******

5.3. Robustness checks

To address self-selection concerns with regard to the endogeneity of the decision to use public *versus* private debt, we re-estimated the models presented in Table 10 for a matched sample of syndicated loans (Roberts and Whited, 2013). To create a matched sample, we employ a propensity score matching approach as used by Parsons (2001), by creating a 1 to 1 matching algorithm that captures the most identical syndicated loan deal in the same industry and year. The propensity score was created using the following deals' characteristics: transaction size, WAMaturity, and WARating. Overall, our estimates remain unchanged, namely: (*i*) CSPP increased the likelihood of firms choosing bond over syndicated loan deals; and (*ii*) firms' profitability becomes the most important characteristic affecting the propensity of a firm choosing bonds over loans after the announcement of the programme.

6. Conclusion

This paper provides insight on the impact of the CSPP on the borrowing cost and debt financing choice of euro area non-financial firms, by using a cross-section of bonds and loans closed in the 2000-2019 period. Results suggest that the CSPP reduces corporate bond spreads across all samples, with the implementation period strengthening the reduction in spreads seen during the announcement period. We also find a beneficial spillover effect of the CSPP on the pricing of syndicated loans, as there is a significant drop in loan spreads during the CSPP implementation period; i.e., syndicated loan spreads do not change significantly with the announcement of the CSPP, but they narrowed, on average, 53.3 bps during the period the ECB bought eligible-bonds. Results hold when implementing a deal-level analysis.

Overall, these results are in line with similar studies on the effectiveness of the CSPP programme, such as the reduction in bond yields presented by Miquel-flores and Abidi (2018), Grosse-

Rueschkamp *et al.* (2019) and Zaghini (2019) for both eligible and non-eligible bonds, and provides insight regarding syndicated loans, which appear to have been indirectly influenced by the CSPP, possibly through the portfolio rebalancing channel (Gagnon *et al.*, 2011; Zaghini, 2019; Bernanke, 2020).

Concerning the impact on non-financial firms' debt choices, results confirm that the CSPP increased the likelihood of firms choosing bond over syndicated loan deals, not only for the eligible sample, but also when controlling for non-financial firms' characteristics. However, the same is not verifiable for the full sample, possibly due to portfolio rebalancing, giving banks more leeway to grant loans. Hence, in keeping with the predictions of De Santis *et al.* (2018), Grosse-Rueschkamp *et al.* (2019) and Arce *et al.* (2021), we provide evidence consistent with the CSPP affecting firms' choice of funding. By promoting the issuance of eligible bonds by firms with access to this market, the CSPP stimulated the substitution of bank term loans with bond debt.

In addition, we show that CSPP does not affect debt financing choices for firms that use extensively both bond and syndicated bank debt to fund their activities. Hence, the substitution of bank term loans with bond debt is important for non-switchers, those that may have more difficulty in accessing the bond market. Our firm-level analysis corroborates the predictions of Grosse-Rueschkamp *et al.* (2019) and Arce *et al.* (2021): the CSPP had a positive impact on the flow of new loans extended to firms that are not able to issue CSPP-eligible bonds. However, our sample is made up of large companies. In economies heavily affected by the crisis (e.g., the GIIPS), SMEs represent the majority of firms, so examining how the CSPP has unlocked bank financing for these firms is an opportunity for future research. Policymakers may need to reassess this result and implement other mechanisms (e.g., guarantees provided to bank loans) to be able to expand credit to non-financial firms more efficiently.

This paper also provides empirical evidence on corporate borrowing decisions. Results document that sampled firms' characteristics, like size, profitability, leverage, and growth opportunities influence the firms' choice between market and bank debt. Findings are consistent with the hypothesis that bond financing promotes the reduction of the deadweight costs associated with information asymmetries and provides support for the flotation costs' argument of debt choice. Findings also show that more profitable firms, and those with more growth options and looking for long-term financing are

more likely to choose corporate bond over syndicated loan deals. We only find results in line with the renegotiation and liquidation hypothesis for switching firms. However, we show that with the announcement and implementation of the CSPP the only characteristic that affects firm's choice between market and bank debt is profitability, meaning that factors such as size or growth opportunities of the sampled listed companies are no longer relevant. We believe that a more detailed analysis of how the CSPP affected the debt choice process is also a valuable opportunity for future research.

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Figure 1: Distribution of bond and loan issues per year

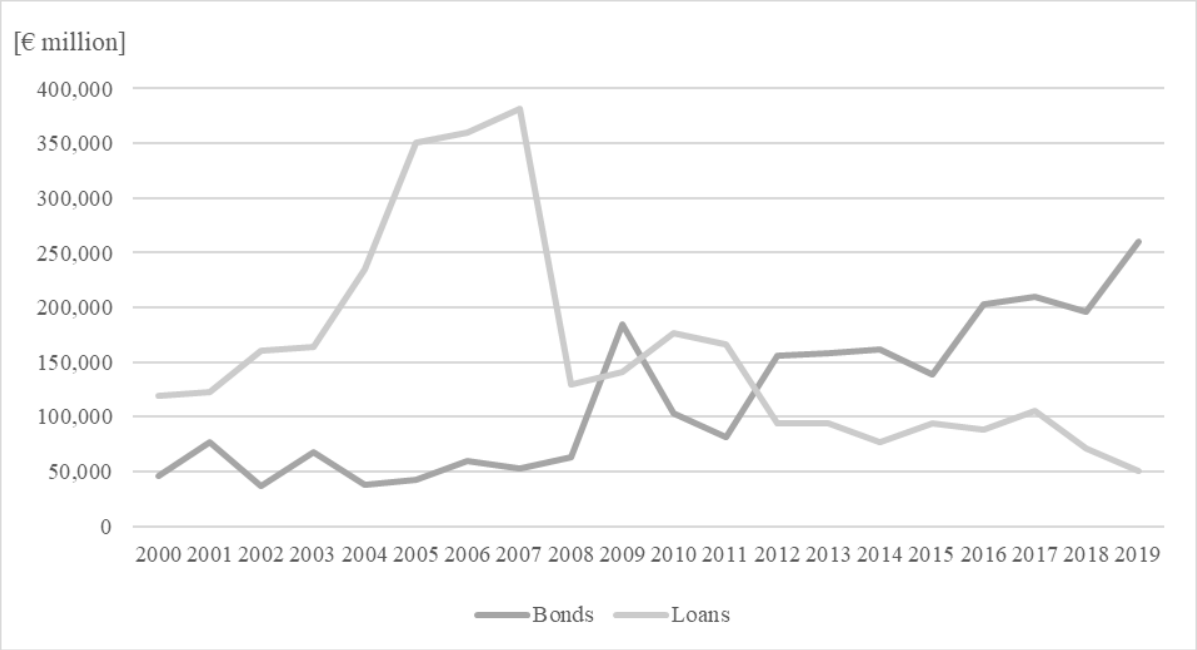

Figure 1 describes the distribution of the total value of bond and loan issues per year.

Figure 2: Average credit spread of bonds and loans at tranche level

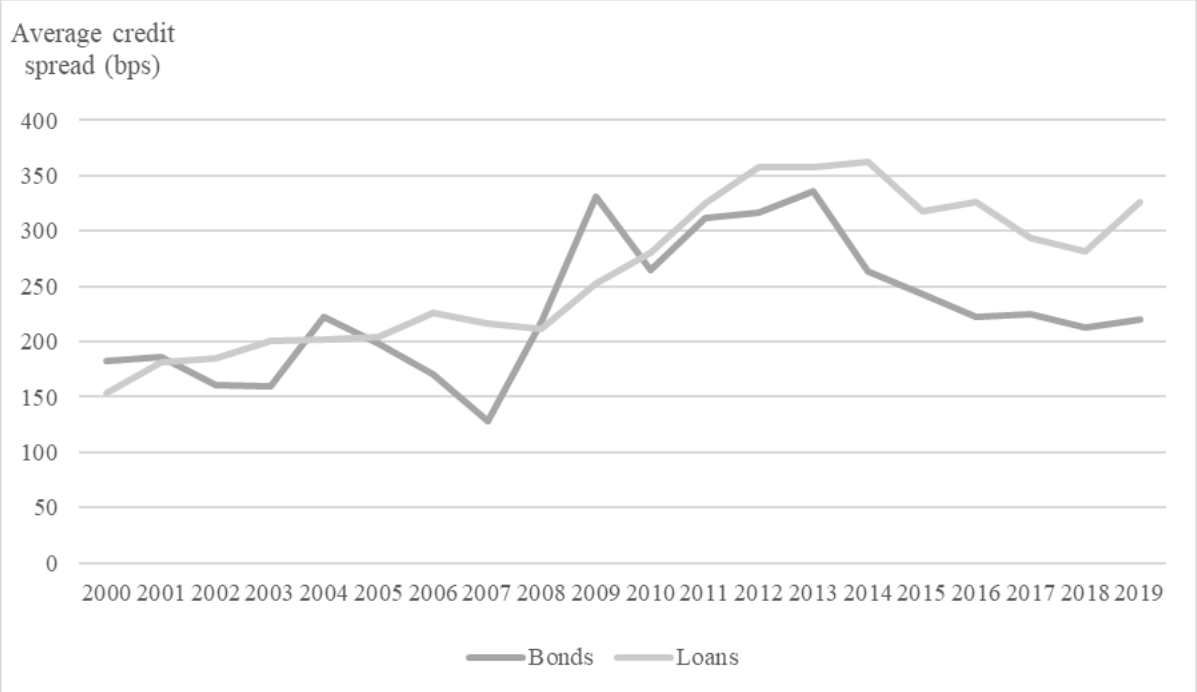

Figure 2 presents the evolution of the sample's average spread (in bps) of bonds and loans by year.

Table 1: Definition of variables and sources

Variable name	Variable Definition	Source
Dependent variables:		
Spread	For bonds, spread represents the margin yielded by the security at issue above a corresponding currency treasury benchmark with a comparable maturity (option-adjusted spread). For loans, spread represents the spread paid by the borrower over Libor or Euribor plus the facility fee (all-in-spread-drawn).	DCM / Loan Analytics
WAS	Weighted average spread, computed as the sum of the product of the tranche's weight in the transaction size and the tranche's spread.	Authors
Choice of debt	Dummy variable equal to 1 if the firm issues a bond, and 0 if the firm closes a loan.	Authors
Independent variables:		
CSPP	Dummy variable equal to 1 if the bond/loan closing date belongs to the CSPP period (March 10, 2016 - December 31, 2019), and 0 otherwise.	Authors
CSPP announcement	Dummy variable equal to 1 if the bond/loan closing date belongs to the CSPP announcement period (March 10, 2016 - June 8, 2016), and 0 otherwise.	Authors
CSPP purchases	Dummy variable equal to 1 if the bond/loan issue belongs to the CSPP implementation period (June 8, 2016 - December 31, 2019), and 0 otherwise.	Authors
Contractual Characteristics		
Rated	Dummy variable equal to 1 if the bond/loan has a credit rating, and 0 otherwise.	DCM / Loan Analytics
Rating	Rating based on the S&P, Moody's and Fitch rating at the bond/loan closing date. The rating is converted as follows: AAA=Aaa=1, AA+=Aa1=2, and so on until D=RD/D=22; the average is considered if the ratings differ among rating agencies.	DCM / Loan Analytics
WARating	Weighted average rating, computed as the sum of the product of the tranche's weight in the transaction size and the tranche's rating.	Authors
Maturity	Bond/loan maturity in years.	DCM / Loan Analytics
WAMaturity	Weighted average maturity, computed as the sum of the product of the tranche's weight in the transaction size and the tranche's maturity.	Authors
Transaction size	Bond/loan transaction size in Euro million.	DCM / Loan Analytics
Tranche to transaction	The ratio of tranche size to transaction size of the bond/loan.	DCM / Loan Analytics
Callable	Dummy variable equal to 1 if the bond has a call option, and 0 otherwise.	DCM Analytics
Fixed rate	Dummy variable equal to 1 if the bond has a fixed rate, and 0 otherwise.	DCM Analytics
Secured loan	Dummy variable equal to 1 if the loan is secured, and 0 otherwise.	Loan Analytics
Term loan	Dummy variable equal to 1 if the loan is a term loan, and 0 otherwise.	Loan Analytics
Number of banks	Number of financial institutions participating in the bond/loan issuance.	DCM / Loan Analytics
Number of tranches	Number of tranches per transaction.	DCM / Loan Analytics
Firm Characteristics		
Switcher	Dummy variable equal to 1 for a firm using both bond and loan financing within the sample period (January 1, 2000 - December 31, 2019), and 0 otherwise.	Authors
Total assets	Total assets in Euro million.	Datastream
Return on Assets	Net income divided by total assets.	Datastream
Fixed assets to total assets	Ratio of fixed assets to total assets. Fixed assets include property, plant and equipment.	Datastream
Total debt to total assets	Ratio of total debt to total assets.	Datastream
Market to book ratio	Sum of the book value of liabilities and the market value of equity divided by the book value of assets.	Datastream
Current ratio	Ratio of total current assets to total current liabilities.	Datastream

(continued)

Table 1: Definition of variables and sources

(continued)

Variable name	Variable Definition	Source
Macroeconomic Factors		
Volatility	VSTOXX (Euro Stoxx 50 Volatility) index.	Datastream
EUSA5y-Libor3M	Difference between the five-year Euro swap rate and the 3-month Libor rate. A proxy for the slope of the yield curve.	Datastream
Country risk	Moody's country credit rating at closing date, converted as follows: AAA=1, AA+=2, and so on until C=21.	Moody's Ratings
Financial crisis	Dummy equal to 1 if the issue date belongs to the 2007-2008 financial crisis period (from September 15, 2008 - Lehman Brothers' bankruptcy filing date - through to April 23, 2010), and 0 otherwise.	Authors
Sovereign crisis	Dummy equal to 1 if the issue date belongs to the European sovereign debt crisis (from April 24, 2010 through to December 31, 2016), and 0 otherwise.	Authors

Table 2: Industrial, geographic and purpose distribution of the full sample at tranche level

Panel A: Industrial distribution

Industrial category of issuer/borrower	Bonds			Loans		
	Number of tranches	Total value [€ Million]	% of total value	Number of tranches	Total value [€ Million]	% of total value
Commercial and Industrial						
Agriculture, Forestry and Fishing	76	20,721.80	0.89%	266	52,420.83	1.65%
Communications	434	311,783.12	13.35%	805	465,112.22	14.63%
Construction/Heavy Engineering	276	131,087.68	5.61%	1,210	327,563.07	10.30%
Manufacturing						
Chemicals, Plastic and Rubber	203	97,884.75	4.19%	877	155,446.89	4.89%
Food and Beverages	151	93,943.00	4.02%	692	138,951.21	4.37%
Machinery and Equipment	433	309,042.87	13.23%	765	260,080.29	8.18%
Steel, Aluminum and other Metals	112	53,458.00	2.29%	361	91,683.89	2.88%
Other	209	112,912.20	4.83%	801	154,548.53	4.86%
Mining and Natural Resources	28	15,020.00	0.64%	34	8,437.20	0.27%
Oil and Gas	173	116,807.01	5.00%	77	17,775.34	0.56%
Real Estate	282	125,760.79	5.39%	389	119,522.61	3.76%
Retail Trade	310	152,066.28	6.51%	1,170	212,949.92	6.70%
Services	412	235,815.55	10.10%	2,052	429,556.40	13.51%
Utilities	597	381,962.29	16.36%	1,174	546,077.29	17.17%
Transportation	300	144,120.89	6.17%	642	139,972.60	4.40%
Other	103	32,986.00	1.41%	296	59,824.98	1.88%
Total	**4,099**	**2,335,372.23**	**100.00%**	**11,611**	**3,179,923.28**	**100.00%**

Panel B: Geographic distribution

Geographic location of issuer/borrower	Bonds			Loans		
	Number of tranches	Total value [€ Million]	% of total value	Number of tranches	Total value [€ Million]	% of total value
Austria	107	30,912.09	1.32%	73	15,071.51	0.47%
Belgium	102	53,278.00	2.28%	322	74,477.18	2.34%
Cyprus	3	1,250.00	0.05%	3	677.25	0.02%
Estonia	7	1,425.00	0.06%	8	535.40	0.02%
Finland	115	36,970.00	1.58%	197	74,769.60	2.35%
France	1,138	658,064.33	28.18%	3,000	837,579.00	26.34%
Germany	526	290,853.65	12.45%	2,189	839,900.40	26.41%
Greece	17	6,110.00	0.26%	301	31,115.51	0.98%
Ireland	134	91,980.05	3.94%	147	47,454.59	1.49%
Italy	307	177,298.38	7.59%	1,301	342,968.02	10.79%
Lithuania	4	940.00	0.04%	6	460.40	0.01%
Luxembourg	394	222,368.40	9.52%	240	71,805.13	2.26%
Malta	4	277.50	0.01%	8	2,561.89	0.08%
Netherlands	911	614,631.76	26.32%	1,044	298,425.80	9.38%
Portugal	123	18,741.30	0.80%	226	34,582.40	1.09%
Slovakia	8	2,937.70	0.13%	22	4,178.50	0.13%
Slovenia	2	565.00	0.02%	19	1,461.34	0.05%
Spain	197	126,769.08	5.43%	2,505	501,899.37	15.78%
Total	**4,099**	**2,335,372.23**	**100.00%**	**11,611**	**3,179,923.28**	**100.00%**

Panel C: Purpose distribution

Funding purpose	Bonds			Loans		
	Number of tranches	Total value [€ Million]	% of total value	Number of tranches	Total value [€ Million]	% of total value
Corporate control (CC)	249	121,234.70	5.19%	5,067	1,059,792.60	33.33%
Capital structure (CS)	684	348,341.01	14.92%	4,126	1,652,203.51	51.96%
Fixed asset based (FAB)	8	3,466.75	0.15%	139	8,545.66	0.27%
General corporate purpose (GCP)	3,146	1,855,926.30	79.47%	1,204	340,933.38	10.72%
Project Finance (PF)	12	6,403.48	0.27%	1,075	118,448.14	3.72%
Total	**4,099**	**2,335,372.23**	**100.00%**	**11,611**	**3,179,923.28**	**100.00%**

Panel A describes the industrial distribution of the full sample of bond and loan tranches; Panel B details the tranche allocation to borrowers in a particular country; Panel C presents the distribution of the full sample of bond and loan tranches per funding purpose. There are no observations from Latvia.

Table 3: Univariate statistics – pricing features of the full sample at tranche level

Variable of interest *Continuous variables*	Bonds	Loans	Wilcoxon z-test	Variable of interest *Continuous variables*	Bonds	Loans	Wilcoxon z-test
Spread (bps)				**Tranche size (€ Million)**			
Number	4,099	11,611		Number	4,099	11,611	
Mean	245.18	244.76	-8.011 ***	Mean	574.33	305.78	63.673 ***
Median	170.00	225.00		Median	500.00	64.80	
Rating [1-22 weak]				**Tranche to transaction**			
Number	3,597	1,400		Number	4,099	11,611	
Mean	8.79	10.34	-12.648 ***	Mean	0.81	0.44	56.253 ***
Median	8.00	10.00		Median	1.00	0.30	
Maturity (years)				**Number of banks**			
Number	4,099	11,611		Number	4,099	11,611	
Mean	8.02	6.62	19.837 ***	Mean	5.92	7.98	-13.406 ***
Median	7.00	6.33		Median	5.00	6.00	
Transaction size (€ Million)				**Country risk [1-21 weak]**			
Number	4,099	11,611		Number	4,099	11,611	
Mean	952.39	676.47	36.812 ***	Mean	2.58	2.30	5.327 ***
Median	600.00	250.00		Median	1.00	1.00	

Variable of interest *Dummy variables*	Bonds	Loans	Fisher's exact test	Variable of interest *Dummy variables*	Bonds	Loans	Fisher's exact test
CSPP				**Switcher**			
Nr. of tranches	4,099	11,611		Nr. of tranches	4,099	11,611	
Nr. of tranches with d	1,456	1,303	0.000 #	Nr. of tranches with d	1,551	1,688	0.000 #
% of total	35.52%	11.22%		% of total	37.84%	14.54%	
CSPP announcement				**Financial crisis**			
Nr. of tranches	4,099	11,611		Nr. of tranches	4,099	11,611	
Nr. of tranches with d	133	67	0.000 #	Nr. of tranches with d	337	721	0.000 #
% of total	3.24%	0.58%		% of total	8.22%	6.21%	
CSPP purchases				**Sovereign crisis**			
Nr. of tranches	4,099	11,611		Nr. of tranches	4,099	11,611	
Nr. of tranches with d	1,326	1,236	0.000 #	Nr. of tranches with d	2,976	3,635	0.000 #
% of total	32.35%	10.65%		% of total	72.60%	31.31%	
Rated				**Eligible**			
Nr. of tranches	4,099	11,611		Nr. of tranches	4,099	11,611	
Nr. of tranches with d	3,597	1,400	0.000 #	Nr. of tranches with d	2,628	727	0.000 #
% of total	87.75%	12.06%		% of total	64.11%	6.26%	

This table reports summary statistics for contractual characteristics and macroeconomic factors of the full sample of bonds and loans at tranche level. Similar distributions were tested using the Wilcoxon rank-sum test for continuous variables and the Fisher's exact test for discrete ones. ***, **, and * indicate significant difference at the 1%, 5%, and 10% significance levels, respectively. # indicates that the variables do not differ significantly between the type of funding at the 1% significance level. For a definition of the variables, see Table 1.

Table 4: Univariate statistics – firms' characteristics of the high-information sample at deal level

Variable of interest *Continuous variables*	Bonds	Loans	Wilcoxon z-test	Variable of interest *Continuous variables*	Bonds	Loans	Wilcoxon z-test
Total assets (€ Million)				**Total debt to total assets**			
Number	1,832	1,256		Number	1,832	1,256	
Mean	41,882.46	22,003.57	17.254 ***	Mean	0.33	0.32	2.642 ***
Median	23,930.50	7,462.01		Median	0.33	0.31	
Return on assets (%)				**Market to book ratio**			
Number	1,832	1,256		Number	1,832	1,256	
Mean	3.75	3.65	-0.591	Mean	0.92	1.06	-1.217
Median	3.44	3.63		Median	0.77	0.80	
Fixed assets to total assets				**Current ratio**			
Number	1,832	1,256		Number	1,832	1,256	
Mean	0.27	0.29	-0.924	Mean	1.16	1.24	-3.038 **
Median	0.27	0.25		Median	1.07	1.13	

This table reports summary statistics for firms' characteristics of the high-information sample at deal level. Similar distributions in contractual characteristics were tested using the Wilcoxon rank-sum test. ***, **, and * indicate significant difference at the 1%, 5%, and 10% significance levels, respectively. For a definition of the variables, see Table 1.

Table 5: Determinants of bond pricing at tranche level

Dependent variable:	Full sample		Eligible sample		High inf. sample	
Spread (bps)	[1a]	[1b]	[2a]	[2b]	[3a]	[3b]
Independent variables:						
Intercept	423.567 ***	417.545 ***	-432.813 ***	-443.754 ***	148.618	136.583
	(0.000)	(0.000)	(0.000)	(0.000)	(0.202)	(0.243)
CSPP	-60.800 ***		-27.259 ***		-41.804 ***	
	(0.000)		(0.000)		(0.000)	
CSPP announcement		-81.083 ***		-48.771 ***		-73.474 ***
		(0.000)		(0.000)		(0.000)
CSPP purchases		-57.574 ***		-23.330 ***		-36.684 ***
		(0.000)		(0.000)		(0.000)
Log transaction size	-15.832 ***	-15.725 ***	10.022 ***	10.344 ***	-5.196	-4.792
	(0.000)	(0.001)	(0.001)	(0.001)	(0.304)	(0.343)
Maturity	1.166 ***	1.172 ***	0.914 **	0.930 **	1.443 ***	1.455 ***
	(0.000)	(0.000)	(0.013)	(0.011)	(0.000)	(0.000)
Rated	-396.799 ***	-396.782 ***			-371.209 ***	-371.766 ***
	(0.000)	(0.000)			(0.000)	(0.000)
Rating*Rated	41.734 ***	41.751 ***	19.543 ***	19.520 ***	38.615 ***	38.692 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tranche to transaction	-17.414	-16.879	20.012 ***	20.499 ***	1.428	1.917
	(0.123)	(0.134)	(0.007)	(0.005)	(0.894)	(0.858)
Number of banks	-1.453 **	-1.471 **	-0.923 **	-0.895 **	0.981	1.002
	(0.020)	(0.020)	(0.033)	(0.041)	(0.137)	(0.135)
Callable	31.532 ***	31.208 ***	11.374 ***	11.829 ***	2.720	1.953
	(0.000)	(0.000)	(0.005)	(0.003)	(0.670)	(0.758)
Fixed rate	40.269 ***	40.358 ***	70.622 ***	70.610 ***	62.473 ***	62.197 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Switcher	-26.389 ***	-26.362 ***	-1.146	-1.129	-25.035 ***	-24.936 ***
	(0.000)	(0.000)	(0.751)	(0.753)	(0.000)	(0.000)
Volatility	4.466 ***	4.596 ***	4.071 ***	4.209 ***	4.942 ***	5.135 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
EUSA5y-Libor3M	-13.403 ***	-13.502 ***	-19.024 ***	-19.028 ***	-18.485 ***	-18.477 ***
	(0.004)	(0.004)	(0.000)	(0.000)	(0.001)	(0.001)
Country risk	1.524	1.543	0.674	0.688	2.399	2.454
	(0.349)	(0.343)	(0.646)	(0.638)	(0.330)	(0.319)
Financial crisis	115.752 ***	114.327 ***	125.661 ***	123.829 ***	116.012 ***	114.014 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sovereign crisis	55.352 ***	55.566 ***	58.232 ***	58.471 ***	52.800 ***	53.260 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log total assets					0.081	0.103
					(0.982)	(0.977)
Return on assets					-3.886 ***	-3.929 ***
					(0.000)	(0.000)
Fixed assets to total					-50.165 ***	-49.035 ***
					(0.003)	(0.003)
Total debt to total assets					58.107 **	57.909 **
					(0.011)	(0.011)
Market to book ratio					0.516	0.689
					(0.784)	(0.712)
Current ratio					14.091 **	13.388 **
					(0.011)	(0.016)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Purpose fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	4,099	4,099	2,628	2,628	2,316	2,316
Adjusted R^2	0.690	0.691	0.575	0.577	0.618	0.620

This table presents the results of OLS regressions analyzing the determinants of bond pricing, at tranche level. For each independent variable, the first row reports the estimated coefficient and the second row reports the p-value. Coefficients were estimated based on heteroskedasticity-consistent standard errors clustered by year and deal. ***, **, and * indicate significant difference at the 1%, 5%, and 10% significance levels, respectively. For a definition of the variables, see Table 1.

Table 6: Determinants of loan pricing at tranche level

Dependent variable:	Full sample		Eligible sample		High inf. sample	
Spread (bps)	[4a]	[4b]	[5a]	[5b]	[6a]	[6b]
Independent variables:						
Intercept	212.244 ***	213.063 ***	109.677	96.534	406.696 ***	402.478 ***
	(0.000)	(0.000)	(0.241)	(0.307)	(0.000)	(0.000)
CSPP	-67.087 ***		-42.430 ***		-53.283 ***	
	(0.000)		(0.010)		(0.001)	
CSPP announcement		-25.456		67.156		27.777
		(0.177)		(0.640)		(0.538)
CSPP purchases		-69.301 ***		-49.859 ***		-56.612 ***
		(0.000)		(0.002)		(0.001)
Log transaction size	2.509 *	2.508 *	-3.530	-3.026	-13.119 ***	-12.995 ***
	(0.094)	(0.094)	(0.393)	(0.468)	(0.000)	(0.000)
Maturity	6.909 ***	6.914 ***	2.129	2.073	5.145 ***	5.215 ***
	(0.000)	(0.000)	(0.186)	(0.201)	(0.000)	(0.000)
Rated	-209.282 ***	-209.428 ***			-170.548 ***	-171.632 ***
	(0.000)	(0.000)			(0.000)	(0.000)
Rating*Rated	17.897 ***	17.921 ***	9.737 ***	9.789 ***	17.878 ***	18.004 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tranche to transaction	-60.017 ***	-60.089 ***	-34.694 ***	-34.560 ***	-76.005 ***	-76.630 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Number of banks	-1.765 ***	-1.766 ***	-0.580	-0.580	-0.410	-0.412
	(0.000)	(0.000)	(0.128)	(0.128)	(0.391)	(0.388)
Term loan	-8.866 ***	-8.756 ***	14.035 *	14.534 *	21.902 ***	22.535 ***
	(0.003)	(0.004)	(0.081)	(0.072)	(0.000)	(0.000)
Secured	22.342 ***	22.255 ***	31.850 **	32.251 **	26.027 ***	25.837 ***
	(0.000)	(0.000)	(0.017)	(0.016)	(0.008)	(0.008)
Switcher	-26.568 ***	-26.709 ***	-13.258 *	-13.603 *	-23.392 ***	-23.627 ***
	(0.000)	(0.000)	(0.080)	(0.073)	(0.001)	(0.001)
Volatility	-0.296	-0.319	0.775 ***	0.770 ***	-0.031	-0.047
	(0.136)	(0.109)	(0.001)	(0.002)	(0.936)	(0.904)
EUSA5y-Libor3M	10.888 ***	10.977 ***	7.722	8.097	17.505 ***	17.574 ***
	(0.000)	(0.000)	(0.223)	(0.204)	(0.001)	(0.001)
Country risk	8.121 ***	8.009 ***	6.609 *	6.900 **	12.888 ***	12.802 ***
	(0.000)	(0.000)	(0.059)	(0.049)	(0.000)	(0.000)
Financial crisis	90.249 ***	90.568 ***	94.392 ***	94.189 ***	125.533 ***	125.912 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sovereign crisis	118.949 ***	119.239 ***	36.539 ***	35.748 ***	79.295 ***	79.624 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log total assets					3.685	3.709
					(0.124)	(0.121)
Return on assets					-2.384 ***	-2.362 ***
					(0.000)	(0.000)
Fixed assets to total					-11.671	-10.586
					(0.484)	(0.526)
Total debt to total assets					-40.600 *	-40.675 *
					(0.057)	(0.055)
Market to book ratio					-0.019	-0.010
					(0.945)	(0.972)
Current ratio					-3.733	-3.715
					(0.441)	(0.443)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Purpose fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	11,611	11,611	734	734	2,244	2,244
Adjusted R^2	0.368	0.368	0.470	0.487	0.521	0.521

This table presents the results of OLS regressions analyzing the determinants of loan pricing, at tranche level. For each independent variable, the first row reports the estimated coefficient and the second row reports the p-value. Coefficients were estimated based on heteroskedasticity-consistent standard errors clustered by year and deal. ***, **, and * indicate significant difference at the 1%, 5%, and 10% significance levels, respectively. For a definition of the variables, see Table 1.

Table 7: Determinants of bond pricing at deal level

Dependent variable:	Full sample		Eligible sample		High inf. sample	
WAS (bps)	[7a]	[7b]	[8a]	[8b]	[9a]	[9b]
Independent variables:						
Intercept	486.814 ***	482.707 ***	-321.287 ***	-323.574 ***	279.031 **	274.355 **
	(0.000)	(0.000)	(0.000)	(0.000)	(0.037)	(0.040)
CSPP	-59.783 ***		-34.943 ***		-46.622 ***	
	(0.000)		(0.002)		(0.001)	
CSPP announcement		-85.220 ***		-49.811 ***		-83.746 ***
		(0.000)		(0.000)		(0.000)
CSPP purchases		-55.861 ***		-32.301 ***		-41.380 ***
		(0.000)		(0.004)		(0.003)
Log transaction size	-19.728 ***	-19.720 ***	9.176 **	9.173 **	-7.647	-7.612
	(0.000)	(0.000)	(0.026)	(0.027)	(0.179)	(0.183)
WAMaturity	1.092 **	1.104 ***	-0.284	-0.250	1.274 ***	1.286 ***
	(0.012)	(0.010)	(0.705)	(0.739)	(0.002)	(0.001)
Rated	-414.817 ***	-414.540 ***			-394.521 ***	-394.691 ***
	(0.000)	(0.000)			(0.000)	(0.000)
WARating*Rated	43.468 ***	43.463 ***	20.123 ***	20.110 ***	40.979 ***	41.034 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Number of tranches	7.475	7.378	-7.311 **	-7.285 **	1.525	1.843
	(0.175)	(0.183)	(0.048)	(0.049)	(0.764)	(0.721)
Number of banks	-1.098	-1.126	1.470 **	1.453 **	1.231 *	1.236 *
	(0.140)	(0.131)	(0.016)	(0.018)	(0.090)	(0.086)
Switcher	-28.954 ***	-28.666 ***	-4.321	-4.180	-27.140 ***	-26.592 ***
	(0.000)	(0.000)	(0.294)	(0.309)	(0.000)	(0.000)
Volatility	4.423 ***	4.576 ***	4.433 ***	4.521 ***	5.251 ***	5.446 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
EUSA5y-Libor3M	-15.983 **	-16.102 **	-15.796 **	-15.792 **	-18.096 *	-18.115 *
	(0.045)	(0.041)	(0.031)	(0.030)	(0.090)	(0.086)
Country risk	2.034	2.061	1.865	1.862	2.709	2.728
	(0.475)	(0.467)	(0.517)	(0.516)	(0.514)	(0.508)
Financial crisis	125.438 ***	123.784 ***	129.980 ***	128.850 ***	123.489 ***	121.461 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sovereign crisis	69.990 ***	70.199 ***	62.073 ***	62.168 ***	65.016 ***	65.350 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log total assets					-2.107	-2.065
					(0.591)	(0.599)
Return on assets					-4.163 ***	-4.224 ***
					(0.000)	(0.000)
Fixed assets to total assets					-46.133 **	-45.226 **
					(0.024)	(0.026)
Total debt to total assets					47.541 **	48.187 **
					(0.046)	(0.043)
Market to book ratio					-0.218	-0.061
					(0.909)	(0.975)
Current ratio					9.893	9.220
					(0.104)	(0.129)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Purpose fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	3,222	3,222	2,035	2,035	1,832	1,832
R^2	0.681	0.681	0.563	0.564	0.618	0.620
Adjusted R^2	0.676	0.676	0.553	0.553	0.607	0.609

This table presents the results of OLS regressions analyzing the determinants of bond pricing, at deal level. For each independent variable, the first row reports the estimated coefficient and the second row reports the p-value. Coefficients were estimated based on heteroskedasticity-consistent standard errors clustered by year and country. ***, **, and * indicate significant difference at the 1%, 5%, and 10% significance levels, respectively. For a definition of the variables, see Table 1.

Table 8: Determinants of loan pricing at deal level

Dependent variable:	Full sample		Eligible sample		High inf. sample	
WAS (bps)	[10a]	[10b]	[11a]	[11b]	[12a]	[12b]
Independent variables:						
Intercept	251.001 ***	250.532 ***	243.185 **	225.082 **	328.029 ***	318.569 ***
	(0.000)	(0.000)	(0.014)	(0.024)	(0.000)	(0.000)
CSPP	-38.335 ***		-49.406 ***		-51.460 ***	
	(0.009)		(0.004)		(0.006)	
CSPP announcement		12.012		81.804 ***		38.268
		(0.754)		(0.000)		(0.336)
CSPP purchases		-41.335 ***		-59.243 ***		-57.129 ***
		(0.004)		(0.000)		(0.004)
Log transaction size	-5.240 **	-5.184 **	-11.242 ***	-10.546 ***	-14.459 ***	-14.160 ***
	(0.014)	(0.014)	(0.005)	(0.009)	(0.000)	(0.000)
WAMaturity	0.391	0.399	-2.103	-2.229	0.272	0.421
	(0.455)	(0.446)	(0.132)	(0.109)	(0.789)	(0.684)
Rated	-167.007 ***	-167.425 ***			-168.488 ***	-170.762 ***
	(0.000)	(0.000)			(0.000)	(0.000)
WARating*Rated	16.498 ***	16.564 ***	7.274 ***	7.314 ***	18.383 ***	18.643 ***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
Number of tranches	24.456 ***	24.444 ***	18.971 ***	19.075 ***	27.500 ***	27.607 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Number of banks	-2.257 ***	-2.266 ***	-0.290	-0.295	-0.544	-0.556
	(0.000)	(0.000)	(0.416)	(0.407)	(0.176)	(0.160)
Switcher	-27.379 ***	-27.734 ***	-14.867 **	-15.513 **	-25.939 ***	-26.499 ***
	(0.000)	(0.000)	(0.039)	(0.032)	(0.000)	(0.000)
Volatility	0.122	0.095	0.559 **	0.540 **	0.575 *	0.555 *
	(0.609)	(0.690)	(0.028)	(0.032)	(0.053)	(0.062)
EUSA5y-Libor3M	13.830 ***	14.015 ***	11.466 **	11.879 **	19.030 ***	19.234 ***
	(0.000)	(0.000)	(0.022)	(0.017)	(0.000)	(0.000)
Country risk	8.072 ***	8.031 ***	8.653 ***	9.051 ***	13.698 ***	13.652 ***
	(0.000)	(0.000)	(0.006)	(0.004)	(0.000)	(0.000)
Financial crisis	96.187 ***	96.489 ***	96.512 ***	96.356 ***	115.862 ***	116.498 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sovereign crisis	133.079 ***	133.204 ***	43.337 ***	42.305 ***	85.369 ***	85.747 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log total assets					1.711	1.794
					(0.498)	(0.473)
Return on assets					-1.797 ***	-1.758 ***
					(0.003)	(0.003)
Fixed assets to total assets					-5.274	-3.438
					(0.729)	(0.823)
Total debt to total assets					-3.460	-4.032
					(0.901)	(0.884)
Market to book ratio					-0.112	-0.092
					(0.670)	(0.726)
Current ratio					-3.094	-3.049
					(0.375)	(0.383)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Purpose fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	4,626	4,626	518	518	1,256	1,256
R^2	0.578	0.579	0.528	0.534	0.648	0.620
Adjusted R^2	0.573	0.574	0.483	0.489	0.632	0.609

This table presents the results of OLS regressions analyzing the determinants of loan pricing, at deal level. For each independent variable, the first row reports the estimated coefficient and the second row reports the p-value. Coefficients were estimated based on heteroskedasticity-consistent standard errors clustered by year and country. ***, **, and * indicate significant difference at the 1%, 5%, and 10% significance levels, respectively. For a definition of the variables, see Table 1.

Table 9: Determinants of firms' cost of borrowing and debt choice

Dependent variable:	Full sample		Eligible sample		High inf. sample	
WAS (bps)	[13]		[14]		[15]	
	Bonds	Loans	Bonds	Loans	Bonds	Loans
Independent variables:						
Intercept	369.454 ***	152.792 ***	-381.104 ***	182.281 **	269.226 **	290.301 ***
	(0.001)	(0.000)	(0.000)	(0.021)	(0.033)	(0.000)
CSPP	-57.532 ***	-31.498 **	-33.159 ***	-41.586 **	-43.757 ***	-55.875 ***
	(0.000)	(0.046)	(0.003)	(0.015)	(0.002)	(0.003)
Log transaction size	-10.952 **	-3.621	13.219 ***	-11.007 ***	-5.771	-10.507 ***
	(0.049)	(0.106)	(0.001)	(0.001)	(0.355)	(0.001)
WAMaturity	0.719	-2.322 ***	-0.504	-2.992 **	1.262 ***	-2.960 **
	(0.115)	(0.000)	(0.467)	(0.031)	(0.001)	(0.012)
Rated	-436.708 ***	-208.390 ***			-409.926 ***	-182.197 ***
	(0.000)	(0.000)			(0.000)	(0.000)
WARating*Rated	46.657 ***	19.137 ***	20.724 ***	6.529 ***	42.299 ***	18.588 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Number of tranches	5.664	35.263 ***	-13.097 ***	24.921 ***	1.252	34.747 ***
	(0.299)	(0.000)	(0.001)	(0.000)	(0.830)	(0.000)
Number of banks	-0.600	-1.632 ***	0.873	-0.109	0.864	0.026
	(0.401)	(0.006)	(0.138)	(0.819)	(0.267)	(0.972)
Switcher	-36.505 ***	-29.579 ***	-12.590 ***	-9.138	-34.110 ***	-24.722 ***
	(0.000)	(0.000)	(0.007)	(0.184)	(0.000)	(0.000)
Volatility	4.291 ***	0.200	4.323 ***	0.687 ***	5.158 ***	0.486 *
	(0.000)	(0.477)	(0.000)	(0.003)	(0.000)	(0.092)
EUSA5y-Libor3M	-11.984	11.967 ***	-14.269 *	12.251 ***	-15.288	15.926 ***
	(0.170)	(0.003)	(0.070)	(0.009)	(0.177)	(0.002)
Country risk	1.257	5.720 ***	3.894 **	7.479 ***	2.500	10.589 ***
	(0.490)	(0.000)	(0.040)	(0.002)	(0.272)	(0.000)
Financial crisis	122.403 ***	81.624 ***	128.997 ***	88.594 ***	125.953 ***	104.273 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sovereign crisis	68.539 ***	134.361 ***	57.772 ***	41.841 ***	66.203 ***	87.208 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log total assets					-2.523	-1.780
					(0.440)	(0.486)
Return on assets					-3.777 ***	-1.820 **
					(0.000)	(0.011)
Fixed assets to total assets					-28.383 *	0.270
					(0.099)	(0.984)
Total debt to total assets					50.741 **	-6.134
					(0.012)	(0.791)
Market to book ratio					-0.204	-0.411
					(0.913)	(0.183)
Current ratio					17.663 ***	-2.752
					(0.003)	(0.402)

(continued)

Table 9: Determinants of firms' cost of borrowing and debt choice

(continued)

Dependent variable: Choice of debt	Bond = 1, Loan = 0	Bond = 1, Loan = 0	Bond = 1, Loan = 0
Independent variables:			
Intercept	-5.472 ***	-4.397 ***	-5.856 ***
	(0.000)	(0.008)	(0.000)
CSPP	-0.067	1.052 ***	0.431 ***
	(0.549)	(0.000)	(0.007)
Log Transaction Size	0.285 ***	0.278 ***	0.130 **
	(0.000)	(0.001)	(0.029)
WAMaturity	0.055 ***	0.191 ***	0.143 ***
	(0.000)	(0.000)	(0.000)
Rated	2.630 ***		2.104 ***
	(0.000)		(0.000)
WARating*Rated	-0.080 ***	0.038 *	-0.065 ***
	(0.000)	(0.054)	(0.006)
Number of tranches	-0.582 ***	-0.249 **	-0.469 ***
	(0.000)	(0.013)	(0.000)
Number of banks	-0.142 ***	-0.165 ***	-0.157 ***
	(0.000)	(0.000)	(0.000)
Switcher	-0.014	-0.804 ***	-0.181 *
	(0.863)	(0.000)	(0.060)
Volatility	-0.015 ***	0.005	-0.008
	(0.005)	(0.481)	(0.220)
EUSA5y-Libor3M	-0.073	-0.144	-0.126
	(0.404)	(0.232)	(0.256)
Country risk	-0.016	-0.088 ***	-0.048 ***
	(0.253)	(0.000)	(0.009)
Financial crisis	0.711 ***	0.466 **	0.912 ***
	(0.000)	(0.040)	(0.000)
Sovereign crisis	0.935 ***	0.852 ***	1.160 ***
	(0.000)	(0.000)	(0.000)
Log total assets			0.152 ***
			(0.000)
Return on assets			0.004
			(0.580)
Fixed assets to total assets			-0.126
			(0.511)
Total debt to total assets			-0.627 ***
			(0.002)
Market to book ratio			0.030 ***
			(0.001)
Current ratio			-0.043
			(0.537)
Number of observations	7,848	2,553	3,088
Wald chi2	1,849.590	498.120	1,143.240
Log pseudolikelihood	-49,908.312	-14,906.219	-19,181.218
Wald test of indep. equations	9.38***	1.020	2.420

This table presents the results of estimating endogenous switching regression models at deal level. We implement the full information maximum likelihood (FIML) method to simultaneously estimate binary and continuous parts of the model in order to yield consistent standard errors. For each independent variable, the first row reports the estimated coefficient and the second row reports the p-value. Coefficients were estimated based on heteroskedasticity-consistent standard errors clustered by year and country. ***, **, and * indicate significant difference at the 1%, 5%, and 10% significance levels, respectively. For a definition of the variables, see Table 1.

Table 10: Determinants of firms' debt choice

Dependent variable: Choice of debt	Full sample [16] Bond = 1, Loan = 0	Eligible sample [17] Bond = 1, Loan = 0	High inf. sample [18] Bond = 1, Loan = 0
Independent variables:			
Intercept	2.473 **	16.367 ***	4.131 **
	(0.030)	(0.000)	(0.021)
CSPP	-0.223	1.330 ***	0.885 ***
	(0.118)	(0.000)	(0.001)
Log transaction size	-0.237 ***	-0.949 ***	-0.860 ***
	(0.000)	(0.000)	(0.000)
WAMaturity	0.153 ***	0.541 ***	0.322 ***
	(0.000)	(0.000)	(0.000)
Rated	5.175 ***		3.874 ***
	(0.000)		(0.000)
WARating*Rated	-0.147 ***	-0.063	-0.124 ***
	(0.000)	(0.230)	(0.005)
Switcher	0.178	-1.166 ***	-0.088
	(0.231)	(0.000)	(0.622)
Volatility	-0.029 ***	0.004	-0.015
	(0.000)	(0.763)	(0.126)
EUSA5y-Libor3M	-0.162	-0.681 ***	-0.236
	(0.132)	(0.000)	(0.144)
Country risk	0.158 ***	0.089 *	0.190 ***
	(0.000)	(0.086)	(0.000)
Financial crisis	1.892 ***	2.335 ***	2.461 ***
	(0.000)	(0.000)	(0.000)
Sovereign crisis	1.742 ***	1.518 ***	1.900 ***
	(0.000)	(0.000)	(0.000)
Log total assets			0.408 ***
			(0.000)
Return on assets			0.026 *
			(0.071)
Fixed assets to total assets			0.384
			(0.294)
Total debt to total assets			0.156
			(0.685)
Market to book ratio			0.055 ***
			(0.000)
Current ratio			-0.081
			(0.526)
Country dummies	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Number of observations	7,845	2,548	3,077
Wald chi2	2,095.370 ***	455.050 ***	1,058.190 ***
Log pseudolikelihood	-2,416.476	-639.943	-933.020
Pseudo-R^2	0.545	0.503	0.551

This table presents the results of logistic regressions that predict nonfinancial firms' choice between bond and loan deals. For each independent variable, the first row reports the estimated coefficient and the second row reports the p-value. Coefficients were estimated based on heteroskedasticity-consistent standard errors clustered by year and country. ***, **, and * indicate significant difference at the 1%, 5%, and 10% significance levels, respectively. For a definition of the variables, see Table 1.

Table 11: Determinants of switchers' debt choice

Dependent variable:	Full sample	Eligible sample	High inf. sample
Debt choice	[19]	[20]	[21]
	Bond = 1, Loan = 0	Bond = 1, Loan = 0	Bond = 1, Loan = 0
Independent variables:			
Intercept	9.897 ***	21.692 ***	9.470 ***
	(0.000)	(0.000)	(0.005)
CSPP	0.401	1.568 ***	0.623
	(0.169)	(0.000)	(0.159)
Log transaction size	-0.821 ***	-1.363 ***	-1.781 ***
	(0.000)	(0.000)	(0.000)
WAMaturity	0.546 ***	0.586 ***	0.771 ***
	(0.000)	(0.000)	(0.000)
Rated	3.611 ***		2.100 ***
	(0.000)		(0.008)
WARating*Rated	-0.168 ***	-0.050	-0.087
	(0.000)	(0.469)	(0.225)
Volatility	-0.011	0.012	0.007
	(0.368)	(0.423)	(0.614)
EUSA5y-Libor3M	-0.330 *	-0.582 **	-0.453 **
	(0.085)	(0.049)	(0.046)
Country risk	0.153 ***	0.163 *	0.268 ***
	(0.004)	(0.090)	(0.003)
Financial crisis	2.650 ***	2.355 ***	2.680 ***
	(0.000)	(0.000)	(0.000)
Sovereign crisis	1.853 ***	1.325 ***	1.664 ***
	(0.000)	(0.000)	(0.000)
Log total assets			0.842 ***
			(0.000)
Return on assets			0.033
			(0.173)
Fixed assets to total assets			0.764
			(0.250)
Total debt to total assets			-0.844 *
			(0.092)
Market to book ratio			0.073 ***
			(0.000)
Current ratio			-0.178
			(0.294)
Country dummies	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Number of observations	2,134	1,199	1,512
Wald chi2	540.520 ***	308.740 ***	449.030 ***
Log pseudolikelihood	-788.296	-368.049	-440.749
Pseudo-R^2	0.456	0.505	0.561

This table presents the results of logistic regressions that predict switching firms' choice between bond and loan deals. For each independent variable, the first row reports the estimated coefficient and the second row reports the p-value. Coefficients were estimated based on heteroskedasticity-consistent standard errors clustered by year and country. ***, **, and * indicate significant difference at the 1%, 5%, and 10% significance levels, respectively. For a definition of the variables, see Table 1.

Appendix A – The pricing determinants of bonds and loans

The theoretical and empirical research on credit spread determinants is extensive. Virtually all of the empirical studies on corporate bond spreads find credit ratings to be one of its most important determinants (Collin-dufresne et al., 2001; Elton et al., 2001; Hull et al., 2004; Titman et al., 2004; Gabbi and Sironi, 2005; Longstaff et al., 2005). Researchers also find other factors to be important, like maturity (Fons, 1987; Sarig and Warga, 1989; Helwege and Turner, 1999), liquidity (Longstaff et al., 2005; Chen et al., 2007; Bao et al., 2011), systematic risk (Collin-Dufresne *et al.*, 2001; Elton *et al.*, 2001), incomplete accounting information (Flannery et al., 2012), leverage (Flannery *et al.*, 2012), and taxes (Elton *et al.*, 2001). Market variables, like the level of interest rates, the slope of the yield curve, and market volatility, also have a significant impact on corporate bond spreads (Campbell and Taksler, 2003; Krishnan *et al.*, 2005; Marques and Pinto, 2020).

As for corporate bonds, extant research on syndicated loans shows that contractual and firm characteristics, as well as macroeconomic conditions, affect their credit spreads. Recent empirical studies indicate that several contractual factors convey information about the pricing of loans (Carey and Nini, 2007; Qian and Strahan, 2007; Bae and Goyal, 2009; Maskara, 2010; Bharath et al., 2011; Ivashina and Kovner, 2011; Lin et al., 2011; Colla et al., 2012; Alves et al., 2021). These include credit rating, tranching level, maturity,[9] deal size, currency risk, loan and interest rate type, and fees. Macroeconomic factors like the financial crises (Santos, 2011; Alves *et al.*, 2021), the GDP per capita and sovereign risk (Kleimeier and Megginson, 2000; Qian and Strahan, 2007; Bae and Goyal, 2009; Lin *et al.*, 2011), and market volatility (Colla *et al.*, 2012; Alves *et al.*, 2021) significantly influence credit spreads.

Extant literature also presents different characteristics of the bank syndicate structure as important loan spread determinants, like bank relationship strength, syndicate size, foreign bank participation, and bank reputation (Dahiya *et al.*, 2003; Esty and Megginson, 2003; Bae and Goyal,

[9] Extant empirical literature on the pricing of syndicated loans presents puzzling results regarding the term structure of spreads. Bae and Goyal (2009), Maskara (2010), and Lin *et al.* (2011) show that, on average, there is a significantly positive relationship between spreads and maturity. However, focusing on project finance loans, Sorge and Gadanecz (2008) document that the term structure of spreads is 'hump-shaped'. On the contrary, Alves *et al.* (2021) find a convex relationship between spread and maturity for LBO syndicated loans.

2009; Ivashina, 2009; Bharath *et al.*, 2011; Ivashina and Kovner, 2011; Alexandre *et al.*, 2014; Alves *et al.*, 2021). In addition, several authors find that law and institutional characteristics are important pricing factors, namely: the protection of shareholder and creditor rights (Qian and Strahan, 2007; Bae and Goyal, 2009; and Lin *et al.*, 2011; Cao *et al.*, 2019), efficiency of contract enforcement (Djankov et al., 2007; Bae and Goyal, 2009; Cao *et al.*, 2019); the legal origin of a country (Qian and Strahan, 2007; Davydenko and Franks, 2008; Colla *et al.*, 2012); and the type of financial system (Alves *et al.*, 2021).

Finally, empirical literature on debt pricing provides evidence regarding the impact of borrowers' characteristics on spreads, for both corporate bonds and syndicate loans (Campbell and Taksler, 2003; Chen *et al.*, 2007; Qian and Strahan, 2007; Bae and Goyal, 2009; Ivashina and Kovner, 2011; Flannery *et al.*, 2012; Marques and Pinto, 2020; Alves *et al.*, 2021).

Appendix B - Descriptive statistics for bonds and loans at deal level

Panel A: Continuous variables

Variable of interest	Bonds						Loans					
	Number	Mean	Median	Std. Dev.	Max	Min	Number	Mean	Median	Std. Dev.	Max	Min
Contractual characteristics												
WAS (bps)	3,222	249.06	175.35	197.52	858.00	11.00	4,626	203.98	175.00	141.63	600.00	15.71
WARating [1-22 weak]	2,769	8.82	8.00	3.54	19.00	1.00	772	9.24	9.00	3.75	21.00	1.00
WAMaturity (years)	3,222	7.78	7.00	5.83	100.00	1.50	4,626	6.31	5.12	4.08	44.00	0.08
Transaction size (€ Million)	3,222	659.85	500.00	592.30	3,500.00	27.50	4,626	607.58	196.75	1,208.25	8,000.00	4.50
Number of banks	3,222	5.40	5.00	3.45	30.00	1.00	4,626	7.95	6.00	6.82	45.00	1.00
Number of tranches	3,222	1.19	1.00	0.52	6.00	1.00	4,626	2.11	1.00	1.58	12.00	1.00
Firms' characteristics												
Total assets (€ Million)	1,832	41,882.46	23,930.50	49,737.40	283,169.00	51.60	1,256	22,003.57	7,462.01	37,009.58	351,209.00	0.04
Return on assets (%)	1,832	3.75	3.44	4.18	29.88	-17.56	1,256	3.65	3.63	5.82	52.73	-23.93
Fixed assets to total assets	1,832	0.27	0.27	0.19	1.02	0.00	1,256	0.29	0.25	0.21	1.00	0.00
Total debt to total assets	1,832	0.33	0.33	0.15	2.31	0.00	1,256	0.32	0.31	0.17	1.38	0.00
Market to book ratio	1,832	0.92	0.77	1.23	31.57	0.01	1,256	1.06	0.80	4.68	165.12	0.05
Current ratio	1,832	1.16	1.07	0.53	5.21	0.10	1,256	1.24	1.13	0.71	11.09	0.04
Macroeconomic factors												
Volatility	3,222	21.48	19.88	8.18	77.15	10.68	4,626	22.79	20.58	9.57	74.69	10.68
EUSA5y-Libor3M	3,222	0.73	0.64	0.50	2.17	-0.77	4,626	0.80	0.76	0.55	2.17	-0.86
Country risk [1-21 weak]	3,222	2.70	1.00	3.07	21.00	1.00	4,626	2.72	1.00	3.34	21.00	1.00

Panel B: Dummy variables

Variable of interest	Bonds			Loans		
	Number	% of total	Std. Dev.	Number	% of total	Std. Dev.
CSPP	3,222	32.00%	0.47	4,626	12.28%	0.33
CSPP announcement	3,222	3.10%	0.17	4,626	0.65%	0.08
CSPP purchases	3,222	28.99%	0.45	4,626	11.63%	0.32
Rated	3,222	85.94%	0.35	4,626	16.69%	0.37
Switcher	3,222	38.67%	0.49	4,626	19.20%	0.39
Financial crisis	3,222	8.54%	0.28	4,626	6.83%	0.25
Sovereign crisis	3,222	71.17%	0.45	4,626	34.24%	0.47

This table presents the descriptive statistics for the full sample of bonds and loans at deal level. For a definition of the variables, see Table 1.

Appendix C - Univariate statistics of full sample at tranche level: pre- *versus* CSPP period

Variable of interest	Bonds			Wilcoxon z-test	Loans			Wilcoxon z-test
Continuous variables	Number	Mean	Median		Number	Mean	Median	
Spread (bps)								
pre-CSPP	2,643	259.55	186.00	4.352 ***	10,308	237.41	225.00	-19.604 ***
CSPP	1,456	219.10	150.70		1,303	302.94	300.00	
Rating [1-22 weak]								
pre-CSPP	2,282	8.59	8.00	-5.375 ***	1,121	9.41	9.00	-18.186 ***
CSPP	1,315	9.13	9.00		279	14.05	14.00	
Maturity (years)								
pre-CSPP	2,643	7.83	7.00	-5.114 ***	10,308	6.66	6.50	2.871 ***
CSPP	1,456	8.36	7.00		1,303	6.37	6.00	
Transaction size (€ Million)								
pre-CSPP	2,643	815.80	500.00	-9.925 ***	10,308	702.79	253.10	8.437 ***
CSPP	1,456	1,200.34	700.00		1,303	468.28	197.50	
Tranche size (€ Million)								
pre-CSPP	2,643	561.46	500.00	-4.310 ***	10,308	278.61	64.07	1.203
CSPP	1,456	584.78	500.00		1,303	236.35	67.60	
Tranche to transaction								
pre-CSPP	2,643	0.86	1.00	13.454 ***	10,308	0.43	0.28	-8.925 ***
CSPP	1,456	0.73	1.00		1,303	0.53	0.50	
Number of tranches								
pre-CSPP	2,643	1.35	1.00	-13.838 ***	10,308	3.69	3.00	14.918 ***
CSPP	1,456	1.82	1.00		1,303	2.66	2.00	
Number of banks								
pre-CSPP	2,643	5.49	5.00	-9.397 ***	10,308	8.32	6.00	17.499 ***
CSPP	1,456	6.71	6.00		1,303	5.25	4.00	
Country risk [1-21 weak]								
pre-CSPP	2,643	2.21	1.00	-16.044 ***	10,308	1.91	1.00	-39.918 ***
CSPP	1,456	3.27	2.00		1,303	5.41	3.00	

Variable of interest	Bonds			Fisher's exact test	Loans			Fisher's exact test
Dummy variables	Number	Number (d=1)	% of total		Number	Number (d=1)	% of total	
Rated								
pre-CSPP	2,643	2,282	86.34%	0.000	10,308	1,121	10.88%	0.000
CSPP	1,456	1,315	90.32%		1,303	279	21.41%	
Switcher								
pre-CSPP	2,643	1,103	41.73%	0.000	10,308	1,596	15.48%	0.000
CSPP	1,456	448	30.77%		1,303	92	7.06%	
Eligible								
pre-CSPP	2,643	1,676	63.41%	0.000	10,308	710	6.89%	0.000
CSPP	1,456	952	65.38%		1,303	17	1.30%	

This table reports summary statistics for contractual characteristics and macroeconomic factors of the full sample at tranche level, separated into two sub-samples: pre-CSPP period (from January 1, 2000 through to March 9, 2016) and CSPP period (from March 10, 2016 through to December 31, 2019). Similar distributions were tested using the Wilcoxon rank-sum test for continuous variables and the Fisher's exact test for discrete ones. ***, **, and * indicate significant difference at the 1%, 5%, and 10% significance levels, respectively. # indicates that the variables do not differ significantly between the type of funding at the 1% significance level. For a definition of the variables, see Table 1.

Appendix D - Industrial, geographic and purpose distribution of switchers at tranche level

Panel A: Industrial distribution

Industrial category of issuer/borrower	Bonds			Loans		
	Number of tranches	Total value [€ Million]	% of total value	Number of tranches	Total value [€ Million]	% of total value
Commercial and Industrial						
Agriculture, Forestry and Fishing	24	9,677.00	1.15%	26	27,732.61	2.13%
Communications	126	110,263.85	13.05%	116	270,198.49	20.73%
Construction/Heavy Engineering	90	56,121.68	6.64%	82	119,841.05	9.20%
Manufacturing						
Chemicals, Plastic and Rubber	78	46,866.75	5.55%	59	53,215.15	4.08%
Food and Beverages	22	13,610.00	1.61%	15	15,786.40	1.21%
Machinery and Equipment	87	62,157.40	7.36%	53	66,443.93	5.10%
Steel, Aluminum and other Metals	50	31,870.00	3.77%	25	28,578.20	2.19%
Other	55	38,715.00	4.58%	44	50,224.55	3.85%
Mining and Natural Resources	8	2,900.00	0.34%	9	4,790.00	0.37%
Oil and Gas	23	12,410.00	1.47%	4	4,050.00	0.31%
Real Estate	77	38,041.00	4.50%	51	43,348.24	3.33%
Retail Trade	142	82,624.78	9.78%	75	71,497.60	5.49%
Services	131	85,245.50	10.09%	130	186,891.30	14.34%
Utilities	199	178,261.81	21.10%	117	265,729.75	20.39%
Transportation	111	64,593.70	7.65%	63	68,963.57	5.29%
Other	23	11,425.00	1.35%	19	25,923.90	1.99%
Total	**1,246**	**844,783.47**	**100.00%**	**888**	**1,303,214.75**	**100.00%**

Panel B: Geographic distribution

Geographic location of issuer/borrower	Bonds			Loans		
	Number of tranches	Total value [€ Million]	% of total value	Number of tranches	Total value [€ Million]	% of total value
Austria	21	10,870.00	1.29%	10	3,680.00	0.28%
Belgium	23	10,672.50	1.26%	16	15,680.00	1.20%
Estonia	3	900.00	0.11%	1	50.00	0.00%
Finland	59	26,780.00	3.17%	67	57,052.50	4.38%
France	611	411,993.93	48.77%	331	482,548.25	37.03%
Germany	214	178,851.08	21.17%	189	328,855.25	25.23%
Greece	12	3,845.00	0.46%	12	5,013.35	0.38%
Ireland	9	4,750.00	0.56%	8	11,709.00	0.90%
Italy	117	76,250.00	9.03%	95	204,964.44	15.73%
Lithuania	1	300.00	0.04%	1	60.00	0.00%
Luxembourg	25	16,410.00	1.94%	17	17,160.61	1.32%
Netherlands	89	67,461.26	7.99%	55	67,915.20	5.21%
Portugal	17	7,485.00	0.89%	20	16,960.00	1.30%
Slovakia	1	1,242.70	0.15%	1	1,016.06	0.08%
Slovenia	1	300.00	0.04%	3	423.09	0.03%
Spain	43	26,672.00	3.16%	62	90,127.00	6.92%
Total	**1,246**	**844,783.47**	**100.00%**	**888**	**1,303,214.75**	**100.00%**

Panel C: Purpose distribution

Purpose of funding	Bonds			Loans		
	Number of tranches	Total value [€ Million]	% of total value	Number of tranches	Total value [€ Million]	% of total value
Corporate control (CC)	50	38,915.50	4.61%	161	314,593.13	24.14%
Capital structure (CS)	210	126,746.57	15.00%	528	826,873.17	63.45%
Fixed asset based (FAB)	-	-	-	3	484.80	0.04%
General corporate purpose (GCP)	981	676,121.40	80.03%	189	156,576.99	12.01%
Project Finance (PF)	5	3,000.00	0.36%	7	4,686.66	0.36%
Total	**1,246**	**844,783.47**	**100.00%**	**888**	**1,303,214.75**	**100.00%**

Panel A describes the industrial distribution of switchers' tranches; Panel B details the tranche allocation to borrowers in a particular country; Panel C presents the purpose of funding of switchers' tranches. There are no observations for firms located in Cyprus, Latvia and Malta.

Appendix E - Univariate statistics of firm characteristics of switchers at deal level

Variable of interest *Continuous variables*	Bonds	Loans	Wilcoxon z-test	Variable of interest *Continuous variables*	Bonds	Loans	Wilcoxon z-test
Total assets (€ Million)				**Total debt to total assets**			
Number	937	575		Number	937	575	
Mean	35,491.44	24,892.94	6.518 ***	Mean	0.32	0.32	0.518
Median	21,375.98	12,577.00		Median	0.30	0.30	
Return on assets (%)				**Market to book ratio**			
Number	937	575		Number	937	575	
Mean	3.40	3.48	-1.164	Mean	0.90	1.24	-2.350 **
Median	3.25	3.58		Median	0.75	0.82	
Fixed assets to total assets				**Current ratio**			
Number	937	575		Number	937	575	
Mean	0.25	0.28	-2.001 **	Mean	1.16	1.24	-1.332
Median	0.24	0.25		Median	1.09	1.12	

This table reports summary statistics of firm characteristics of switchers at deal level. Similar distributions in contractual characteristics were tested using the Wilcoxon rank-sum test. ***, **, and * indicate significant difference at the 1%, 5%, and 10% significance levels, respectively. For a definition of the variables, see Table 1.