Firm Transparency & the Impact of economic crises on Western European syndicated loan pricing

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Dissertation written under the supervision of professor Ricardo Reis

Dissertation submitted in partial fulfilment of requirements for the MSc in Finance, at the Universidade Católica Portuguesa, June 2023.

Abstract

Title: Firm Transparency & the Impact of economic crises on Western European syndicated loan pricing

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This research investigates the relationship between the transparency level of a firm and the effects of economic crises on the all-in-drawn spread of syndicated loans. To conduct my research, I gathered a sample of 3,116 syndicated loans, granted to 932 individual companies in the Benelux, Germany and France granted from 01/2008 until 06/2022. This timeframe covers 3 major economic crises: the 2008/2009 financial crisis, the European debt crisis, and the COVID-19 crisis. My findings confirm that public and especially large-cap firms experience a stronger increase in syndicated loan prices during economic crises. Furthermore, I also provide a deeper understanding of the dynamics at play by including borrower-specific variables, such as the EBITDA and the effect of a borrowers' credit rating. To validate my results, I have also performed a series of robustness checks.

Keywords: syndicated loans, economic crises, firm transparency

Resumo

Título: Transparência das empresas e o impacto de crises económicas no preço de empréstimos sindicalizados na Europa Ocidental

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Este estudo investiga a relação entre o nível de transparência das empresas e o efeito de crises económicas no all-in-drawn spread de empréstimos sindicalizados. A amostra utilizada contém 3116 empréstimos sindicalizados que foram concedidos a 932 empresas no Benelux, Alemanha e França entre 01/2008 e 06/2022. Este período engloba 3 grandes crises financeiras: a crise financeira de 2008/2009, a crise da dívida europeia e a crise do COVID-19. Para estudar esta relação, são consideradas variáveis de controlo relativas a características específicas das empresas que pedem empréstimos, tais como o seu EBITDA e avaliação de crédito. Os resultados obtidos demonstram que empresas públicas e empresas de grande dimensão registam um aumento maior no preço de empréstimos sindicalizados durante crises económicas. Para validar os resultados obtidos foram realizados diversos testes de robustez.

Palavras-chave: *empréstimos sindicalizados, crises económicas, transparência das empresas*

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RW	Risk Weight

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1 Introduction

The syndicated loan market can be considered as an important cornerstone of the corporate finance world. The evolution of the dynamics in this market reflects several economic and financial circumstances that countries and corporations have faced. The goal of my dissertation is to analyze a specific aspect of this market, which is the effect of a firm's transparency level on the prices of syndicated loans during economic crises.

The global financial crisis of 2008 has caused dramatic turmoil in the financial landscape. This confronted the world with unseen economic challenges. During these periods we have gained valuable insights about the behavior of financial markets and the inherent risks involved in syndicated loans. This can be considered as a crucial aspect of corporate finance. Prior studies like Santos and Winton (2019) have demonstrated that during crisis times loan spreads tend to widen because bank capital drops and therefore lenders demand higher premiums for the increased risk. In even more recent research Drago and Gallo (2020) investigated how syndicated loans spreads of public and private firms were affected by the 2008/2009 financial crisis and the European sovereign debt crisis.

Because public firms are subject to stricter regulatory requirements, they are usually more transparent in comparison to private firms. Due to this, public firms generally enjoy lower borrowing costs, which they owe to their lower information asymmetry, and this could also be related to their stronger bargaining position (Bharath et al., 2007). Nevertheless, being public can also lead to negative effects during economic crises because of a general increase in risk aversion which can have stronger effects on public firms (Thomas and Wang, 2004).

My study also relates to the discussion whether the increase in loan spreads during crisis periods (including COVID-19) is stronger for public firms, and especially large-cap companies. The reason is that large-cap companies benefit from a bigger market capitalization and contain stocks with higher liquidity. This explains why these large caps often enjoy a lower cost of capital. As proven by the 3FF factor model, smaller firms, normally, have higher average returns than larger firms. This could be interpreted as compensation for the higher risk that these firms bring (Fama and French, 1992).

An important dimension of my research is the inclusion of control variables, such as EBITDA, which represents the operational cash flow of a firm. EBITDA has also been utilized in other related research as a control variable to account for a firm's operating performance (Kaplan and

Ruback, 1995). My research also takes the role of foreign mandated arrangers in syndicated loan markets into consideration. While their role in affecting loan spreads is less clear, their function in promoting syndicate coordination and risk management is vital (Sufi, 2007).

My study also utilizes a constant sample selection in which I only consider firms that have received loans during both crisis and non-crisis periods. This technique allows me to perform a more robust comparison and interpretation of my results.

The layout of my research is as follows. Initially, I present a review of the relevant literature, in which I focus on certain key themes such as: syndicated loan markets [2.1], the determinants of loan spreads [2.2], the effects of economic crises on financial markets [2.3], the impact of monetary and fiscal policies during economic downturns [2.4], and the economic repercussions of the COVID-19 pandemic [2.5]. Following the literature review, I have established the research hypotheses [3]. The subsequent part of my study discusses the data and methodology utilized to conduct my research. This part contains an overview of the research sample [4.1], a discussion of the dependent [4.2] and independent variables [4.3], and my method of analysis [4.4] that I used in this research. Next, I present the descriptive statistics [5.1], the empirical results [5.2], and two robustness tests [5.3]. Further, I delve into the interpretation of my key results [6.1], compare them with the existing literature [6.2], and discuss their theoretical [6.3] and practical implications [6.4]. Furthermore, I present the limitations of my study and the opportunities for further research [7]. Finally, I give an overview of the most important findings of my research in the conclusion [8].

2 Literature Review

2.1 The syndicated loan market

2.1.1 General overview

The first part of the literature review gives a brief overview of the most important research that has been done with regards to the syndicated loan market. A syndicated loan is a loan given by multiple banks to one borrower. This is a hybrid instrument that combines certain characteristics of publicly traded debt and, at the same time, also has traits of relationship lending (private debt) (Gadanecz, 2004). The lead arranger is the institution that is responsible for monitoring and screening the borrowers. They are also the ones that are responsible for selling or underwriting the loan to other participant banks (Dennis & Mullineaux, 2000). Syndicated loans are used for several financing activities: working capital, general corporate purposes, refinancing, acquisitions, backup lines, etc. (Sufi, 2007). Financial institutions don't necessarily need to participate in the syndicate from the start, since they also have the option to invest in syndicated loans through the secondary market (Ivashina & Sun 2011).

Several papers can be found that discuss the benefits related to syndicated loans (Simons, 1993; Dennis & Mullineaux, 2000; Barbosa & Ribeiro, 2007). The most important reason is that banks have the need to diversify their loan portfolios. Local regulations can make it difficult for small and mid-sized banks to invest in firms outside of their regional economy. By participating in syndicated loans these banks have a chance to lend to firms in new regions and industries which they normally would have no access to (Simons, 1993). Another important trait of syndicated loans is that the size of the syndicates is usually increased to attempt to prevent strategic default rather than merely trying to lower the costs of re-contracting. Thus, syndicating loans is a way for banks to diversify their risk (Esty & Megginson, 2002).

Another important advantage of syndicated loans is capital constraints. Especially for smaller banks it might be difficult to provide loans to large borrowers since they are restricted in the total amount, they can lend to one. Participating in syndicated loans thus allows smaller banks to provide funding to firms to which they would otherwise have no access (Simons, 1993). According to research by Barbosa & Ribeiro (2007), the primary market of loan syndication appears to have a lot of non-resident banks in each syndicate, that take on the role of leading banks.

Despite these advantages, loan syndication increases banking system risks. The main risk that manifests itself regarding syndicated loans is moral hazard and information asymmetry between leading banks and participants by withholding unfavorable information and leading them into riskier loans. Notwithstanding this last argument, the existing literature actually provides proof that mandated arrangers in syndicates don't take advantage of their position (Simons, 1993). This is also confirmed in research by Sufi (2007), where proof is found that leading banks retain larger portions of a loan and form more concentrated syndicates if information about the borrower is non-transparent.

2.1.2 The European syndicated loan market

In 2014, Howcroft and colleagues investigated several of the factors that could influence banks in Europe their decisions to participate in syndicated loans. They found that the larger and more financially integrated banks are mainly involved in the European syndicated loan market. This is because they most likely have more regulatory capital and participate actively in securitization markets. Banks that are more focused on growth or efficient capital utilization seem to prefer bilateral lending over syndicated lending.

Another study on banks in four important Eurozone nations has proven that these banks are more likely to do business through syndicated loans with companies that are geographically closer and operate within industries that the banks have expertise in. The reason is because this implies a lower monitoring cost for those banks. This can lead to an important sidenote to urge policymakers to design a regulatory framework that takes into consideration that banks can have a bias for certain lenders that are in geographic proximity or operate in industries that they are more familiar with (Burietz & Ureche-Rangau, 2020).

2.2 Determinants of syndicated loan spreads

The price or spread of syndicated loans is called the 'all-in drawn spread'. This price consists of two components. The first one is the coupon spread which is the amount that the borrower pays on top of the LIBOR or EURIBOR. The second component is the facility fee, which the borrower needs to pay on an annual basis.

Syndicated loan spreads can be affected by multiple factors. The first one is borrower-specific characteristics, such as: the size of the borrowing firm, their profitability, the amount of leverage, etc. (Bharath et al., 2011). Another important factor to consider is if a borrowing firm

has a credit rating. The fact that a borrower has a credit rating has a stronger effect on the spread compared to the fact that the borrowing firm is public or private (Dennis & Mullineaux, 2000).

There are also other important factors that can influence the price of syndicated loans, such as loan-specific characteristics. These are factors such as: the maturity date of the loan, the amount borrowed, etc. (Bharath et al., 2011). The last factor that can have a significant impact on the price of the spreads is linked to characteristics related to the lender. Research has shown that leading banks that retain a larger part of the loan charge higher spreads (Sufi, 2007).

In line with the research mentioned in the previous chapter about the preference of lenders to borrow to companies in geographic proximity or to industries in which they are familiar, Barbosa & Ribeiro (2007) confirm these results by showing that syndicates where none of the borrowers has the same nationality as the lender pay higher costs.

Ivashina & Sun (2011) found a significant positive relationship between loan spreads and the time-on-the-market. Especially when the overall institutional demand drops these effects manifest themselves. They also discovered that institutional tranches contain lower spreads, on average, compared to bank tranches of the same loans. When institutional loans are allocated more quickly, the aforementioned effects increase.

Another interesting finding, which is related to what was mentioned about credit ratings earlier, is that if a company has received a credit rating from more than one rating agency, this company benefits from better interest rates on their loans. This effect is even stronger for firms with three ratings. Firms with less than three credit ratings don't benefit as much, since lenders sometimes perceive this as 'rating-shopping', where firms cherry-pick those credit rating agencies from which they can receive the most beneficial scores (Drago & Gallo, 2018).

2.3 Economic recessions and their impact on financial markets

The National Bureau of Economic Research (NBER) has defined recessions as a considerable drop in economic performance that lasts for at least two quarters and impacts a big part of the economy. To be defined as a recession, the NBER considers three parameters that come into play: the depth or intensity, the extent or diffusion, and the persistence or duration of the economic slump. It is important to note that every parameter must be somewhat present in order for a period to be defined as a recession, but these are communicating vessels, which means that a strong presence of one of these parameters, can compensate for a weaker effect in one of the others. The start of the COVID-19 pandemic is a good example of this. The start of the

pandemic was characterized by a sharp decline after a high point of economic activity in February 2020. Even though this decline was relatively short, the other factors: the intensity and the worldwide impact of this economic turmoil were very much present. Because of this, the NBER labelled COVID-19 as a recession.

2.3.1 Effects of the 2008-2009 financial crisis

When we consider the effects of recessions and make a distinction between public and private firms, Santos and Winton (2008) found that private firms are subject to a stronger increase of the spreads of syndicated loans during recessions compared to public firms. However, contradictory results have been found by Drago and Gallo (2020). In their research they mention the 'market sensitivity effect', which basically implies that borrowing costs of listed firms are more volatile and thus since they pay lower spreads in economic stable times, they experience a stronger increase in spreads during recessions.

Research by Bernanke et al. (1996) shows that during economic recessions the borrowers with the highest agency costs in the debt markets are the ones that experience the strongest increase in spreads, because overall, recessions are usually characterized by a 'flight to quality'. This effect was named the 'financial accelerator' by the authors. Another implication for high-agency borrowers of the 'financial accelerator' is that a reduction in spending, production and investments creates a more difficult access to the credit markets and simultaneously is impacting their own real economic activity.

The financial crisis of 2008 led to a decline in demand for credit because most businesses had to put a hold on their expansion plans at the time (Ivashina & Scharfstein, 2010). But, at the same time, there was also a supply effect, because some banks faced constraints with regards to their loan-to-deposit ratios, and also those at a higher risk of credit-line reductions were forced to decrease their lending amounts. These factors together contributed to an increase in the interest rates, which then, in turn, resulted in a stronger lending decrease than during a 'standard' recession (Ivashina & Scharfstein, 2010).

This situation also had an impact on the syndicated loan market. The larger European banks decreased their syndicated lending activities and even banks with more capital shifted more towards bilateral loans. This serves as a good example to demonstrate the increase in risk aversion during economic turbulent times (Howcroft et al., 2014).

2.3.2 Effects of the European debt crisis

De Marco, (2014) discovered that the Eurozone sovereign debt crisis led to a decrease in the credit supply. He found that a 15-20 basis points increase in sovereign losses as a proportion of total assets led banks to raise the interest rates with, on average, 40-65 basis points.

2.3.3 Impact on public vs private firms

It is generally agreed in the literature that listed firms have considerably lower costs of borrowing compared to unlisted firms. One of the reasons for this could be found in the research of Pagano et al. (1998). They discovered that, in the Italian stock market, firms that go public have a significant greater bargaining power with banks. Their findings in the Italian market can be generalized for other European countries as well. Additional evidence can be found in research by Saunders and Steffen (2011). They found that in the UK, private firms pay higher spreads on syndicated loans compared to public firms.

2.4 The role of monetary and fiscal policies during recessions

In the situation where national banks opt for a tightening of the monetary policy, which then in turn can serve as an accelerator for the economic recession, we see that investors shift focus to safer investments (‘flight to quality’). This can be seen as a consequence of the negative impact of higher interest rates and banks being constricted in their credit circulation (Bernanke and Blinder, 1988 and Kashyap and Stein, 1993).

One of the key reasons for the tightening monetary policy in the paragraph mentioned above, is that, during recessions, the effects of asymmetric information play a big role in the rise of interest rates (Bernanke, 1983; Mishkin, 1990; Mishkin, 1994). Because of asymmetric information the negative effects of adverse selection and moral hazard are amplified. The financially weakest borrowers, who are in desperate need of funding, agree to take even higher risks by accepting interest rates that are substantially higher than what they would reasonably be able to bear. Because of this, banks are very reluctant to lend money to firms during times like this (Mishkin, 1996).

An important lesson learned from previous economic crises is that central banks and governments should maintain an active fiscal policy. This is because actively intervening in the economy can help to stabilize the situation. There is a whole range of measures that governments can take to support their economies, such as: a stimulus package (including tax

cuts), increasing public spending, and providing aid to the state or individuals. If these are implemented successfully, the effects of a crisis can be heavily mitigated and financial markets will be able to recover faster (Auerbach and Gale, 2009). A notable example of a scenario where there was a good usage of an active fiscal policy, was during the aggressive response of the Fed during the 2008/2009 financial crisis. The monetary easing policy of the Fed at the time could be considered exceptionally fast and very proactive. Besides this, the Fed also spent its focus on providing liquidity to the private sector in the hope to reduce financial strains (Bernanke, 2009). Nevertheless, during crises Ivashina and Scharfstein (2010) have shown that financial institutions reduce their lending activities.

2.5 The Economic effects of COVID-19

The Covid-19 pandemic had a very significant effect on the world economy. This situation, which was never seen before, led governments to take unprecedented measures. Nationwide lockdowns, international travel bans, social distancing, … It became clear, quite quickly, that the economic effects of this pandemic would be felt internationally and that it wasn't very likely that this situation would end soon. Luckily, governments all over the world learned from past economic crises (such as the measures mentioned in the previous chapter) and implemented various fiscal and monetary measures to support businesses and households, while simultaneously trying to control financial markets.

On a macro-economic level, the measures taken by most governments to control infection rates had a stronger negative effect on the overall economy (closing of the workplaces and international travel bans) than the positive ones (closing schools and cancelling public gatherings). Globally, this situation led, on average, to a 10 percent decrease in the economic activity over a span of 30 days, which was proven in a study by Deb et al. (2021).

The countries that were hit the hardest by COVID-19 also had shown the weakest bank lending scenarios. An explanation for this could be attributed to elements such as: the financial health status of the banks, the level of competition in the local market, the regulation and the country's institutional framework, the maturity of financial intermediaries and credit markets, whether companies still have access to debt markets, and how the public health sector has responded to the crisis (Çolak & Öztekin's, 2021).

Another interesting finding of the relationship between the COVID-19 pandemic with regards to bank lending is that recent research has shown that loan spreads, on average, increased by

over 11 bps for lenders with a high exposure to COVID-19, and by more than 5 bps for borrowers with an increased level of exposure (Hasan et al., 2021).

3 Research Hypotheses

In this thesis, I am to propose several research hypotheses. All of these are carefully chosen to gain a more profound understanding of the relationship between economic crises and the transparency level of a firm (public vs. private and large-cap vs. small-/mid-cap) and how these two relate to the price of syndicated loans.

As already mentioned in the literature review, it is a common phenomenon that public firms, on average, pay lower costs on their debt instruments compared to private firms. One of the main reasons for this is their increased level of transparency. An increased level of transparency rationally leads to lower levels of information asymmetry, which in turn translates to lower screening and monitoring costs (Saunders and Steffen, 2011). Another important reason is that public companies usually have more funding opportunities through alternative sources. This allows public firms to establish a stronger bargaining position in their negotiations with financial institutions regarding loan spreads (Diamond, 1991). A last important reason is that public firms generally have a more diversified shareholder base. Because of this, public firms are more able to mitigate agency problems and subsequently spread their financial risks (Jensen and Meckling, 1976).

Based on the arguments mentioned above, the first hypothesis of my research is the following:

H1: Public firms are typically charged lower spreads on syndicated loans compared to private ones

An economic crisis can reasonably lead to an increase in spreads of syndicated loans, due to the 'flight to quality' phenomenon and the fact that banks are potentially less able to provide credit to firms because of financial constraints. Drago and Gallo (2020) have already shown in prior research that these effects are also translated in the syndicated loan market.

Therefore, this leads to my second hypothesis:

H2: During economic crises the spreads of syndicated loans increase compared to non-crisis periods.

According to the market sensitivity effect that was mentioned in the research of Drago and Gallo (2020), the market value of public firms is more volatile than the one of private firms. This means that, in economic stable times, public firms receive more beneficial spreads on their loans, but in economic turbulent times their market value could experience a stronger drop

compared to private firms. This will in turn have repercussions on the spreads they pay and could reasonably lead to an increase of them. Another possible explanation is that participant lenders can also explore more alternative, possible financial instruments when dealing with public firms, such as secondary loans or corporate bonds. This is an option which they don't have when dealing with private firms (Bharath et al., 2011).

Thus, in line with previous research this leads to my third hypothesis:

H3: The loan spreads of public companies increase more during an economic crisis compared to private companies.

In line with what is mentioned above, it could be possible to extend this reasoning and see if the effects are also true when a distinction is made between large-cap public firms and non-large cap public firms (small- or mid-cap). Since large-cap firms, normally, have more liquid stocks, it could be a reasonable assumption that during turbulent economic times, with increased volatility, the stocks of these large-caps suffer more and lead to a stronger decrease in firm value, which makes banks more reluctant to provide loans. These factors could then rationally lead to higher spreads for large-cap firms during economic crises.

So, I can state the fourth hypothesis as follows:

H4: Economic crises lead to a greater increase in loan spreads for large-cap public firms compared to other public firms.

4 Data and Methodology

4.1 Data Sources

In the following section of the thesis, I will present the utilized data sources, as well as the established methodology to conduct my research. The approach I used is largely founded on the methodology of Drago and Gallo (2020).

There are, however, some significant differences between my methodology and the one just mentioned. The first one is that I include the COVID-19 crisis in my research, which allows me to extend the timeframe that these researchers used. Second, I am using a different database to gather my sample of syndicated loans. Third, I am controlling for different firm characteristics, to gain a deeper understanding of the mechanics at play.

To carry out my empirical study, I gathered a dataset of 3,116 syndicated loans granted to 932 individual companies in the Benelux, Germany, and France. I obtained these loans from Refinitiv Eikon Deal Screener. To conduct my research, I treat each tranche of a syndicated loan as an individual loan, because of its unique characteristics. The analyzed period covers January 2008 until June 2022. By setting this specific timeframe I am able to research the effects of crises on the spreads of syndicated loans for public and private firms during three significant crises: the 2008/2009 financial crisis, the European sovereign debt crisis, and, as previously mentioned, the COVID-19 pandemic.

I merged the loans from Refinitiv Eikon with additional financial information of the borrowers, which I gathered from Bureau Van Dijk – Orbis Europe database. I merged the firms based on different factors, such as: company name, operating country, and other firm-specific information. Finally, I also gathered data from Datastream to retrieve information on the value of the LIBOR/EURIBOR that was present at the time the loan was granted to the firm.

4.2 Variables

The following sections will discuss the variables that were used in this study more in detail. First, I present an overview of the dependent variable, the AISD. Subsequently, I discuss the independent variables of interest. Finally, I present the control variables which allow me to capture a better understanding of the dynamics at play.

4.2.1 Dependent Variable

The dependent variable of my research, which I obtained from Refinitiv Eikon, is the logarithm of the initial all-in-drawn spread. Basically, this variable gives a complete overview of the total costs which the borrower must bear. This variable consists of several components, which are: the EURIBOR/LIBOR rate, the interest rate that is paid on top of this reference rate and any additional fees that must be paid during the duration of the loan. The reason for choosing this AISD as my dependent variable and not just the regular interest rate, is because this allows me to get a better understanding of the complete borrowing costs. The AISD is a better reflection of the assessment that the lender makes of the borrower. It allows me to capture market conditions, but also characteristics related to the borrower (Drago and Gallo, 2020). Besides this, I also chose to use the logarithm of this AISD, because this normalizes the data and avoids problems with skewness in the distribution of my data.

4.2.2 Independent Variables

The core independent variables of my research are two dummies, indicating whether the borrower is public (1) or private (0) and if the loan was granted during a crisis (1) or not (0). Simultaneously, I also created an interaction variable *Listed * Crisis*. This interaction variable allows me to capture the relationship between loans granted during crisis periods to public firms and the effects on the spread of the syndicated loan.

4.2.3 Control Variables

The first set of control variables that I used in my research are related to the specific characteristics of the loan. I selected these control variables based on prior research that was done in this field (Drago & Gallo, 2020; Ivashina & Scharfstein, 2010; Qian & Strahan, 2007; Sufi, 2007).

The first variable is the reference rate of the LIBOR or EURIBOR. The reason for including this variable is that changes in the underlying interest rates could reasonably also impact the spread that borrowers must pay. Next, I use the maturity of the loan. Prior research has already proven that the duration of a loan is an important factor in setting the AISD (Bharath et al., 2007). Another control variable related to the loan is a dummy variable called ‘secured’, which indicates if the loan was collateralized at the time it was granted (Drago and Gallo, 2020). Besides this, I also control with a dummy variable if the loan contains covenants. Another control variable that could reasonably have an impact on the loan is if the debt is senior or

subordinated. Finally, I also control for the type of loan and the purpose it was used, since more riskier loans could also rationally lead to higher spreads (Sufi, 2007 and Denis & Mihov, 2003).

Besides control variables that are related to loan-specific characteristics, my research also includes two control variables regarding the characteristics of the borrower. The borrower variables that I selected are inspired by previous research that has been done in this area (Sufi, 2007)

The first control variable related to the borrower is a risk weight that has been given to each firm in the sample. This risk weight is obtained by converting the credit rating of the firm in accordance with the Basel III conversion scale (see appendix figure 3 for more information). Based on the credit rating of the firm at the time the loan was granted, each borrower receives a risk weight between 20% and 150% (BCBS, 2015). Non-rated firms receive a risk weight that is equal to 100%. By adding the risk weight to my model, I can leverage information that has been gathered on the borrowers by credit rating agencies and easily convert these into a quantifiable number.

The second borrower related control variable is the logarithm of the EBITDA in the year prior to when the loan was granted. Drago and Gallo (2020) did not include this variable in their regression. I believe that including this variable could be an important factor in a lender's decision to price the spread, since a company's operating profitability could potentially be an important factor in setting the price of the loan. Drago and Gallo (2020) included other variables related to the borrower, such as: cash flow, leverage and fixed assets. Since all these variables were insignificant in their regression, I decided to not include these, but in turn search for other alternatives that could lead me to new understandings. Hence the choice for the EBITDA.

The last set of control variables that I included are related to specific characteristics of the different countries in my sample. I created a dummy for each country, which will allow me to control for differences between them. It is reasonable to think that there could be country-specific factors that cause differences in the spreads, such as the political influence that shapes the costs and terms of bank loans (Houston et al., 2012) or also the legal environment of each country (La Porta et al., 1997 and Djankov et al., 2007).

4.3 Methodology

As previously mentioned, my approach follows largely the methodology of Drago and Gallo (2020). To perform the OLS regressions, I'm using the statistical software 'Stata'. My research uses a panel data regression, which should allow me to capture both variations across time and within borrowers. At the same time, it also allows me to verify the specific variables that are mentioned in the previous section.

My regression model looks as following:

$$Ln\ (Loan\ Spread)_{i,\,t} = \beta_0 + \beta_1 Crisis_{i,\,t} + \beta_2 Public\ Firm_{i,\,t} + \beta_3 Crisis_{i,\,t} * Public\ Firm_{i,\,t} + \beta_4 X_{i,\,t} + \beta_5 Y_{i,\,t} + \beta_6 Z_{i,\,t} + \varepsilon_{i,\,t}$$

The goal of estimating this model is to assess whether there is a relationship between the occurrence of economic crises and the listing status of the borrowers in the Benelux, Germany and France and the impact on syndicated loan spreads. This model also allows me to include three vectors of control variables. X represents a vector of the control variables that are related to the loan, Y represents a vector of control variables that are related to the borrower and Z represents a vector for the aforementioned country dummies.

The variable *Ln (Loan Spread)* represents the dependent variable, which I outlined before.

Crisis is a dummy variable that takes a value of 1 if the loan was granted during the 2008/2009 financial crisis, the European sovereign debt crisis or during the COVID-19 pandemic.

Public Firm is a dummy that takes the value of 1 if the borrowing firm was public at the time the loan was granted.

*Crisis * Public* is the interaction variable that allows me to research the relationship between the change in the spread and loans that were granted to public firms during a crisis.

Lastly, I also had to define the specific timeframe in which a crisis occurred. For this, I used the turning points in economic cycles as defined by the OECD (2022). I identified the following periods as a crisis: 02/2008 until 06/2009 (2008/2009 financial crisis), 08/2011 until 02/2013 (European sovereign debt crisis). To define the COVID-19 recession, I diverted from the OECD turning points and used 02/2020 as a starting point. This start date is generally agreed upon as the time when COVID-19 began. Deciding on the 'end' date is a more complex and subjective task since there is no 'general' consensus on when the COVID-19 crisis ended (especially in terms of economic consequences). A potential end date of this crisis could be the time when the

ECB started raising the interest rates (07/2022). Therefore, I set the end date of the COVID-19 crisis on 06/2022 for my analysis, to avoid bias in my results coming from higher interest rates, which could rationally affect the spread.

5 Data Analysis and Results

In the following sections I will discuss the descriptive statistics. After that, I will present the empirical results of my research. To conclude, I have performed some robustness checks in order to get a further validation of my earlier results.

5.1 Descriptive Statistics

In Table 1, I present an overview of the distribution of my sample for each of the chosen countries. The table gives an overview on the total number of loans per country, the average all-in spread of the syndicated loans, the average amount that was borrowed by firms in each country, the absolute number of loans granted to listed firms, the relative number of loans granted to listed firms and the percentage of public firms in my sample for each country. The results show that almost 2/3 of the loans in my sample were granted to private firms and that the ratio of public to private firms is approximately 40/60.

Table 1: The distribution of the syndicated loans by country

Country	Number of Loans	Mean all-in spread (bps)	Mean amount (mln of USD)	Number of loans to listed firms	% of loans to listed firms	% of listed firms
Belgium	159	303.46	1,298.50	70	44.03%	40.00%
Netherlands	649	304.28	562.68	285	43.91%	45.16%
Luxembourg	234	328.52	625.01	79	33.76%	42.04%
Germany	904	313.36	821.81	368	40.71%	40.79%
France	1,250	299.31	479.39	387	30.96%	35.26%
Total	3,196	306.64	644.57	1,189	37.20%	39.70%

Table 2 shows the descriptive statistics of my research. The key variables are presented with a distinction made for public and private firms. The results show that banks generally charge lower spreads to public companies compared with private firms. Private firms seemingly also tend to borrow for longer periods (6 months on average) and have more secured loans. Unsurprisingly, public firms also had a significantly higher EBITDA in the years prior to when the loan was granted. To find additional information on the correlation of the variables used in my research, I refer to appendix 1 and 2. The descriptive statistics from my research are very similar to the ones in the research of Drago and Gallo (2020).

Table 2 - Descriptive Statistics

Variable	Public Firms			Private Firms			Differences	
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev	Diff. in mean[1]	Diff. in median[2]
Spread (bps)	257.58	250.00	161.78	335.70	350	152.06	-78.11***	-100.00***
Crisis	0.24	0.00	0.46	0.26	0.00	0.44	-0.02*	0.00*
Maturity (months)	63.07	60.00	25.79	69.82	72.00	27.84	-6.75***	-12.00***
Secured	0.33	0.00	0.47	0.45	0.00	0.50	-0.11***	0.00***
Covenant	0.07	0.00	0.25	0.04	0.00	0.20	0.02***	0.00***
Basel III - RW	0.98	1.00	0.22	1.01	1.00	0.12	-0.04***	0.00***
SovRating	21.46	22.00	0.82	21.37	22.00	0.87	0.09***	0.00**
Ln (EBITDA)	6.56	6.61	1.86	5.68	5.69	1.53	0.89***	0.87***
Large cap	0.21	0	0.41	-	-	-	-	-
NumLenders	8.52	6	8.67	5.28	4	5.61	-3.24***	2***
ForeignShare	0.74	0.80	0.29	0.70	0.75	0.28	0.04***	0.05***

*** Significant at 1%, ** significant at 5%, * significant at 10%

[1] testing for the means with a t-test

[2] testing for the medians with a Mann-Whitney U test

5.2 Empirical Results

In the following section I will present the main results of my research. As mentioned in the previous chapter, I performed an OLS regression to test the validity of my hypotheses.

5.2.1 The impact of financial crises on firms' loan spreads

Table 3 shows the results from the OLS regressions, with variations of the model in every column to get a better understanding of the ongoing dynamics.

Table 3 - The impact of economic crises on syndicated loan spreads

	(1) Ln (Spread)	(2) Ln (Spread)	(3) Ln (Spread)	(4) Ln (Spread)	(5) Ln (Spread)
Listed	-0.247***	-0.261***	-0.269***	-0.463***	-0.287***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Crisis	0.068*	0.118	0.070*	-0.061	0.101
	(0.058)	(0.249)	(0.056)	(0.539)	(0.333)
Listed * Crisis	0.119***	0.035	0.088*	0.045	0.098
	(0.009)	(0.746)	(0.065)	(0.706)	(0.368)
Loan Control Variables					
EURIBOR/LIBOR	-0.096***	-0.072***	-0.096***	-	-0.086***
	(0.000)	(0.000)	(0.000)		(0.000)
Duration	0.002***	-0.002	0.002***	-	-0.003*
	(0.000)	(0.226)	(0.000)		(0.071)
Secured	0.232***	0.272***	0.249***	-	0.301***
	(0.000)	(0.000)	(0.000)		(0.000)
Covenant	0.059	-0.038	0.034	-	0.108
	(0.181)	(0.690)	(0.454)		(0.250)
Senior Debt	-1.171***	-1.488***	-1.201***	-	-1.537***
	(0.000)	(0.000)	(0.000)		(0.000)
Loan Type					
Term Loan	0.176***	0.183**	0.187***	-	0.162**
	(0.000)	(0.016)	(0.000)		(0.034)
Bridge Loan	-0.396***	-0.616***	-0.414***	-	-0.670***
	(0.000)	(0.000)	(0.000)		(0.000)
Revolving Loan	-0.276***	-0.379***	-0.289***	-	-0.402***
	(0.000)	(0.000)	(0.000)		(0.000)
Loan Purpose					
CAPEX	-0.050	-0.268	-0.024	-	-0.375
	(0.616)	(0.324)	(0.820)		(0.173)
LBO	0.349***	0.317***	0.360***	-	0.312***
	(0.000)	(0.000)	(0.000)		(0.000)
Working Capital	-0.069	0.065	-0.067	-	0.042
	(0.342)	(0.722)	(0.379)		(0.821)
General Finance	-0.169***	-0.148***	-0.159***	-	-0.155***
	(0.000)	(0.009)	(0.000)		(0.007)
Borrower Control Variables					
Basel III - RW	1.000***	0.994***	-	1.064***	0.957***
	(0.000)	(0.000)		(0.000)	(0.000)
Ln (EBITDA)	-	-0.089***	-	-0.112***	-0.095***
		(0.000)		(0.000)	(0.000)
Constant	5.272***	6.817***	6.744***	5.372***	6.823***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

CFE	Yes	Yes	Yes	Yes	No
Observations	3,116	728	3,116	751	728
Adj R-squared	0.428	0.525	0.375	0.352	0.501

This table shows the results of the first model's OLS regression. The dependent variable is Ln (*Spread)*, which represents the logarithm of the initial AISD of the loan given to the i-th firm on day t. In column (2), I estimate the complete model with all vectors of control variables. In columns (1), (3), (4) and (5), I use different model specifications. *** significant at 1%, ** significant at 5%, and * significant at 10%.

In column (1), I have estimated the model using all control variables, except for *Ln (EBITDA)*. The results from the variable *Listed* show that public firms benefit from their status, since the spread drops 24.7% on their syndicated loans compared to private firms. In every variation of the model that I have tested, this variable has both a very strong economic and statistical power ($p < 0.01$).

Therefore, I can say that Hypothesis 1 can be considered true.

In columns (2), (3), (4) and (5), I present different variations of the model. Column (2) contains all the variables for the regression (including *Ln (EBITDA)*, while in columns (3), (4) and (5) every time I exclude one vector of control variables.

Besides this, the results from columns (1) and (3) prove that during a crisis the spreads on syndicated loans tend to increase with about 7%, which is statistically significant at a 10% level ($p < 0.1$). It can thus be observed that when I include a variable to control for the EBITDA of the firm, the variable *Crisis* loses its significance. Nevertheless, the results from columns (1) and (3) are in line with Hypothesis 2, implying that for most firm the spreads tend to rise during a crisis, but that even during times of economic crises lenders give more weight to the actual performance of the firm (as reflected by *Ln (EBITDA)*), than just raising spreads merely for being in a crisis.

Other remarkable observations can be made regarding some of the included control variables. The dummy variable 'Senior Debt' is both economically and statistically very relevant. In all the variations of the model, senior loans heavily reduce the spreads paid on the syndicated loans as compared to subordinated debt. These results are also highly significant. The type of loan and its purpose are also variables that cannot be neglected and potentially can have a very strong influence in determining the price of the loan. The other control variables related to the borrower *Basel III – RW* and *Ln (EBITDA)* are also key determinants for lenders to set the spread.

As for hypothesis 3, I can state that when I do not include the EBITDA of the borrower, public firms tend to experience a stronger increase in the price of syndicated loans during periods of crisis. However, the inclusion of this specific borrower variable reduces the statistical significance of the interaction term. Therefore, just like with hypothesis 2, I can see that public firms, on average, do experience an increase in the spreads of their syndicated loans during a crisis, but again, when controlling for EBITDA this effect is no longer present.

5.2.2 The effects of economic crises on the borrowing costs of large-cap firms

As mentioned in previous parts of the thesis, public firms tend to have a substantially higher market cap and transparency level compared to private firms. Because of the market sensitivity effect, they benefit from increased visibility during economic stable times, but experience adverse effects when there is instability in the economy, leading to increased volatility in financial markets. To build further on hypothesis 3, I performed a more in-depth analysis in which I only considered public firms and created a dummy variable that indicates if the public firm is either a large-cap or not. Since public firms experienced, under some circumstances, a stronger increase in loan spreads than private firms (due to their increased visibility and transparency), I want to check if these effects are also applicable to large-cap public firms compared to small- or mid-caps.

Thus, to perform the following regression, I excluded private firms from my sample and included a new dummy variable *Large-Cap*. The dummy Large-Cap takes the value of 1 if the total assets of the borrower are valued > $10 billion USD. The creation of this new dummy variable allowed me to establish a second model, to test for hypothesis 4:

$$Ln\ (Loan\ Spread)_{i,\,t} = \beta_0 + \beta_1 Large\text{-}Cap_{i,\,t} + \beta_2 Crisis_{i,\,t} + \beta_3 Large\text{-}Cap * Crisis_{i,\,t} + \beta_4 X_{i,\,t} + \beta_5 Y_{i,\,t} + \beta_6 Z_{i,\,t} + \varepsilon_{i,\,t}$$

Table 4 – The impact of economic crises on large-cap public firms

	(1) Ln (Spread)	(2) Ln (Spread)
Crisis	0.081	-0.096
	(0.166)	(0.331)
Large-Cap	-0.634***	-0.223**
	(0.000)	(0.030)
Crisis * Large-Cap	0.376***	0.593***
	(0.000)	(0.000)
Ln (EBITDA)	-	-0.092***
		(0.000)
Loan Variables	Yes	Yes
Borrower Variables	Yes	Yes
CFE	Yes	Yes
Observations	1,150	521
Adj R-squared	0.545	0.524

This table shows the results of the second model. The dependent variable is *Ln (Spread)*, which represents the logarithm of the initial AISD of the loan given to the i-th firm on day t. *** significant at 1%, ** significant at 5%, and * significant at 10%.

The results from column (1) and (2) in Table 4 show that *Large-Cap* public firms are charged significantly lower spreads compared to other public firms. However, during times of crises the coefficient of the variable *Crisis* * *Large-Cap* becomes positive and highly significant ($p < 0.01$). Even when I control for *Ln (EBITDA)* the results remain unchanged, indicating that the effects of a crisis are stronger for large-cap public firms vs non-large cap public firms in comparison with the effects of a crisis on public firms vs. private firms.

Thus, based on the previous results I can confirm hypothesis 4.

5.3 Robustness Checks

In the subsequent sections, I have performed two robustness tests to validate my previous results and get a better understanding of potential elements that could have led me to wrong results. In the first robustness test I check if the percentage of foreign lenders impacts the price of syndicated loans. The second test uses a different sample selection technique and only includes firms that have received a loan during both a crisis period and a non-crisis period.

5.3.1 The impact of foreign lenders in the loan syndicate

The percentage of foreign mandated arrangers or co-managers could potentially be a factor that has an impact on the price of the syndicated loan. This is because foreign lenders might have a different, more conservative approach to assess a borrower that is not located in the same country. This could be due to various reasons, such as: less knowledge of the local regulations,

bigger information asymmetries, etc. The inclusion of this variable should allow me to capture the aforementioned dynamics.

Table 5 - The impact of economic crises considering the share of foreign lenders

	(1) Ln (Spread)	(2) Ln (Spread)
Listed	-0.247***	-0.259***
	(0.000)	(0.000)
Crisis	0.068*	0.110
	(0.051)	(0.289)
Listed * Crisis	0.117***	0.044
	(0.010)	(0.689)
ForeignShare	-0.024	0.072
	(0.580)	(0.533)
Ln (EBITDA)	-	-0.092***
		(0.000)
Loan Variables	Yes	Yes
Borrower Variables	Yes	Yes
CFE	Yes	Yes
Observations	3,116	728
Adj R-squared	0.427	0.525

The first column shows the results of the first model. This was estimated by adding the variable *ForeignShare*. In the second column, I have added the variable Ln (EBITDA). The dependent variable is *Ln (Spread)*, this is the logarithm of the initial AISD of the syndicated loan given to the i-th firm on day t. *** significant at 1%, ** significant at 5%, and * significant at 10%.

After running the regression, I observe that the variable *ForeignShare* is statistically insignificant. This is the case, both when I control for *Ln (EBTIDA)* and not. Based on this, I cannot say if the percentage of foreign lenders has an impact on the spread and further research should be conducted to get a better understanding of the dynamics at play.

5.3.2 Using a constant sample composition during crisis and non-crisis

The previously obtained results could be biased by the method I have applied to establish my initial sample. Therefore, I decided to perform the same regression as in the first model, but this time only considering firms that obtained a syndicated loan during both a crisis and a non-crisis period. This sample selection technique is based on the methodology from (Ball et al., 2015). My results are presented in Table 6.

Table 6 - The impact of economic crises on syndicated loan spreads using a constant sample

	(1) Constant Sample - Ln (Spread)	(2) Constant Sample – Ln (Spread)
Listed	-0.403***	-0.332**
	(0.000)	(0.024)
Crisis	-0.069	-0.117
	(0.310)	(0.498)
Listed * Crisis	0.307***	0.374**
	(0.000)	(0.049)
Ln (EBITDA)	-	-0.097***
		(0.008)
Loan Variables	Yes	Yes
Borrower Variables	Yes	Yes
CFE	Yes	Yes
Observations	718	274
Adj R-squared	0.547	0.539

The first column shows the results of the first model. This was estimated by using a constant sample of only firms that received a loan during both crisis and non-crisis periods. The dependent variable is *Ln (Spread)*, logarithm of the initial AISD of the loan given to the i-th firm on day t. *** significant at 1%, ** significant at 5%, and * significant at 10%.

First of all, it must be noted that applying this method led to a heavy reduction of my total sample, which could bias the results. However, hypothesis 3 can also be confirmed when using a constant sample size, since the coefficient of *Listed * Crisis* is, again, both economically and statistically highly significant (both in column (1) and (2)).

It can also be observed that the coefficient of the variable crisis becomes negative in this regression, but due to the statistical insignificance, no conclusions can be drawn from this variable.

6 Discussion

In this section I will discuss the key findings of my research, followed by the theoretical and practical implications.

6.1 Key findings

6.1.1 The effects of economic crises based on public vs private firms

The main discovery from my research is that with an increase in the level of firm transparency (public vs private and large-cap vs small-/mid-cap), the spread on the loans that firms pay during economic crises goes up. My results are in line with previous research conducted by Drago and Gallo (2020) in similar circumstances. However, another important discovery is that my findings lose their statistical significance when I include the variable *Ln (EBITDA)* to control for the operational performance of the borrowing firm. This might imply that, even during economic crises, lenders consider the financial health of the firm an important factor to determine the spread and do not raise the price of syndicated loans for all firms regardless of their performance. As mentioned in the literature before, large firms typically benefit from their increased visibility, which places them in a better position to negotiate their interest rates. However, my results have shown that this increased visibility leads to adverse effects in turbulent economic times. There can be numerous reasons for this effect to take place, such as: heightened complexity of public firms, stocks becoming more illiquid during times of increased volatility, higher leverage levels, etc.

A potential explanation for my results could be that even during times of crises, lenders are generally more concerned with the cash-generating abilities of the borrower, rather than merely focusing on their status as public or private. In this way, my findings are in line with previous studies where researchers investigated borrower-specific characteristics in order to determine the loan spread (Bharath et al., 2011). Even during economic crises, banks still tend to analyze borrowers on a case-by-case basis. It could thus be argued that it is possibly not the crisis itself that leads to an increase in the spreads, but this can just be considered as a timeframe where more firms than usual experience financial distress. This aggregated effect could be the reason why the spreads of syndicated loans increase.

As a consequence, the underlying reason for the increase in spreads is the firm's poor performance rather than a general increase of prices due to increased panic in the markets.

Another possible explanation can be found in the fact that public firms usually have more access to alternative sources of financing. Therefore, a public firm could be less willing to accept unfavorable loan conditions when they are still operating strongly during a crisis. This leaves only the 'weaker' public firms to accept these higher imposed spreads, which drives the overall value of syndicated loan prices up during times of economic turmoil. Goel and Zemel (2018) confirm this explanation with their research of the 2008/2009 financial crisis. They discovered that public firms with a strong balance sheet shifted much more towards the bond markets and thus were less affected by the negative effects of the reduction in the supply of credit.

6.1.2 The effects of economic crises on large-cap vs mid/small cap firms

Another interesting finding of my research is that within the category of public firms, large-caps experience a much stronger increase of the spreads on their syndicated loans during economic crises compared to small-/mid-cap public firms.

Even when I take into account specific borrower characteristics, such as variables: *Basel III – RW* and *Ln (EBITDA),* these effects still persist. There could be a few possible explanations for this. Large-cap firms often have very complex financial structures and diverse operations, and, during economic crises, these could serve as an amplifier, since their perceived risk also increases more compared to smaller public firms. This is why lenders could charge large-cap firms higher spreads since they have a higher risk profile in crises. In line with what was mentioned for public firms, an increased level of illiquidity of their assets might in turn lead to higher costs of financial distress, which is translated into the price that lenders charge these large-caps.

6.1.3 The influence of foreign mandated arrangers and co-managers

To gain a further understanding of certain omitted variables that could influence my results, I ran a robustness check to see whether the percentage of foreign lenders has an impact on the price of syndicated loans. In theory, a higher number of foreign mandated arrangers or co-managers could lead to situations where informational asymmetry levels increase, or different regulatory environments can make financial institutions more hesitant to borrower to firms in third countries. These factors could rationally lead to an increase in the spread when the percentage of foreign lenders increases. However, my results could not support this proposition. This might imply that the relationship between foreign lenders and borrowers is not as straightforward as I initially thought. One important keynote, however, is that the countries in

my sample (Benelux, Germany and France) all share a lot of similarities in terms of political structure and prosperity levels. This is why potentially the variable *ForeignShare* could have been more significant if my sample consisted of countries where the differences in economic prosperity are more distinct. In any case my findings could be an interesting source for further exploration.

6.1.4 The effects of using a constant sample

In the final phase of my research, I conducted a regression where I only included firms from my sample that borrowed at least once during both a crisis and a non-crisis. The results from this regression are in line with my prior findings and demonstrate that during economic crises public firms experience a stronger increase in the price of their syndicated loans. By demonstrating this, I was able to show that my original observations were not the result of firms that only borrow during certain market conditions.

6.2 Theoretical implications

My findings contribute to the literature on the relationship between information asymmetry and the cost of external financing. Earlier research has already demonstrated that companies prefer methods of internal financing because this reduces the costs of information asymmetries (Myers and Majluf's Pecking Order Theory, 1984). However, my research has shown that public firms appear to pay higher spreads during economic crises. This could imply that an increased amount of informational asymmetry could be beneficial to borrowers in more turbulent times and thus provide a new insight into this theory.

Normally, smaller firms face greater obstacles to receive financing, which has an impact on their growth (Beck et al., 2005). However, my research also carries implications regarding the theory surrounding the size of the firm and its financial performance, because, based on my findings, large-cap public firms are encountering challenges related to the prices paid on their loans during economic crises.

Another implication for the theoretical literature is that including the logarithm of EBITDA as a control variable in my regression offers a new understanding of the dynamics at play. In contrast to research by Drago and Gallo (2020), I do not rely on the firm’s amount of leverage or other financial ratios, but I rather focused on the operational performance of the firm and how this impacts a lender’s decision-making process.

Finally, the insignificant effect of foreign arrangers on the prices of loan spreads could lead to new insights, since it is not automatically implied that a higher presence of foreign arrangers will automatically lead to increased spreads (Yilmaz, 2018). As I already mentioned before, in the case where the foreign lenders are from neighboring countries or when they share similar levels of economic prosperity, an increase in this percentage does not necessarily have to go hand in hand with a higher loan price.

6.3 Practical implications

My research could serve as a guideline for public companies (especially large caps) to apply this knowledge in structuring their debt profile. Given this general increase in spreads during economic crises, it could be interesting for these firms to renegotiate their current loans during economic stable times to allow them to benefit from better conditions. Since the EBITDA of a firm serves as a key determinant for lenders to assess borrowers, it would encourage firms to focus on their operational performance to benefit from acceptable loan rates.

Since the presence of foreign arrangers in my sample did not seem to significantly impact the spreads, my findings could stimulate policy makers to establish regulations that encourage cross-border lending, since for neighboring countries no detrimental effects were found.

7 Limitations and Further Research

Even though my research has offered a valuable contribution to my understanding of the syndicated loan markets, there are several limitations attached to my findings. These limitations can serve as an interesting source for future research. The first is that, while my study includes some borrower characteristics, such as: public vs private, EBITDA, Risk Weight, etc. there could be other borrower specific variables that reasonably have an impact on the spreads. Elements such as intangible assets or management quality could also have an impact on the spreads during economic crises.

Another limitation of my research that could be researched is the impact of prior relationships between borrowers and lenders and see what the effect is of these dynamics on the spreads during times of increased market volatility.

My research focused on the effects of economic crises, so an interesting future research project could be to investigate other types of shocks to the economy or industry-specific crises. Another interesting aspect could be to analyse the crisis more into detail and see if the various stages (such as peak vs recovery phase) differently impact the spreads.

Lastly, my study also has a geographical limitation. I focused in my research on the Benelux, Germany and France. Therefore, it might not be right to generalize my findings for the whole European continent, since regulation in Southern, Eastern, and even Northern Europe can have significant differences, which differently impact loan prices.

8 Conclusion

My research led me on a journey to discover the relationship between the transparency level of a firm and economic crises on how this is reflected in syndicated loan spreads. The goal of my research is to provide the reader with a better understanding of the dynamics that determine this.

The evidence that I found has shed a new light on the different dynamics that come into play. Contrary to conventional wisdom, public firms tend to experience a stronger increase in the price of their syndicated loans compared to private firms during economic crises. These effects also hold true when I compare large-cap public firms with small-/mid-cap public firms. Thus, my results could imply that an increased level of transparency proves to be detrimental during economic crises. An important cause for this can be found in the higher sensitivity of these firms to economic shocks.

Especially when I compare large-cap to other public firms, the negative effects of an economic crisis on the loan spreads seem to be very explicit. However, when I ran a robustness check to test for the effect of the percentage of foreign lenders in the syndicate, there seemed to be no significant impact. This might imply that the foreign lenders play a lesser role than initially thought when investigating borrower characteristics. It could also be a consequence of my sample selection, since all borrowers come from countries with similar prosperity levels.

When I analyze the firm's performance using the EBITDA, the impact of the listing status of the firms became insignificant. This finding could potentially open the door for a new theory which states that the operational performance of a firm can serve as a buffer for the negative effects of a crisis on the price which public firms pay for their loans.

Lastly, I also performed a robustness check with a constant sample. This included only firms that had taken a loan during both crisis and non-crisis times. The results of this robustness check were in line with my prior findings.

9 Appendix

Variable	VIF	1/VIF
Recession	4.61	0.217033
Listed_rec~n	3.81	0.262478
rate_value	2.12	0.471537
country_du~3	2.04	0.490751
country_du~2	2.04	0.490904
duration	1.88	0.531374
Listed	1.81	0.551603
dummy_Loan~B	1.70	0.586789
log_ebitda	1.69	0.593427
dummy_Purp~n	1.62	0.618624
dummy_Purp~l	1.56	0.639081
secured	1.56	0.639474
dummy_Purp~O	1.56	0.641371
BaselIIIwe~t	1.49	0.669623
dummy_~eLoan	1.48	0.676591
dummy_Loan~g	1.43	0.697982
country_du~1	1.38	0.722490
Covenant	1.28	0.779756
country_du~4	1.22	0.818322
Seniority	1.09	0.919436
dummy_Purp~x	1.08	0.929554
dummy_Purp~C	1.07	0.937859
Mean VIF	1.80	

Figure 1 - Correlation Matrix - All Variables

Variable	VIF	1/VIF
Recession	2.59	0.386198
rate_value	2.16	0.463457
Listed_rec~n	1.90	0.525269
country_du~2	1.89	0.528799
country_du~3	1.79	0.558740
secured	1.70	0.587966
dummy_Loan~B	1.64	0.611476
dummy_Purp~l	1.44	0.693113
dummy_Purp~O	1.44	0.693538
Listed	1.42	0.705714
duration	1.35	0.738576
dummy_Loan~g	1.34	0.747116
dummy_Purp~n	1.31	0.763361
country_du~4	1.29	0.773209
country_du~1	1.21	0.823909
dummy_~eLoan	1.16	0.864430
BaselIIIwe~t	1.06	0.939366
dummy_Purp~C	1.06	0.940977
Seniority	1.06	0.946266
dummy_Purp~x	1.05	0.953022
Covenant	1.05	0.953662
Mean VIF	1.47	

Figure 2 - Correlation matrix - All Variables (excl. EBITDA)

External rating of counterparty	AAA to AA–	A+ to A–	BBB+ to BBB–	BB+ to BB–	Below BB–	Unrated
"Base" risk weight	20%	50%	100%	100%	150%	100%

Figure 3 - Basel III: Risk Weight conversion scale

10 References

Acharya, V. V., Eisert, T., Eufinger, C., & Hirsch, C. W. (2011). Real effects of the sovereign debt crisis in Europe: Evidence from syndicated loans. Unpublished manuscript.

Adrian, T., Colla, P., & Song Shin, H. (2013). Which financial frictions? Parsing the evidence from the financial crisis of 2007 to 2009. NBER macroeconomics annual, 27(1), 159-214.

Altman, E. I., Resti, A., & Sironi, A. (2005). Default recovery rates in credit risk modeling: A review of the literature and empirical evidence. Economic Notes, 34(2), 183-208.

Auerbach, A. J., & Gale, W. G. (2009). Activist Fiscal Policy to Stabilize Economic Activity. NBER Working Paper No. 15407.

Auerbach, A. J., & Gorodnichenko, Y. (2012). Measuring the output responses to fiscal policy. American Economic Journal: Economic Policy, 4(2), 1-27.

Augustin, P., Boustanifar, H., Breckenfelder, J. H., & Schnitzler, J. (2014). Sovereign credit risk and cross-border lending in the euro area. Unpublished manuscript.

Bae, K. H., Goyal, V. K., & Suardi, S. (2002). Cross-border lending and the role of loan syndicates: An empirical analysis of European loan markets. Unpublished manuscript.

Ball, R., Li, X., & Shivakumar, L. (2015). Contractibility and Transparency of Financial Statement Information Prepared Under IFRS: Evidence from Debt Contracts Around IFRS Adoption. Journal of Accounting Research, 53(5), 915–963. https://doi.org/10.1111/1475-679x.12095

Barbosa, L., & Ribeiro, N. (2007). Determinants of Spreads in Syndicated Loans to Euro Area Corporates. Economic Bulletin. http://www.bportugal.pt/en-US/BdP%20Publications%20Research/AB200707_e.pdf

Beck, T., Demirguc-Kunt, A., & Maksimovic, V. (2005). Financial and Legal Constraints to Growth: Does Firm Size Matter? Journal of Finance, 60(1), 137–177. https://doi.org/10.1111/j.1540-6261.2005.00727.x

Ben S. Bernanke, 2009. "The crisis and the policy response: a speech at the Stamp Lecture, London School of Economics, London, England, January 13, 2009," Speech 442, Board of Governors of the Federal Reserve System (U.S.).

Berg, T., Saunders, A., & Steffen, S. (2016). The total cost of corporate borrowing in the loan market: Don't ignore the fees. Journal of Finance, 71(3), 1225-1252.

Berger, A. N., & DeYoung, R. (1997). Problem loans and cost efficiency in commercial banks. Journal of Banking & Finance, 21(6), 849-870.

Bernanke, B. S. (1983). Non-Monetary Effects of the Financial Crisis in the Propagation of the Great Depression. https://doi.org/10.3386/w1054

Bernanke, B. S. (2013). The crisis as a classic financial panic. Speech at the Fourteenth Jacques Polak Annual Research Conference.

Bernanke, B. S., & Blinder, A. S. (1988). Credit, Money, and Aggregate Demand. https://doi.org/10.3386/w2534

Bernanke, B. S., & Gertler, M. (1995). Inside the black box: The credit channel of monetary policy transmission. Journal of Economic Perspectives, 9(4), 27-48.

Bernanke, B., Gertler, M., & Gilchrist, S. (1996). The Financial Accelerator and the Flight to Quality. The Review of Economics and Statistics, 78(1), 1-15.

Bharath, S. T., Dahiya, S., Saunders, A., & Srinivasan, A. (2007). So what do I get? The bank's view of lending relationships. Journal of Financial Economics, 85(2), 368–419. https://doi.org/10.1016/j.jfineco.2005.08.003

Bharath, S. T., Dahiya, S., Saunders, A., & Srinivasan, A. (2011). Lending relationships and loan contract terms. Review of Financial Studies, 24(4), 1141-1203.

Bharath, S. T., Dahiya, S., Saunders, A., & Srinivasan, A. (2011). Lending Relationships and Loan Contract Terms. Review of Financial Studies, 24(4), 1141–1203. https://doi.org/10.1093/rfs/hhp064

Bolton, P., Freixas, X., Gambacorta, L., & Mistrulli, P. E. (2016). Relationship and transaction lending in a crisis. Review of Financial Studies, 29(10), 2643-2676.

Bruno, V., & Shin, H. S. (2015). Capital flows and the risk-taking channel of monetary policy. Journal of Monetary Economics, 71, 119-132.

Burietz, A., & Ureche-Rangau, L. (2020). Better the devil you know: Home and sectoral biases in bank lending. International Economics, 164, 69-85.

Caouette, J. B., Altman, E. I., & Narayanan, P. (2008). Managing credit risk: The next great financial challenge. John Wiley & Sons.

Correa, R., Sapriza, H., & Zlate, A. (2016). Liquidity shocks, dollar funding costs, and the bank lending channel during the European sovereign crisis. FRB Boston Risk and Policy Analysis Unit Paper No. RPA, 16-4.

Cour-Thimann, P., & Winkler, B. (2013). The ECB's non-standard monetary policy measures: The role of institutional factors and financial structure. Oxford Review of Economic Policy, 28(4), 765-803.

Covitz, D. M., & Downing, C. (2007). Liquidity or credit risk? The determinants of very short-term corporate yield spreads. Journal of Finance, 62(5), 2303-2328.

De Haas, R., & van Horen, N. (2013). Running for the exit? International bank lending during a crisis. Review of Financial Studies, 26(1), 244-285.

De Haas, R., & van Lelyveld, I. (2014). Multinational banks and the global financial crisis: Weathering the perfect storm? Journal of Money, Credit and Banking, 46(s1), 333-364.

De Marco, F. (2012). Bank lending and the sovereign debt crisis. Unpublished manuscript.

De Marco, F. (2014). Bank lending and the sovereign debt crisis. Manuscript, Boston College.

Deb, P., Furceri, D., Ostry, J. D., & Tawk, N. (2021). The Economic Effects of COVID-19 Containment Measures. Open Economies Review, 33(1), 1–32. https://doi.org/10.1007/s11079-021-09638-2

Denis, D. J., & Mihov, V. T. (2003). The choice among bank debt, non-bank private debt, and public debt: evidence from new corporate borrowings. Journal of Financial Economics, 70(1), 3–28. https://doi.org/10.1016/s0304-405x(03)00140-5

Dennis, S. A., & Mullineaux, D. J. (2000). Syndicated loans. Journal of Financial Intermediation, 9(4), 404-426.

Diamond, D. W. (1991). Monitoring and Reputation: The Choice between Bank Loans and Directly Placed Debt. Journal of Political Economy, 99(4), 689–721. https://doi.org/10.1086/261775

Djankov, S., McLiesh, C., & Shleifer, A. (2007). Private credit in 129 countries☆. Journal of Financial Economics, 84(2), 299–329. https://doi.org/10.1016/j.jfineco.2006.03.004

Drago, D., & Gallo, R. (2017). The impact of sovereign rating changes on European syndicated loan spreads: The role of the rating-based regulation. Journal of International Money and Finance, 73, 213–231. https://doi.org/10.1016/j.jimonfin.2017.02.029

Drago, D., & Gallo, R. (2018). Do multiple credit ratings affect syndicated loan spreads?. Journal of International Financial Markets, Institutions and Money, 56, 1-16.

Drago, D., & Gallo, R. (2020). The impact of financial crises on the syndicated loan spreads applied to public and private firms. Journal of Financial Stability, 46, 100718. https://doi.org/10.1016/j.jfs.2019.100718

Esty, B. C., & Megginson, W. L. (2002). Creditor Rights, Enforcement, and Debt Ownership Structure: Evidence from the Global Syndicated Loan Market. Social Science Research Network. https://doi.org/10.2139/ssrn.320226

Fama, E. F., & French, K. R. (1992). The Cross-Section of Expected Stock Returns. The Journal of Finance, 47(2), 427–465. https://doi.org/10.1111/j.1540-6261.1992.tb04398.x

Gadanecz, B. (2004). The syndicated loan market: structure, development and implications. BIS Quarterly Review, December, 75-89.

Gadanecz, B., & Kara, A. (2011). Securitisation and banking risk: What do we know so far? Review of Economics & Institutions, 2(1), 1-37.

Gadanecz, B., Kara, A., & Mora, R. (2004). Financial integration, competition, and growth: A two-sector model of the EU accession countries. Unpublished manuscript.

Gertler, M., & Gilchrist, S. (1994). Monetary policy, business cycles, and the behavior of small manufacturing firms. Quarterly Journal of Economics, 109(2), 309-340.

Giannetti, M., & Laeven, L. (2012). The flight home effect: Evidence from the syndicated loan market during financial crises. Journal of Financial Economics, 104(1), 23-43.

Giannetti, M., & Yafeh, Y. (2012). Do cultural differences between contracting parties matter? Evidence from syndicated bank loans. Management Science, 58(2), 365-383.

Goel, M., & Zemel, M. (2018). Switching to bonds when loans are scarce: Evidence from four U.S. crises. Journal of Corporate Finance, 52, 1–27. https://doi.org/10.1016/j.jcorpfin.2018.05.006

Gropp, R., Gruendl, C., & Guettler, A. (2012). The impact of public guarantees on bank risk-taking: Evidence from a natural experiment. Review of Finance, 18(2), 457-488.

Hasan, I., Politsidis, P. N., & Sharma, Z. (2021). Global syndicated lending during the COVID-19 pandemic. Journal of Banking and Finance, 133, 106121. https://doi.org/10.1016/j.jbankfin.2021.106121

Houston, J. F., Lin, C., Lin, P., & Ma, Y. (2012). Creditor rights, information sharing, and bank risk taking. Journal of Financial Economics, 96(3), 485-512.

Howcroft, B., Kara, A., & Marques-Ibanez, D. (2014). Determinants of syndicated lending in European banks and the impact of the financial crisis. Journal of International Financial Markets, Institutions and Money, 32, 473–490. https://doi.org/10.1016/j.intfin.2014.07.005

Imbierowicz, B., & Wahrenburg, M. (2013). Wealth and risk effects of the Eurozone debt crisis for creditors. Unpublished manuscript.

Ivashina, V., & Scharfstein, D. (2010). Bank lending during the financial crisis of 2008. Journal of Financial Economics, 97(3), 319-338.

Ivashina, V., & Sun, Z. (2011). Institutional demand pressure and the cost of corporate loans. Journal of Financial Economics, 99(3), 500-522.

Ivashina, V., & Sun, Z. (2011). Institutional demand pressure and the cost of corporate loans☆. Journal of Financial Economics, 99(3), 500–522. https://doi.org/10.1016/j.jfineco.2010.10.009

Ivashina, V., & Sun, Z. (2011). Institutional stock trading on loan market information☆. Journal of Financial Economics, 100(2), 284–303. https://doi.org/10.1016/j.jfineco.2010.11.004

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics, 3(4), 305–360. https://doi.org/10.1016/0304-405x(76)90026-x

Jiménez, G., Ongena, S., Peydró, J. L., & Saurina, J. (2012). Credit supply and monetary policy: Identifying the bank balance-sheet channel with loan applications. American Economic Review, 102(5), 2301-2326.

Jordà, Ò., Schularick, M., & Taylor, A. M. (2011). Financial crises, credit booms, and external imbalances: 140 years of lessons. IMF Economic Review, 59(2), 340-378.

Kalemli-Ozcan, S., Papaioannou, E., & Peydró, J. L. (2013). Financial regulation, financial globalization, and the synchronization of economic activity. Journal of Finance, 68(3), 1179-1228.

Kaminsky, G. L., & Vega-García, L. (2015). Systemic and idiosyncratic sovereign debt crises. Journal of the European Economic Association, 13(1), 115-142.

Kaplan, S. A., & Ruback, R. S. (1995). The Valuation of Cash Flow Forecasts: An Empirical Analysis. Journal of Finance, 50(4), 1059. https://doi.org/10.2307/2329344

Kashyap, A. K., & Stein, J. C. (1993). Monetary Policy and Bank Lending. https://doi.org/10.3386/w4317

Kremp, E., & Sevestre, P. (2013). Did the crisis induce credit rationing for French SMEs? Journal of Banking & Finance, 37(10), 3757-3772.

Krishnamurthy, A., Nagel, S., & Vissing-Jorgensen, A. (2014). ECB policies involving government bond purchases: Impact and channels. Unpublished manuscript.

La Porta, R., Lopez-De-Silanes, F., Shleifer, A., & Vishny, R. W. (1997). Legal Determinants of External Finance. Journal of Finance, 52(3), 1131–1150. https://doi.org/10.1111/j.1540-6261.1997.tb02727.x

Mishkin, F. S. (1990). Asymmetric Information and Financial Crises: A Historical Perspective. https://doi.org/10.3386/w3400

Mishkin, F. S. (1994). Preventing Financial Crises: An International Perspective. https://doi.org/10.3386/w4636

Mishkin, F. S. (1996). The Channels of Monetary Transmission: Lessons for Monetary Policy. https://doi.org/10.3386/w5464

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics, 13(2), 187–221. https://doi.org/10.1016/0304-405x(84)90023-0

NBER. (2020). US Business Cycle Expansions and Contractions. Retrieved from https://www.nber.org/cycles/

OECD. (2022, December). OECD turning points. Retrieved May 31, 2023, from https://www.oecd.org/sdd/leading-indicators/oecdcompositeleadingindicatorsreferenceturningpointsandcomponentseries.htm

Pagano, M., Panetta, F., & Zingales, L. (1998). Why do companies go public? An empirical analysis. The journal of finance, 53(1), 27-64.

Popov, A., & van Horen, N. (2015). Exporting sovereign stress: Evidence from syndicated bank lending during the euro area sovereign debt crisis. Review of Finance, 19(5), 1825-1866.

Qian, J., & Strahan, P. E. (2007). How Laws and Institutions Shape Financial Contracts: The Case of Bank Loans. Journal of Finance, 62(6), 2803–2834. https://doi.org/10.1111/j.1540-6261.2007.01293.x

Rajan, R. G., & Winton, A. (1995). Covenants and collateral as incentives to monitor. Journal of Finance, 50(4), 1113-1146.

Reinhart, C. M., & Rogoff, K. S. (2011). From financial crash to debt crisis. American Economic Review, 101(5), 1676-1706.

Revisions to the Standardised Approach for credit risk. (2015, December 10). https://www.bis.org/bcbs/publ/d347.htm

Rogoff, K., & Reinhart, C. M. (2009). This time is different: Eight centuries of financial folly. Princeton University Press.

Romer, C. D. (1993). The nation in depression. Journal of Economic Perspectives, 7(2), 19-39.

Santos, J. A. C., & Tsatsaronis, K. (2003). The cost of barriers to entry: Evidence from the market for corporate euro bond underwriting. ECB Working Paper No. 236.

Santos, J. a. C., & Winton, A. (2008). Bank Loans, Bonds, and Information Monopolies across the Business Cycle. Journal of Finance, 63(3), 1315–1359. https://doi.org/10.1111/j.1540-6261.2008.01359.x

Santos, J. a. C., & Winton, A. (2019). Bank Capital, Borrower Power, and Loan Rates. Review of Financial Studies, 32(11), 4501–4541. https://doi.org/10.1093/rfs/hhz001

Saunders, A., & Steffen, S. (2011). The Costs of Being Private: Evidence from the Loan Market. Review of Financial Studies, 24(12), 4091–4122. https://doi.org/10.1093/rfs/hhr083

Schuermann, T. (2004). What do we know about loss given default? In E. Altman & H. Rijken (Eds.), Loss Given Default of High Yield Corporate Debt. Risk Books.

Simons, K. (1993). Why do banks syndicate loans. New England Economic Review, 45–52. https://econpapers.repec.org/article/fipfedbne/y_3A1993_3Ai_3Ajan_3Ap_3A45-52.htm

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

Thomas, H., & Wang, Z. (2004). The integration of bank syndicated loan and junk bond markets. Journal of Banking and Finance. https://doi.org/10.1016/j.jbankfin.2003.01.001

Yilmaz, U. (2018). Why Do Firms Borrow from Foreign Banks? Social Science Research Network. https://doi.org/10.2139/ssrn.3380086

Çolak, G., & Öztekin, Ö. (2021). The impact of COVID-19 pandemic on bank lending around the world. Journal of Banking and Finance, 133, 106207. https://doi.org/10.1016/j.jbankfin.2021.106207