UNIVERSIDADE CATÓLICA PORTUGUESA

The impact of the CSPP across the eurozone

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Resumo

Este trabalho visa auferir a eficácia do Corporate Sector Purchasing Programme (CSPP), tendo em conta o contexto da crise financeira, a forma como o programa impactou as dinâmicas de obrigações empresariais e o efeito que produziu nos países da zona euro.

Para testar o desempenho desta política, foram consideradas 1,202 obrigações empresariais, pertencentes a 310 empresas quotadas e não financeiras, estabelecidas em um dos 19 países da zona euro, durante 20 anos. Os resultados obtidos, baseiam-se na comparação de duas subamostras, a pré-CSPP (2000-2015) que inclui os períodos de pré-crise e crise e o período CSPP (2016-2020).

Os resultados empíricos sugerem que uma das principais determinantes da yield spread é o rating de crédito. Esta evidência é controversa, visto que o excesso de confiança neste indicador é visto como uma das causas da crise financeira.

Estudando as duas subamostras temporais, o anúncio e implementação do CSPP produziram uma contração na yield de 154 bps para 128 bps. Atingindo assim, o decréscimo desejado.

Geograficamente, é possível observar neutralidade, com todos os países membros a beneficiar, sobretudo os GIIPS.

Como um todo, os resultados obtidos a partir dos dados disponíveis indicam o sucesso do programa, uma vez que se verifica uma redução no custo de financiamento de empresas por toda a zona euro.

Palavras-chave: CSPP, Crise Financeira, BCE, Zona Euro, Setor Empresarial,Obrigações Empresariais

Abstract

This works aims to test the efficacy of the Corporate Sector Purchasing Programme (CSPP), taking into account the financial crisis context, how the programme influenced corporate bond dynamics and its impact across the eurozone countries.

To test the performance of this policy, 1,202 corporate bonds, from 310 publicly traded non-financial companies, established in one of 19-eurozone countries, over 20 years were taken into account. Results are based on the comparison of two subsamples, the pre-CSPP (2000-2015) which includes the pre-crisis and crisis period and the CSPP period (2016-2020).

The empirical results indicate that one of the main variables in explaining yield spreads are credit rating. This is controversial, as the overreliance on these indicators is seen by many as one of the culprits in the financial crisis.

Observing time subsamples, the CSPP announcement and implementation period produced a reduction in yields from 154 bps to 128 bps. Achieving the desired yield tightening.

Geographically, neutrality is observed, with all members countries benefiting, particularly the GIIPS.

With the results from the available data is possible to consider the programme a success, as it provides less expensive funding for companies all over the eurozone.

Keywords: CSPP, Financial crisis, ECB, Eurozone, Corporate Sector, Corporate Bon

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Chapter 1 -Introduction

Following the 2007 US financial crisis, triggered by the subprime bubble and the Lehman Brothers' bankruptcy, the eurozone was facing governments' bankruptcy and a banking system contaminated by the Mortgage-Backed Securities (MBS) crisis. This combination led to what we know today as the European Sovereign Debt Crisis, starting in Greece one of the most financial fragile systems. Since all eurozone countries are extremely connected via currency and monetary policy, it was only a matter of time until the plague was spread to all the euro territories, banking systems and governments, who already were in distress across Europe. Szczerbowicz (2015), found this context to be particularly concerning, as each euro economy reacts differently to external shocks, due to the lack of tax union. Plus, no euro government has control over monetary policy tools, as they are handed over to the European Central Banks (ECB) when joining the union.

Together, these events split the single financial euro market into a multitude of individual struggling markets, where credit conditions were divergent. Thus, each country's central bank was facing distinct refinancing settings, a phenomenon pointed out by Szczerbowicz (2015). The crisis combined with the feedback loop between the default risk of both banks and governments turned out to sink credit ratings.

The result was the ECB's traditional monetary tool, the refinancing rate, not being able to stabilize the markets across the euro-system, since the zero-lower bound (ZLB) had been reached. As Bernanke (2020) brought to light, Europe could have entered the liquidity trap Japan fell in the '90s. Additionally, confidence in the interbank market, crucial for the performance of the banking system, soured. Investors were no longer participating in the markets and information was seen with suspicion. This led to the stricture of the primary and secondary markets, leaving companies with little to no funding options.

To combat the inherent issues, the ECB announced multiple unconventional policy packs in the years following the crisis. These policies were Quantitative Easing (QE) measures or Unconvention Monetary Policies (UMP), as the focus and tools are outside of the normal. As the ECB doesn't control interest rates, since they are ineffective in this context, it resorts to directly injecting liquidity into the economy. This occurs by purchasing assets straight from economic agents. The umbrella term used for all the policies of this nature became known as the Asset Purchasing Programmes (APP), such policies were studied by authors such as Beirne et al. (2011), Szczerbowicz (2015), Gibson et al. (2016), and Markmann & Zietz (2017).

Most of these were focused on the public and financial sectors. As a result, it was only in 2016, that the ECB noticed that after all the efforts, the corporate sector, which had been left alone, did not recover almost a decade after the first crisis waves. Thus, the Corporate Sector Purchasing Programme (CSPP) was announced on the 10th of March 2016.

This was a programme designed especially for non-financial enterprises. The goal was to revive the primary and secondary bond markets, provide less expensive funding to companies and in larger quantities, keep and improve solvency and restart investors' activity. For this, according to Gnan (2019), the eligibility criteria were relaxed, compared to previous policies. No minimum tranche amount was required, bonds only had to have a rating of BBB- and higher and maturity between 6 months and 31 years.

In this study, I begin to explore the reasons behind the framing of this particular policy and its importance, plus the different types of mechanisms that allowed for policy transmission. Being that this is has a focus on bonds, their dynamics and variables will also be brought up for discussion. Lastly, I'm interested in exploring the degree to which the programme was effective in improving economic conditions and meeting its announced targets.

While extensive work has been done regarding the earlier APP, such as the ones conducted by Beirne et al. (2011), Szczerbowicz (2015), Gibson et al. (2016) and Markmann & Zietz (2017), the CSPP being one of the latest to be launched and one of the remaining active ones, the policy and its impacts still lack discussion. Using methodology applied in previous studies regarding other UMP, I will be adapting and applying them to this subject.

For this, I make use of panel data comprising of a combination of macroeconomic variables, bond characteristics and issuing companies indicators. Totalling 1,202 bonds issued by 310 companies, over 20 years in all 19-euro zone countries. The two types of efficacies I will be testing, are if whether the CSPP was effective in lowering yield spreads for corporate bonds and if possible positive outcomes were equally distributed across the euro members. This will be accessed through OLS regressions, to which later country fixed effects will be added. The 19 countries were grouped by political and geographical rationale.

The results are consistent with previous authors findings. In line with authors such as Fabozzi & Vink (2012), Branco et al. (2020) and Marques & Pinto (2020), that critic the overreliance on credit ratings and their possible role behind the financial crisis, this variable seems to still have a high influence in determining yields, particularly in lowering them, with an emphasis in the post-2016 period.

The CSPP was indeed effective in meeting its goals and improving economic conditions for firms. Namely, when compared to the pre-CSPP time range, the average yield spread for corporate bonds went down from 154 bps to 128 bps.

Seeing side by side the effects across countries, both Central Europe and the GIIPS observed positive outcomes. With the CSPP contributing to an average lowering of the yield of 22 bps and 31 bps, respectively. However, it's not the most developed and market-based economies that benefit the most. As observed by the figures provided, the GIIPS were able to capture the biggest benefits.

The following dissertation is organized as follows, Chapter 2 presents the literature review, including problem contextualization and bond dynamic discussion. The research hypotheses used to conduct this study are found in Chapter 3. The data used and its description is presented in Chapter 4. Chapter 5 dives deeper into the models and variables, as well as the results obtained. Finally, Chapter 6 discusses the conclusion extracted, plus the main limitation found in this piece of work that could be solved in future research.

Chapter 2 – Literature Review

2.1 Financial Crisis – context

The burst of the mortgage bubble catapulted the world into an unprecedented series of financial crises. Starting with the USA sub-prime crisis in 2007, triggered by the systematic default of Mortgage-Backed Securities involving poor credit quality real estate mortgages. Securitization, meaning the technique through which non-tradable assets are pooled together and traded as one, achieved explosive growth in the pre-crisis decade. In Europe, the volume of this market increased tenfold during the first decade of the 2000s, Cardone (2010). The problem with this specific financial product arises from the fact that it is an originator-to-distributor model. By only spreading the asset's credit risk and not holding on to any of it, financial institutions lack the incentive to monitor. This creates subsequent agency problems, Alves & Pinto (2016).

Like many other banking institutions, Lehman Brothers entered the securitization market at the beginning of the new millennium. When the sub-prime crisis reached its high in 2008, the accumulated losses suffered resulted in a drastic drop in its share price. Ultimately, this led to the bankruptcy of one of the world's biggest financial institutions. Not only the already existing crisis in the USA was deepened, but it extended the phenomenon to the world's banking network, creating a domino effect.

In the meantime, in Europe, the main financing source for all the economy has always been the banking system; as opposed to America, where economic agents rely on the financial market. The combination of uncertainty experienced in the securitization market, instability and distrust of the financial sphere led to a huge economic shock for the eurozone. While all euro area countries are connected by the banking and monetary union, there’s no tax union which creates macroeconomic disparities among the members. This meant that when faced with an exogenous shock, not only the imbalances created in each country were not the same, but most monetary policy tools were not available to governments, Szczerbowicz (2015). As expected, more frail and peripheral economies were the most affected ones. Sovereigns were declared as unable to meet their obligations or refinance themselves. This is a summary of what we know today as the European Sovereign Debt Crisis.

2.2 Unconventional Monetary Policies

The focus of any central bank is to control inflation resorting to mechanisms that influence the interest term rate. However, in the context described above, these policies are ineffective due to reaching the zero-lower bound. The ZLB occurs when short-term nominal interest rates are close or equal to zero. If nothing is done, the economy affected by this problem can enter a perpetual cycle of deflation. Traditional monetary policy has been shown to create a liquidity trap when facing this question, just as we have seen in Japan since the 1990s, Bernanke (2020).

With few options to stimulate aggregate demand, central banks had to adapt and create what is known as Unconventional Monetary Policies. They are unconventional, not only because the tools are different, but also their target is deflation. The main strategy applied by most central banks around the world was Quantitative Easing, Szczerbowicz (2015). The technique consists of directly purchasing assets from economic agents, as a way to expand the monetary base and influence economic agents' expectations, Fawley & Neely (2013).

The characteristics of the QE applied, varied depending on the goals and context of each central bank. For instance, funding-wise bank-based economies, such as the European and Japanese ones, injected liquidity into the economy via creating facilitated refinancing conditions for their financial institutions. On the opposite side, market-focused economies, like the USA and England, resorted to directly purchasing bonds from the market as a form to reduce the excess supply, Hamilton & Wu (2012).

2.2.1 The Asset Purchasing Programmes

In particular, the ECB materialized this policy in the Asset Purchasing Programmes. Inside this umbrella, multiple other ones were developed, such as the Corporate Sector Purchasing Programme (CSPP), the Public Sector Purchasing Programme (PSPP), the Covered Bond Purchasing Programme (CBPP) and the Asset-Backed Securities Purchasing Programme (ABSPP). Stabilization of prices across the euro area, the revival of financial markets, supply of liquidity to struggling financial institutions, governments and corporations were common targets in all initiatives, as mentioned by Gibson et al. (2016).

Another similarity found across all UMP is the channels through which the policies impact real economy. Using the nomenclature introduced by Beirne et al. (2011), the four main channels that not only the mentioned researchers, but also Szczerbowicz (2015), Gibson et al. (2016), and Markmann & Zietz (2017) highlight are: the announcement effect, portfolio balance effect, liquidity premium effect and real economy effect.

The most evidence-based channel is the announcement one. It is also the common denominator in most central banks' strategies. In the case of the CBPP1

Markmann & Zietz (2017) found results consistent with Bernier et al. (2011), in which the announcement effect produced a spread tightening of 10 to 11 bps for eligible covered bonds. When reporting the efficacy of the Swiss National Bank's QE, Kettemann & Krogstrup (2014), found that throughout the entire active period of the policy, the strongest market effects occurred in the days following the announcement. Overall, the results achieved by this mechanism present a sufficient magnitude for Krishnamurthy & Vissing-Jorgensen (2011) to purpose the hypothesis of central banks stabilizing the economy via announcement alone. At heart, this would produce the desired outcome, without the negative repercussions for central banks' balance sheets.

The lack of surprise factor, coupled with the already bettered market conditions, due to the implementation and success of initial policy packs, can explain the reason why when comparing programmes posteriorly launched with the initial ones, we find that the more recently initiated ones did not achieve the same success as the original.

In the same train of thought, Bluwstein & Canova (2016) found evidence that overall, the surprise factor of UMP announcements can produce outputs comparable to conventional monetary policies in more stable periods.

The second most referred effect is the portfolio rebalance. As pointed by Collin-Dufresne et al. (2001) investors don´t own a single asset type. In fact, following the diversification practice where bonds are concerned, most have a mix of corporate and treasury bonds. The main reason is to balance out their risk exposure, particularly credit risk. Central banks by addressing the excess supply in the security market, by the economic Law of Supply and Demand the prices of those purchased securities will go up, decreasing their yields and new market equilibrium is found, as stated by Kettemann & Krogstrup (2014). This will not only decrease the yield of bonds but also reduce their term premium, increasing the overall attractiveness of these instruments. This will incentivize investors to start trading sovereign bonds, highly sought-after during economic instability due to their safe and stable nature; for corporate bonds which the central bank virtually reduced the risk and instability.

By presenting itself as a willing buyer of securities, under almost any circumstance, the central bank comes into play with what is called the liquidity premium effect. During market contractions, investors reduce their activity due to fear of not being able to trade their assets if needed. However, with this position of the main financial institution, investors regain confidence in the market as they know they will always have a buyer for their assets.

The last of the mentioned effects is the real economy one. Just like the aforementioned effect, this one works in reviving agents market trust. When the ECB announces that it is willing to intervene in the market with a certain amount of euros, the economy expects to have that same amount circulating via the agent target by the said announced policy. Meaning, if the policy's target is banks, just like the case of the CBPP, private agents are expecting to be able to benefit from the capital injection via the provision of credit.

One negative side effect of UMP that Bluwstein & Canova (2016) brought awareness to is international spillovers. It was found that in the case of the European Union implementing QE, non-euro partners with advanced economies and strong domestic banking systems, achieved even larger benefits from European policy than the euro countries themselves. On the other hand, partners with more fragile economies and reliance on foreign banking became worst in the presence of European UMP.

Summarizing, all of the programmes implemented by the ECB were found to have achieved positive outcomes in some capacity, as found by Beirne et al. (2011), Szczerbowicz (2015), Gibson et al. (2016) and De Santis et al. (2018). The same could be said for the ones implemented by the Swiss National Bank by Kettemann & Krogstrup (2014), the Federal Reserve by Gagnon et al. (2011), Hancock & Passmore (2011) and the Bank of England or the Bank of Japan by Fawley & Neely (2013).

However, one reserve that is pointed out in most works is the substitution effect. As mentioned by Beirne et al. (2011) and Branco et al. (2020), the financial crisis worsened the conditions of all securities markets, and in addition to subsequent policies triggered a trade-off among them. Being that financial products born out of securitization were perceived as the main cause of the financial crisis, economic agents had incentives to shy away from these types of products, both from a public perception point of view, bankruptcy fear and also tighter regulations, Krishnamurthy & Vissing-Jorgensen (2011), Boesel et al. (2018) and Branco et al. (2020). All these encouraged financial institutions to find financing alternatives.

One interesting fact to note is that, according to Alves & Pinto (2016), while ABS and MBS reputation soured after the crisis. Mainly due to being seen as one of its culprits. Similar securitization products, presenting similar issues and risk profiles, did not experience the same scrutiny.

The other dimension of this issue is the incentives given by the implemented QE. As found by Cardone et al. (2010), Beirne et al. (2011), European Central Bank (2012), De Santis et al. (2018) and Branco et al. (2020) a portion of the APP success can be traced back to a shift in the financing sources adopted. There's evidence that, particularly, banks and companies, traded their funding for products that suited the criteria imposed by the ECB's programmes.

2.2.2 The Corporate Sector Purchase Programme

Among all the programmes launched by the ECB, this work will be focused on the CSPP. This intervention was part of a policy pack announced on the 10th of March 2016.

According to Zaghini (2019) after many phases of financial aid, the economic indicators of the eurozone as a whole were still at levels representing a crisis state. Thus, the ECB decided to launch a new stability pack. Together with the CSPP, it was announced a reduction of the deposit facility rates, four new long-term refinancing operations and an increase of the monthly purchase of already existing APP, De Santis et al. (2018).

The CSPP was designed to target the corporate sector. By directly purchasing bonds issued by non-financial European firms, the central bank hoped to revive the bond market and provide better financing to companies.

According to De Santis et al. (2018), the main goals of the programme were to reduce the cost of funding for firms by decreasing bond yields, revive investment activity and insure firms 'solvency.

The mentioned goals were to be met by the purchase of corporate bonds that would fit the following criteria, according to Gnan (2019): they had to be issued by non-financial entities established in the euro area, issued in euro, have a minimum of BBB- credit rating (in the S&P rating scale) and be eligible for collateral under the ECB's credit operations. On top of these conditions, maturity-wise it had to be inside the interval of 6 months to 31 years at the time of purchase. There was no minimum issuance size and a later drooped condition, was to have a yield superior to the deposit facility rate.

By imposing broad limits to maturity and no restrictions in issuance size, the ECB was able to capture a diverse group of companies. Democratizing the aid provided.

As with any other policy, authors focused on the announcement effect, which proved to be so successful in earlier packs. Both Todorov (2017) and Zaghini (2019), found the announcement effect to produce a decrease of about 30 bps on the yields of eligible bonds. However, for Gnan (2019) this number is much smaller, amounting to 12 bps. For the author, this can be explained by the fact that the two previous investigators did not distinguish the results produced by CSPP, from the ones produced by the other three policies announced on the exact same date.

When it comes to the premium there are two opposite views. Todorov (2017) defends that by the observed liquidity and price increase, the first measured by an increase of third-party dealers turn-over and a 6 bp reduction in the bid-ask spread, it could be concluded that there was a decrease in the risk premium of bonds. On the other side, Gnan (2019) argues that the strong portfolio rebalance effect that was observed in the post-announcement period, which was also pointed out by Zaghini (2019) when increasing the analysis timeframe. For him, this was a clear indicator that a premium was constructed for eligible bonds.

Regarding the market neutrality targeted by the ECB, meaning the effects of a certain programme on its targeted security spilling over to other security types and equally for all member countries' economies, the research concludes heterogeneity. Torodov (2017) defends that results related to yield reduction are particularly applicable to eligible bonds with low ratings and high maturity profiles. Gnan (2019) accounts for this measure, concluding that the group of eligible bonds saw a stronger reduction of yields, amounting up to 5 pp of reduction when compared to non-eligible bonds.

Lastly, concerning a possible substitution effect, mentioned by authors when analyzing other APP, Todorov (2017) and Zaghini (2019) encountered different outcomes. For the first researcher, firms took advantage of the ECB's incentive and shifted their issuance in order to meet with the programme's demanded characteristics. On the opposite side, Zaghini (2019) found that a clear rebalancing effect was observed after the announcement effect, where the issuance of eligible bonds increased. Meaning that investors shifted their demand to the rest of the non-eligible market.

2.3 Bonds

It's fundamental to understand how bonds work, given them being one of the main securities targeted by ECB's QE but also a large form of funding for companies. Not all bonds were eligible for purchase under the APP, only a certain duration, maturity and ratings were accepted. Thus, it's relevant to understand how these characteristics influence a bond's quality, public perception, and what dynamics dictate these said characteristics. Additionally, it focal to study the main variables for the empirical analysis, further down the line: price and yield.

2.3.1 Yield

For this analysis, one of the focus variables is bonds' yield. The ECB, by ambitioning to have better market conditions and funding conditions for companies, directly implies creating less expensive financing options. For funding to become a smaller burden for firms, the yield must exhibit a decreasing pattern during the programme's active timeline.

As we know, corporate bonds present a yield spread when compared to their sovereign counterparts. Campbell & Taksler (2003) found that the more positive stockholders are about companies' profits, the larger the chances of the firm's default probability decreasing. In turn. This will result in a drop in the firm's bonds yield spread.

When investigating the biggest drivers for yields, Longstaff et al. (2005) have found that the majority of yield spreads are due to default factors. Finding that for investment-grade bonds, this phenomenon could go up 50 pp of the observed spread. The remaining explanation belongs to bond-specific characteristics such as liquidity and principal amount.

2.3.2 Prices

The knowledge regarding prices is highly synchronized to the one about yields, as they are inversely correlated variables.

Campbell & Taksler (2003) by studying the US equity and corporate bond markets, during the decade of 1990, concluded that the two markets went in opposite directions. The explanation found for the differences in prices, for securities of the same company, was that stock investors are generally more optimistic when compared to ones that invest in bonds. Since stockholders receive the remaining firm profits, the higher the profit the bigger their gain; bondholders receive nothing besides the initial promised payment.

Another conclusion obtained by the same authors is that while volatility is great for equity prices, it's majorly negative for bond prices. This happens since volatility increases bondholders' uncertainty of receiving their payments.

Chen et al. (2007) have found that one major influence in the bond's price is the level of liquidity. For the investor, the harder it expects the trading of a particular security to be, the lower it is available to pay for it.

One interesting finding by Flannery et al. (2012) is that while bondholders can predict changes in a firms' leverage, outstanding equity and debt, they are not able to anticipate the evolution of their respective prices. This implies that changes in bond prices are not anticipated by the market.

2.3.3 Credit rating

In the last years, particularly after the crisis, researchers have been questioning credit rating models. The first conclusion found is that credit ratings attributed by rating agencies, such as Moody's and Standard & Poor's, do not fully explain credit spreads, this is evidenced by Fabozzi & Vink (2012), Branco et al. (2020) and Marques & Pinto (2020). This is a sign that indicators such as this one don't fully capture all risk aspects of a firm. One curious finding by Fabozzi & Vink

(2012) is that when comparing credit ratings attributed by the two mentioned agencies, Moody's has shown a better fit between a firm's credit factor and the final rating attributed. The same authors went further, defending that one of the crisis causes was the over-reliance of investors on credit rating.

Opposite to the thesis just presented, Elton et al. (2001) had previously found that the majority of credit spreads between corporate bonds and sovereign ones, could be explained by rating at issuance. Hull et al. (2004) reiterated that indeed credit rating can be viewed as the credit risk of the issuer. Additionally, changes in this metric are due to changes within the company itself. Something to keep in mind is that both studies were conducted during the pre-crisis years, contrary to the ones presented in the last paragraph.

The debate on credit risk is also supported by Gabbi & Sironi (2005), Longstaff et al. (2005) and Chen et al. (2007). These authors bring to our attention the fact that traditional credit risk models, such as structural form and reduced form ones, have shown empirically little explanatory power when it comes to yield spreads, regarding bonds. Cremers et al. (2008) have measured this discrepancy, affirming that on average traditional models only predict 20 pp to 30 pp of credit spreads. A solution presented is option embedded firm value models, which has been shown to produce results similar to the observed market dynamics.

Another alternative earlier published by Titman et al. (2004) proposes adaptations to traditional models. These include considering market imperfections and the option of investment flexibility. The conclusions found that these models produce default spreads similar to the ones observed in the market, as later confirmed by Cremers et al. (2008) and their model.

Regarding market dynamics, Campbell & Taksler (2003) have found that in periods of high idiosyncratic risk, bonds' yields suffer a tremendous widening. The same can be said for periods of high volatility in the equity market, denoting a clear link between equity dynamics and debt dynamics. The same was found by Flannery et al. (2012) in their theory in which future leverage expectations condition investors' actions.

A complete opposite view is defended by Collin-Dufresne et al. (2001), stating that no expectations or firm-specific characteristics affect spreads, but that systematic factors are the main drivers of bonds' dynamics.

2.3.4 Liquidity

One variable that has gained more and more relevance in explaining bond prices and yield dynamics is liquidity. Out of many reasons, one that can explain the importance of this variable is the existence of a liquidity premium. Collin-Dufresne et al. (2001) argue that this premium is born out of the context of the bond market: low volume transactions with high costs. Adding to the mentioned authors such as Chen et al. (2007), Bao et al. (2011) and Prokopczuk et al. (2013) hypothesize that the main culprit for changes in credit spread is the shifts in local demand and supply for bonds, meaning liquidity.

Chapter 3 – Hypothesis and Research Questions

3.1 Motivation

As we can assess based on the studies presented in the literature review, this topic of research is highly pursued by economic scholars. Multiple works have been conducted regarding the sources and impacts of the last financial crisis, the policies conducted and their implications for financial institutions. However, the amount of research regarding non-financial institutions is still somewhat scarce.

With this research, I look to enrich the present knowledge, by basing my research on the qualitative finding of De Santis et al. (2018), but applying econometric models employed in previous studies directed to financial institutions and analysing the homogeneity of the geographic effects produced by the CSPP.

In the current climate, where the COVID-19 pandemic revived the threat of a new recession, more than ever I hope to not only contribute to existing literature but also bring a reflection to UMP design in the context of a monetary union full of complexity and heterogenous economic conditions, such as the euro area.

3.2 Research Questions

Based on all the arguments provided, I will focus my research on how the recovery programmes constructed by the ECB, as means to contract the financial crisis, impacted firms and their access to funding. Resorting to methodologies and theoretical concepts used in previous works done on covered bonds, I plan on finding answers to the following questions regarding corporate bonds.

1. What were the results on the primary market for corporate bonds, upon the announcement and conduction of the programme?
2. Were the effects found convergent across the euro area?

3.3 Hypothesis

One of the major mechanisms through which UMP works is by artificially decreasing the supply of a particular asset. This happens via major acquisitions by the regions' central bank. Following the economic concept of the Law of Supply and Demand, for the same level of demand, as the supply decreases, the price of the good or service in question increases. Knowing that the price and yields of bonds are inversely correlated, the higher the price, the lower the yield.

Additionally, as appointed by Campbell & Taksler (2003) the more profitable a company may seem to investors, the better outcome its bonds' yields will have in the market. Thus, a better financing environment benefits the firm.

As for the timing, for all programmes up until now, the announcement date was the period where the largest results were produced. This is mainly due to a surprise factor. Unlike periods in which the policies were already established and market players knew what to expect, by coming forward with totally new incentive packs, central banks reinstall market thrust. This propels agents to increase their market actions.

As presented in the literature review, most researchers found that for the CBPP all three phases had the most positive outcomes at the announcement. The same was observed for the CSPP by Todorov (2017), Gnan (2019) and Zaghini (2019).

H1: After the announcement of the CSPP, corporate bonds' spreads experienced a significant tightening.

When an investor trades, one of its biggest concerns is how easily can securities be sold in the future if needed. This is what in finance we call liquidity.

Just as presented in the literature review, the ECB by declaring itself as a buyer of last resort, announces to all investors that if no one else will trade with them, the central bank will. This is the so-called liquidity effect, one of the channels through which UMP is transmitted. Additionally, liquidity improvement was presented as one of the CSPP objectives, according to De Santis et al. (2018).

Thus, when combining the supposed increase in issuance, ambitioned by the policy, with the renewed confidence and incentives for investors to resort to the market, it can be expected that the trading activity is invigorated.

Additionally, assuming liquidity premium arises from transactions with low volume and high costs, typically seen in bond markets, as found by Dufresne et al. (2001); the ECB by proposing itself to reduce the costs of funding for these markets is implicitly working towards less expensive transactions.

Further, as economic conditions experience a positive evolution, there are more disposable incomes for families, more stable credit ratings and equilibrium in financial markets is reached; it can be expected that bonds' liquidities would improve and the markets should able to regulate themselves again. This ultimately is the ECB goal: be able to in some timeline withdraw its UMP policies.

H2: The European primary market liquidity improved due to the implementation of the CSPP.

Economies such as the GIIPS by the time the exogenous shock of the American financial market arrived in Europe, were already struggling. The financial distress was to the point where the beginning of what we know today as the European Sovereign Debt Crisis was visible. The American sub-prime crisis was just an additional trigger.

As mentioned in the literature review, the governments must step in the role of lender of last resort whenever needed. When faced with distress, banks tend to fear one phenomenon: bank runs. This creates chaos, leading to bankruptcy and a domino effect in all financial spheres. On the other hand, the remaining economic players fear a credit crush. Meaning, in the chance of economic instability financial institutions will be hesitant to lend, trying to avoid default by their creditors. This originates a stagnant economic environment, deepening any existing issue.

According to Ureche-Rangau (2013), in early 2010 some countries' banks were already facing liquidity problems. So, governments were already stepping in, increasing their debt to rescue these institutions. These were the economies that when the sub-prime finally reached Europe were so drowned in debt, that the aid needed was massive.

One of the things we have to keep in mind is that according to Gnan (2019) a goal for the ECB is market neutrality. Meaning the effects produced by the purchase of the targeted bonds is to have a similar effect in other bond types and all economies under the Euro Zone.

H3: More fragile European economies experienced smaller benefits when compared to central and advanced economies.

Chapter 4 – Data

4.1 CSPP Characteristics

To be able to reach answers for the purposed questions, we have to define the traits of the programme under study. Since the focus of this investigation is non-financial firms, the targeted programme is the CSPP. According to the data provided by the ECB, the policy was announced on the 10th of March 2016 and the purchase period begin on the 8th of June of the same year.

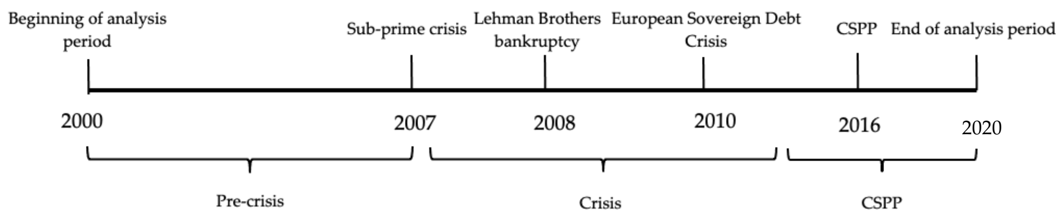

Figure 1 Analysis Timeline

Figure 1 gives an overview of the analysis period and the timeline of events. For research purposes, we will consider the present period to be the last available data (2020). This is core in this study since **H1** test the existence of economic improvement after the announcement. Finally, we know from De Santis et al. (2018) that originally the policy pack in which the CSPP was included was designed to run up to September 2018. However, according to the ECB, it's still active in 2020.

As of the latest data provided by the ECB, the programme purchases amount to 248,340€ million, composed of bonds 20.87 pp belonging to the primary market and 79.13 pp from the secondary market. [1]

Lastly, our target depends on the eligibility criteria. According to the ECB, the parameters for maturity are either maximum of a year at issuance, with 28 days remaining at the time of purchase or at least a year maturity at issuance and belonging to the interval of 6 months to 31 years at the time of purchase. There's no minimum issuance volume, the credit rating of at least BBB-, according to the S&P scale, denominated in euro and issued by a non-financial firm established in the eurozone.

4.2 Sample and Sources

To address all the questions proposed, three different sets of data are needed: macroeconomic data, bond data (using primary market figures) and company data.

4.2.1 Macroeconomic Data

For the macroeconomic variables, according to Campbell & Taksler (2003) and Flannery et al. (2012) market volatility is a major factor in explaining bond dynamics. To measure this, I will be using the Cboe Volatility Index, which is a market index that can represent the volatility expectations over 30 coming days for call and put options traded in the S&P 500 Index. For this measure, a value

[1] According to values taken from https://www.ecb.europa.eu/mopo/implement/app/html/index.en.html#cspp, on 9th December 2020.

[2] Information provided by https://www.cboe.com/tradable_products/vix/, on 10th February 2021

within the 12 to 20 range is considered a regular volatility period, 20 and up is considered high volatility and below 12 represents low volatility.[2] Something that we also know from studies on the ECB's UMP, such as Beirne et al. (2011), Fawley & Neely (2013), Gnan (2019) and Bernanke (2020) is that the yield curve is one essential target. By manipulating an economy's yield curve, one can influence the entire financial environment. As a measure of this factor, I will be employing the US daily treasury yield curve rates for 5 years, directly extracted from the US Department of the Treasury. Lastly, it is also referred by Szczerbowicz (2015) how the sovereign risk can dictate the risk premium in all its market's segments. Thus, its crucial to take into consideration how a country's risk influences bonds. For this the country's risk measured by its rating or CDS rating will be used, provided by Moody's Investor Services. The transformation from S&P rating to numbers can be found in Appendix 1.

4.2.2 Bond Data

One research that is consistently referred to is Chen (2007). When studying corporate bonds and how their yields behave, this work is always taken as a research foundation. This is visible in Cremers (2008), Bao (2011), Flannery (2012), Bluwstein (2016) and Marques (2020). For this reason, I will be adopting the variables used by the authors when explaining the determining variables of corporate yield.

Concerning bond data, all variables were extracted from the DCM Analytics Data Base. The variables extracted, following the DCM denomination in brackets, were YieldSpread (Tranche Spread to Benchmark) measured in basis points, Maturity (Tranch Years to Maturity), Size (Tranch Value) referring to the size of the tranche measured in euros, Coupon which is a dummy variable that identifies the tranches with fixed-rate (Tranche Issue Type), Rating (Tranche S&P Rating (Launch)), company name and nationality using (Company Full Name) and

(Company Nationality), respectively and lastly the announcement date (Filing/Announcement Date).

4.2.3 Company Data

As for the variables that characterize the companies, all were extracted from Thompson Reuters' Eikon database. I will be using the same company variables proposed by Chen (2007) when assessing Yield Spread determinants. From all companies established in the 19 members of the eurozone, excluding the ones belonging to the financial or public sectors, it was extracted the following data: net sales or revenues (WC01001), total debt (WC03255), total assets (WC02999), market capitalization (WC08001) and operating income (WC01250).

With the mentioned variables the following indicators will be constructed: Leverage (total debt/total assets), Margin (net sales/operating income) and Solvency (total debt/market capitalization).

4.3 Descriptive Statistics

After cleaning all the data extracted and considering the specifications required by the CSPP, I'm able to analyse 1,202 bonds issued for 20 years, in 19 countries and belonging to 310 non-financial publicly traded companies.

Using the descriptive statistics of the complete sample, presented in Table 1, we can conclude that the average bond was issued with a 10-year maturity, over a tranche size of 779€ million and yielding a spread 139 bps above the risk-free counterpart. Being that the risk is at 3, this implies that the bond was issued in an AA rated country, during a regular volatility period, due to the Volatility

Index presenting a value of around 18. Together with the yield curve at 2, this represents a stable economic period.

Firm wise, the issued bond belongs to a company highly leveraged, with debt being 157 of assets. The same is also observable in the average solvency ratio of 0.857. Together, the high figures could indicate a struggling institution.

	Mean	**Median**	**St.Dev.**	**Min**	**Max**
Yield Spread (bp)	139.44	119.6	74.267	0	597.2
Maturity (years)	10.21	9.56	6.233	1.99	30.99
Size (M€)	779,000	750,000	391,000	38,200	3,740,000
Volatility	18.14	18.02	6.261	11.04	40
Yield Curve	1.919	1.743	0.759	0.709	6.474
Risk	2.986	2	2.8	1	11
Leverage	157	0.413	1,312.79	0	23,282
Margin	0.115	0.941	0.39	-5.965	0.981
Solvency	0.857	0.662	0.808	1	11

Table 1 Descriptive Statistics

When splitting the sample into pre-CSPP and a CSPP or post-CSPP periods, as presented by Panel A and Panel B in Appendix 2, we can observe some variations and effects of the programme.

When comparing the two side by side, we can see that both the minimum and maximum values for Yield Spreads decreased significantly. This can be an indication of policy efficacy since this was one of the programmes proposals: to create less expensive funding for companies. Another note to keep in mind is the fluctuation in the size of the issuance, on average the issuance went from 749€ million to 800€ million.

As far as the macroeconomic environment is concerned, we see an increase of the average yield curve, from 1.79 to 2 when comparing the pre and post CSPP. This can be interpreted as an indicator of the positive impact the programme had on the markets' expectations. As for the average risk, it increased in the post-

CSPP term, which could be positive assuming that more economies are able to have access to funding.

Regarding company indicators, on average we see an increase in the leverage ratio while keeping the solvency at the same level. This could indicate that with the CSPP, firms were able to access funds without further compromising their financial integrity.

Chapter 5 – Methodology

5.1 Models

5.1.1 OLS

When trying to find answers to the questions regarding the market's reaction to the programme, I'm going to combine event study with an OLS regression. This way, through observing the evolution of yield spread of the market throughout the analysis timeframe and evaluating if there were any variations in the contribution of each variable to the explanation of the spread, we have a better scope of the announcement effect.

For this, I will be adopting the model presented by Chen (2007) for explaining how different determinants influenced yield spread. However, as opposed to the authors I am including firms' specific variables and macroeconomic variables. In their study, only exchange rate and risk-free rate were considered. One of the main reasons for not including the exchange rate in my analysis resides in that this study is focused only on the euro area, where only one currency exists for all 19 members.

Equation 1 presents the regression that will be estimated by OLS, followed by an explanation of both the dependent variable, $YieldSpread_{itd}$, and its 19 independent variables.

$$YieldSpread_{itd} = \beta_0 + \beta_1 Maturity_{id} + \beta_2 Size_{id} + \beta_3 Coupon_{id} + \beta_4 CSPP_i + \beta_5 Volatility_i + \beta_6 YieldCurve_i + \beta_7 Risk_{it} + \beta_8 Leverage_{id} + \beta_9 Margin_{id} + \beta_{10} Solvency_{id} + \sum_{11}^{20} \beta_x DR_{id} + \varepsilon_{itd}$$

Equation 1 OLS model

Where:

$YieldSpread_{itd}$ - Difference between the treasury yield and the bond's yield measured in basis points, form firm d from country t observed during day i

$Maturity_{id}$ – Time to maturity of the bond from firm d in day i, measured at launch in years

$Size_{id}$ – Total value of tranche from firm d in day i, at launch measured in euros

$Coupon_{id}$ – Dummy variable that takes the value 1 if bond from firm d in day i has a fixed coupon, takes the value 0 otherwise

$CSPP_i$ – Dummy variable that takes the value 1 if the programme was active in day i and 0 otherwise

$Volatility_i$ – Expected market volatility in a 30-day horizon, for day i measured as a price index

$YieldCurve_i$ – Value of the US 5-year, yield curve for day i used as a proxy for the global market yield curve

$Risk_{it}$ – Country's t risk in day i measured as its rating or CDS's rating

$Margin_{id}$ – Calculated by the coefficient between, firm's d operating income for day i, measured in euros and firm's d net sales or revenue for day i, measured in euros

$Leverage_{id}$ – Calculated by the coefficient between, firm's d total debt as of day i, measured in euros and firm's d total assets as of day i, measured in euros

$Solvency_{id}$ - Calculated by the coefficient between, firm's d total debt as of day i, measured in euros and firm's d market capitalization in day i, measured in euros

DR_{id} – ten dummy variables, one for each of the ten S&P rating accepted in the CSPP (AAA, AA+, AA, AA-, A+, A, A-, BBB+, BBB, BBB-) and assigned to a bond from firm d in day i. Each takes the value 1 for the rating they represent and zero otherwise.

ε_{itd} – error term for firm d from country t in day i

5.1.2 Fixed Effects

In order to access if the results achieved through the OLS regression are observable in all countries, I will be adding country fixed effects to the regression. This way, it will be possible to see if the CSPP was indeed homogenous in creating benefits in all euro area or if it just benefited some members.

For this, three additional dummy variables will be added to the model. Each representing a group of countries. The distribution is presented in Table 1, as follows Group 1 includes the GIIPS, Group 2 Central Europe and Group 3 Eastern European countries.

Group 1	**Group 2**	**Group 3**
Greece	Germany	Cyprus
Ireland	France	Estonia
Portugal	Austria	Finland
Spain	Belgium	Latvia
Italy	Luxembourg	Lithuania
	Netherlands	Malta
		Slovakia
		Slovenia

Table 2 Countries' distribution

By adding the three dummy variables to the original equation, we achieve the mathematical statement shown in Equation 2. By multiplying the programme's dummy with each group's dummy, it's possible to access what was the effect in each geographic agglomerate during the CSPP active period.

Where:

$G1_t$ - Dummy variable that takes the value 1 if firm belongs to country t in Group 1 and takes 0 otherwise
$G2_t$ - Dummy variable that takes the value 1 if firm belongs to country t in Group 2 and takes 0 otherwise
$G3_t$ - Dummy variable that takes the value 1 if firm belongs to country t in Group 3 and takes 0 otherwise

The same OLS estimation will be performed.

$$YieldSpread_{itd} = \beta_0 + \beta_1 Maturity_{id} + \beta_2 Size_{id} + \beta_3 Coupon_{id} + \beta_4 Volatility_i + \beta_5 YieldCurve_i + \beta_6 Risk_{it} + \beta_7 Leverage_{id} + \beta_8 Margin_{id} + \beta_9 Solvency_{id} + \sum_{10}^{19} \beta_x DR_{id} + \beta_{20} CSPP_i G1_t + \beta_{21} CSPP_i G2_t + \beta_{22} CSPP_i G3_t + \varepsilon_{itd}$$

Equation 2 Fixed Effects estimation

5.2 Empirical Results

Table 3 presents the results for the OLS estimation for the full-time sample, as well as two subsamples: pre and post CSPP announcement and implementation.

The results presented are the estimated coefficients, for the impact that each of the variables has on explaining the yield spread dynamic, for eurozone corporate bonds ranging from 2000 to 2020. Below the coefficients, the p-value can be found for each of the estimates. Additionally, the individual significance for each of the variables is signalled by an asterisk, using the following pattern: significant at 1% (***), significant at 5% (**) and significant at 10% (*).

One variable that shows high explanatory power, across all time samples is the dummy Coupon. Particularly, in the pre-CSPP timespan, the bond having a fixed rate, on average contributes to a 96.50 pp increase in the yield spread, ceteris paribus. This is expected as investors demand compensation, for the fact that the bond doesn't adjust to market fluctuations.

Across the board, all rating dummies show high significance, meaning that as expected ratings play a huge role in determining the yields. For the case of the total time sample, a bond being attributed with the AA credit rating, on average will contribute to the lowering of its spread up to 173 pp, ceteris paribus.

The overreliance on ratings was a problem already brought to attention by Fabozzi & Vink (2012), Branco et al. (2020) and Marques & Pinto (2020). Additionally, Elton et al. (2001) and Hull et al. (2004) stated the fact that the major explanation for the spread bonds' yields have over risk-free ones are indeed rating at issuance.

The expectations for this observation are the BBB- rating in the total sample and the post-CSPP period, as well as the AA+ for the pre-CSPP subsample. One major finding is that from 2016 to 2020, all ratings contributed negatively to the yield spread and the higher the rating, the more it weighed in bringing the spread down, while in the first subsample, all ratings contribute to an increased spread. A plausible explanation could be that markets' distrust in credit ratings in the period leading up to the financial crisis and ECB's programmes.

One interesting fact to keep in mind is that for the case of the total sample and the 2016 to 2020 period, where the higher ratings have an increased impact in lowering yields; as the rating betters the impact of its coefficient grows but not at a steady linear pace.

	Total sample	Pre-CSPP (2000-2015)	Post-CSPP (2016-2020)
Bond Characteristics			
Maturity	**2.58** ***	**0.7575**	**2.96*** **
	0.000	0.225	0.000
Size	**1,94e-08*** **	**3.87e-09**	**1.91e-08*** **
	0.000	0.686	0.001
Coupon	**63.31** ***	**96.50*** **	**51.061*** **
	0.000	0.000	0.000
AA+	**-125.86***	**100**	**omitted**
	0.081	0.173	
AA	**-173.50*** **	**omitted**	**-169.207*** **
	0.000		0.000
AA-	**-135.422*** **	**63.33** **	**-92.97** **
	0.000	0.028	0.047
A+	**-123.79*** **	**67.758*** **	**-108.09*** **
	0.001	0.009	0.000
A	**-112.65*** **	**75.08*** **	**-99.735*** **
	0.002	0.004	0.001
A-	**-99.69*** **	**86.88*** **	**-87.29*** **
	0.006	0.001	0.004
BBB+	**-75.49** **	**131.13*** **	**-73.389** **
	0.038	0.000	0.014
BBB	**-73.85** **	**133.48*** **	**-69.016** **
	0.043	0.000	0.022
BBB-	**-50.67**	**152.42*** **	**-48.767**
	0.173	0.000	0.118
Macroeconomic Factors			
CSPP	**-23.49*** **		
	0.000		
Volatility	**2.8*** **	**6.661*** **	**-0.492**
	0.000	0.000	0.340
Yield Curve	**-4.969***	**9.44** **	**-4.199**
	0.093	0.017	0.639
Risk	**1.577** **	**3.755** **	**1.893*** **
	0.046	0.013	0.023
Firm characteristics			
Leverage	**-0.0017**	**-0.007**	**-0.0015**
	0.275	0.392	0.231
Margin	**-3.10**	**-1.21**	**-2.594**
	0.562	0.942	0.593
Solvency	**7.426*** **	**7.581***	**10.79*** **
	0.003	0.067	0.000
constant	**93.557** **	**-212.57*** **	**119.86*** **
	0.015	0.000	0.000
F-test	**21.66*** **	**15.36*** **	**12.26*** **
Adjusted R^2	**0.2968**	**0.3862**	**0.2614**
N	**1,202**	**502**	**700**

Table 3 OLS regression

Notes: 1. *** p<0.01; ** p<0.05; * p<0.1

2 P-value below estimates

3 Omitted results by collinearity for AA, AA+ and AAA

Like the findings of Collin-Dufresne et al. (2001) and Chen (2007), variables such as the company's leverage and margin are not found to have any contribution to the yield dynamic, in any time sample. However, solvency is found to be highly significant, particularly in the post-CSPP time range. On average, for each pp the solvency ratio of the company increases, its yield will increase 10.79 pp, ceteris paribus. This is a clear sign that after the crises, markets are better at keeping close track of riskier players.

The three macroeconomic variables generally conclude the expected results. With both risk and volatility presenting a positive correlation with yield as seen in Collin-Dufresne et al. (2001) and Campbell & Taksler (2003), meaning the higher the risk and uncertainty in an economy, the higher compensation demanded by investors.

The focus of the work, the CSPP, is represented by a dummy variable. With significance at all three levels, it is shown in the total sample that whenever bonds are issued after the CSPP announcement, on average their yields are 23.49pp lower than their non-CSPP counterparts, ceteris paribus. This result goes per the goals proposed by the ECB for this policy and with the findings of Todorov (2017), Gnan (2019) and Zaghini (2019). All three authors found the CSPP to produce a yield spread decrease in some capacity.

For all the results presented, the Adjusted R^2 is at a maximum of 0.3862. Although it is a moderate value, all the F statistics are significant at the three statistical levels.

Another important dynamic to consider is how homogenous was the programme's effect across the eurozone. For this, geographic fixed effects were introduced into the OLS regression, presented in Equation 2. Table 4 presents the results for the OLS estimation with the added fixed effects.

In the variables already included in the original OLS regression, all observations stand. When adding the fixed effects for the three-eurozone regions described previously, except for the third group, G3, the two remaining present statistical significance at all levels.

Being that the CSPP dummy is being multiplied by the group dummy, the estimated presented gives us the impact of the CSPP in that region. While both estimates have a negative signal, meaning that in both cases the programme contributed to a decrease in the average bonds' yields, G1 has a superior impact.

This way, while we cannot truly state if the CSPP effects were convergent across the euro area, due to G3 having no significance, we can say that overall, the policy met its goal in most territories. Nonetheless, this result is surprising when confronted with the deduction made for **H3.** With this, it can be concluded that more fragile economies were the ones to benefit the most out of the policy.

5.3 Hypotheses Validation

When confronting the hypotheses placed and the results obtained, we have mixed results. Regarding **H1**, as verified when looking side by side at the descriptive statistics, there's a decrease in the yields spreads from 154 bps to 128 bps. Additionally, variables such as the ones presented in Table 5, all inverted their signal after the CSPP announcement and implementation, having a negative impact on yields helping their lowering process.

While all these factors, combined with the fact that in our sample most bonds were issued in the CSPP announcement and implementation period, there's also no evidence to reject **H2**, regarding the improvement of liquidity in the primary bond market.

	OLS	Fixed effects
Bond Characteristics		
Maturity	**2.58** ***	**2.57*** **
	0.000	0.000
Size	**1,94e-08*** **	**1.91e-08** ***
	0.000	0.000
Coupon	**63.31** ***	**63.31*** **
	0.000	0.000
AA+	**-125.86***	**123.75***
	0.081	0.087
AA	**-173.50*** **	**-172.63*** **
	0.000	0.000
AA-	**-135.422*** **	**-134.09** **
	0.000	0.001
A+	**-123.79*** **	**-123.51*** **
	0.001	0.001
A	**-112.65*** **	**-112.48*** **
	0.002	0.002
A-	**-99.69*** **	**-99.26*** **
	0.006	0.007
BBB+	**-75.49** **	**-75.159** **
	0.038	0.039
BBB	**-73.85** **	**-73.33** **
	0.043	0.045
BBB-	**-50.67**	**-50.17**
	0.173	0.117
Macroeconomic Factors		
CSPP	**-23.49*** **	
	0.000	
CSPPG1		**-30.68*** **
		0.001
CSPPG2		**-22.19*** **
		0.000
CSPPG3		**-15.27**
		0.632
Volatility	**2.8*** **	**2.83*** **
	0.000	0.000
Yield Curve	**-4.969***	**-4.59**
	0.093	0.126
Risk	**1.577** **	**2.253** **
	0.046	0.042
Firm characteristics		
Leverage	**-0.0017**	**-0.002**
	0.275	0.251
Margin	**-3.10**	**-3.13**
	0.562	0.559
Solvency	**7.426*** **	**7.57*** **
	0.003	0.003
constant	**93.557** **	**90.22*** **
	0.015	0.020
F-test	**21.66*** **	**19.61*** **
Adjusted R^2	**0.2968**	**0.2959**
N	**1,202**	**1,202**

Table 4 OLS vs Fixed-effects regression

Notes: 1 *** p<0.01; ** p<0.05; * p<0.1

2 P-value below estimates

3 Omitted results by collinearity for AAA

Lastly, when looking at the geographic neutrality of the CSPP, it's possible to conclude that GIIPS and Central Europe both benefited from the programme. However, looking at the magnitude of the benefit, developed and stronger European economies, traditionally located in the centre of the continent, earned a lesser portion of the benefits. This is contrary to expected, thus rejecting **H3.**

Future research can deepen the study of this subject by taking new approaches, further studying how the CSPP affected companies' debt choice or testing how efficient the policy was in more peripheral eurozone territories such as Eastern Europe. Considering the answers found for all three purposed hypotheses, it's possible to conclude that the CSPP reached its announced goals, particularly in less developed euro economies.

	Pre-CSPP	**Post-CSPP**
Volatility	positive	negative
Yield Curve	positive	negative
AA-	positive	negative
A+	positive	negative
A	positive	negative
A-	positive	negative
BBB+	positive	negative
BBB	positive	negative
BBB-	positive	negative

Table 5 Variables lowering yield spreads

Chapter 6 – Conclusions

The 2007 financial crisis was just the trigger to multiple financial disasters that would ensue shortly after, particularly in Europe. With a fragile banking system and governments near bankruptcy, the ECB launched a series of UMP to revitalize and strengthen the eurozone. However, most of the programmes were directed to the public and financial sectors and in 2016 it was found that the corporate sector and its markets were still at crisis levels. In this context, the CSPP was announced. With the promised to provide less expensive funding, revive investors' activity, and recover the firm's solvency, the policy presented relaxed eligibility criteria.

To study its efficiency, I applied the data of 1,202 bonds issued by 310 non-financial publicly traded eurozone companies, over 20 years, to yield spread explanatory models to assess how the programme impacted this dynamic. After the announcement and implementation of the policy, a decrease of the yields from 154 bps to 128 bps was observed. Particularly, the maximum value observed for a yield dropped from 597 bps in the pre-CSPP period to 399 bps after the announcement. Most variables that contributed to an increase in the spread, mainly rating, switched their signal and started bestowing its lowering. This phenomenon could represent the regain of thrust in the rating system by the markets.

Another concern was how homogenous was this policy in benefiting the eurozone members. For this purpose, all 19 countries were grouped into three different groups and added to the model in the form of country fixed effects.

Although, results for Eastern Europe were inconclusive, for both the GIIPS and Central Europe the results are positive. After the announcement and implementation of the CSPP, on average yields dropped 31 bps for the first group and 22 bps for the second group.

In closing, it can be declared that the CSPP has been efficient to date. Not only in lowering yields and providing less expensive funding to companies, but also in reviving the thrust in markets and public information, such as credit ratings. One peculiarity was its efficacy in less developed, peripheral economies and with fewer public companies such as the GIIPS.

As a means to enrich the research in this topic, further consideration of Eastern Europe dynamics could be incorporated, as well as including an analysis of how this policy affected the choice of debt type for these non-financial euro enterprises and as the policy still is active to date, keeping track and doing a long-term examination of the CSPP may be fitting.

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Appendix 1 - S&P rating conversion system

S&P rating	#
A**AA**	1
AA+	2
AA	3
AA-	4
A+	5
A	6
A-	7
BBB+	8
BBB	9
BBB-	10
BB+	11
BB	12
BB-	13
B+	14
B	15
B-	16
CCC+	17
CCC	18
CCC-	19
CC	20
SD	21
D	22

Appendix 2 - Descriptive statistics pre and post CSPP

Panel A – Pre CSPP

	Mean	**Median**	**St.Dev.**	**Min**	**Max**
Yield Spread (bp)	154.1	129.9	86.466	23	597.2
Maturity (years)	12.08	10	7.226	2	30.99
Size (M €)	749,000	700,000	408,000	50,000	3,740,000
Volatility	20.55	19.2	7.014	11.56	40
Yield Curve	1.796	1.638	1.105	1.105	6.474
Risk	2.528	1	2.680	1	11
Leverage	91.325	0.364	442.134	0	4,244.66
Margin	0.131	0.093	0.216	-1.943	0.981
Solvency	0.859	0.662	0.871	0	9.35

Panel B – Post CSPP

	Mean	**Median**	**St.Dev.**	**Min**	**Max**
Yield Spread (bp)	128.90	114.7	62.024	0	399.9
Maturity (years)	8.86	8	4.994	1.99	30.01
Size (M €)	800,000	750,000	378,000	38,200	3,000,000
Volatility	16.39	14.04	4.982	11.04	25.42
Yield Curve	2.008	1.946	0.305	1.704	2.517
Risk	2.315	3	2.841	1	11
Leverage	205.667	0.438	1,688.414	0	23,282.6
Margin	0.103	0.097	0.480	-5.965	0.974
Solvency	0.855	0.655	0.760	0	4.77