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Corporate Quantitative Easing and Real Economic Activities in Sweden

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Abstract: The real economic effects of unconventional monetary policy are relatively under-explored in the existing literature. Using bond issuance and quarterly firm financial data from S&P Capital IQ, we study the real economic effects of the Riksbank's Corporate Bond Purchase Program (CBPP) during 2020–2022. Employing a difference-in-difference study, we show that eligible Swedish non-financial corporate bond issuers responded to the program strategically by issuing more bonds denominated in Swedish krona. We then perform a dynamic event study to compare how firm financial activities are associated with bond issuance before and during the CBPP. Our analysis reveals no statistically significant differences in firm financial activities across periods, nor evidence that firms conduct real investment, accumulate excess cash, or increase their overall leverage during the CBPP. Instead, we find that bond proceeds were used for corporate acquisitions, share repurchases, and the substitution of existing debt.

Keywords: Quantitative easing, Corporate bond market, Corporate investment, Dynamic event study

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1 Introduction

The COVID-19 pandemic caused severe disruptions to global economic activity, affecting both supply chains and consumer demand (McKibbin and Fernando, 2023; World Bank, 2022). As economic uncertainty grew, investor confidence fell, causing a flight to safer asset classes. Riskier financial markets, such as the equity and corporate credit markets, came under pressure as the demand for such assets fell, raising credit costs for private firms. (Löwen et al., 2021; Aramonte and Avalos, 2020). The Riksbank was among many central banks worldwide that intervened to ease financial disruptions in the corporate credit market during the pandemic. It did so by implementing quantitative easing (QE) and, more specifically, through the Corporate Bond Purchase Program (CBPP) (Sveriges Riksbank, 2025; World Bank, 2022).

In Swedish media, the Riksbank’s corporate bond purchases have sparked ongoing discussion. For instance, some commentators have expressed concern that these measures may have disproportionately benefited sectors with greater reliance on bond financing, e.g. real estate, by directly lowering their borrowing costs (Munkhammar, 2020; Carlström and Billing, 2021). Whether this effect could have contributed to increased market concentration, driven by access to cheaper funding for corporate acquisitions, or to incentivize higher levels of corporate borrowing, has also been discussed (Kainz Rognerud, 2023; Carlström and Billing, 2021).

While the financial market effects of central banks’ corporate bond purchases have been examined in both the Swedish and international contexts¹, their real economic implications remain less well understood (Darmouni and Siani, 2024; Andersson et al., 2022; Lu et al., 2025). The main contribution of this paper is to explore the real economic implications of corporate purchase programs in small, open economies. In particular, we focus on the Riksbank’s CBPP conducted during the pandemic. Using data on Swedish corporate bond issuance together with quarterly firm-level financial data from S&P Capital IQ, we examine how firms’ financial activities are associated with corporate bond issuances during the CBPP. Overall, we did not find any statistically significant change in Swedish firms’ use of bond proceeds during the CBPP, or any indication of a stimulus to firm real investment.

In the first part of our analysis, we conduct a difference-in-differences (DiD) study to assess whether firms responded strategically to the implementation of the CBPP. Specifically, we use the fact that the Riksbank only purchased bonds denominated in Swedish krona (SEK) to examine whether eligible firms altered their bond currency denomination

¹See, for example, Hajimirza and Thamrongsak (2022), Wollert (2020), Kanda et al. (2025) and van der Zwan et al. (2024)

preferences following the introduction of the program. This empirical strategy follows the one employed by [De Santis and Zaghini \(2021\)](#). Our findings indicate that eligible² firms became approximately 15 percentage points more likely to issue bonds in SEK relative to ineligible firms during the program period. This effect is statistically significant, though it only becomes apparent after some time. These results suggest that eligible firms internalized the anticipated financial benefits of the program and adjusted their financing strategies accordingly. Additionally, it indicates that further research on whether the program achieved its goal of enabling firms to upkeep their normal bond issuance could be of interest.

Building on the evidence that eligible firms adjusted their bond issuance behavior, we next examine whether the use of bond proceeds also changed during the CBPP. In the second part of our analysis, we conduct a dynamic event study to examine how different firm financial activities were associated with bond issuances during both normal times and the CBPP. Following the approach of [Darmouni and Siani \(2024\)](#), we compare how these financial activities changed in the quarters leading up to and following a bond issuance.

In general, we do not find statistically significant differences between how firms used the proceeds from issuing bonds before and during the CBPP. Nevertheless, our results allow us to draw several conclusions regarding the use of bond proceeds during the program period. Most notably, we find no evidence of increased real investment activities, suggesting that, contrary to assumptions in many macroeconomic models, firms did not appear to "borrow to invest". In contrast to the findings of [Darmouni and Siani \(2024\)](#) in the U.S. setting, we find no evidence that firms excessively accumulated cash during the CBPP, indicating that firms did not "borrow to save".

We have found statistically significant activity in share repurchases and company acquisitions during the CBPP, suggesting that some of the bond proceeds were allocated to corporate control and capital structure adjustments. However, the intensity of such activities did not appear to exceed levels observed during normal periods. Similar to [Hajimirza and Thamrongsak \(2022\)](#), we also observe that firms' overall leverage did not increase, which plausibly indicates that bonds were issued to substitute existing corporate debt.

Then, we shed light on the on-going discussions in the Swedish media by conducting the same analysis on a restricted sub-sample of real estate bond issuers. Consistent with our overall findings, we do not observe that real estate firms increased their real investment

²In brief, the program-eligible firms are Swedish non-financial corporations with investment-grade credit ratings. Further details are provided in Section [3.3](#).

during the program. We do not find support for the view that the CBPP led to an increase in these firms' overall leverage. However, we find evidence that real estate firms might have used bond proceeds to engage in corporate acquisitions.

Our results yield three important insights that align with and extend previous research. First, we confirm that the liquidity positions of firms play an important role in how the effects of unconventional monetary policy are transmitted to the real economy. Thus, a closer integration between corporate finance and macroeconomics would be fruitful. Second, we confirm that central banks worldwide continue to face challenges in targeting QE toward the most cash-constrained firms in the economy. Finally, institutional contexts, such as issuer and market characteristics, matter for the transmission of unconventional monetary policy. Taken together with related research in this field ([Darmouni and Siani, 2024](#); [De Santis and Zaghini, 2021](#); [Grosse-Rueschkamp et al., 2019](#)), we can see that the same underlying principles of corporate QE may translate into different magnitudes of real effects.

2 Literature Review

Large-scale asset purchases³, also known as quantitative easing (QE), are a tool used by central banks to lower interest rates and improve broader financing conditions ([BOE, 2024](#); [ECB, 2022](#)). The impact of QE on the economy can be described by the so-called transmission mechanism and the channels it consists of ([Andersson et al., 2022](#); [Busetto et al., 2022](#); [Krishnamurthy, 2011](#); [Galema and Lugo, 2021](#)), including, but not limited to⁴:

1. *Signalling channel*: By engaging in QE, a signal is sent to the market that the policy rate will remain low in the future, or at least throughout the QE program, since rising interest rates can negatively affect the financial results of central banks.
2. *Portfolio rebalancing channel*: Under QE, central banks choose which asset types and maturities to purchase. When they enter the market as buyers, they effectively crowd out the supply of specific assets, driving up their prices. As a result, other investors in the market may rebalance their portfolios by shifting toward alternative asset classes, which in turn raises the prices of those assets and lowers their interest rates.

³Such as purchases of government bonds, corporate bonds, municipal bonds and covered bonds ([ECB, 2022](#); [BOE, 2024](#); [Sveriges Riksbank, 2025](#)).

⁴Following current literature, the order of the channels described does not follow a specific time or importance sequence. In fact, these channels are not mutually exclusive and can operate simultaneously.

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3. *Direct pass-through channel*: Premiums of certain assets can rise when investors perceive an increased risk associated with them, leading to a situation where many want to sell but few are willing to buy. By stepping in as buyers, central banks can improve market liquidity and reduce the liquidity premiums of such assets.
 4. *Bank lending channel*: When assets are sold to central banks, either by a commercial bank directly or on behalf of its customers, it increases its total volume of central bank reserves. Depending on the circumstances, this can encourage commercial bank lending, as the risk and return profile of their assets decreases, encouraging them to seek higher returns by lending to households and companies.

Several studies have found that central banks' corporate bond purchases reduce corporate bond spreads and stabilize the corporate debt markets, confirming the presence of the direct pass-through channel.⁵ Moreover, signalling, portfolio rebalancing and bank lending channels have all been studied, and their relevance has been confirmed (Kanda et al., 2025; van der Zwan et al., 2024). In Sweden, the direct pass-through effect of corporate QE were examined by Hajimirza and Thamrongsak (2022) and Wollert (2020), both supporting that the Riksbank's corporate bond purchases reduced corporate bond spreads.

Some other studies have investigated how corporate bond purchases affect the supply of corporate bonds. De Santis and Zaghini (2021) found that the ECB's Corporate Sector Purchase Program (CSPP), announced in 2016, increased eligible firms' bond issuance, confirming the results of previous studies, such as those of Óscar Arce et al. (2017) and Grosse-Rueschkamp et al. (2019). A similar stimulus on eligible firms' bond issuance had been observed in the U.S. and Japan as well (Halling et al., 2020; Boyarchenko et al., 2022; Nguyen, 2024).

As highlighted by Andersson et al. (2022), there exist fewer studies on the later stages of the QE transmission mechanism, i.e. its impact on real economic activities, particularly in a small, open economy context as in Sweden. By reducing borrowing costs, QE is thought to stimulate spending and investment, ultimately boosting aggregate demand and supporting inflation (Busetto et al., 2022). De Santis and Zaghini (2021) explored how the CSPP affected the real economy. They found that while all firms increased their investment spending, the eligible firms increased their investment in marketable and equity securities, share repurchases, cash holdings, and short-term investment. Grimm et al. (2021) also investigated the CSPP and discovered that, conditional on country and industry, the CSPP-eligible firms significantly increased their R&D investment compared

⁵See, for example, Kanda et al. (2025), van der Zwan et al. (2024), Bordo and Duca (2022), Boneva et al. (2022) and Boneva et al. (2024).

to ineligible firms. On the other hand, [Darmouni and Siani \(2024\)](#) found that real investment was generally insensitive to a similar program in the U.S. setting during the COVID-19 crisis – many firms used bond proceeds to adjust their capital structure, such as maintaining equity payouts and repaying bank debt. They discovered that corporate liquidity and financial heterogeneity matter for the transmission of corporate bond purchases. By exploring bank loans for investment purposes, [Lu et al. \(2025\)](#) confirmed that expansionary monetary policy is less effective at inducing real effects during uncertain times in the U.S. [Giambona et al. \(2020\)](#) showed that the U.S. QE program during the global financial crisis induced corporate investment and employment through the bank lending channel.

This paper contributes to the existing literature in multiple ways. First, understanding how firms utilize bond proceeds under QE is of great importance for understanding the monetary policy transmission mechanism and designing an efficient monetary policy. Currently, this part of the transmission mechanism has not been well studied, as highlighted by [Darmouni and Siani \(2024\)](#), [Andersson et al. \(2022\)](#) and [Lu et al. \(2025\)](#). Second, we investigate the presence of such real effects in the Swedish context, which adds to the sparse research on QE in small, open economies. [Andersson et al. \(2022\)](#) pointed out that the effects of QE and the importance of transmission channels may differ from those in major economies, e.g. the U.S., the UK, and the euro area, due to the greater dependence on international trade and financial markets.

3 Institutional Framework

3.1 Corporate Finance

Fundamentally, companies fund all their operational and investment needs through equity or debt. From a company’s perspective, both financing methods have different advantages and disadvantages. As interest payments are tax-deductible, debt creates interest tax shields for firms. However, debt must be repaid to its creditors and can require business assets as debt collateral, which increases the risks of financial distress. In contrast, equity does not require such scheduled repayments and can also provide investor industry expertise. Nevertheless, firms may face red tape, market pressure, and difficult decisions regarding ownership control ([Berk and DeMarzo, 2016](#)).

Compared to other EU economies, equity financing is more common than debt financing in Sweden, indicated by its high equity market capitalization to GDP ratio and net stock market listing. Although the average annual corporate bond issuance size is larger than

the average annual equity issuance size in Sweden, the difference is still much smaller compared to those in other larger economies, e.g. the U.S. (OECD, 2022). Moreover, the average net leverage ratio of non-financial companies in Sweden has decreased from above 35% in 2008 to below 30% in 2021 (Beck et al., 2023). Swedish firms largely rely on inter-company and bank loans when it comes to debt financing.⁶ In 2020, debt securities only represented 15% of Swedish non-financial firms' aggregate debt financing (OECD, 2022). The dominance of bank loans as a debt financing method has been persistent throughout history, which may be explained by the lower financial and administrative costs associated with them. For medium to small companies, bank loans are even more prevalent (Gunnarsdottir and Lindh, 2011).

Corporate bonds are a type of public debt financing which can be divided into different categories based on collateralization, seniority and markets (Berk and DeMarzo, 2016). According to the literature, how the proceeds from bond sales are used can be grouped as follows (Kanda et al., 2025; Berk and DeMarzo, 2016; SEC, 2013):

1. Corporate control, such as merger and acquisition (M&A);
2. Capital structure, such as debt refinancing, debt repayment and dividend recapitalization;
3. Investment in property, plant and equipment (PPE), research and development (R&D), intangible assets and financial securities;
4. General corporate purposes, such as working capital financing and management;
5. Project finance.

Among these corporate finance activities, PPE, R&D and intangible asset investment as well as project finance are those most directly contributing to the real economy.

3.2 The Swedish Non-Financial Corporate Bond Market

The Swedish non-financial corporate (NFC) bond market has experienced significant growth since the 2008 financial crisis, as bank lending regulations tightened. The growth is demonstrated across different dimensions, including monetary scale, accessibility, issuer diversity, and SEK-denomination. Despite having experienced significant changes, the Swedish NFC bond market is, nonetheless, relatively small and young compared to other

⁶At the end of 2020, inter-company and bank loans represented 47% and 38% of non-financial firms' total debt financing (OECD, 2022).

developed markets. It continues to have a substantial proportion of unrated bonds, driven by the high costs associated with obtaining credit ratings and inefficiencies in the Swedish bankruptcy system. Swedish corporate bond issuers are typically large and concentrated in specific industries, such as real estate and industrials. Foreign investors remain the largest holders of Swedish corporate bonds, followed by domestic investment funds. In comparison, pension funds and insurance companies do not represent a large share of corporate bond investors (OECD, 2022).

In general, corporate bond markets tend to be more illiquid than equity markets due, inter alia, to the illiquid nature of the instrument and the dominance of over-the-counter (OTC) trading (OECD, 2022). Corporate bond markets, more specifically, also tend to lack market makers, and Sweden is not an exception in this regard (Wollert, 2020). The Swedish corporate bond market is relatively less liquid, particularly in the secondary market, compared to its international counterparts. This is caused by several factors, including a smaller market size, fewer investor categories, limited transparency in the disclosure of bond trade information, and banks acting as bond dealers with smaller trading books (OECD, 2022; Sveriges Riksbank, 2021).

Liquidity in the Swedish secondary corporate bond market was put to the test during the COVID-19 pandemic. The pandemic caused serious disruptions in global economic activities from both the supply and demand sides. As a result, uncertainties in financial markets spread. In March 2020, risk premiums for corporate bonds increased sharply, with yield spreads rising to more than 2 percentage points from their historical level of slightly above 1 percentage point. The bid-ask spread, which measures the difference between the highest price a bond buyer is willing to pay and the lowest price a bond seller is willing to accept, rose to more than 0.5% from its historical level of around 0.1%, indicating that liquidity was rapidly deteriorating. The sell-off pressure came from investment funds which experienced fund out-flows as large as 20 billion SEK in March 2020, as their fund shareholders, predominantly small and private investors, sought safer asset types during this uncertain time. Other factors, such as unreliable pricing caused by poor transparency in bond trading and the sizable share of unrated bonds, also exacerbated the uncertainties and breakdown of the price formation process (Wollert, 2020).

The stress also affected the primary market. A higher yield spread implied that it became more expensive for firms to borrow and issue new bonds. During the early months of the pandemic, total bond issuance in Sweden fell below its 5-year market average, with zero non-investment grade bonds issued from January to March 2020 (OECD, 2022). This stood in stark contrast to the global figure where an increase in corporate bond issuance was observed since March 2020. In other regions, such as the U.S. and China,

this increase was not only caused by firm liquidity crunch, but also preparation for future economic uncertainty (OECD, 2021).

3.3 The Riksbank’s Corporate Bond Purchase Program (CBPP)

This section is based on the Riksbank’s official descriptions and publications regarding the CBPP (Sveriges Riksbank, 2025). To alleviate the negative impact of the COVID-19 pandemic on Swedish economic and financial activities, the Riksbank announced that it would expand its security purchase program as part of its expansionary monetary policy on 19 March 2020. Before 2020, the Riksbank had only purchased government bonds. Corporate bonds, like commercial paper, municipal bonds, and covered bonds, were therefore a brand new addition to its list of security purchases. Of the total 700 billion SEK allocated for the security purchase program, 1.4% (10 billion SEK) was designated for corporate bond purchases to further support Swedish companies by enhancing credit availability, improving liquidity, and reducing borrowing costs.

The CBPP officially started half a year after the first announcement, during the week commencing 14 September 2020, and ended on 31 December 2021. By 31 December 2021, the Riksbank held corporate bonds worth 12.2 billion SEK and had spent 13.0 billion SEK on such purchases. In 2022, an additional 2.5 billion SEK of corporate bond purchases were made to compensate for matured securities, and no new purchases have been made since. We present the timeline of the CBPP in Table A1.

Under the CBPP, the Riksbank intended to purchase SEK-denominated corporate bonds issued by Swedish non-financial companies on the secondary market. In an announcement published on 1 September 2020, the Riksbank presented the first version of the CBPP selection criteria. For a corporate bond to be considered eligible, it needed to be non-subordinated with a remaining maturity of up to five years. Either the bond or its issuer had to be stable investment grade, i.e., to be rated as Baa3/BBB- at minimum with no indications of downgrades at the time of the purchase.⁷ Moreover, the Riksbank operated under the principles of equal treatment and market neutrality. This entailed that the Riksbank would not own more than 50% of an individual issuer’s total outstanding volume of corporate bonds or more than 50% of an individual bond issue.

On 26 November 2020, the Riksbank updated its selection criteria by including a norm-based criterion. It was decided that bond issuers needed to comply with international

⁷However, if both the bond and the issuer were rated, both ratings should meet this minimum requirement. Bond ratings would be prioritized, but in case they were missing, issuer ratings would be used instead. If the bond or the issuer had obtained credit ratings from multiple credit rating agencies, none of these should fall below the minimum requirement.

standards and norms for sustainability, such as those in the UN Global Compact. To do so, the Riksbank would apply a norm-based negative screening of bond issuers prior to each auction and purchase offer. On 30 June 2022, the Riksbank announced that it would further take sustainability into account by introducing an emissions reporting requirement. This meant that only companies that reported their Scope 1 and 2 emissions would be considered eligible for corporate bond purchases.

4 Data

We have obtained both bond issuance and quarterly firm financial data from S&P Capital IQ to construct our dataset. The bond issuance data covers individual bonds issued by different non-financial corporations (NFCs), including details such as maturity date, offering date, offering amount, security type, seniority, issuance currency, coupon type, coupon rate and S&P credit ratings.⁸ For the scope of our analysis, we only include bonds or notes issued by NFCs headquartered in Sweden. Issuers with the sole business purpose of raising bonds on the Swedish bond market on behalf of their foreign parents are excluded. Other excluded fixed income instruments are convertible bonds, preferred shares and hybrids. Furthermore, we only keep senior, non-subordinated bonds or notes. The sampling period is restricted to 2016–2022. Together, these restrictions give us a final sample consisting of 1,940 bond observations.

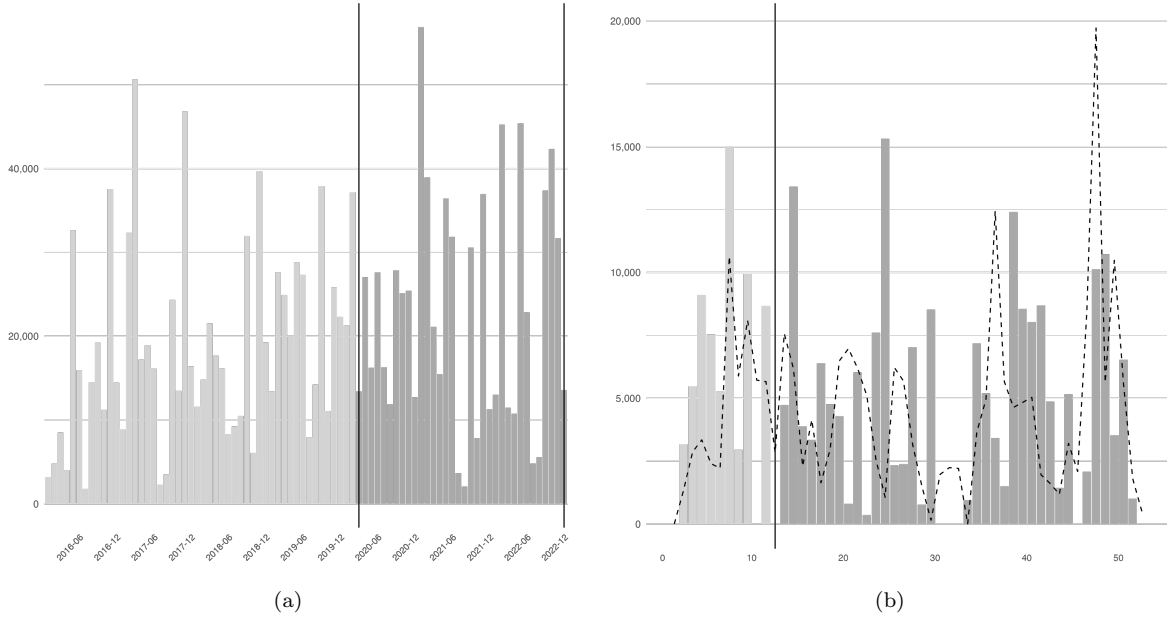
In our bond issuance sample, there are 245 unique issuers. Based on these issuers, we then retrieve quarterly consolidated firm financial data between 2016 Q1 and 2024 Q2. Some issuers are finance vehicles, i.e. subsidiaries established with the purpose of raising and managing funds on behalf of its parent company or other entities within the corporate group. In our analysis of how bond proceeds are used, we substituted the financial information of finance vehicles with that of their parent companies, which is appropriate when using consolidated financial statements. It is important to note that our data does not comprehensively cover bond or issuer credit ratings, as firms may obtain credit ratings from alternative agencies, such as Moody’s. Additionally, due to the data source, we lack information on bond trading in the secondary market and firm norm breaches. As a result, we are unable to determine which firms or their bonds would have been eligible for the CBPP at a certain point in time.

⁸Aggregating bond issuances by year, this dataset exhibits a similar time trend as Statistics Sweden’s data (see Figure A1). Differences between these two datasets are not statistically significant (see Table A7).

4.1 Descriptive Statistics

In contrast to, for example, the bond market in the U.S. (Darmouni and Siani, 2024), the Swedish corporate bond market did not demonstrate increased issuance activities following the announcement of the CBPP (see Figure 1). Similarly, there are no substantial variations in the size of individual bond issuances or in the overall distribution of issuance sizes (see Table 1).

Figure 1: Total bond issuance in million SEK by unit of time.



Note: Panel (a) shows total monthly bond issuance during 2016–2022. Black solid lines indicate the announcement and end of the CBPP. Panel (b) shows total weekly bond issuance during 2020. The black solid line indicates the announcement of the CBPP in March 2020, and the black dashed line is the average total weekly bond issuance from 2016 to 2019.

While differences in issuance size across periods remain minimal within both the CBPP-purchased and non-CBPP-purchased⁹ sub-groups, notable differences in bond maturity are observed (see Tables 2 and 3). More specifically, CBPP-purchased firms issued fewer long-term bonds, particularly those with very long maturity.¹⁰ Similarly, non-CBPP-purchased firms also reduced their issuance of very long-term bonds during the CBPP, which accounts for the significant difference in average bond maturity across the two periods.

Consistent with existing literature, our sample issuers are concentrated in the real estate, consumer discretionary and industrials sectors, see Tables A4 and A8. Furthermore, bond issuers tend to be large companies and issue large bonds, see Tables A6 and A9.

⁹By CBPP-purchased and non-CBPP-purchased, we refer to firms whose bonds were, and were not, purchased by the Riksbank during the CBPP period, respectively.

¹⁰By very long maturity, we refer to bonds with a maturity longer than 50 years.

Table 1: Summary statistics of bond issuance (in million SEK) by time period.

Stat	Pre-CBPP (2016-2020)	CBPP (2020-2022)
Min.	0.99	1.08
1st Qu.	250.00	300.00
Median	500.00	500.00
Mean	895.66	957.90
3rd Qu.	988.70	1,000.00
Max.	9,683.20	11,852.00

Table 2: Summary statistics of bond issuance (in million SEK) by CBPP purchase status and time period.

	Non-CBPP purchased companies		CBPP-purchased companies	
Stat.	2016-2020	2020-2022	2016-2020	2020-2022
Min.	0.99	68.20	1.03	1.08
1st Qu.	250.00	325.20	250.00	300.00
Median	500.00	500.00	500.00	500.00
Mean	930.50	1,127.62	882.44	883.78
3rd Qu.	1,000.00	1,000.00	941.48	999.30
Max.	9,683.20	11,852.00	7,865.10	7,606.00

Table 3: Summary statistics of bond maturity (in days) by CBPP purchase status and time period.

	Non-CBPP purchased companies		CBPP-purchased companies	
Stat.	2016-2020	2020-2022	2016-2020	2020-2022
Min.	186	365	183	188
1st Qu.	1,096	1,096	1,095	1,095
Median	1,461	1,461	1,826	1,610
Mean	10,464	5,587	2,726	1,705
3rd Qu.	1,827	1,826	2,191	1,826
Max.	358,517	357,852	358,023	8,036

5 Effects on Corporate Bond Issuance Behavior

5.1 Methodology

To analyze whether eligible NFCs reacted to the CBPP, we exploit the program selection criterion that eligible bonds must be denominated in SEK. As there were no known concurrent shocks influencing currency denomination decisions during the program period, this identification strategy allows us to assess whether the program affected the issuance behavior of eligible NFCs. Consulting [De Santis and Zaghini \(2021\)](#), we employ a difference-in-difference (DiD) model estimated using OLS, which takes the following form:

$$SEK_i = \alpha_0 + \beta_1 \cdot \text{Post} \cdot \text{Eligible}_i + \beta_2 \cdot \text{Eligible}_i + \alpha_i + \alpha_f + \alpha_w + \alpha_{s,q} + \epsilon_i \quad (1)$$

where SEK_i is a dummy equal to 1 if a bond i was denominated in SEK and 0 otherwise; Post is a dummy equal to 1 if the time period is from March 2020 onwards and 0 otherwise; Eligible_i indicates whether a bond i whose issuer was eligible for the CBPP; α_i is a set of bond controls consisting of bond duration and bond size; α_f is a set of firm controls consisting of multiple bond issuer indicator¹¹ and log total assets; α_w are week fixed effects; $\alpha_{s,q}$ are sector-quarter fixed effects.

Due to the lack of comprehensive data on credit ratings, secondary bond trade information and firm norm breeches, we are unable to assess whether a bond or its issuer would be eligible for the CBPP.¹² Nonetheless, we know that companies whose bonds were purchased by the Riksbank were undoubtedly eligible for the program. Therefore, we choose to construct *Eligible* based on the Riksbank’s list of purchased corporate bonds (see Table A2).¹³ In this analysis, we use bond observations between 2016 and 2022 and the log of bond issuers’ total assets, without substituting them with their parent companies’ financial data.

¹¹Defined as a binary variable equal to one if the issuer has issued more than one bond within a given quarter and 0 otherwise.

¹²Furthermore, credit rating may not serve as an ideal control in the Swedish context, given the high proportion of unrated bonds and the likelihood that obtaining a credit rating is strongly correlated with firm size, as proxied by log total assets (see Section 3.2).

¹³This approach is similar to that of [Hajimirza and Thamrongsak \(2022\)](#).

5.2 Results and Discussion

Examining Table 4, being an eligible firm during the CBPP has an economically and statistically significant effect on choosing SEK as the issuance currency. We observe that eligible firms are between 8 to 17 percentage points more likely to issue bonds in SEK during the CBPP than in normal times. This effect is large and positive, evident across all our four model specifications.¹⁴ Therefore, we find evidence suggesting that eligible firms did adjust their issuing behavior in response to the CBPP.

To better understand when the changes in issuance currency take effect, we estimate model (4) in Table 4 using varying time horizons. The results are presented in Table 5. We observe that the coefficient of interest becomes statistically significant only when data from 2021 is included in the sample. De Santis and Zaghini (2021) find relatively similar results and attribute this time lag in responses to the complexity and length of the bond issuance process. To further investigate, we expand the sample incrementally by quarter rather than by year. The coefficient results for $Eligible_i * Post$, together with the 95% confidence intervals, are presented in Figure 2.

As anticipated, the effect takes several quarters to reach statistical significance, where the sample needs to be extended to the second quarter of 2021 at least.¹⁵ It is possible that we are capturing the aforementioned delay in firms' responses to the program. However, given the similarity in coefficient sizes and the continuously decreasing confidence intervals, it is also plausible that we are simply observing the effect of an increasing sample size. To further investigate, we would ideally have separated the data into two groups: firms that had previously issued in SEK and those that had not. However, this approach is not feasible due to the small sample size of the resulting groups.

¹⁴Model (4) is estimated using the specification presented by Equation 1. In the third model specification, where sector fixed effects are used instead of sector-quarter fixed effects, the effect is only statistically significant at the 10% level.

¹⁵Interestingly, we observe a very large and positive coefficient when using only data from the second quarter of 2020, the first complete quarter following the program announcement. However, the coefficient is only marginally significant at the 10 % level, and this result should be interpreted with caution.

Table 4: Effects of the CBPP: OLS estimations with different sets of controls.

	<i>Dependent variable:</i>			
	SEK			
	(1)	(2)	(3)	(4)
Eligible*Post	0.099** (0.041)	0.162*** (0.043)	0.082* (0.044)	0.165*** (0.055)
Eligible	−0.051 (0.033)	−0.091*** (0.031)	−0.048 (0.034)	−0.089** (0.042)
Post	−0.317** (0.141)	−0.263*** (0.086)	−0.002 (0.080)	−0.232 (0.188)
BondSize	−0.0002*** (0.00001)	−0.0001*** (0.00002)	−0.0001*** (0.00002)	−0.0001*** (0.00002)
BondDuration	−0.00001 (0.00002)	−0.00002 (0.00002)	−0.00002 (0.00003)	−0.00004 (0.00003)
MultipleIssues	−0.018 (0.022)	0.030 (0.022)	0.012 (0.024)	0.039 (0.027)
LogTotalAssets		−0.032*** (0.009)	−0.019** (0.009)	−0.027** (0.011)
Sector*Quarter Fixed Effects	Yes	Yes	Only Sector	Yes
Week Dummies	No	No	Yes	Yes
Observations	1,419	1,195	1,195	1,195
R ²	0.453	0.447	0.546	0.675
Adjusted R ²	0.363	0.343	0.380	0.471
Residual Std. Error	0.297 (df = 1218)	0.270 (df = 1005)	0.262 (df = 875)	0.242 (df = 735)
F Statistic	5.038*** (df = 200; 1218)	4.299*** (df = 189; 1005)	3.299*** (df = 319; 875)	3.319*** (df = 459; 735)

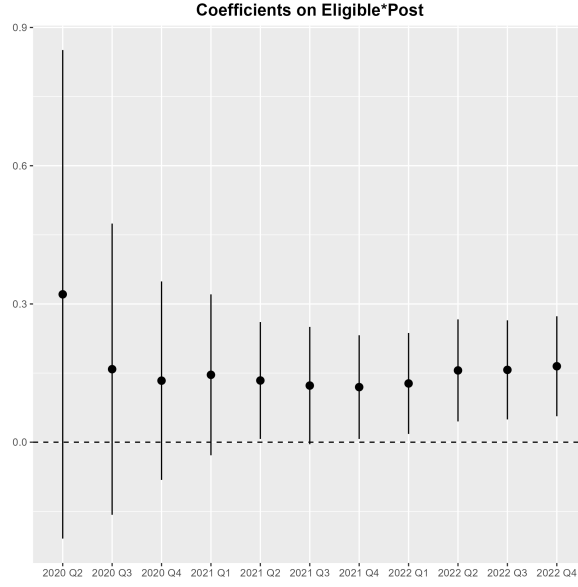
Note: This table presents difference-in-differences estimates where the dependent variable SEK_i is a dummy which takes 1 if the bond is denominated in SEK and 0 otherwise. $Post$ is a dummy equal to 1 if the time period is from March 2020 onwards and 0 otherwise. $Eligible_i$ indicates whether a bond i whose issuer was eligible for the CBPP. All regressions include sets of controls as specified and use robust standard errors. Symbols *, ** and *** indicate significance at the 1%, 5% and 10% level, respectively.

Table 5: Time effects of the CBPP: OLS estimations with samples incrementally expanded by year.

	<i>Dependent variable:</i>		
	SEK		
	2016-2020	2016-2021	2016-2022
	(1)	(2)	(3)
Eligible*Post	0.134 (0.110)	0.120** (0.057)	0.165*** (0.055)
Eligible	-0.066 (0.046)	-0.088** (0.044)	-0.089** (0.042)
Post	-0.187 (0.188)	-0.139 (0.101)	-0.232 (0.188)
BondSize	-0.0001*** (0.00002)	-0.0001*** (0.00002)	-0.0001*** (0.00002)
BondDuration	0.034 (0.035)	0.038 (0.029)	0.039 (0.027)
MultipleIssues	-0.00004 (0.00004)	-0.00004 (0.00003)	-0.00004 (0.00003)
LogTotalAssets	-0.041*** (0.014)	-0.028** (0.012)	-0.027** (0.011)
Sector*Quarter Fixed Effects	Yes	Yes	Yes
Week Dummies	Yes	Yes	Yes
Observations	814	1,009	1,195
R ²	0.684	0.680	0.675
Adjusted R ²	0.478	0.474	0.471
Residual Std. Error	0.256 (df = 492)	0.242 (df = 614)	0.242 (df = 735)
F Statistic	3.320*** (df = 321; 492)	3.309*** (df = 394; 614)	3.319*** (df = 459; 735)

Note: This table presents difference-in-differences estimates where the dependent variable SEK_i is a dummy which takes 1 if the bond is denominated in SEK and 0 otherwise. $Post$ is a dummy equal to 1 if the time period is from March 2020 onwards and 0 otherwise. $Eligible_i$ indicates whether a bond i whose issuer was eligible for the CBPP. All regressions include sets of controls as specified and use robust standard errors. Symbols *, ** and *** indicate significance at the 1%, 5% and 10% level, respectively.

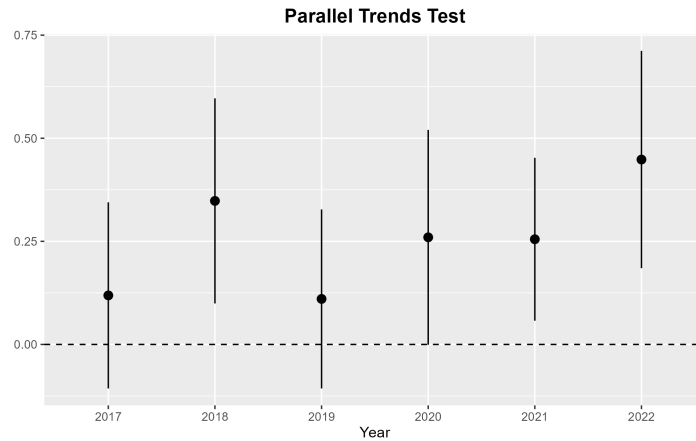
Figure 2: Time effects of the CBPP: OLS estimations with samples incrementally expanded by quarter.



Note: This figure plots the estimated coefficients of $Eligible_i * Year$ with the 95% confidence intervals. The dependent variable is SEK_i which takes on 1 if a bond is issued in SEK and 0 otherwise. All regressions include sets of controls as specified in Equation 1 and use robust standard errors.

The key identifying assumption of a valid DiD model is the parallel trends assumption. To formally test this, we estimate a model nearly identical to Equation 1¹⁶, but replace the *Post* indicator with year dummies interacted with *Eligible*. The results of this parallel trends test are presented in Table 3, with 2016 as the baseline. Notably, the coefficient for 2018 is statistically significant and large in magnitude, posing a potential threat to the validity of our empirical strategy.

Figure 3: Relative bond issuance in SEK: Parallel trends test.



Note: This figure plots the result of the formal parallel trends test of eligible and ineligible firms' bond issuance with respect to bond currency denomination. It presents the estimated coefficients of $Eligible_i * Year$ with the 95% confidence intervals. The dependent variable is SEK_i which takes on 1 if a bond is issued in SEK and 0 otherwise.

¹⁶This approach is similar to that of De Santis and Zaghini (2021).

The results from this section indicate that the CBPP did affect the currency denomination of NFC bond issuances, although with a delay which likely reflects the time required for firms to adjust their issuance processes (De Santis and Zaghini, 2021). However, the findings do not necessarily support the argument that the program was effective in increasing the number of bonds issued. Rather, they suggest that firms were aware of the program and adapted their behavior based on their eligibility status.¹⁷

5.3 Discussion of Empirical Strategy

It is possible that other concurrent corporate QE programs have affected our results. For instance, the CSPP had similar selection criteria as the CBPP (ECB, 2025). Although SEK has become an increasingly common currency for bond issuance in Sweden, other currencies, particularly the euro, remain popular, especially among non-real-estate issuers and on foreign exchanges (OECD, 2022). In this case, concurrent corporate QE programs, such as the CSPP, could potentially influence our results through the portfolio rebalancing channel. Specifically, as demand for CSPP-eligible bonds increased, comparable Swedish NFC issuers might observe an increased demand for their euro-denominated bonds as well, despite not being technically eligible under the CSPP. Nonetheless, if the effect of this channel was substantial, it would imply that our estimates are downward biased, suggesting that we capture a lower bound of the program’s effect on currency denomination choices.

Another potential limitation of our empirical strategy is that the variable *Eligible* primarily reflects firms whose bonds were actually purchased under the CBPP, rather than all firms that were technically eligible, as discussed in Section 4. As a result, the control group, i.e. the ineligible firms, may have included some CBPP-eligible firms. Although this cannot be verified with our available data, we argue that constructing *Eligible* based on the Riksbank’s purchase list (see Table A2) likely captures a substantial proportion of CBPP-eligible firms, particularly given the two-year duration of the program.

A more concerning issue is the potential violation of the parallel trends assumption. To our knowledge, there is no existing literature on the Swedish corporate bond market, nor any known policy reforms in 2018, that would plausibly explain why eligible firms issued comparatively more bonds in SEK during that year. Despite efforts to identify additional control variables, we have been unable to resolve this issue. We therefore conclude that

¹⁷De Santis and Zaghini (2021) use similar results, in combination with showing that the number of bonds issued increased more for eligible firms than the ineligible ones, to argue that the ECB’s Corporate Sector Purchase Program (CSPP) increased bond issuances. However, as no spike in bond issuances was observed at the start of the CBPP (see Figure 1) and bond issuances increased more for the ineligible firms than eligible ones (see Figure A2), such a conclusion is not warranted in the Swedish case.

some caution is warranted when interpreting our results as causal.

6 Corporate Financial Activities during Corporate QE

6.1 Methodology

To understand how corporate financial activities changed in relation to bond issuances before and after firms became aware that a major new bond buyer, the Riksbank, had entered the market, we conduct a dynamic event study based on the approach used by [Darmouni and Siani \(2024\)](#). The model is estimated through OLS, with the following specification:

$$Y_{f,q} = \sum_{j=-4}^6 \beta_j \cdot \text{Issuance}_{f,q+j} + \alpha_f + \gamma_{s,q} + \epsilon_{f,q} \quad (2)$$

where $Y_{f,q}$ is the financial variable of interest for a firm f in quarter q ; $\text{Issuance}_{f,q+j}$ is a bond issuance dummy which equals to 1 if firm f issues at least one bond in quarter $q+j$ and 0 otherwise; j ranges from -4 to 6, indicating whether it is one of the four preceding or one of the six following quarters relative to the current quarter ($j = 0$); α_f are firm fixed effects; $\gamma_{s,q}$ are sector-quarter fixed effects. We run this model separately for the pre-CBPP period (2017 Q1–2020 Q1) and during the CBPP (2020 Q2–2022 Q4). In this analysis, we use bond observations between 2017 and 2022. The quarterly firm financial data used spans from 2016 Q1 to 2024 Q2.¹⁸

Considering both data coverage and direct relevance for the hypothesized use of bonds described in Section 3.1, we have selected the following financial items as our main dependent variables (see Table 6). Consulting [Darmouni and Siani \(2024\)](#), we normalize our non-dummy dependent variables by the firms’ total assets from four quarters prior. To control for large outliers, the non-dummy dependent variables are winsorized at a 1% level.¹⁹

Here, we assume that missing values in *Repurchases*²⁰ and *Acquisitions* indicate no activ-

¹⁸The only financial variable used from the 2016 data is total assets, as we normalize all non-dummy financial variables by total assets from four quarters earlier.

¹⁹In contrast to [Darmouni and Siani \(2024\)](#), we do not normalize our dependent variables by total assets in 2019 for the quarters during the CBPP.

²⁰Share repurchases is a more discretionary variable compared to dividends which can be either dis-

Table 6: Summary of firm financial items, their relation to hypothesized bond usage, and the corresponding study variables.

Hypothesized bond usage	Indicative financial variables	Study variable
Corporate control	Number of companies acquired	<i>Acquisitions</i>
	Cash flow from investing	<i>CFI</i>
Capital structure	Total share repurchases	<i>Repurchases</i>
	Total debt	<i>Debt</i>
Investment	Net property, plant and equipment	<i>PPE</i>
	Intangible assets	<i>Intangibles</i>
	Cash flow from investing	<i>CFI</i>
General corporate purpose	Cash and cash equivalent	<i>Cash</i>
Project finance	-	-

Note: Project finance is not analyzed in this paper due to accounting complexity. Firms usually set up special purpose vehicles (SPVs) for project finance which may be either on- or off-balance sheet. Total share repurchases and number of companies acquired are transformed into dummy variables indicating whether a firm has repurchased shares (*Repurchases*) and acquired at least one company (*Acquisitions*), respectively.

ities as companies would not report such activities if they were not material for the year (IFRS Foundation, 2025a,b). *CFI* and *CFF* are aggregate cash flow variables extracted from firms' cash flow statements. While these aggregate variables do not allow us to isolate specific firm financial activities, they offer better data coverage and indicate firm cash use at the net level within each area.

6.2 Results and Discussion

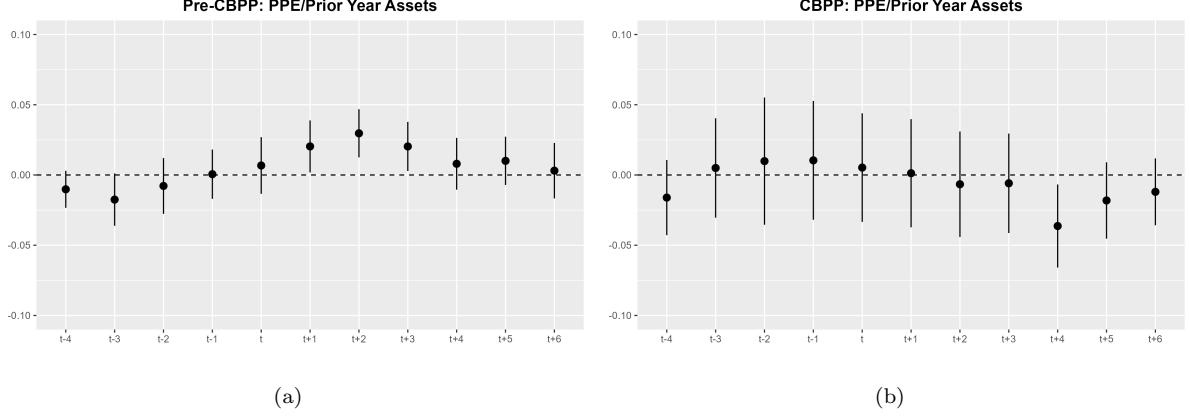
Real investment

In conventional macroeconomic models and theories, firms are assumed to borrow for fixed capital investment financing purposes. While these theoretical backdrops match our findings during normal times, they fail to do so during the CBPP period, where the real investment patterns are muted following a bond issuance. During the pre-CBPP period, firms appear to start conducting fixed capital investment one quarter following a bond issuance, which fade two quarters thereafter (see Figure 4a). In contrast, during the CBPP, there is no discernible evidence of such investment activity (see Figure 4b). However, given the substantial overlap in confidence intervals across both periods, we

cretionary or continuous depending on a firm's dividend payout policy. Using dividends could therefore cause endogeneity issues. Darmouni and Siani (2024) also discussed this variable choice and preferred share repurchases, citing that firms are reluctant to cut dividends.

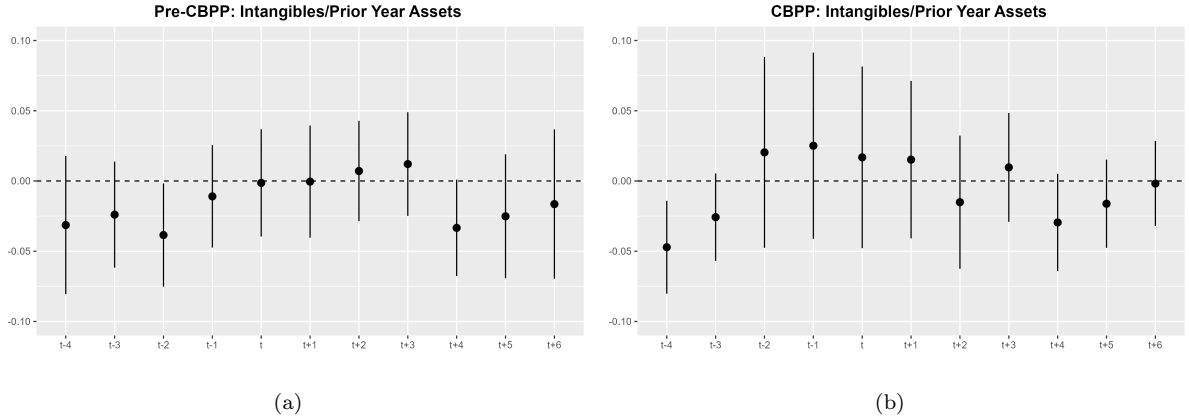
are unable to draw definitive conclusions regarding differences in fixed capital investment activities before and during the program. With respect to intangible investment, we do not find that bond issuances are associated with increased intangible asset investment²¹ nor that firms' behavior differed in the two periods. (see Figure 5).

Figure 4: PPE: Coefficient plots.



Note: Each point is an estimate of β_j from Equation 2 with the 95% confidence interval. "PPE/Prior year assets" is net property, plant and investment normalized by the firm's total assets from four quarters prior. Observations are four preceding and six quarters following the quarter of bond issuance, including the issuance quarter. "Pre-CBPP" times include bonds issued during 2017 Q1–2020 Q1. "CBPP" times include bonds issued during 2020 Q2–2022 Q4. All regressions include sets of controls as specified in Equation 2 and use robust standard errors.

Figure 5: Intangibles: Coefficient plots.



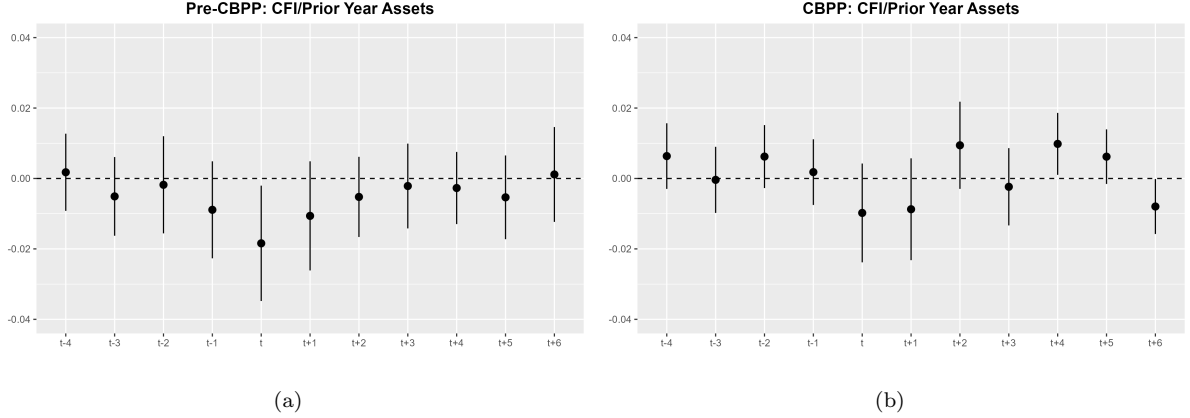
Note: Each point is an estimate of β_j from Equation 2 with the 95% confidence interval. "Intangibles/Prior year assets" is intangible assets normalized by the firm's total assets from four quarters prior. Observations are four preceding and six quarters following the quarter of bond issuance, including the issuance quarter. "Pre-CBPP" times include bonds issued during 2017 Q1–2020 Q1. "CBPP" times include bonds issued during 2020 Q2–2022 Q4. All regressions include sets of controls as specified in Equation 2 and use robust standard errors.

The pattern of *CFI* (cash from investing activities) during the pre-CBPP period closely

²¹Investment in intangible assets are typically smaller in scale compared to those in *PPE*, as evidenced by data from, for example, [Thum-Thyssen et al. \(2021\)](#). Given that bonds are generally issued in larger denominations than bank loans, it is unlikely that they are primarily used to finance intangible asset investment.

mirrors investment in *PPE*, as observed in significant net cash outflows in period t (see Figure 6a). This provides additional support for the interpretation that bond issuances were associated with real investment prior to the program: firms spent more on acquiring assets than they received through sales of, or returns on, existing assets. In contrast, this pattern does not persist during the CBPP.²² Nonetheless, we do not find statistically significant differences in net investment cash flows between the two periods because of the overlapping confidence intervals.

Figure 6: CFI: Coefficient plots.



Note: Each point is an estimate of β_j from Equation 2 with the 95% confidence interval. "CFI/Prior year assets" is cash flow from investing normalized by the firm's total assets from four quarters prior. Observations are four preceding and six quarters following the quarter of bond issuance, including the issuance quarter. "Pre-CBPP" times include bonds issued during 2017 Q1–2020 Q1. "CBPP" times include bonds issued during 2020 Q2–2022 Q4. All regressions include sets of controls as specified in Equation 2 and use robust standard errors.

Our finding of muted investment patterns during corporate QE aligns with existing theories and research on corporate liquidity and investment decisions, such as those of Davis et al. (2023) and Jeenas (2024). Using an alternative methodology, Davis et al. (2023) demonstrated that corporate borrowing does not appear to be strongly linked to aggregate demand, capital expenditure or foreign direct investment. Jeenas (2024) showed that firms' fixed capital accumulations exhibit heterogeneous patterns depending on their financial positions. A plausible explanation for this observed investment insensitivity to borrowing cost changes under QE may be that less cash-constrained firms do not rely on debt as their marginal source of financing (Jeenas, 2024). This is consistent with the structural characteristics of the Swedish NFC bond market, where Swedish NFC bond issuers tend to be the least liquidity- or credit-constrained firms in the economy.²³ One might argue that the pandemic lockdown, which coincided with the CBPP, created practical barriers to investment and increased uncertainty, making firms unwilling to un-

²²Interestingly, *CFI* exhibits a statistically significant decrease in $t + 4$, which also coincides with the statistically significant decrease in *PPE*. This point will be further discussed in the subsequent analysis.

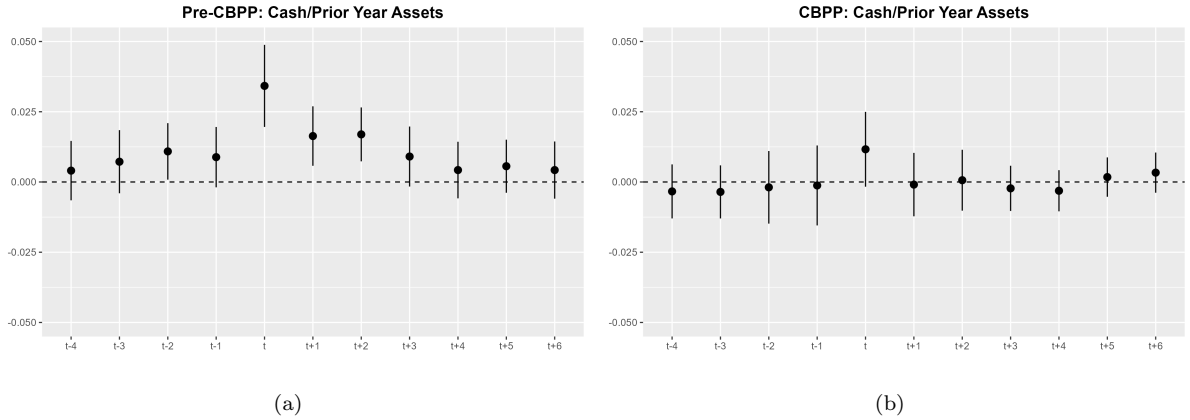
²³Issuing bonds entails significant administrative costs, implying that firms would have had sufficient cash reserves from the outset in order to participate in the corporate bond market, see Section 3.2.

dertake investment. However, this effect should be accounted for by the sector-quarter fixed effects in our specification.

Cash accumulation

Xiao (2022) argues that economic shocks that increase default risk are more likely to prompt firms to accumulate safe assets, such as cash, for self-insurance purposes. Examining Figure 7, firms exhibit a similar pattern in cash holdings across both periods, characterized by an immediate post-issuance increase followed by a rapid decline, suggesting that the raised capital is quickly spent. Prior to the CBPP, firms appear to retain some portion of their cash holdings for up to two quarters following a bond issuance. The immediate post-issuance increase in cash holdings is nearly statistically significant in the post-CBPP period.²⁴ We do not detect any significant differences in cash holdings between the two periods, which is supported by the overlapping confidence intervals of the estimated coefficients across both periods. Consequently, we find no evidence to suggest that firms engaged in abnormal cash accumulation during the CBPP, in contrast to Xiao (2022) and Darmouni and Siani (2024).

Figure 7: Cash: Coefficient plots.



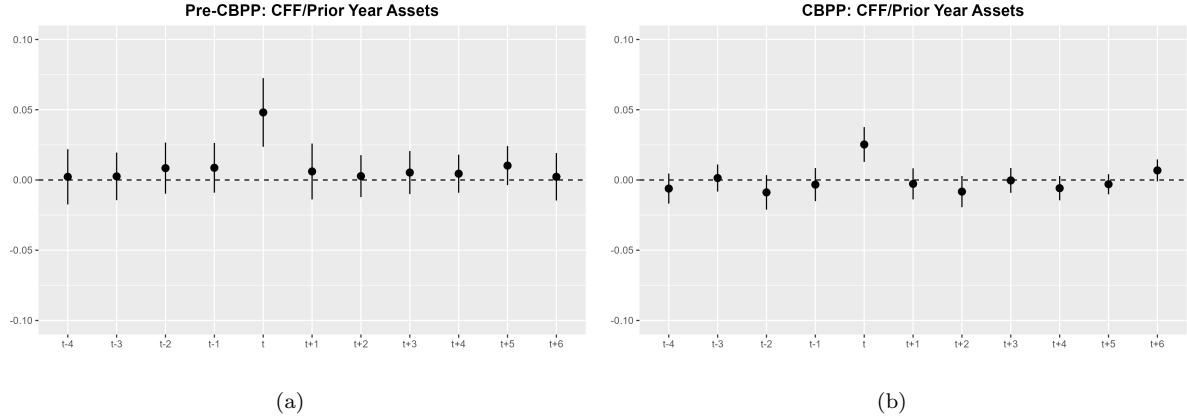
Note. Each point is an estimate of β_j from Equation 2 with the 95% confidence interval. "Cash/Prior year assets" is cash and cash equivalent normalized by the firm's total assets from four quarters prior. Observations are four preceding and six quarters following the quarter of bond issuance, including the issuance quarter. "Pre-CBPP" times include bonds issued during 2017 Q1–2020 Q1. "CBPP" times include bonds issued during 2020 Q2–2022 Q4. All regressions include sets of controls as specified in Equation 2 and use robust standard errors.

When analyzing *CFF* (cash from financing), we find evidence indicating that firms do indeed receive substantial inflows of cash immediately following a bond issuance. This is particularly notable given that *CFF* is an aggregate item including both inflows and outflows related to financing activities, such as the issuance or repurchase of equity and

²⁴Theoretically, the statistically insignificant increase in cash holdings in period t could also reflect a recovery from an abnormal decline in firms' natural cash levels just before the bond issuance, with the bond proceeds helping to restore cash to normal levels. However, this explanation is unlikely, as we do not observe any statistically significant declines in cash in the periods preceding the issuance.

debt. Therefore, the statistically insignificant coefficient in t in Figure 7b can likely be explained by a more rapid deployment of bond proceeds, which offsets any increase in cash holdings at the quarterly frequency.²⁵

Figure 8: CFF: Coefficient plots.



Note. Each point is an estimate of β_j from Equation 2 with the 95% confidence interval. "CFF/Prior year assets" is cash flow from financing normalized by the firm's total assets from four quarters prior. Observations are four preceding and six quarters following the quarter of bond issuance, including the issuance quarter. "Pre-CBPP" times include bonds issued during 2017 Q1–2020 Q1. "CBPP" times include bonds issued during 2020 Q2–2022 Q4. All regressions include sets of controls as specified in Equation 2 and use robust standard errors.

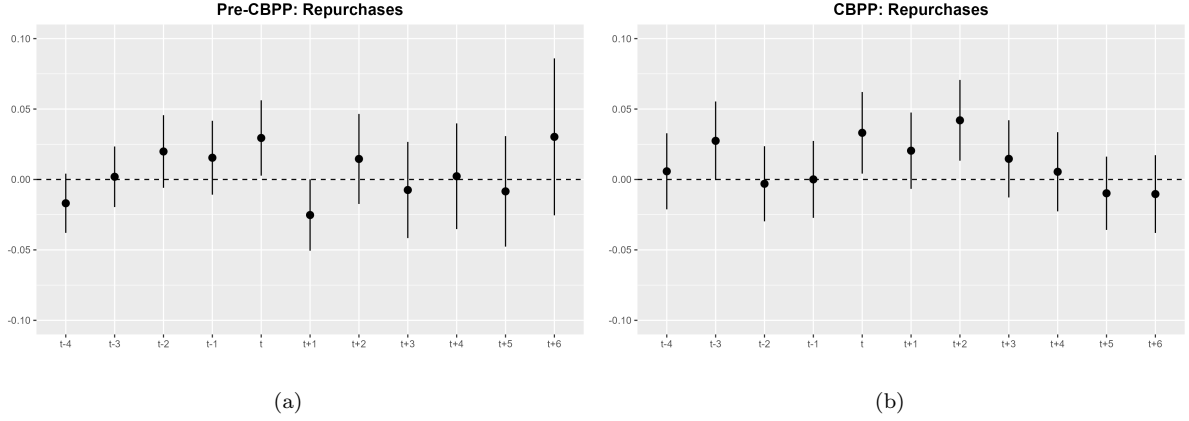
Our findings indicates that the picture is more nuanced than a simple distinction between "borrowing to save" and "borrowing to invest". Bolton et al. (2011) present a model built on the workhorse neoclassical q model of investment, constant external financing costs, and four basic financial instruments. They show that when cash-capital ratio is very high, i.e. when exceeding a certain upper threshold, a firm is better off paying out the excess cash to shareholders to avoid the cash-carrying cost. Hence, additional liquidity generated from bond issuance alone would give less marginal value to these firms, compared to the more financially constrained ones. This again aligns with the institutional setting of our study and could explain what we observe in share repurchase activities below.

Capital structure

Figure 9b shows that firms repurchase their shares either immediately or shortly after a bond issuance during the CBPP. While firms also appear to repurchase their shares immediately during normal times, they are less likely to do so in the subsequent quarter (see Figure 9a). This aligns with the concern raised by Acharya and Plantin (2025), who suggested that expansionary monetary policy could lead to increased leveraged payouts, which benefits shareholders rather than stimulating investment.

²⁵It is unlikely that this outcome was mainly driven by smaller bond issuances. The median issuance size remained constant at SEK 50 million both prior to and during the CBPP (see Table 1).

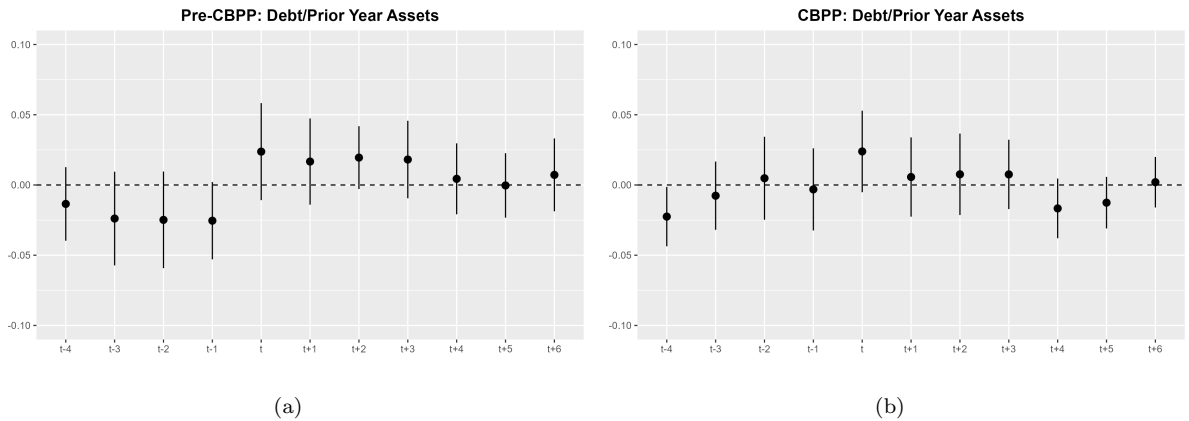
Figure 9: Repurchases: Coefficient plots.



Note. Each point is an estimate of β_j from Equation 2 with the 95% confidence interval. "Repurchases" is a dummy variable equal to 1 if the firm has repurchased shares and 0 otherwise. Observations are four preceding and six quarters following the quarter of bond issuance, including the issuance quarter. "Pre-CBPP" times include bonds issued during 2017 Q1–2020 Q1. "CBPP" times include bonds issued during 2020 Q2–2022 Q4. All regressions include sets of controls as specified in Equation 2 and use robust standard errors.

Total debt levels do not significantly change across periods, indicating that firms do not significantly increase their leverage through bonds. This suggests that firms likely restructured the composition of their debt, for example, substituting existing bank loans with bond financing, rather than engaging in net new borrowing. This is consistent with the findings of [Hajimirza and Thamrongsak \(2022\)](#) who showed that CBPP-eligible firms increased their long-term debt by raising bond debt leverage rather than bank loans, in response to the lower cost of financing.

Figure 10: Debt: Coefficient plots.

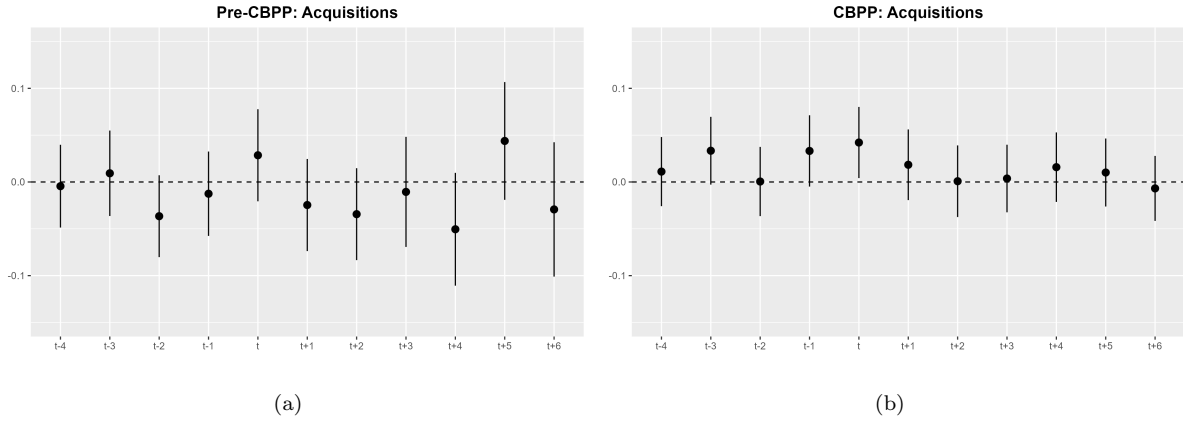


Note. Each point is an estimate of β_j from Equation 2 with the 95% confidence interval. "Debt/Prior year assets" is total debt normalized by the firm's total assets from four quarters prior. Observations are four preceding and six quarters following the quarter of bond issuance, including the issuance quarter. "Pre-CBPP" times include bonds issued during 2017 Q1–2020 Q1. "CBPP" times include bonds issued during 2020 Q2–2022 Q4. All regressions include sets of controls as specified in Equation 2 and use robust standard errors.

Corporate control

With regard to corporate control, we find that firms engage in company acquisitions during the CBPP period. Figure 11b shows that firms were approximately 5 percent more likely to acquire companies immediately following a bond issuance during the program period. However, we do not find statistically significant evidence that M&A activities differed between the two periods. Nonetheless, this pattern appears to be somewhat more pronounced among real estate firms (see Section 6.3). This result is consistent with the findings of Yang et al. (2019), who showed that cash-rich companies in China are more likely to pursue M&A than their cash-constrained counterparts since abundant liquidity can incentivize company management to pursue self-interested, low-value projects.

Figure 11: Acquisitions: Coefficient plots.



Note. Each point is an estimate of β_j from Equation 2 with the 95% confidence interval. "Acquisitions" is a dummy variable equal to 1 if the firm has acquired at least one company and 0 otherwise. Observations are four preceding and six quarters following the quarter of bond issuance, including the issuance quarter. "Pre-CBPP" times include bonds issued during 2017 Q1–2020 Q1. "CBPP" times include bonds issued during 2020 Q2–2022 Q4. All regressions include sets of controls as specified in Equation 2 and use robust standard errors.

Previously, we observed a decrease in *PPE* and *CFI* four quarters following a bond issuance during the CBPP. This observed decrease in fixed capital is most likely due to asset sales or divestitures, since write-downs or impairments would not affect *CFI*. According to Bolton et al. (2011), asset sales are very costly for firms since they not only indicate underinvestment but also incur physical adjustment costs. Hence, firms engaging in asset sales are associated with financial distress.²⁶ However, this explanation seems unlikely in our context, as bond issuers did not exhibit abnormally low cash levels prior to an issuance, nor would financial distress explain share repurchase activity. Thus, the more plausible explanation is that these firms engaged in divestitures, i.e. spinning off or selling business divisions. Notably, we do not observe this divestiture pattern in sub-sample of real estate firms during the CBPP (see Section 6.3).

²⁶Also see Warusawitharana (2008).

6.3 Real Estate Firms

We attempt to shed light on the ongoing Swedish debate, which focuses on the effects of the CBPP on real estate firms, by applying the same methodology but using selected firm financial variables and the real estate sub-sample. These results are available in the [Appendix](#). Interestingly, we observe that real estate issuers appear to hold less cash during the program period than they did in normal times (see [Figure A3](#)). Indeed, we know that firms appear to have raised bonds of similar size from [Figure A4](#), but this increase in cash holdings is not even registered during the CBPP (see [Figure A3b](#)), indicating that a large share of bond proceeds is quickly spent in the same quarter as a bond issuance.

Similar to the results from [Section 6](#), we find evidence that real estate firms may have used their bond proceeds to acquire companies in the bond issuance quarter t (see [Figure A7](#)). The difference between the probabilities of engaging in corporate acquisitions before and during the CBPP is statistically significant in $t+1$. Again, we find no evidence of real estate firms using bond proceeds to conduct real investment, neither before nor during the CBPP (see [Figures A5 and A6](#)), and they do not appear to have changed their leverage (see [Figure A8](#)).

Returning to the Swedish debate, our findings may indicate the program was particularly beneficial for real estate firms, which were seemingly more strapped for cash than other companies. There is also evidence suggesting that some real estate firms may have used the bond proceeds to finance corporate acquisitions, a usage previously less common within the industry. However, we find no indication that the program led to increased overall debt levels among these firms.

6.4 Discussion of Empirical Strategy

The most apparent potential confounding factor is the COVID-19 pandemic, which also adversely affected firms' business activities.²⁷ We argue that the inclusion of sector-quarter fixed effects, which control for time-varying changes within sectors, helps account for the differential impact of the pandemic across industries. Additionally, firm fixed effects remove any time-invariant firm-specific characteristics. As a result, our findings are unlikely to be driven by persistent differences such as firm sizes, financing models or inherent investment needs. Thus, any remaining confounding factors would need to be both firm-specific and time-varying, or impact firms in a way that differs from the broader sectoral trends in a given quarter.

²⁷For instance, see [Graham et al. \(2024\)](#) and [Canton et al. \(2021\)](#).

Simultaneous fiscal policy changes with firm-specific and time-varying implications can be a confounding factor.²⁸ More specifically, if firms had varying access to the Swedish government’s support schemes during the program period, i.e. firms within the same sector had alternative liquidity sources of differing scale, our results would capture the combined effects, rather than the impact of the CBPP alone. An example of such financial assistance measures with varying eligibility requirements, conditions, and flexible guaranteed amounts can be The Swedish Export Credit Agency Guarantees ([The Parliamentary Committee on Finance, 2020](#)).

Another potential confounding factor is the simultaneous implementation of QE programs in other regions, such as the U.S. and the Euro area. Although we explicitly separated out Swedish bond issuers, this does not entirely rule out the possibility that these firms may have accessed other liquidity sources indirectly, for instance, through inter-company loans from foreign subsidiaries that were eligible to raise funds under other local QE programs.²⁹

In light of these discussions and our empirical design, we are cautious with asserting causal inferences from our findings. This work marks but a first step toward understanding the complex real economic effects of unconventional monetary policy, specifically in the Swedish context. There are numerous paths for future research that could provide a deeper understanding of causal relationships in this domain. One potential approach is to utilize more comprehensive bond and firm financial datasets that include credit ratings, secondary bond trade information, and firm norm breeches, which would allow for a DiD analysis based on the CBPP eligibility criteria. Exploring appropriate instrumental variables in the Swedish context can help isolate the intervention’s impact. For instance, [Darmouni and Siani \(2024\)](#) used bond market weight as an instrument for abnormal bond issuance volume in the U.S setting. Another interesting methodology could involve text scraping to extract the stated purposes of bond issuances from bond prospectuses and analyze the topic trends, as all traded bonds are required to present a prospectus prior to issuance.

7 Conclusion

Through the CBPP, the Riksbank played a key role in calming the Swedish NFC bond market during the COVID-19 pandemic ([Hajimirza and Thamrongsak, 2022](#); [Wollert,](#)

²⁸For instance, broad-based measures like general tax deferments, which applied uniformly to all firms, would not qualify as such factors.

²⁹This is particularly relevant in light of the discussion in Section 3.1, which highlights that inter-company loans constitute a significant component of Swedish corporate debt financing.

2020). In this paper, we have shown that eligible firms were aware of the program and adapted their financing strategies to obtain the implied financial benefits. The impact of the program on bond issuance is, however, outside of the scope for this analysis. Then, we have shown and compared how Swedish NFCs utilized their bond proceeds before and during the CBPP. Overall, we have not found significant differences in the use of bond proceeds between periods. Nonetheless, our study presents several important findings. First, we observe no evidence of firms "borrowed to invest", a common assumption in conventional macroeconomic models. Second, we do not see that firms "borrowed to save", contrary to that observed in other institutional contexts, such as in the U.S. (Darmouni and Siani, 2024). At the same time, we find that cash raised through bond issuance was rapidly depleted by firms during the program, raising the question of how it was used. Finally, we are able to show that bond proceeds were likely allocated toward capital structure adjustments, e.g. through share repurchases and, plausibly, debt repayments, as well as corporate acquisitions.

Undoubtedly, the CBPP benefited its targeted firms by providing cheaper liquidity, thereby strengthening their financial positions. Moreover, spillover effects were evident, as even non-targeted corporate bond issuers experienced lower borrowing costs (Hajimirza and Thamrongsak, 2022). One could argue that the CBPP might have reduced bond issuers' default risk, at least in the short to medium term. By substituting their debt, these large firms might also have freed up banks' lending capacity for smaller and more cash-constrained firms in the economy. However, our overall findings suggest that, given the nature of the program beneficiaries and the role of corporate liquidity, the CBPP's direct real effects appeared to be limited. Similar to Darmouni and Siani (2024), three important takeaways that align with and extend previous research emerge from our analysis. First, incorporating corporate liquidity is crucial for understanding the transmission of unconventional monetary policy. Thus, a closer integration between corporate finance and macroeconomics would be fruitful. Second, the challenge of targeting unconventional monetary policy toward the most cash-constrained firms in the economy remains. Finally, institutional contexts, such as issuer and market characteristics, are shown to be important, as the same underlying principles of corporate QE may translate into different magnitudes of real effects (Darmouni and Siani, 2024; De Santis and Zaghini, 2021; Grosse-Rueschkamp et al., 2019).

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Appendix

Table A1: Development timeline of the Riksbank's CBPP.

Date	Event
2020-03-19	The initial announcement concerning corporate bond purchases came as the Riksbank declared plans to initiate a SEK 300 billion asset purchase program scheduled for March to December 2020. The exact monetary scope of the program remained unspecified.
2020-07-01	The Riksbank announced that the overall asset purchase program would be expanded to SEK 500 billion and extended to June 2021. It also decided that the monetary scope of the CBPP would be SEK 10 billion and take place from September 2020 to June 2021.
2020-09-01	The CBPP's specifics—such as eligibility criteria and the underlying rationale—were outlined.
Week commencing 2020-09-14	Start of the CBPP.
2020-11-26	The Riksbank announced that the overall asset purchase program would be expanded to SEK 700 billion and extended to December 2021. However, the scale and length of the CBPP remained unchanged at SEK 10 billion until June 2021. The Riksbank also decided to include norm-based screening as a selection criterion. Green bonds could also be included in the program from now on.
2021-04-27	Based on the Riksbank's decision to continue purchasing corporate bonds during the third quarter of 2021, it was implied that the CBPP would be extended. However, the extended end date of the CBPP was not specified.
2021-07-01	The Riksbank announced that corporate bonds would be purchased during the fourth quarter of 2021 which implied that the CBPP was extended again.
2021-12-31	End of the corporate bond holding expansion.
2022-06-30	Introduction of the emissions reporting criterion under the CBPP.
2022-12-31	Official end of the CBPP. From now on, the Riksbank did not make new corporate bond purchases and let the holdings expire instead.

Table A2: Firms whose bonds were purchased by the Riksbank under the CBPP.

Issuer	
AB Bonnier Fastigheter Finans	Investment AB Latour
AB Electrolux	Jernhusen AB
AB Industrivärden	Krafttringen Energi AB
AB Sagax	Kungsleden AB
AB SKF	L E Lundbergföretagen AB
AB Stångåstaden	Lantmännen Ekonomisk Förening
Akademiska Hus AB	Lejonfastigheter AB
Akelius Residential Property AB	Nobina AB
ASSA ABLOY AB	Rikshem AB
Atrium Ljungberg AB	Rodamco Sverige AB
Castellum AB	Samhällsbyggnadsbolaget i Norden AB
Corem Kelly AB	Sandvik AB
Elekta AB	Scania CV AB
Ellevio AB	Securitas AB
Epiroc AB	Specialfastigheter Sverige AB
Essity AB	SSAB AB
Fabege AB	Stockholm Exergi Holding AB
Fastighets AB Balder	Stockholms Kooperativa Bostadsförening
Fastighets AB Förvaltaren	Svensk FastighetsFinansiering AB
Fastighets AB Stenvalvet	Svenska Cellulosa Aktiebolaget SCA
FastPartner AB	Swedish Match AB
Heba Fastighets AB	Tele2 AB
Heimstaden Bostad AB	Telia Company AB
Hemsö Fastighets AB	Vacse AB
Holmen AB	Vasakronan AB
Humlegården Fastigheter AB	Vattenfall AB
Husqvarna AB	Volvo Treasury AB
Indutrade AB	Willhem AB
Intea Fastigheter AB	

Table A3: Summary statistics of the bond sample.

Statistic	All-time issuers	Post only issuers	Pre only issuers	Total sample
Number of issuances	1,692	99	149	1,940
Number of issuers	107	59	79	245
Min. issuance	0.99	68.20	1.65	0.99
Max. issuance	11,852	5,461.60	5,872.10	11,852
Median issuance	500	500	500	500
Mean issuance	916.15	891.73	1,018.22	922.47
Min. TTM (days)	183	366	186	183
Max. TTM (days)	358,023	2,593	358,517	358,517
Median TTM (days)	1,642	1,098	1,777	1,595.50
Mean TTM (days)	2,795.27	1,360.42	20,821.52	4,106.54

Table A4: Bond issuances by industry.

Industry	Total issuances (mSEK)	%
Real Estate	575,292.30	33.33
Consumer Discretionary	453,046.50	26.25
Industrials	319,562.20	18.52
Utilities	106,916	6.19
Materials	74,344.27	4.31
Communication Services	63,261	3.67
Consumer Staples	62,635.90	3.63
Information Technology	47,907.20	2.78
Health Care	22,781	1.32
Multi-sector Holdings	197.87	0.01
Total	1,725,944.00	100.00

Table A5: Bond issuances by currency.

Currency	Total issuance (mSEK)	%
SEK	817,392.30	47.36
EUR	793,291.40	45.96
NOK	47,761.26	2.77
USD	35,148.79	2.04
GBP	11,568.40	0.67
CHF	8,861.10	0.51
JPY	5,376.90	0.31
AUD	3,224.30	0.19
HKD	2,795	0.16
CNY	524.90	0.03
Total	1,725,944.00	100.00

Table A6: Bond issuances by issuance size.

Issuance size (mSEK)	Total issuances (mSEK)	Number of issuances
Issuance <50	1,117.83	80
$50 \leq \text{Issuance} < 100$	1,600.60	23
$100 \leq \text{Issuance} < 500$	195,768.50	717
$500 \leq \text{Issuance} < 1000$	356,807.50	577
$1000 \leq \text{Issuance} < 5000$	789,753.50	412
Issuance ≥ 5000	380,896.40	62

Figure A1: Annual Swedish non-financial corporate bond issuance (in million SEK), Capital IQ bond sample compared to Statistics Sweden.

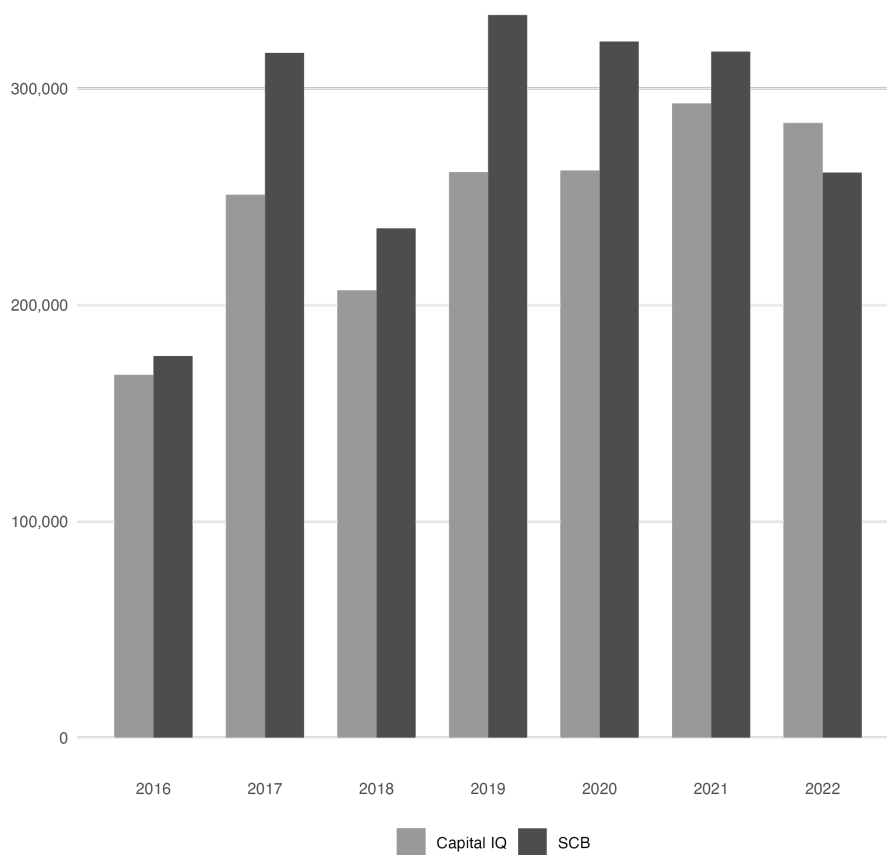


Table A7: Statistical tests of Capital IQ and Statistics Sweden annual aggregate issuance data, 2016-2022.

	Test	Statistic	p-value
t	t-test	-1.218	0.248
W	Wilcoxon Test	15	0.259

Table A8: Bond issuer distribution by industry.

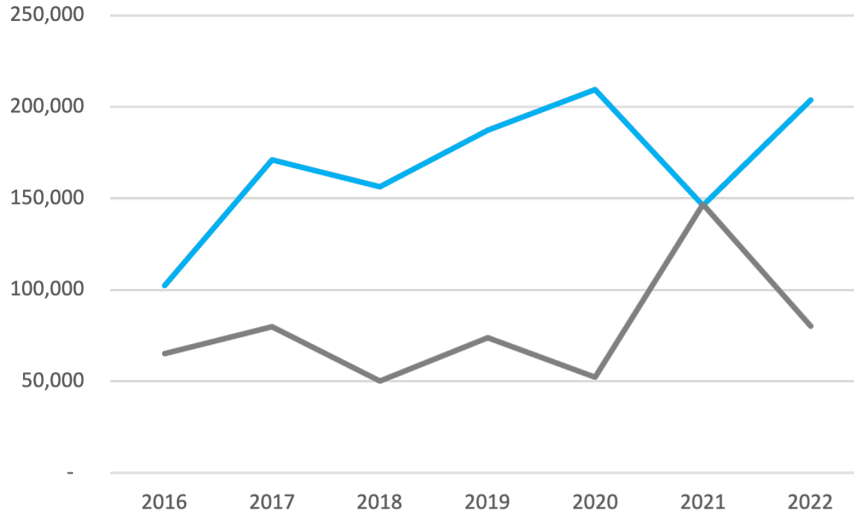
Industry	Freq.	%
Real Estate	87	35.51
Industrials	63	25.71
Consumer Discretionary	22	8.98
Information Technology	13	5.31
Materials	13	5.31
Communication Services	12	4.90
Health Care	10	4.08
Utilities	9	3.67
Consumer Staples	8	3.27
Energy	5	2.04
Multi-sector Holdings	3	1.23
Total	245	100.00

Table A9: Bond issuer distribution by company size.

Size	Freq.	%
Small	9	3.67
Medium	112	45.71
Large	60	24.49
N/A	64	26.12
Total	245	100.00

Note: The definitions of small-, medium- and large-sized companies follow those of the European Commission: small-sized companies have total assets of 10 million euros or less, while medium-sized companies have total assets of 43 million euros or less.

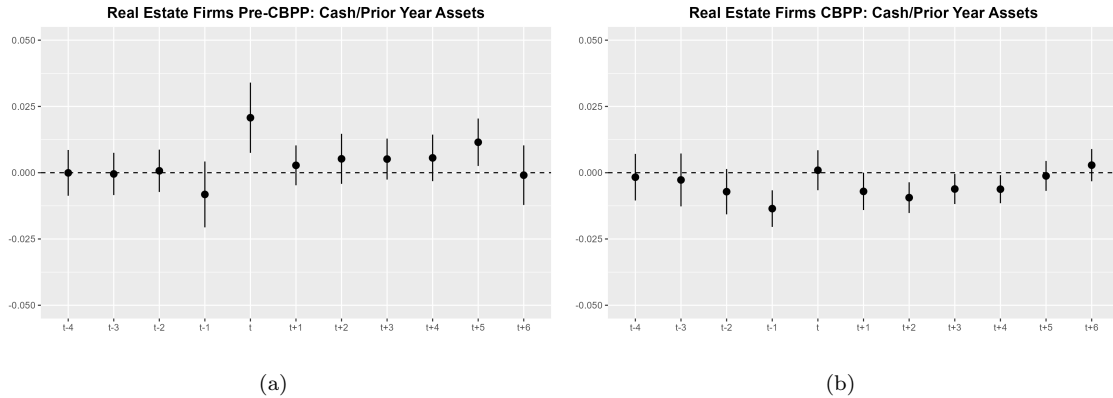
Figure A2: Annual bond issuance (in million SEK) by CBPP purchase status.



Note: Companies with CBPP-purchased bonds are shown by the blue line; those without CBPP purchases are shown by the grey line.

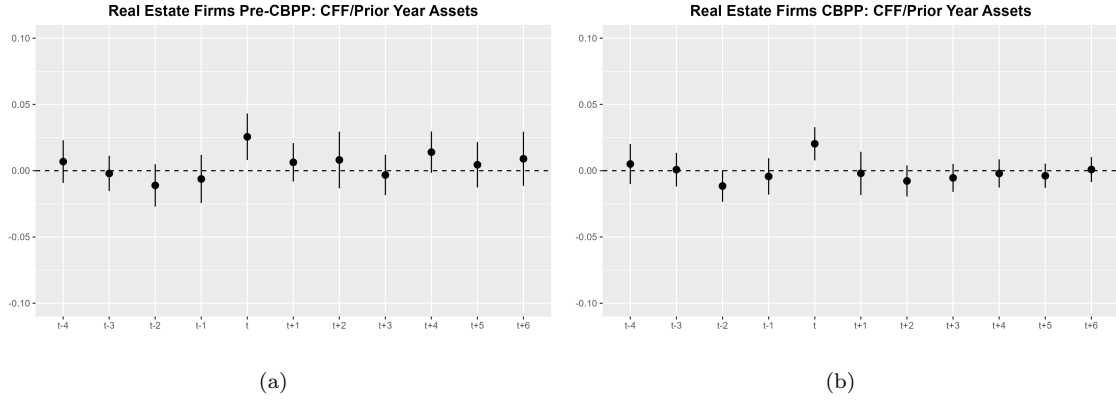
Real Estate Firm Sub-Sample Results

Figure A3: Cash: Coefficient plots for the real estate firm sub-sample.



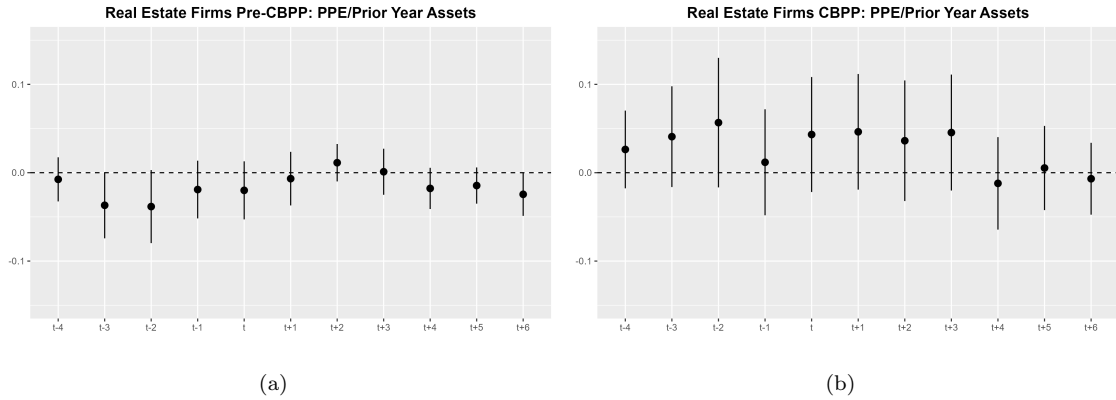
Note: Each point is an estimate of β_j from Equation 2 with the 95% confidence interval. "Cash/Prior year assets" is cash and cash equivalent normalized by the firm's total assets from four quarters prior. Observations are four preceding and six quarters following the quarter of bond issuance, including the issuance quarter. "Pre-CBPP" times include bonds issued by real estate firms during 2017 Q1–2020 Q1. "CBPP" times include bonds issued by real estate firms during 2020 Q2–2022 Q4. All regressions include sets of controls as specified in Equation 2 and use robust standard errors.

Figure A4: CFF: Coefficient plots for the real estate firm sub-sample.



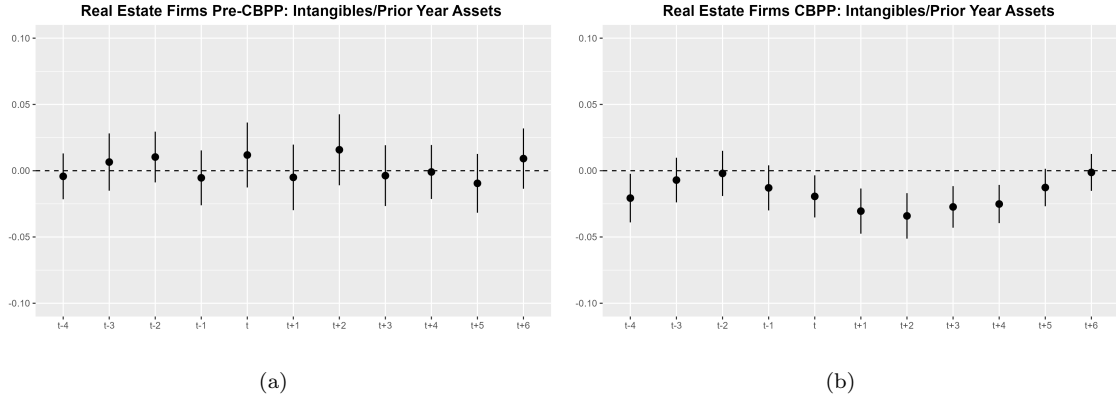
Note: Each point is an estimate of β_j from Equation 2 with the 95% confidence interval. "CFF/Prior year assets" is cash flow from financing normalized by the firm's total assets from four quarters prior. Observations are four preceding and six quarters following the quarter of bond issuance, including the issuance quarter. "Pre-CBPP" times include bonds issued by real estate firms during 2017 Q1–2020 Q1. "CBPP" times include bonds issued by real estate firms during 2020 Q2–2022 Q4. All regressions include sets of controls as specified in Equation 2 and use robust standard errors.

Figure A5: PPE: Coefficient plots for the real estate firm sub-sample.



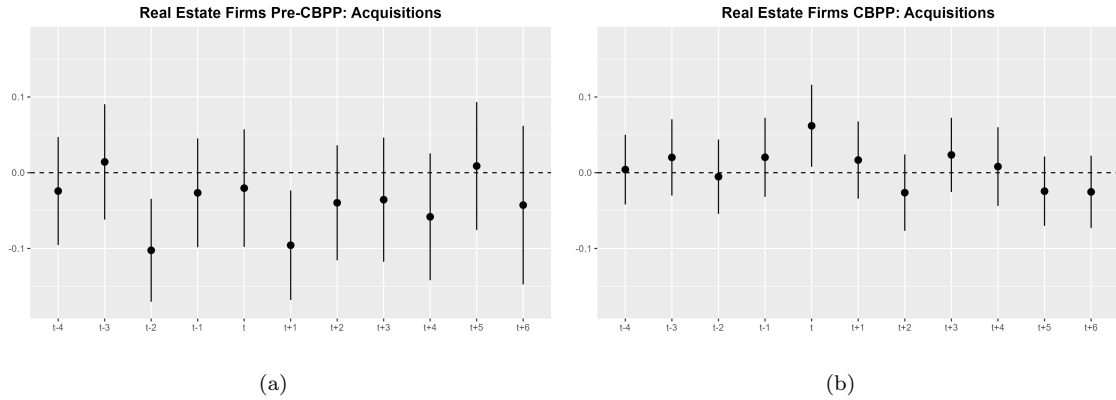
Note: Each point is an estimate of β_j from Equation 2 with the 95% confidence interval. "PPE/Prior year assets" is net property, plant and equipment normalized by the firm's total assets from four quarters prior. Observations are four preceding and six quarters following the quarter of bond issuance, including the issuance quarter. "Pre-CBPP" times include bonds issued by real estate firms during 2020 Q2–2022 Q4. "CBPP" times include bonds issued by real estate firms during 2020 Q2–2022 Q4. All regressions include sets of controls as specified in Equation 2 and use robust standard errors.

Figure A6: Intangibles: Coefficient plots for the real estate firm sub-sample.



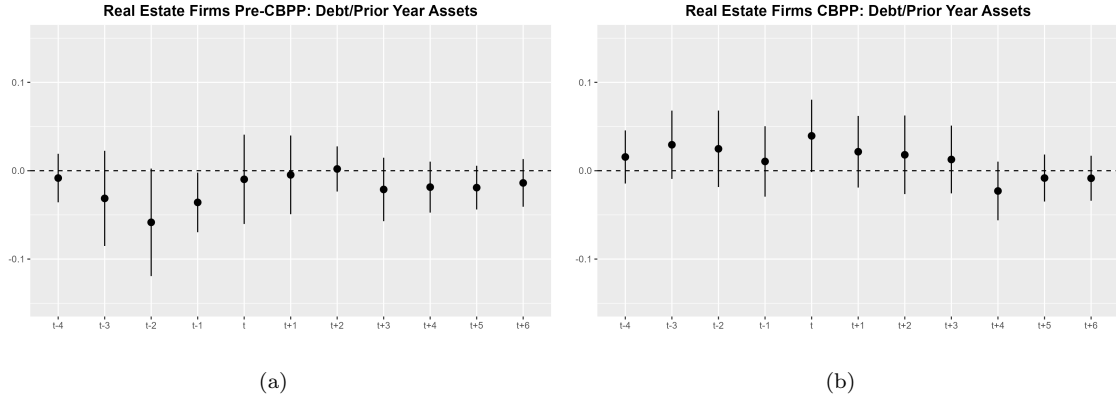
Note: Each point is an estimate of β_j from Equation 2 with the 95% confidence interval. "Intangibles/Prior year assets" is intangible assets normalized by the firm's total assets from four quarters prior. Observations are four preceding and six quarters following the quarter of bond issuance, including the issuance quarter. "Pre-CBPP" times include bonds issued by real estate firms during 2017 Q1–2020 Q1. "CBPP" times include bonds issued by real estate firms during 2020 Q2–2022 Q4. All regressions include sets of controls as specified in Equation 2 and use robust standard errors.

Figure A7: Acquisitions: Coefficient plots for the real estate firm sub-sample.



Note: Each point is an estimate of β_j from Equation 2 with the 95% confidence interval. "Acquisitions" is a dummy variable equal to 1 if the firms has acquired at least one company and 0 otherwise. Observations are four preceding and six quarters following the quarter of bond issuance, including the issuance quarter. "Pre-CBPP" times include bonds issued by real estate firms during 2017 Q1–2020 Q1. "CBPP" times include bonds issued by real estate firms during 2020 Q2–2022 Q4. All regressions include sets of controls as specified in Equation 2 and use robust standard errors.

Figure A8: Debt: Coefficient plots for the real estate firm sub-sample.



Note: Each point is an estimate of β_j from Equation 2 with the 95% confidence interval. "Debt/Prior year assets" is total debt normalized by the firm's total assets from four quarters prior. Observations are four preceding and six quarters following the quarter of bond issuance, including the issuance quarter. "Pre-CBPP" times include bonds issued by real estate firms during 2017 Q1–2020 Q1. "CBPP" times include bonds issued by real estate firms during 2020 Q2–2022 Q4. All regressions include sets of controls as specified in Equation 2 and use robust standard errors.