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SME Financing in Ireland Revisited: *Exploring the Long Shadow of the Financial Crisis*

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Abstract

The functioning of credit markets and their impact on economic activity came to the fore in Ireland following the 2007 global financial crisis. The major challenges in the banking sector led to a severe contraction in credit availability, in particularly for small- and medium-sized firms. This negatively affected their investment activity and employment. While the economy has recovered, credit demand has not recovered to the same extent and lending volumes have remained muted. Thus after 15 years of economic recovery, and a multitude of policy interventions, the credit landscape continues to puzzle. This research attempts to revisit issues around credit access for Irish firms and explores both demand and supply in a euro area context. We find that credit demand for bank loans is lower in Ireland than in other countries and trade credit demand remains higher. Using scenario analysis, we show this is partly driven by higher interest rates and lower competition in the banking sector than in other countries. We also find rejection rates have fallen; this likely reflects low demand, lower credit risk as well as improved bank lending conditions.

JEL codes: C1; C2; C3; C4

Keywords: Access to finance; bank competition; financial crises.

1 INTRODUCTION

The financial crisis in Ireland in 2007 had a major impact on the activities of domestic enterprises, in particular through credit access channels. The rapid expansion of credit during the 2002-2007 period led to major vulnerabilities through increased indebtedness with severe consequences when the crisis occurred (McCann & McIndoe-Calder, 2015). The tightening of credit constraints in the period following the financial crash was rapid and prolonged and has been found in existing research to have had a material impact on enterprise investment and employment (Gerlach-Kristen et al., 2015; O'Toole et al., 2014). Furthermore, in the immediate aftermath of the crisis, the structure of financing shifted with bank credit being replaced by internal funds and emergency usage of trade credit channels (Lawless et al., 2013; Casey & O'Toole, 2014).

The financial crisis also led to long term structural changes in the banking sector in Ireland through the withdrawal of a number of large banks such as Bank of Scotland Ireland, KBC, and Ulster Bank. This reduction in banking competition likely has had a number of impacts on the Irish credit market. Most notably, the interest rates for Irish firms have been persistently higher than for firms in other countries and there has been an absence of interest rate pass through from lower policy rates to Irish enterprises. Cross country research has shown that lower bank competition impacts firm investment (Ryan et al., 2014). Further changes to bank credit regulations (through both micro- and macro- prudential instruments) have also tightened credit access but many of these measures were necessary to build resilience in the banking sector.

Since 2015, the economy has rebounded in a relatively rapid fashion. While to a large extent this rebound has been driven by the performance of multinationals in the pharmaceutical and computer services sectors, domestic enterprises have also recovered. This recovery has been supported by a robust performance in the labour market with rising real wages and low unemployment. However, despite this supportive economic context, credit demand has not risen to the same extent, nor has small firm investment increased in a similar fashion. Recent monitoring reports (Gargan et al., 2018; Lawless, Martinez-Cillero, et al., 2020) have noted that SME investment has remained relatively subdued, likely impacted by a range of factors including uncertainty, access to finance (Lawless, Martinez, & O'Toole, 2020) and other constraints. Recent research has indicated that the investment gap is particularly acute for research and development activities (Gargan et al., 2024).

Given this economic context, the aim of this research is to revisit the evidence around the SME financing landscape for Irish enterprises. We explore patterns of both credit demand as well as credit supply in a euro area context by drawing on the European Central Bank Survey on Access to Finance for Enterprises (ECB SAFE). This allows us to benchmark Ireland to other countries as well as explore the extent to which different factors are impacting credit access across countries. Two specific issues we explore are the extent to which interest rates and banking sector competition are impacting credit demand and supply in Ireland.

A number of findings emerge from our analysis. Firstly, on the credit demand side, applications for all financing types, across euro area small firms, peaked following the financing crisis and has been declining ever since. The high level of demand at the height of the crisis is likely to reflect refinancing demand as banks withdrew existing facilities. The only break to this downward trend was an uptick following the onset of the COVID-19-pandemic. For Irish enterprises, applications were extremely high following the crisis and have declined substantially. It does however remain amongst the highest of the countries explored; credit applications peaked at approximately 50 per cent of enterprises in early 2012 whereas in late 2024 this had fallen to just over 30 per cent.

Focusing on the different types of financing, there are two clear differences between Ireland and other countries. First, Irish firms have a higher demand for trade credit and this demand has not waned as the banking sector has stabilised.[1] Second, Ireland has a lower demand for bank loans than in other countries and, again, this has remained the case as the macroeconomy has recovered. These findings hold when controlling for firm-specific differences across countries as well as macroeconomic and banking sector variables to capture economic and financial differences.

The low level of demand for bank loans and a reliance on trade credit has a number of potential economic implications. Considering first the latter point, a reliance on trade credit may impact the efficiency of financial intermediation, as these credit facilities are not as flexible (across firm transactions) as are other working capital facilities. For example, they may limit trade to existing supplier who provide the credit that cannot be carried across to other transactions, from a liquidity perspective. This may also have implications for purchasing and competition if trade credit is used in inter firm price bargaining. Trade credit also moves risk from banks to firms in terms of credit default which can also create challenges in terms of allocative efficiency (selection, screening and monitoring firms activities).

The second consideration in terms of demand for bank loans relates to capital formation. A number of studies have indicated that Irish enterprises investment activity is low (particularly for R&D) relative to other countries and over time (Gargan et al., 2024; Kren et al., 2025). Typically bank loans provide larger volumes of capital that cannot be replicated out of existing funds and allow longer repayment terms than some other financing types thus allowing an accumulation of capital that is long term in nature. If bank loan demand is low, this may represent the ongoing hesitation and uncertainties in the economy which are holding back Irish firms from committing capital. If this is the case, it may have long term implications for Irelands growth rate, in particular as major capital investment will be needed in the coming years as part of the climate transition, digitalisation and the construction sector.

Moving next to the functioning of the credit market and the level and scale of credit constraints. In terms of credit access, there has been a clear downward pattern in terms of credit denials for all Irish firms over the period since 2013; consistent with the pattern observed in other euro area countries. However, for most of the period in question, we find no statistically significant difference between Ireland and other countries in terms of bank loan or credit line rejections. The most recent period since COVID-19, we

[1] Trade credit is often see as an emergency replacement for bank credit during crisis times (Casey & O'Toole, 2014) and a drop in usage would have been anticipated as the economy recovered.

do find marginally lower rejections rates for Ireland. However, the relationship between rejection rates and applications is important in this context: as the demand is lower than expected for Ireland, the lower rejection rate could just be a function of the type of borrowers or entities that did apply for credit, thus clouding our interpretation of lower rejection rates as indicating a market with well functioning access.

We also analyze trends in discouraged borrowers, firms that need financing but do not apply because they expect rejection. This reveals a hidden component of credit rationing that is not reflected in conventional measures such as denial rates. Ignoring this group could lead to an underestimation of the true extent of credit constraints in the economy. Our results show that, in Ireland, there is a lower level of discouraged borrowers than the average of euro area across all types of financing, and this finding is robust after controlling for firm-level and macroeconomic factors. Ireland has a considerably lower level of discouraged borrowers seeking bank loans, with no sign of a convergence toward the euro area benchmark. This suggests that the relatively low level of bank loan applications in Ireland is unlikely to be driven by self-exclusion on the demand side. Instead, it might point to structural factors within the banking system itself, such as borrowing costs or unattractive loan terms, that play a central role in suppressing demand.

In order to explore the final point in more detail, we use the coefficients in the estimated models to undertake a range of scenarios. In these scenarios, we focus on counterfactual explorations for interest rates and the level of banking competition; we explore what might we expect to happen to Irish credit demand and supply if competition was higher and interest rates were lower. We parameterise these scenarios by using the average levels of these variables in other countries. For Ireland, since the crisis, the level of lending rates for firms has been consistently higher than for other countries and the level of competition has fallen (as many banks exited the market after the crisis). We find that credit demand for bank loans and credit lines would have been substantially higher if interest rates converged to the average of other euro area countries. We also find that discouragement would be lower if competition was higher in Ireland. Thus the legacy effects of the financial crisis (higher interest rates and lower competition) are continuing to shape credit market outcomes in Ireland for small firms.

The structure of the paper is as follows: section 2 provides an overview of the data and empirical approach; section 3 discusses the main results; section 4 identifies key determinants and simulates the impact of interest rate and banking competition shocks on credit applications and discouraged borrowers; finally, section 5 offers concluding remarks.

2 DATA AND SUMMARY STATISTICS

2.1 Data

In this paper, we use data from the Survey on the Access to Finance of Enterprises (SAFE), conducted by the European Central Bank (ECB). The SAFE survey was first introduced in 2009, with early rounds conducted twice per year with a limited set of questions and in a restricted number of euro area countries. A more comprehensive "Common round" conducted in cooperation with the European Commission and

covering all European Union Member States plus several neighboring countries, commenced in 2009 and was initially carried out every two years until 2013. From 2013 onwards, both the ECB-specific rounds and the Common rounds transitioned to an annual frequency, typically conducted around April and October. Since 2024, ECB rounds have become quarterly (Q1, Q2, Q4), while Common rounds are conducted annually (Q3).

The SAFE survey covers 20 euro area countries, 7 other EU member states, and some additional countries, with the specific countries surveyed varying across rounds. For consistent comparison, the paper focuses on 12 euro area countries that have regularly participated: Belgium, Ireland, Italy, Spain, France, Germany, Greece, Slovakia, the Netherlands, Austria, Portugal, and Finland, with more than 280,000 firm-level observations. Firms vary by size (micro to large) and operate in four sectors (Industry, Construction, Trade, and Services). Agriculture, finance, public administration, education, and health are excluded.

The survey has expanded its sample size, with a particular emphasis on the larger euro area economies. Specifically, the sample size has increased to up to 1,500 enterprises in Germany, France, and Italy, and up to 1,300 enterprises in Spain. It is important to mention that the number of Irish enterprises surveyed increased from approximately 100 in 2009 and the first half of 2010 to 500 per round from the second half of 2010. The sample comprises approximately 10,000 firms per round for the most recent rounds.

The SAFE survey provides information on firms' decisions regarding credit applications, and for those that applied, their success in obtaining credit. The survey also captures a range of firm characteristics, including size, age, trading status, profitability, and employment activity.

2.2 Indicators

To analyze firms' interactions with financial markets, we begin by categorising enterprises according to their credit demand and application outcomes, using information directly obtained from the survey. Firms are first divided into two broad groups: those that expressed a demand for credit and those that did not. Among firms with credit demand, we further distinguish between those that submitted an application (active demand) and discouraged borrowers—firms that needed credit but chose not to apply because they believed banks were not lending, found the application process too burdensome, or perceived financing costs as too high. For firms that did apply, outcomes also vary: some received the full amount requested, while others were either completely rejected or approved for only part of the desired amount.

In this paper, we focus on three indicators that capture different stages of firms' access to finance: credit applied (demand side), credit denial (supply side), and discouraged borrowing. These indicators are constructed from firms' responses to specific questions in the SAFE survey, as described in the following section.

On the demand side, firms have been asked if they have applied for the following types of financing in the past six months: a) bank loan, b) trade credit, c) other external financing, d) credit line, bank overdraft or credit cards overdraft. For each type, firms were asked to select one of the following responses: 1) they

applied, 2) they did not apply because of possible rejection, 3) they did not apply because of sufficient internal funds or 4) they did not apply for other reasons. Firms applied for any of these types of credit are captured by the credit applied indicator; a binary variable equal to 1 if the firm applied, and 0 otherwise. Firms that answered that they did not apply because of possible rejection are considered "discouraged borrowers".

If applying for financing, firms are asked about the outcome of their application. Possible responses include: receiving the full amount, receiving 75% or more, receiving less than 75%, rejecting the offer due to high cost, being fully rejected, or still awaiting a decision. Using answers to this question, we construct a separate indicator for credit denial. This measure includes only those firms that applied for credit but were either rejected outright or received less than 75% of the requested amount. Like the other indicators, the credit denial indicator is binary and takes the value of 1 if the firm falls into one of the two defined categories, and 0 otherwise.

This framework, informed by the methodology developed by Ferrando et al. (2013) and applied to the Irish context by Holton & McCann (2012) and Gerlach-Kristen et al. (2015), allows us to systematically separate supply-side from demand-side drivers of the financing patterns observed in our data.

Table 1 below outlines our definitions of credit applied, credit denial and discouraged borrower indicators, clarifying the construction of each binary variable and the underlying response categories drawn from the SAFE survey.

Table 1: Overview of Credit Demand and Credit Constraint Definitions

Indicator	**Definition**
Credit Applied	Binary indicator (1=yes, 0=no) if a firm: - Applied for a bank loan, credit line, trade credit, or other external financing.
Discouraged Borrower	Binary indicator (1=yes, 0=no) for firms that - Did not apply because of possible rejection (Discouraged Borrower).
Credit Denial	Binary indicator (1=yes, 0=no) for firms that had a Credit Demand (i.e., Credit Demand Indicator = 1) and experienced any of the following: - Application was rejected. - Received less than 75% of the amount applied for.

2.3 Trends in Key Indicators

In this section, we present the key trends across both credit demand and credit supply as well as splitting these developments out across different firms and types of financing. The heterogeneity is important as often access to finance challenges can be concentrated across particular groups of firms or enterprises (A. Berger & Udell, 2006) and thus the policy response needs to be carefully targeted.

2.3.1 Credit Applied

The following section presents the overall trends in credit applications across the euro area countries and examines whether these trends differ by financing type.

The overall trend shown in Figure 1 is one of gradual decline in credit demand as the euro area economy recovered from the global financial crisis. However, there is significant variation both between countries and between survey rounds within countries. Irish credit demand is towards the higher end of the range of countries throughout the period 2009 - 2024.

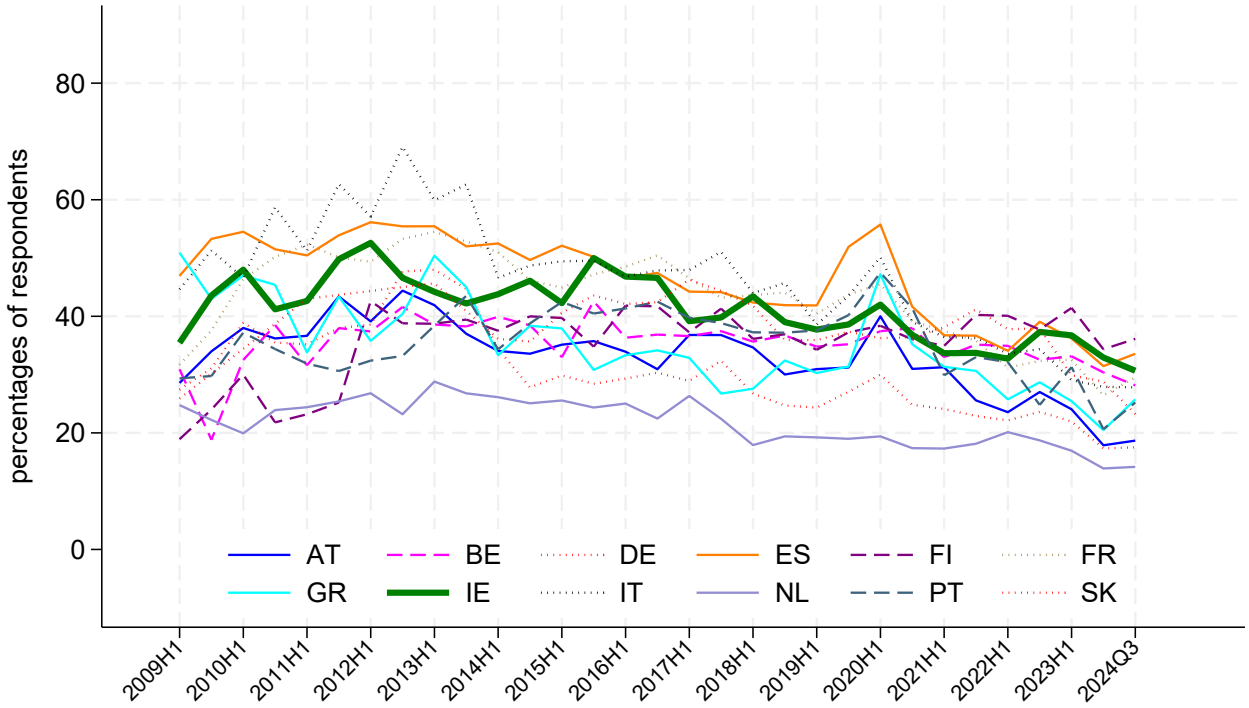
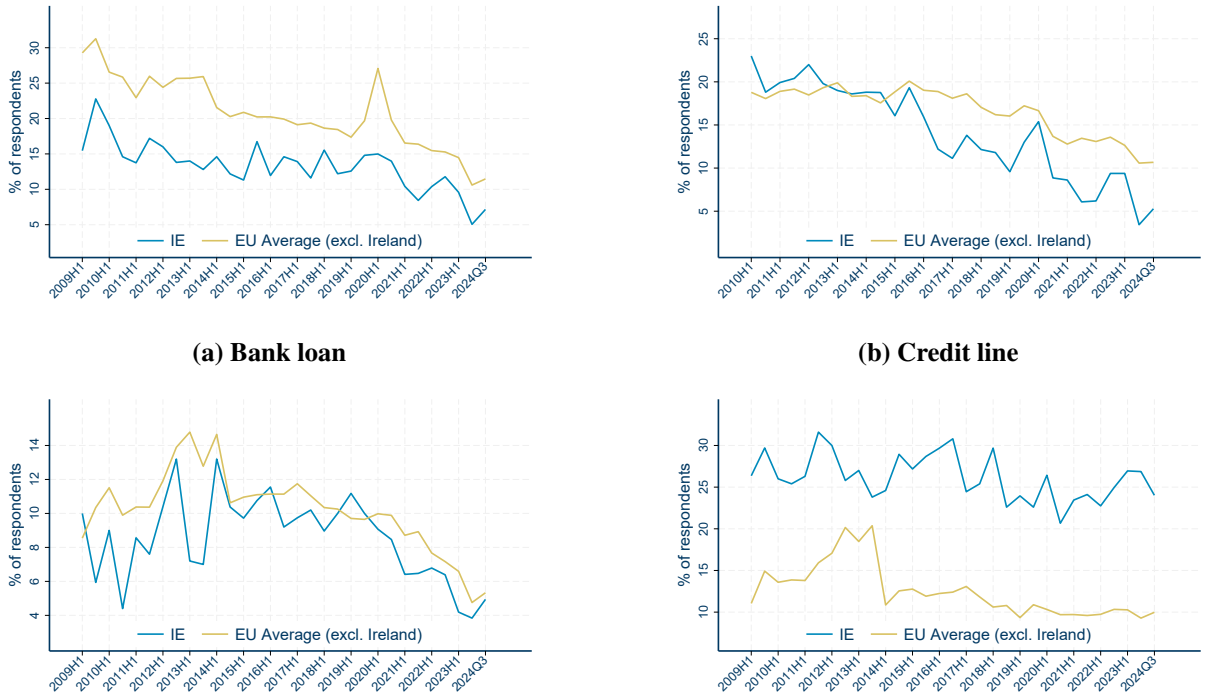


Figure 1: Credit applications across Europe

While the trend in Ireland mirrors that of the broader euro area basket of countries, the level of credit applications is high relative to other countries as noted above. To understand this in more detail, we explore the differential trends in Ireland relative to other euro area countries by the type of financing. Four types are presented in figure 1; bank loans, shorter term credit lines, trade credit and other financing. Focusing on the developments across these areas, this apparent tendency for a higher proportion of Irish firms to demand credit can be seen as a function of differential demand patterns across financing types in Ireland. More specifically, Irish firms appear to have a much stronger demand for trade credit facilities relative to other countries and this has remained the case throughout the period in question. For bank loans, while the downward trend has been evident for Irish enterprises and other euro area countries, Irish firms clearly have a lower level of demand for bank loans and credit lines. For other external financing

(which includes a basket of types such as equity financing and other external funding sources), Irish firms appear to have demand trends similar to that of other countries (high demand following the financial crisis and a subsequent moderation overtime).



(a) Bank loan

(b) Credit line

(c) Other financing

(d) Trade credit

Figure 2: Credit applications across financing types

2.4 Credit denial

Having reviewed the trend in credit applied between Ireland and other countries over time, we now move to exploring the issue of credit denials or access challenges. In this sub-section, we briefly outline the general trends in these indicators overall and by financing type.

2.4.1 Overall trends

As shown in Figure 3, after seeing a significant increase during the global financial crisis for the majority of euro area countries, there has been a general and sustained downward trend over time across all euro area countries in the sample since the recovery of the euro area economy starting in 2013. While this overall trend is evident, there remains considerable variation in the extent of these changes across individual euro area countries. Ireland exhibits a similar pattern over time, initially mirroring the broader euro area trend. However, the decline in credit denials for Irish firms has been more pronounced relative

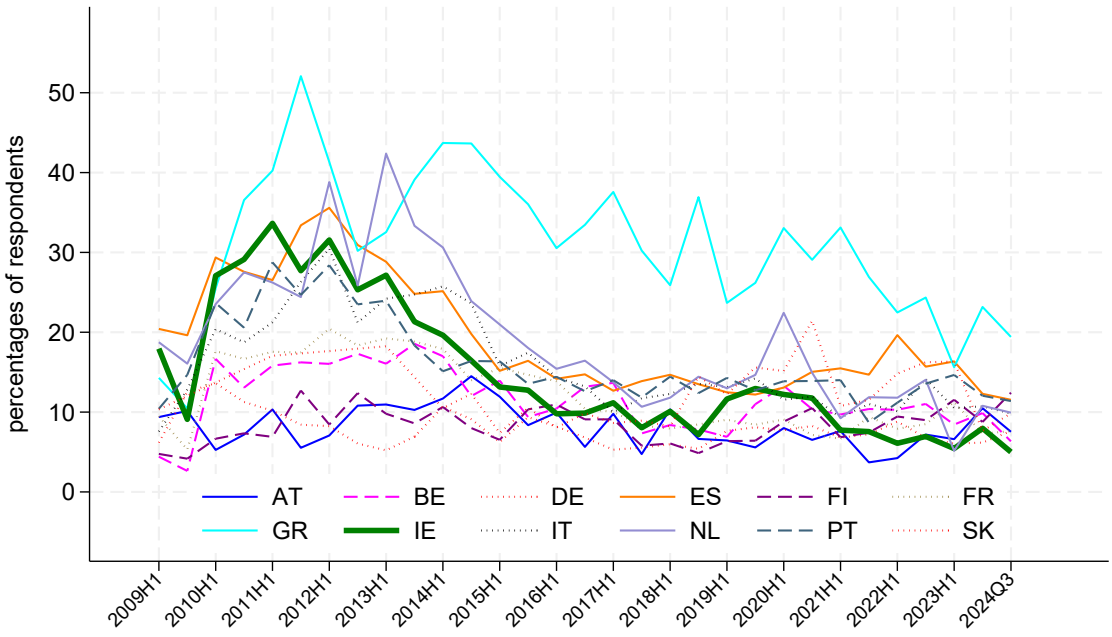
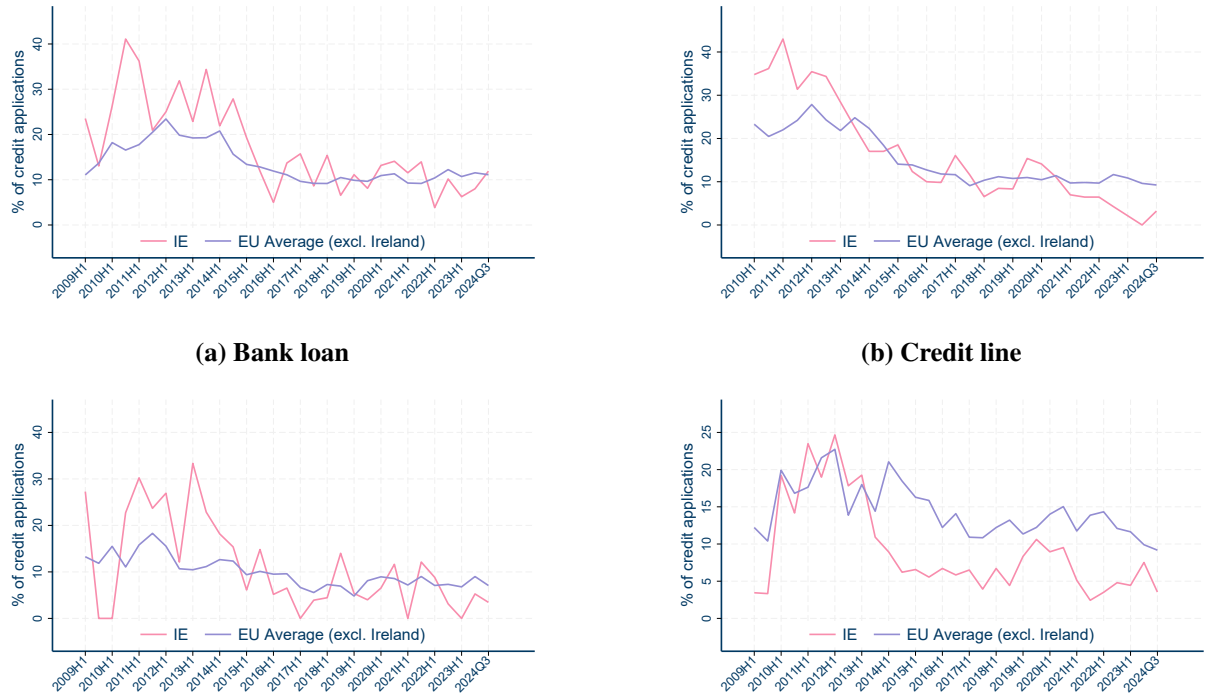


Figure 3: Credit denial by country over time

to its euro area counterparts. Ireland currently reports the lowest rejection rates amongst the countries considered.

2.4.2 Trends by Financing Type

Throughout the sample period, there was a general downward trend in credit-denied firms across all types of financing in both Ireland and the euro area average. Figure 4 shows that while the trend of credit denial in Ireland mirrors the overall euro area trend, there are notable differences in the level and pattern across financing types. Though significantly recovered from the financial crisis with a substantial decline, rejections for bank facilities in Ireland have increased since 2023. This leaves Ireland with a slightly higher rate of denials for bank loans, while still maintaining a lower level of denials for other financing options.



(a) Bank loan

(b) Credit line

(c) Other financing

(d) Trade credit

Figure 4: Credit denial across financing types

2.5 Discouraged borrowers

2.5.1 Overall trends

Discouragement has been recognized as a prevalent phenomenon within debt markets (A. N. Berger et al. (2021)). It is important to explore this type of borrowers as discouraged borrowers represent firms that need financing but do not apply because they expect rejection. This reveals a hidden component of credit rationing that is absent from traditional measures (like rejection rates). Prior studies indicate that discouraged borrowers are twice as frequent as borrowers who experience rejection (M. Berger & Sclip (2023)). Ignoring this group will underestimate the true extent of credit constraints in the economy. In this section, we will explore the general trend for this group of firms across euro area since the financial crisis, as well as how patterns vary by financing types.

Across euro area, discouraged borrowers declined steadily after the financial crisis, but it has edged upward slightly following COVID-19, as shown in Figure 5. Ireland started as the one with the largest share of discouraged borrowers during the financial crisis and then mirrored the general downward trend with more sharply decline. Currently, Ireland is positioned among the countries with the lowest level of discouraged borrowers.

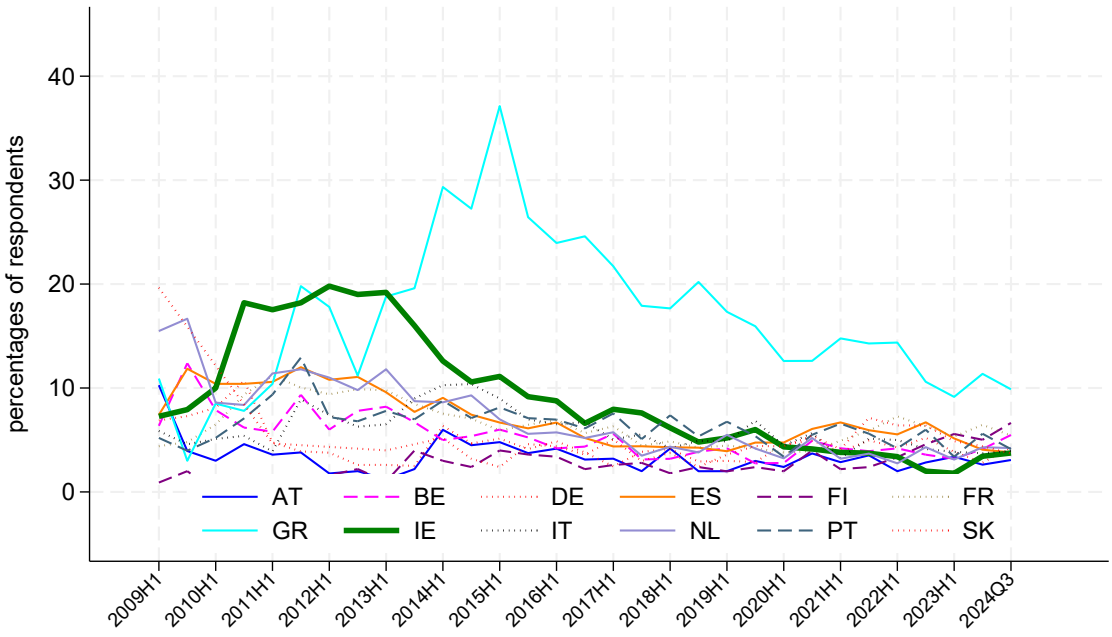
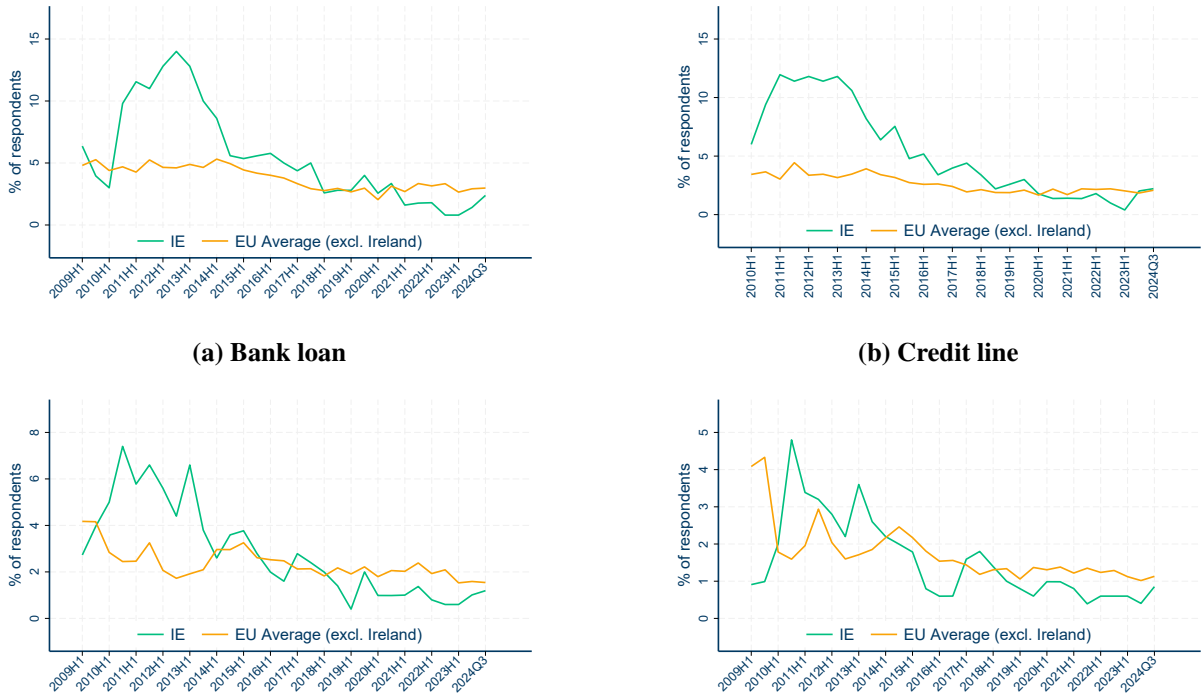


Figure 5: Discouraged borrowers by country over time

2.5.2 Trends by Financing Type

Disaggregating discouraged borrowers by types of financing will help reveal which products are most affected by self-exclusion, and in some way particular relevant as firms' preferences and perceived risks vary significantly across financing instruments.

The financial crisis has left Ireland with a sustained higher level of discouraged borrowers across all financing types, as we can see in Figure 6. However, the subsequent period witnessed a pronounced decline. Ireland now reports levels of discouraged borrowers below the EU average for most financing categories, except for credit lines. Since late 2022, discouraged borrowers registered an uptick in Ireland across all financing channels, which appears to diverge from the prevailing trend of the EU average.



(a) Bank loan

(b) Credit line

(c) Other financing

(d) Trade credit

Figure 6: Discouraged borrowers across financing types

3 ECONOMETRIC ANALYSIS OF SUPPLY AND DEMAND TRENDS

Having reviewed the general unconditional trends across firm types in terms of supply and demand, we now aim to consider whether the trends observed hold when we control for economic and banking system factors that may affect firm financing. For example, the fact that Irish firm credit access was tighter than in other countries during the financial crisis period was likely to be justified given the deterioration in the economic performance of enterprises as the economy collapsed. Thus the trends observed across countries could be purely driven by the differential economic and financial conditions in those markets and the relativities across countries in terms on the ranking of constraints and demand-side factors.

To explore whether the trends are well explained by these economic fundamentals, and to also explore what the determinants of credit supply and demand are, in this section, we run a series of regressions where we attempt to control for confounding factors and differences across countries. We then subsequently review the trends of these controlled regressions vis-a-vis the market assessment undertaken above.

3.1 Empirical Methodology

To model our indicators of supply and demand we need a system of equations which allows us to explore the factors affecting both equations jointly. We apply a two-step, Heckman-style bi-probit model that estimates the probability of a firm (a) exhibiting credit demand and (b) experiencing credit constraints. The use of a selection model is necessary to account for the fact that firms who face credit constraints are not representative of the entire sample of firms, they are a subset of firms that have already exhibited credit demand. This structure allows us to disentangle the demand-side and supply-side drivers of credit access.

$$Demand: \quad Pr(D=1) = \quad f(X_{i,t}, Z_{c,t-1}, \varepsilon_c, \tau_t) \tag{1}$$

$$Supply: \quad Pr(C=1|D=1) = \quad f(X_{i,t}, Z_{c,t-1}, B_{c,t-1}, \varepsilon_c, \tau_t) \tag{2}$$

The explanatory variables that we have in this model can be broken down into three groups of factors:

- $X_{i,t}$ - firm-level characteristics
- $Z_{c,t-1}$ - macroeconomic factors
- $B_{c,t-1}$ - banking system financial factors

$X_{i,t}$: Firm-level characteristics consist of characteristics related to the collection of the survey data, to the nature of the firm and to its economic performance. These include fixed effects for the survey wave, country of origin, firm age, firm size[2] and firm sector[3]. We also include controls for whether the firm is a subsidiary and for firm ownership.

To capture the economic influences which impact firm credit demand and supply, we include a range of indicators that effect the performance of the enterprise. These variables aim to control for those factors which would determine how a firm is performing and would feed into their own credit demand requirements but also into any screening for credit access by financial institutions or other providers of financing. In the SAFE survey, continuous measures of firm performance are not available so we use indicators of relative performance as recorded on the survey. More specifically, we include indicators to captures whether the following variable has increased, decreased, or remained unchanged in the past six months: turnover, labour costs, other costs, interest costs, net income, economic outlook, and profitability. We also include indicators for whether the firms credit history or capital position have improved, deteriorated or remained unchanged over the past six months. In general, we expect that these firm specific factors,

[2] Firms categorised based on the number of employees as either micro (1-9), small (10-49), medium (50-249), or large (250+) enterprises

[3] Four sectors allocated according to NACE sectors. Industry sector covers NACE sectors B - E. Construction sector is NACE sector F. Trade sector is NACE sector G. Services sector includes NACE sectors H - J, L - N, R - S.

contained in $X_{i,t}$, should be included in both the supply and demand equations as they are likely to affect both sides of the credit market.

The second set of factor that we include are in the vector $Z_{c,t-1}$. These include time-varying macroeconomic characteristics vary across country and time period. These factors enter the model with a lag to remove possible reverse causality through simultaneity. For these variables we include personal consumption expenditure growth to capture the growth in the domestic economy, the unemployment rate and the rate of inflation. These variables should capture differences in the macroeconomic performance of the overall markets in which SMEs operate and can enter both the demand and supply of credit equations i.e. banks may use these variables to change credit access as well as firms facing changing demand conditions.

The final vector of variables that we include in the analysis of country-time varying banking system characteristics. We include these only in the supply equation as we expect these to only affect credit outcomes through the banking system developments. These variables are designed to capture the frictions that banks may face in terms of having funding available to lend as well as structural characteristics of the banking system such as competition. More specifically, in the vector, $B_{c,t-1}$, we include the Tier 1 capital ratio, the cost to income ratio, the return on banking sector assets, the Herfindahl index of banking sector competition and the debt to GDP ratio. We also include the interest rate on non-financial corporate loans but this is included in both the demand and supply equations as the price of credit impacts demand as well as supply.

3.2 Credit Applied model - What impact do the firm-level and macroeconomic controls have?

The following section examines whether Ireland differs from other euro area countries over time, after controlling for various characteristics outlined above. It applies the model outlined in Section 3.1 above. We present two types of marginal effects, first to examine the trend in euro area over time and second to examine differences between Ireland and euro area.

3.2.1 Time trend across euro area

First, we examine the time trend across euro area. The marginal effect presented captures the extent to which credit demand differs on average by survey round. The difference presented is a marginal effect relative to the applications for credit in the first period of the survey. Figure 7 suggests that credit applications declined as the euro area economy recovered from 2013/2014 onwards.

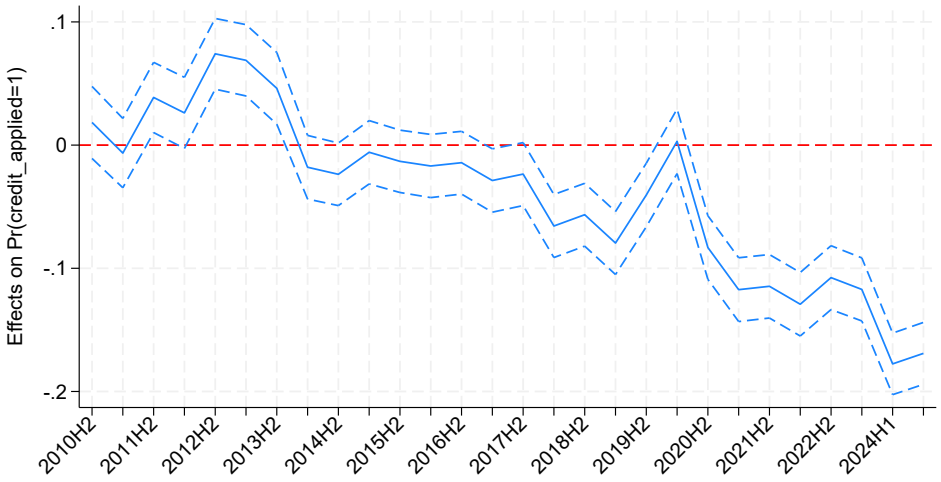
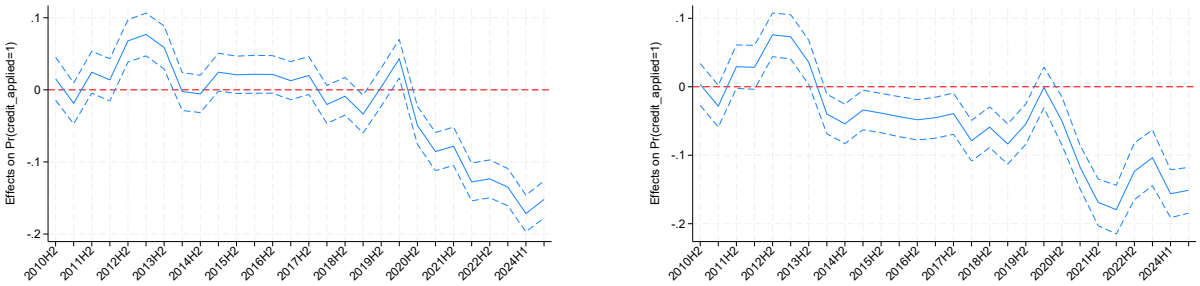


Figure 7: Credit applications time trend, all countries

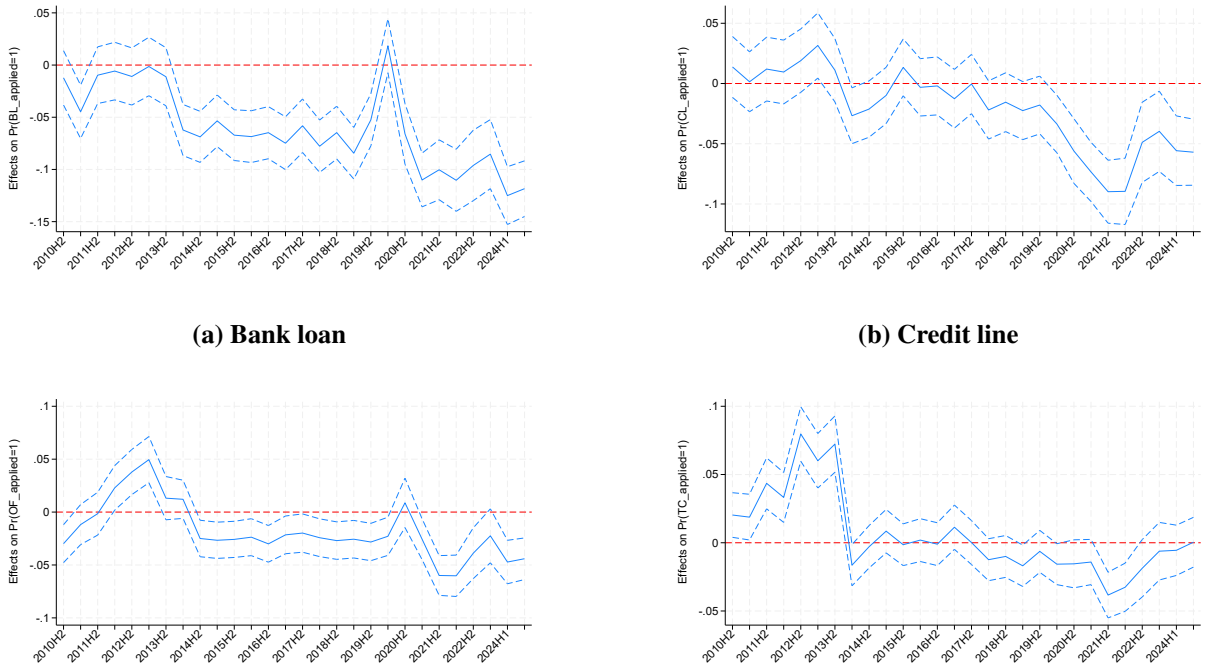
However, much of this decline can be explained by the firm-level and macroeconomic controls outlined above. In Figure 8, we stagger the imposition of the controls. The left-hand panel shows the marginal effect after controlling for only the firm-level characteristics. This suggests that there is no significant decline in applications for credit after controlling for firm-level characteristics, at least until after COVID-19. The right-hand panel shows the effect of also adding the macroeconomic controls. The addition of macroeconomic time-varying controls shows that credit demand was somewhat lower than in the reference period throughout the 2010s. The figure also highlights the most noteworthy trend in credit applications in euro area, namely the precipitous decline in applications since COVID-19. This decline is not explained by either firm-level characteristics or by the prevailing macroeconomic environment.



(a) Firm-level controls **(b) Firm-level and macro controls**

Figure 8: Credit applications marginal effect with firm-level and macroeconomic controls

3.2.2 Estimated effects on applications across financing types



(a) Bank loan **(b) Credit line**

(c) Other financing **(d) Trade credit**

Figure 9: Credit applied across different financing types

In the previous section, the marginal effects of time showing key trends in credit market conditions, showing how the likelihood of firms applying for credit changes during different economic periods. These time-based effects reflect broader macroeconomic shocks, such as financial crisis or recovery phases, and help identify when credit market tighten or loosen.

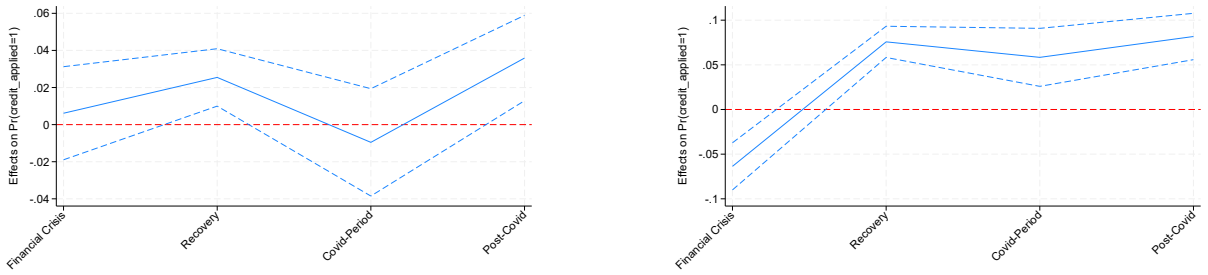
We will look at the impact of time trend on different types of financing. Figure 9 shows that while applications for bank loan shows significant decrease after COVID-19, applications for other types of financing including credit line, trade credit and other financing shows a recovery.

3.2.3 Country effect, Ireland compared to the average

Second, we examine differences between Ireland and the other countries using the model described above. The marginal effect presented captures the extent to which credit applications differs, on average in Ireland, in a given survey wave, having controlled for firm-level and macroeconomic factors. The marginal effect is an interaction term between the country fixed effect and the time period variable. To preserve a sufficiently large sample size, we cluster the survey rounds into four distinct periods. The following table details the time periods.

Table 1: Time Periods

Period name	Time period (number of rounds)
Financial Crisis	2009 H1 – 2013 H2 (10)
Recovery	2014 H1 – 2019 H2 (12)
COVID-Period	2020 H1 – 2021 H2 (4)
Post-COVID	2022 H1 – 2024 Q3 (5)



(a) Without controls **(b) Firm-level and macro controls**

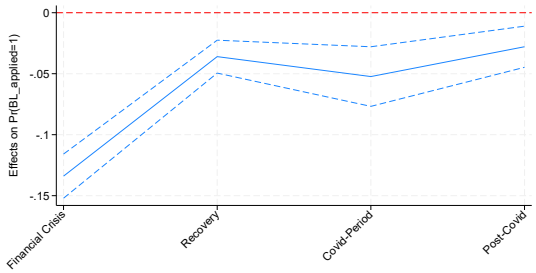
Figure 10: Irish credit demand marginal effect without and with controls

First, we present a comparison of the difference between Ireland and the average of the other countries with and without controls.[4] Figure 10 shows that while Irish credit demand appears stronger than the average without controls, this effect is not statistically significant. However, imposing firm-level and macroeconomic controls reverses this interpretation during the crisis period, implying weaker-than-average demand, before the pattern becomes positive and significant in the recovery period.

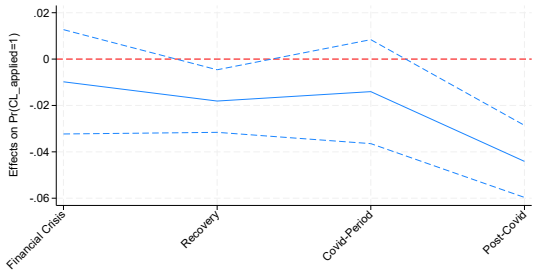
Throughout the economic recovery of the 2010s and the post-COVID period, Irish credit applications have remained stronger than the average. However, considering only headline credit applications masks the true story. The key feature of Irish credit demand revealed by this modeling exercise is the tendency for Irish firms to apply for trade credit at much higher levels than firms in other countries and to apply for bank loans at much lower levels.

Figure 11 shows that the negative coefficient for bank loan applications has reduced over time but that the strong demand for trade credit has persisted throughout the recovery from the financial crisis and into the post-COVID period. Applications for credit lines has remained slightly lower than the average while demand for other financing has almost converged to the average.

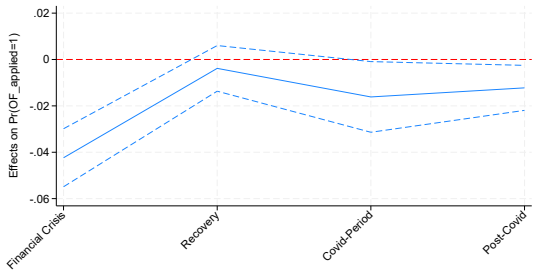
[4] In the country-specific analysis we do not differentiate between firm-level and macroeconomic controls.



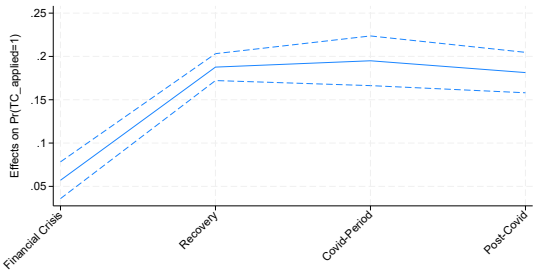
(a) Bank loan



(b) Credit line



(c) Other financing



(d) Trade credit

Figure 11: Irish credit application marginal effects with firm-level and macroeconomic controls, by financing Type

3.2.4 Credit applied - Key findings

Two elements stand out from this analysis. First, the decline across euro area in credit applications since the pandemic is stark. Second, applications for trade credit are higher than average in Ireland while applications for bank loans are lower. The fact that this difference is robust to the inclusion of controls for both firm-level characteristics and the prevailing macroeconomic conditions suggests that there may be a structural difference in credit demand in Ireland.

There are macroeconomic implications to this structure through two channels. First, bank loans are typically understood to finance investment by firms whereas trade credit is a form of working capital. Second, and more importantly, reliance on trade credit has implications for the allocative efficiency of firm decisions. Less efficient procurement or purchasing decisions may result from a reliance on trade credit from particular suppliers.

3.3 Explaining credit denial trends

The next section examines whether Ireland's trend is different from those observed in other euro area countries over time. Using the model introduced in Section 3.1, we present two sets of marginal effects: one capturing the overall euro area trend, and the other illustrating Ireland's divergence from this trend.

3.3.1 Time trend across Europe

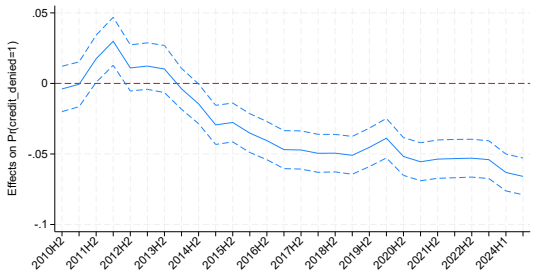
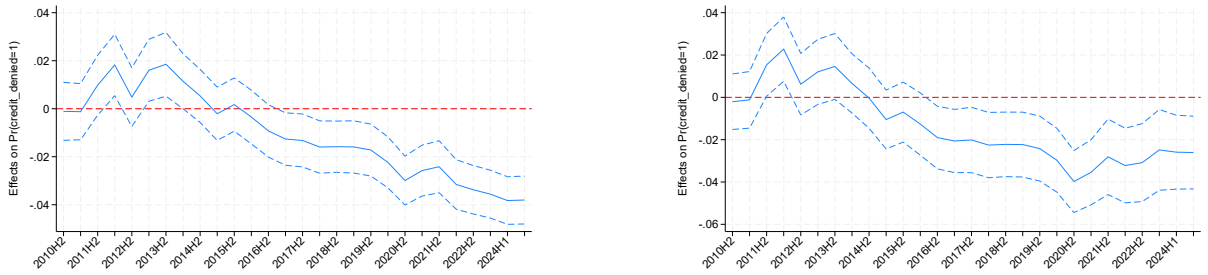


Figure 12: Credit denial marginal effect with no control

We examine the temporal trend across euro area, focusing on how credit denial evolved over survey rounds. The reported marginal effect reflects the average change in credit denial compared to the first period. As shown in Figure 12, credit denial increased significantly in the aftermath of the financial crisis before showing sign of decline after late 2011.

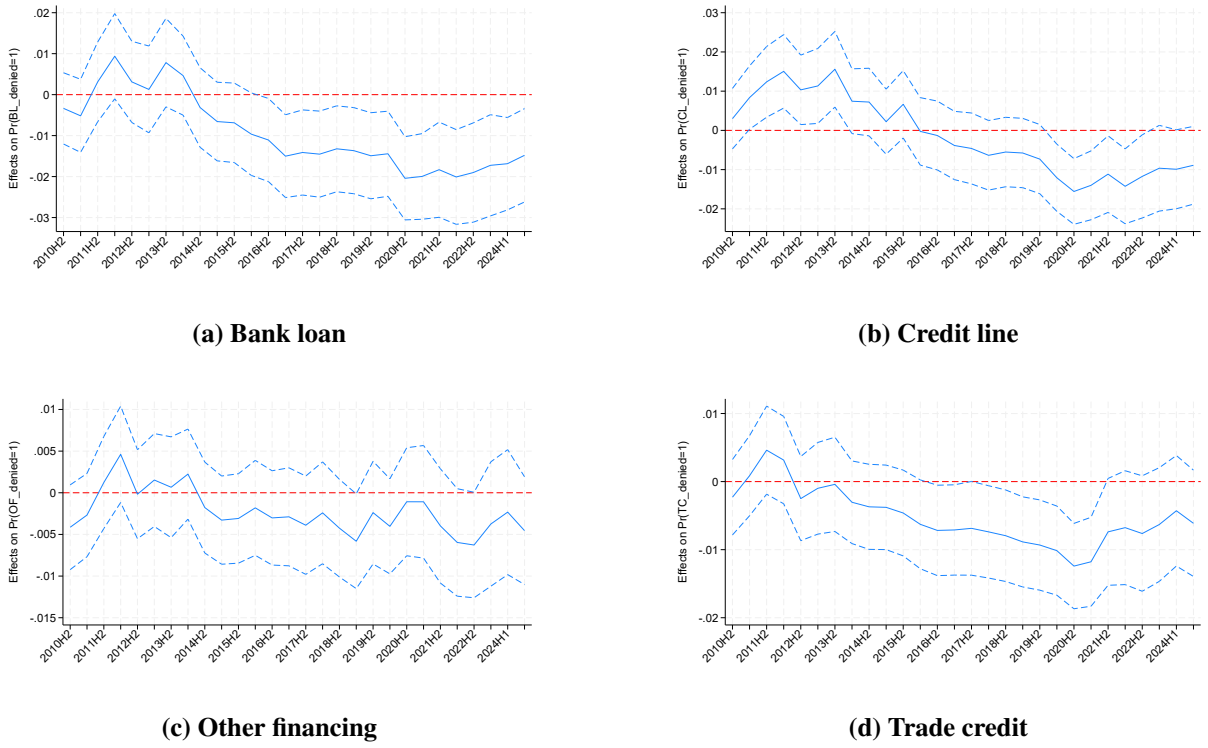


(a) Firm-level controls **(b) Firm-level and macro controls**

Figure 13: Credit denial marginal effect with firm-level and macroeconomic controls

Much of the decline after the financial crisis can be explained by adding the firm-level and time-varying macroeconomic variables. In Figure 13, the left-hand panel displays the marginal effect after controlling solely for firm-level characteristics. The results suggest that, after accounting for these variables, there was precipitous decline in credit denial since late 2013.

The right-hand panel shows the marginal effect after controlling for both firm and time-varying macroeconomic variables, which shows marginal effects levelling off, with a slight rise since COVID-19. The years of increasing credit accessibility came to a standstill, evident throughout all financing channels, as shown in Figure 14.



(a) Bank loan

(b) Credit line

(c) Other financing

(d) Trade credit

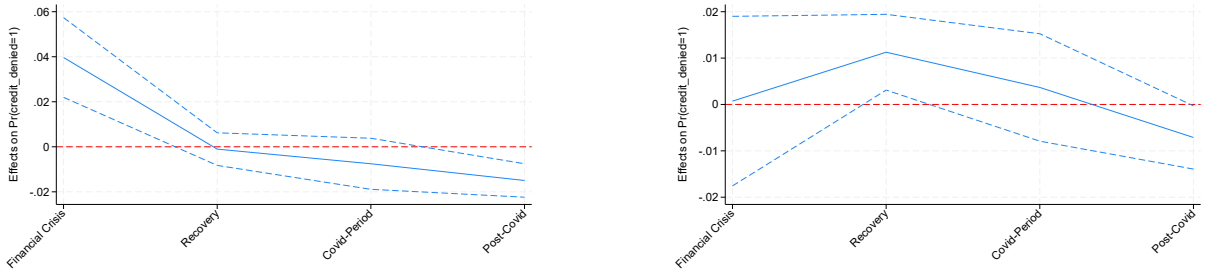
Figure 14: Credit denial marginal effect with firm-level and macroeconomic controls by financing types

3.3.2 Did Ireland tell a different story?

In order to determine whether the degree of credit denial encountered by Irish enterprises differs significantly from that of their euro area counterparts, we now compare Ireland with the euro area average during the sample period. The marginal effects presented indicate the average difference in credit denial between Ireland and the euro area average.

Figure 15 shows the marginal effects on credit denials without and with firm-level and macroeconomic controls. The narratives remain somewhat divergent, particularly during the post-crisis recovery period. Without accounting for controls, Irish firms faced credit rejection levels comparable to those of their euro area counterparts. Yet this masks the underlying trend: after adjusting for firm-specific and macroeconomic variables, Irish firms were denied credit more often than the average during and after the financial crisis and the period leading up to COVID-19, though rates have started to fall recently.

Interestingly, as shown in Figure 16, Irish firms faced fewer rejections in accessing bank loans following the financial crisis. This reflects a distinct national context. One might expect Irish banks, with their massive exposure to the property bubble, to have been more likely to deny both loan and credit line applications. Currently, Irish firms face fewer denials in bank loan and credit line, while remaining higher than the average of euro area for trade credit.



(a) Without controls **(b) With firm-level and macroeconomic controls**

Figure 15: Irish credit denial marginal effects with firm-level and macroeconomic controls

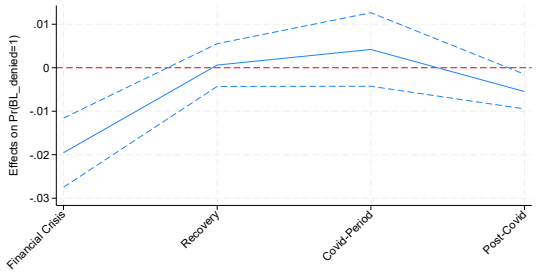
3.3.3 Credit denial - Key findings

Two key points emerge from this analysis: First, after the financial crisis, credit denials steadily fell. Yet, as of late 2016, this trend flattened, which has been seen in all financing channels. In particular, trade credit rejections have shown a slight upward reversal since the onset of COVID-19. Second, Irish credit denials have persisted at levels higher than the euro area average for most of the survey period, a pattern primarily driven by high trade credit rejections. The logic is straightforward: as reliance on trade credit increases, the volume of applications rises, and with it the number of applications were denied.

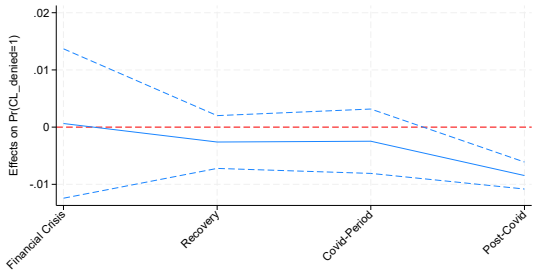
3.4 Discouraged borrowers

3.4.1 Time trend across Europe

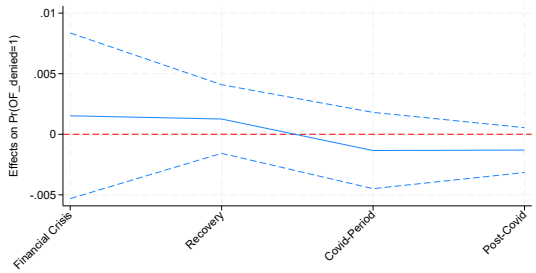
Without controlling for firm-level characteristics and macroeconomics factors, there seems to be a lower level of discouraged borrowers after the financial crisis. However, this masks the true story. The discouraged borrowers actually rose sharply as a result of COVID-19, exceeding the levels seen in financial crisis. This suggests that the consequences of COVID-19 pandemic created a level of uncertainty and economic disruption that discouraged firms from applying for financing to an extent that differed substantially from the experience during the financial crisis.



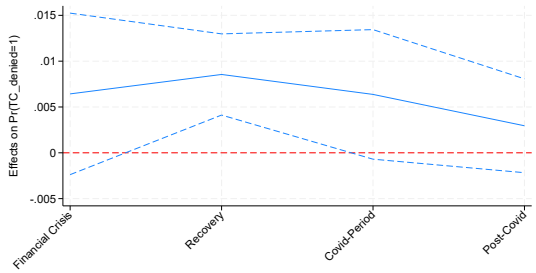
(a) Bank loan



(b) Credit line

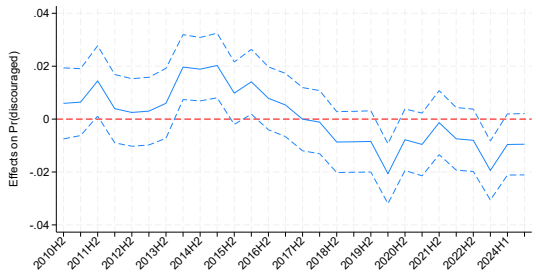


(c) Other financing

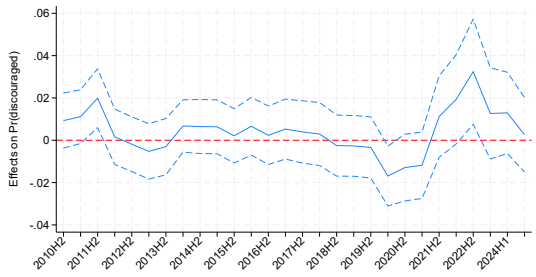


(d) Trade credit

Figure 16: Irish credit denial marginal effect with firm-level and macroeconomic controls, by financing type



(a) Firm-level controls



(b) Firm-level and macro controls

Figure 18: Discouraged borrowers marginal effect with firm-level and macroeconomic controls

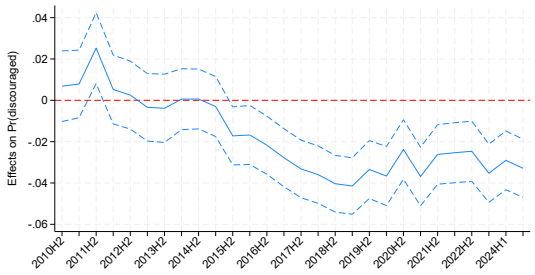
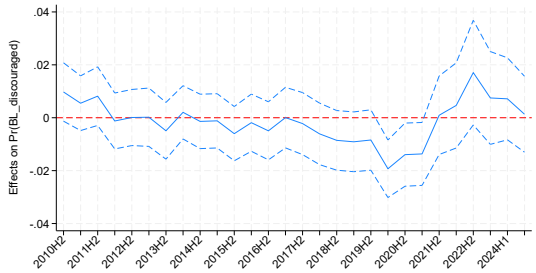
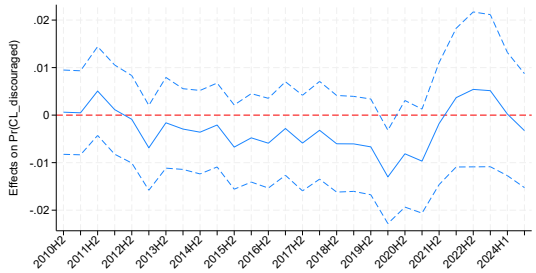


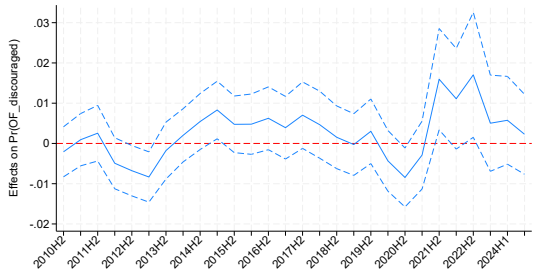
Figure 17: Discouraged borrowers marginal effect with no control



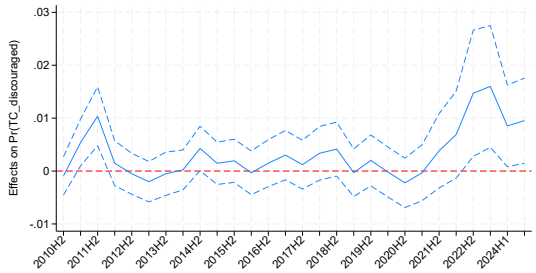
(a) Bank loan



(b) Credit line



(c) Other financing



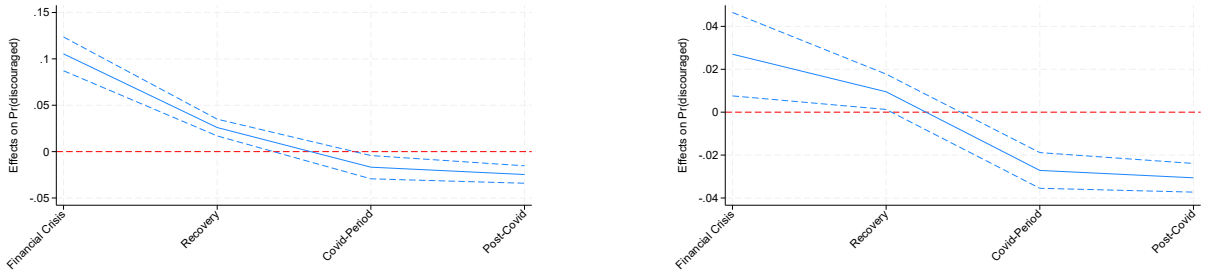
(d) Trade credit

Figure 19: Discouraged borrowers marginal effect with firm-level and macroeconomic controls, by financing type

As shown in Figure 19, discouraged borrowers increased sharply following COVID-19 for all types of financing, and this trend is especially acute in the case of trade credit. This is understandable, as the pandemic caused widespread disruption in global supply chains. Consequently, suppliers have become increasingly cautions about their cash reserves and are less willing to offer delayed payment or other forms of trade credit.

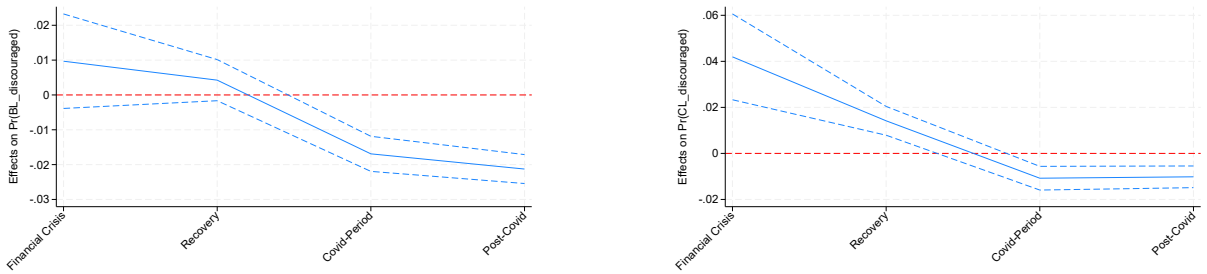
3.4.2 Did Ireland tell a different story

Ireland experienced elevated levels of discouraged borrowers relative to the euro area average during the financial crisis, but then fell markedly throughout the recovery phase prior to the onset of COVID-19. Currently, the level of discouraged borrowers in Ireland is lower compared to the average.

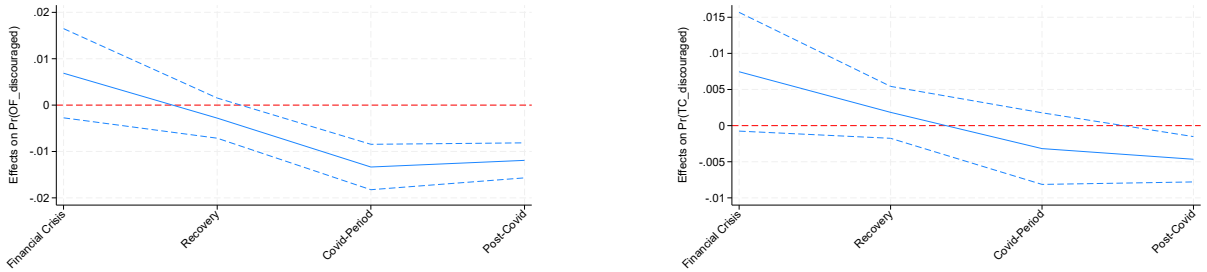


(a) Without controls **(b) Firm-level and macro controls**

Figure 20: Irish discouraged borrowers marginal effect with firm-level and macroeconomic controls



(a) Bank loan **(b) Credit line**



(c) Other financing **(d) Trade credit**

Figure 21: Irish discouraged borrowers marginal effect with firm-level and macroeconomic controls, by financing type

The overall declining trend remains, across all financing channels, though the trend in credit lines has largely converged to the average. A notable gap persists between discouraged borrowers for bank loan and trade credit in Ireland and the euro area benchmark.

4 CREDIT ACCESS DETERMINANTS AND BANKING SECTOR SIMULATIONS FOR IRELAND

4.1 Exploring the determinants of credit outcomes

Beyond understanding the credit access trends across euro area and Ireland, we delve deeper into the underlying economic reasons driving these trends across different financing types.

The model described in Section 3.1 is applied to all financing types[5]: bank loans, credit lines, other financing, and trade credit. The coefficient estimates from these specifications are reported in Appendix 5. Each model includes two binary dependent variables, one for credit applied and one for credit denial. The signs and significance of the coefficients indicate how each variable affects the probability of these outcomes. We then estimated probit models to examine discouraged borrowing behavior across these four financing channels.

Our findings suggest that a number of macroeconomic and banking sector variables play a significant role in affecting credit applications, credit denials and discouragement. Specifically, inflation, interest rates, return on banking sector assets and banking sector competition are among the most relevant factors affecting credit behavior.

The inflation rate is significantly and negatively associated with both applications and discouragement in applying for credit for all types of financing, with effects statistically significant at the 1% level. In terms of the economic channels through which this operates, inflation likely increases uncertainty about future input costs (wages, materials, energy) as well as demand conditions and profit margins. This uncertainty makes long-term investment less attractive and increases firms' reluctance to commit capital. At the same time, inflation may reduce borrower discouragement, as firms' revenues often increase in nominal terms during inflationary periods, improving perceived repayment capacity and lowering fears of rejection.

In our research, the interest rate is found to have a statistically significant negative relationship with both credit applications and denials at the 1% level; this is consistent with a downward sloping demand curve and an upward sloping supply curve (higher interest rates incentivize them to approve more loans, as profitability improves).

In addition, returns on banking sector assets are significantly and negatively linked with denials in bank loans, credit lines, and trade credit. This can be explained by the fact that banks decide whether to approve loans based on risk, capital adequacy, and profitability. Higher returns correlate with better

[5] We employ the specification that includes both firm-level and macroeconomic controls.

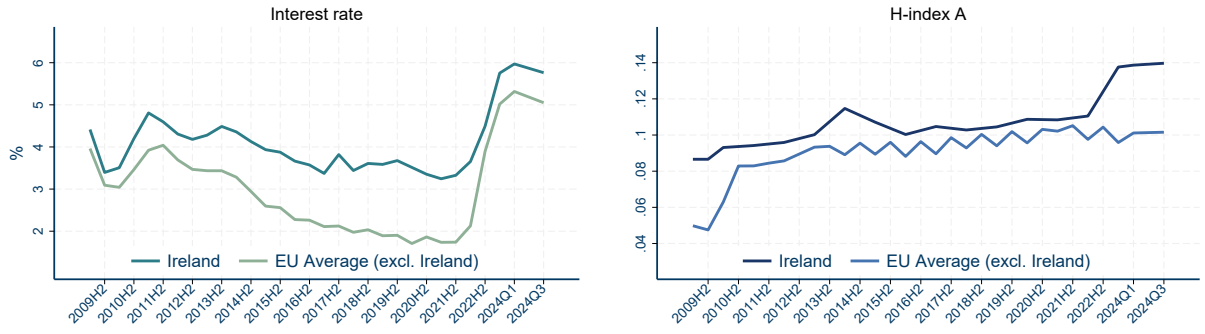
liquidity, making it easier to fund new loans, and on the other hand, fewer denials increase interest income, which boosts overall returns.

Banking sector competition is significantly and positively linked with discouraged borrowing behavior in the credit market at the 1 percent level. With reduced banking concentration, lenders are likely to adopt more cautious lending practices, tightening screening standards and offering less favorable loan terms. This might deter borrowers from applying due to a higher expected probability of rejection.

4.2 Scenario analysis: Interest rates and competition

Interest rates and banking sector competition play a central role in determining credit market dynamics and borrowing patterns. Building on these findings, our next step is to assess how Ireland's distinct banking structure, compared to its euro area peers, has shaped its credit access and firm behavior, and explore how Ireland's credit market might change if these structural difference converged toward the euro area average.

As noted in Coates et al. (2025), lending to Irish SMEs has contracted relative to domestic sector output, and Irish SMEs operate in an environment characterized by weaker banking competition and higher interest rates compared to their euro area peers. Our empirical results have also shown Irish firms had a persistent lower demand for banking facilities, a trend that continued even during the recovery period. This has a number of potential economic implications. Limited engagement with the banking sector, whether due to high interest rates or lack of competition, results in lower investment and slower adoption of advanced technologies. Over time, this will harm a firm's competitiveness and performance.



(a) Interest rates **(b) H-index**

Figure 22: Interest rates on Non-financial corporation loan and Banking competition index

During the sample period, interest rates for non-financial corporations in Ireland have remained substantially higher than the average of euro area throughout the observed period, evidenced in Figure 22. This gap was particularly pronounced following the recovery from the financial crisis and persisted into the years leading up to COVID-19. In the case of banking competition, the higher the H-index, the greater the concentration within the banking sector. Figure 22 shows that the level of concentration in Ireland is

significantly higher than the average.[6] This increasing concentration suggests reduced competitive pressure, which is typically associated with higher borrowing costs and less favourable lending terms can lead many firms to self-exclude from the application process.

To quantify the benefits of reducing borrowing costs and improving banking concentration in Ireland, we run a simulation that models how credit applications and borrower discouragement especially for bank facilities would change if interest rates and banking competition in Ireland were aligned with the average levels in other euro area countries.

There will be a two-step simulation. In the first step, the models estimated above serve as our baseline specification. We will use the coefficients from this baseline as the reference point for all counterfactual analyses. These coefficients are held constant so that the underlying behavioral relationships do not change across scenarios. In the next step, we then substitute the interest rate and banking competition (H-index) variables with benchmark values, which will help us to isolate the impact of these shocks. Comparing the predicted probabilities from the baseline and the counterfactual scenario allows us to quantify how credit applications and borrower discouragement would change under alternative policy settings.

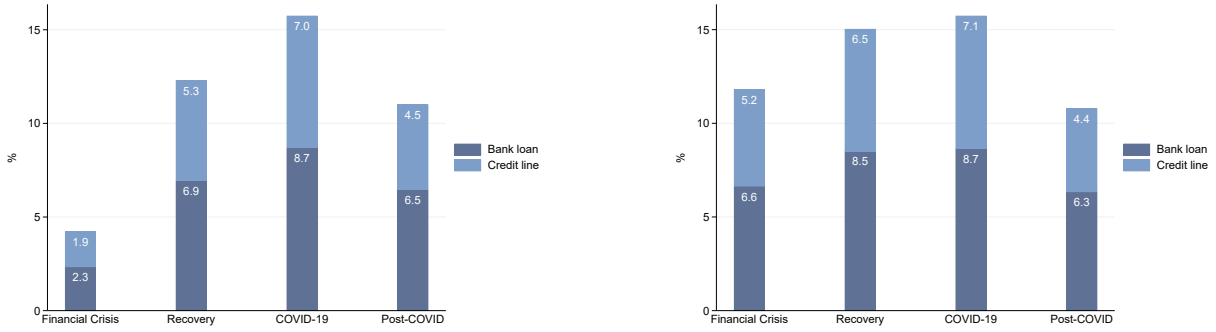
Figure 23 has shown how an interest rate shock affects the probability of submitting applications or becoming discouraged from seeking bank loans and credit lines in Ireland.

We consider two counterfactual scenarios. In the first scenario, we assume that interest rates in Ireland equal the average of other euro area countries. In the second scenario, we fix the interest rates in Ireland to the average of that in four small euro area countries (Austria, Belgium, Netherlands and Finland). For both cases, we keep the estimated coefficients from the baseline model and then substitute the interest rate values with these benchmarks. The percentage change tells how much more (or less) likely a firm is to apply for credit or be discouraged when the interest rate is set to the benchmark level.

Our counterfactual simulations confirm the relationship between the interest rate and credit applications: the interest rate shock, in this case mean a decreased interest rate, positively influences the propensity of firms to seek bank loans and credit lines. This suggests that demand for bank loans and credit lines would have been higher if Irish interest rates converged to the average level of the countries in the survey. As evidenced in Figure 22, with both euro area and small-country peer benchmarks, the aggregated percentage change in bank loan and credit line increasing significantly, moving from around 4 per cent to more than 15 per cent during the COVID-pandemic for both scenarios. Post-COVID, this stimulus has eased to approximately 10 per cent, likely due to the narrowing gap between the interest rate in Ireland and the benchmark values. The demand for bank loans and credit lines responds equally to this shock.

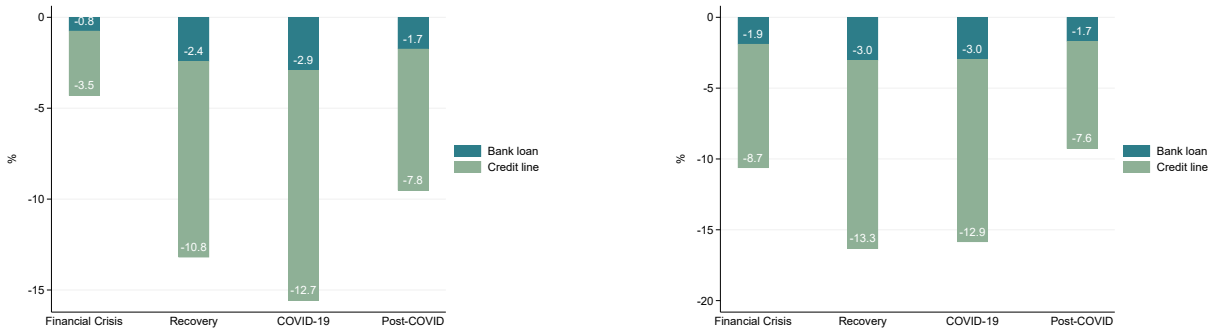
[6] It must be noted that this aggregate concentration measures are for the sector as a whole and do not relate specifically to firm lending. If this was to be calculated for enterprise lending only, the levels would be different. While this would be better for our identification strategy, these data are not available to the authors on a cross country basis. Therefore we use this indicator, despite its limitations.

(a) Credit applied



EU average benchmark (excl. Ireland) **Small country benchmark**

(b) Discouraged borrowers



EU average benchmark (excl. Ireland) **Small country benchmark**

Figure 23: Credit applications and discouragement under the shock to interest rate

Across both simulated scenarios, the probability that a firm becomes discouraged from applying has fallen markedly. The decline is more pronounced among firms seeking credit lines, where the likelihood of discouragement consistently decreases by more than 10 percent throughout the 2010s and into the post-COVID period. Despite the absence of statistical significance in our estimates, the magnitude of the change under the simulated interest rate shock suggests that convergence to the euro area average would meaningfully decrease the probability of Irish firms being discouraged from applying.

Second, given that banking competition is significantly and positively linked with discouraged borrowing behaviour, we examine how the probability of a firm being discouraged from applying for bank loans and credit lines would change if Ireland's H-index matched the average of other euro area countries. It's worth noting that the primary effect of banking competition of discouraged borrowing behaviour is captured through the cost of credit channel, represented by the interest rate. However, this variable might also reflect other factors beyond the explicit cost, such as loan conditions and contractual terms that will have a significant impact on discouraging firms from submitting credit applications.

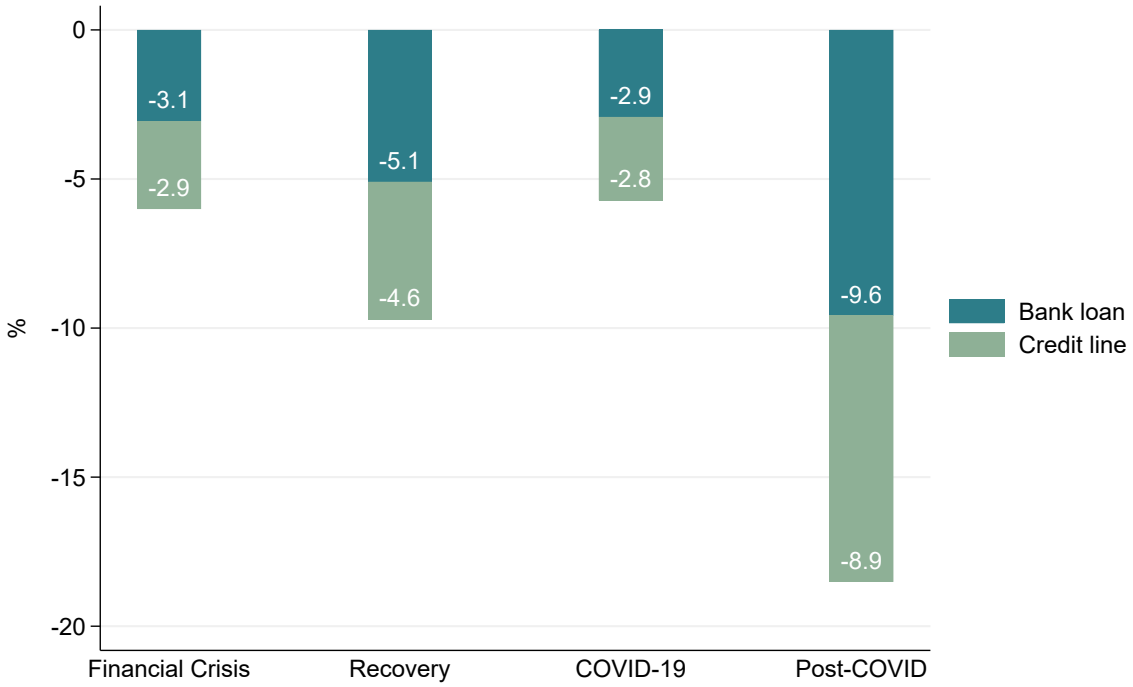


Figure 24: Discouraged borrowers under banking competition shock

As shown in Figure 24, if banking competition in Ireland were to converge to the average, the probability of borrowers becoming discouraged would decline persistently across all periods. The aggregate contraction in discouragement in bank loans and credit lines is modest during the financial crisis (about 6 per cent), intensifies during the recovery phase (nearly 9 per cent), and becomes most pronounced in the post-COVID period (nearly 18 per cent). This aligns with the increasing divergence in banking concentration between Ireland and the rest of euro area in recent years.

5 CONCLUSIONS

The aims of this paper were to: a) explore how the demand and supply of financing to small- and medium-sized firms in Ireland has evolved in the 15 plus years since the financial crisis; and b) identify the key factors driving these trends and propose policy measures to improve SME access to finance.

The overall findings suggests that though Ireland's financial markets have recovered strongly since the financial crisis, lending activity, particularly through traditional banking channels, has not recovered to the same extent. Credit demand in Ireland has declined in line with overall euro area trends (as refinancing dropped following the financial crisis). While demand is high relative to other countries for all financing, Ireland has a lower demand for bank loans than in other countries and this has remained the case as the economy has recovered. This reveals a fact that though credit demand in Ireland is relatively high

compared with most other euro area countries, firms are unable to meet this demand through traditional banking channels.

Furthermore, Ireland has a relatively high share of trade credit usage which likely reflects challenges in traditional credit markets. The low level of applications for bank loans and a reliance on trade credit have a number of potential economic implications. Considering firstly the latter point, a reliance on trade credit may have impacts for the efficiency of financial activities as these credit facilities are not as flexible (across firm transactions) as are other working capital facilities. For example, they may limit the trade to the existing supplier who provides the credit. Further, this cannot be carried across to other transactions, from a liquidity perspective. This may also have implications for purchasing and competition if trade credit is used in inter-firm price bargaining. Trade credit also moves risk from banks to firms in terms of credit default which can also create challenges in terms of allocative efficiency (selection, screening and monitoring firms activities).

The second consideration in terms of loan demand for bank loans relates to capital formation. A number of studies have indicated that Irish enterprises investment activity is low (particularly for R&D) relative to other countries and over time (Gargan et al., 2024; Kren et al., 2025). Typically bank loans provide large volumes of capital that cannot be replicated out of existing funds and allow longer repayment terms thus allowing an accumulation of capital that is long term in nature. If bank loan demand is low, this may represent the ongoing hesitation and uncertainties in the economy which are holding back Irish firms from committing capital. If this is the case, it may have long term implications for Irelands growth rate, in particular as major capital investment will be needed in the coming years as part of the climate transition, digitalisation and the construction sector.

In terms of credit denials, though the overall credit denial in Ireland is lower than the average of euro area, having decreased notably since the onset of the financial crisis. However, the low rejection rates are likely to be function of the low demand levels and self-selection given the financial conditions: if competition is low and interest rates are high, only those firms with extremely profitable applications come through the system and these applications have a high degree of success.

With respect to discouraged borrowers, Irish firms broadly follow the euro area trend of a sharp increase after the onset of COVID-19. However, they also exhibit distinct characteristics, particularly among firms seeking bank loans. Our results show that Irish firms are less discouraged from applying for bank loans than the euro area average. However, again as before, these trends are possibly driven by structural factors within the banking system itself, such as high borrowing costs or less favorable loan terms, which play a central role in deterring firms from viewing credit as required.

To explore these trends in more detail, we run a series of simulations which adjust Irish interest rates and competition levels to the average of other euro area countries. Aligning interest rates in Ireland with the euro area average would significantly increase applications for both bank loans and credit lines, while reducing the incidence of discouraged borrowers. Furthermore, we also find that less banking concentration is also associated with much lower discouraged borrowers in Ireland.

From a policy perspective, our research has a number of implications. The onset of the financial crisis led to major structural changes in financing conditions for small firms in terms of both access, competition and pricing. Fewer banks operated in the market, the cost of credit diverged from policy rates and rejection rates increased notably. As the economy has recovered, these features continue to cast a long shadow on bank financing for small firms. Increasing competition and lowering the cost of financing over time should be structural priorities and ensure better financial intermediation to small enterprises.

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	(1)		(2)	(3)		(4)	(5)		(6)	(7)		(8)
	BL_applied		BL_discouraged	CL_applied		CL_discouraged	OF_applied		OF_discouraged	TC_applied		TC_discouraged
	BL_applied	BL_denied	BL_discouraged	CL_applied	CL_denied	CL_discouraged	OF_applied	OF_denied	OF_discouraged	TC_applied	TC_denied	TC_discouraged
Personal consumption expenditure growth	0.00210	-0.00209	-0.00354	0.00833***	-0.00192	-0.00225	0.0233***	0.0148**	-0.0149***	0.00888***	-0.0116**	-0.00522
	(0.00248)	(0.00449)	(0.00410)	(0.00269)	(0.00492)	(0.00431)	(0.00317)	(0.00667)	(0.00474)	(0.00274)	(0.00501)	(0.00590)
Unemployment rate	0.00806***	0.00501	0.0280***	0.00494	0.00262	0.0214***	0.0136***	0.0233***	0.0170***	0.00680**	0.0185***	0.0308***
	(0.00286)	(0.00494)	(0.00456)	(0.00304)	(0.00510)	(0.00497)	(0.00359)	(0.00700)	(0.00536)	(0.00312)	(0.00541)	(0.00587)
Inflation rate	-0.0240***	-0.00453	-0.0283***	-0.0303***	-0.0119	-0.0277***	-0.0483***	-0.0180	-0.00596	-0.0103*	0.00580	-0.0400***
	(0.00532)	(0.00985)	(0.00854)	(0.00561)	(0.0105)	(0.00967)	(0.00699)	(0.0143)	(0.0101)	(0.00590)	(0.0111)	(0.0119)
Interest rate on non-financial corporate loans	-0.0483***	-0.0599***	0.000703	-0.0466***	-0.0597***	0.0176	-0.0511***	-0.0530**	-0.0229	-0.0335***	-0.0659***	-0.0386**
	(0.0104)	(0.0174)	(0.0153)	(0.0106)	(0.0179)	(0.0164)	(0.0124)	(0.0260)	(0.0182)	(0.0110)	(0.0201)	(0.0196)
Debt to GDP ratio	-0.324***	-0.304**	-0.176	-0.740***	-0.172	-0.0511	-0.544***	-0.564**	0.488***	-0.289***	-0.379**	-0.0220
	(0.0860)	(0.149)	(0.148)	(0.0931)	(0.159)	(0.156)	(0.107)	(0.236)	(0.168)	(0.104)	(0.180)	(0.196)
Tier 1 capital ratio		-0.00937	-0.000530		-0.00680	-0.0130*		-0.0337***	-0.00318		0.0120	-0.00646
		(0.00780)	(0.00710)		(0.00799)	(0.00783)		(0.0108)	(0.00871)		(0.00908)	(0.0101)
Cost to income ratio		0.0000727	0.000102		0.000150	0.0000981		0.000331	-0.000765**		0.0000417	-0.000914**
		(0.000307)	(0.000257)		(0.000259)	(0.000261)		(0.000716)	(0.000300)		(0.000318)	(0.000392)
Return on banking sector assests		-0.0328**	-0.0204		-0.0340**	-0.00470		0.0298	-0.0531***		-0.0400**	0.00588
		(0.0148)	(0.0143)		(0.0138)	(0.0157)		(0.0209)	(0.0170)		(0.0165)	(0.0201)
Banking sector competition		0.626	2.697***		0.417	2.350***		-0.426	1.374**		1.212**	1.308**
		(0.436)	(0.463)		(0.477)	(0.504)		(0.779)	(0.561)		(0.522)	(0.662)
Constant	-0.370***	-1.406***	-1.946***	-0.165**	-1.446***	-2.021***	-0.760***	-1.592***	-2.333***	-1.259***	-2.186***	-2.381***
	(0.0691)	(0.137)	(0.128)	(0.0719)	(0.145)	(0.140)	(0.0810)	(0.199)	(0.147)	(0.0791)	(0.148)	(0.178)
Time fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	178458		178458	178458		178458	178458		178458	178458		178458

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$