CAHIER D'ÉTUDES
WORKING PAPER

N° 210

Bank Lending in the Euro Area: The Role of Bank-Firm Switching and Market Concentration

Gabriele Di Filippo Gastón Giordana Bob Kaempff

David Kremer Léonore Lebouteiller

SEPTEMBER 2026

BANQUE CENTRALE DU LUXEMBOURG

EUROSYSTÈME

Bank Lending in the Euro Area: The Role of Bank-Firm Switching and Market Concentration

Gabriele Di Filippo Gastón Giordana Bob Kaempff David Kremer
Léonore Lebouteiller

Abstract

This paper investigates how euro area firms switching between banks can improve the terms at which they can borrow, using granular data on more than seven million new loans to non-financial corporations from January 2021 to June 2025. Borrowers that switch banks receive significantly lower interest rates, larger amounts and longer maturities on their new loans than comparable firms who are existing customers at the new bank. In addition, the size of the initial rate discount varies across countries and is positively correlated with loan-market concentration at the regional level. In more concentrated markets, banks grant larger discounts, but fewer firms switch banks. However, the magnitude and duration of these benefits are limited. After switching, if the firm contracts further loans from the new bank, then the interest rate, loan amount and maturity all move closer to those the bank sets for non-switching borrowers with comparable characteristics. Although this result is validated for the euro area as a whole, the results at country level are more heterogeneous.

JEL Codes: E43, G21, G31, L14
Keywords: Bank-firm relationships, Credit conditions, Loan market concentration, Euro Area, AnaCredit

September 3, 2026. Banque centrale du Luxembourg, 2 boulevard Royal, L-2983 Luxembourg (Corresponding author: Gaston_Andres_Giordana@bcl.lu). *For useful comments and suggestions, we thank Michael Ehrmann, Vasso Ioannidou, Hans Degryse, Paolo Guarda, Patrick Lünnemann, Jean-Pierre Schoder and BCL colleagues. We also thank participants at 11th Research Workshop of the Monetary Policy Committee Task Force on Banking Analysis for Monetary Policy (Ljubljana, 18.09.2025) and the 7th ChaMP Workstream 1 Workshop (Valletta, 27-28.10.2025). This paper should not be reported as representing the views of the BCL or the Eurosystem. The views expressed are those of the authors and may not be shared by other research staff or policymakers in the BCL or the Eurosystem. All remaining errors are our own.*

Challenges for Monetary Policy Transmission in a Changing World Network (ChaMP)

This paper contains research conducted within the network "Challenges for Monetary Policy Transmission in a Changing World Network" (ChaMP). It consists of economists from the European Central Bank (ECB) and the national central banks (NCBs) of the European System of Central Banks (ESCB).

ChaMP is coordinated by a team chaired by Philipp Hartmann (ECB), and consisting of Diana Bonfim (Banco de Portugal), Margherita Bottero (Banca d'Italia), Emmanuel Dhyne (Nationale Bank van België/Banque Nationale de Belgique) and Maria T. Valderrama (Oesterreichische Nationalbank), who are supported by Gonzalo Paz-Pardo and Jean-David Sigaux (both ECB), 7 central bank advisers and 8 academic consultants.

ChaMP seeks to revisit our knowledge of monetary transmission channels in the euro area in the context of unprecedented shocks, multiple ongoing structural changes and the extension of the monetary policy toolkit over the last decade and a half as well as the recent steep inflation wave and its reversal. More information is provided on its website.

NON-TECHNICAL SUMMARY

In 2025, euro area non-financial corporations held bank loans equivalent to more than 92% of GDP, but borrowed less than 12% of GDP through debt securities they issued on financial markets. As a result, the euro area is generally considered a bank-based economy. This paper analyses how loan terms are affected when firms switch banks. The analysis uses AnaCredit data on more than seven million new loans that more than 2,000 banks granted to non-financial corporations between January 2021 and June 2025. This dataset enables us to identify borrowers who switch to new banks, observe the credit terms offered on their loans when they switch and compare them to the loans the same bank granted to its existing customers with similar characteristics. After a firm switched banks, we track how loan terms evolve over subsequent loans from its new bank.

Results confirm that switching banks results in more favourable loan terms. Indeed, borrowers who switch banks benefit from lower interest rates, larger loan amounts and longer loan maturities than comparable firms that have not recently switched. The size of the rate discount varies across countries and is positively correlated with loan-market concentration. In more concentrated regions, banks offer larger discounts, but fewer firms switch banks. However, the magnitude and duration of these benefits remain limited. After switching, if the firm contracts further loans from the new bank, then the interest rate, loan amount and maturity all move closer to those the bank sets for borrowers with similar characteristics who have not recently switched banks. Although this result is validated for the euro area as a whole, the results at country level are more heterogeneous.

RÉSUMÉ NON TECHNIQUE

En 2025, les sociétés non financières de la zone euro détenaient des prêts bancaires représentant plus de 92 % du PIB, tandis que les titres de créance qu'elles ont émis sur les marchés financiers représentaient moins de 12 % du PIB. Par conséquent, la zone euro est généralement considérée comme une économie fondée sur le financement bancaire. Ce papier analyse comment les conditions de prêt peuvent changer pour une entreprise lorsqu'elle change de banque. L'analyse s'appuie sur des données AnaCredit relatives à plus de sept millions de nouveaux prêts que plus de 2000 banques ont accordés à des sociétés non financières entre janvier 2021 et juin 2025. Cet ensemble de données nous permet d'identifier les emprunteurs qui changent de banque, d'observer les conditions de crédit proposées pour leurs prêts au moment du changement et de les comparer aux prêts accordés par la même banque à ses clients existants qui avaient des caractéristiques similaires. Après qu'une entreprise ait changé de banque, nous suivons l'évolution des conditions de prêt sur les prêts ultérieurs accordés par sa nouvelle banque.

Les résultats confirment que le changement de banque se traduit par des conditions de prêt plus favorables. En effet, les emprunteurs qui changent de banque bénéficient de taux d'intérêt plus bas, de montants de prêt plus élevés et de durées de prêt plus longues que les entreprises comparables qui n'ont pas récemment changé de banque. L'ampleur de la réduction de taux varie d'un pays à l'autre et est positivement corrélée à la concentration du marché du crédit. Dans les régions où le marché est plus concentré, les banques offrent des réductions plus importantes, mais moins d'entreprises changent de banque. Toutefois, l'ampleur et la durée de ces avantages restent limitées. Après le changement, si l'entreprise contracte de nouveaux prêts auprès de la nouvelle banque, le taux d'intérêt, le montant du prêt et la durée de remboursement se rapprochent tous de ceux que la banque fixe pour les emprunteurs avec des caractéristiques comparables qui n'ont pas changé de banque récemment. Bien que ce résultat soit validé pour l'ensemble de la zone euro, les résultats au niveau national sont plus hétérogènes.

1 Introduction

In 2025, euro area non-financial corporations held bank loans equivalent to more than 92% of GDP, but borrowed less than 12% of GDP through debt securities they issued on financial markets. As a result, the euro area is generally considered a bank-based economy.[1] However, national borders and banking characteristics generate a variety of regional loan market structures, with varying degrees of banking competition (European Central Bank, 2026; Gholizadeh, 2025). This implies that the strategies banks use to attract new customers away from an established relationship with another bank are likely to differ across regions.

This paper analyses a dataset of seven million new bank loans to non-financial companies (NFCs) in the euro area between January 2021 and June 2025. In particular, it focuses on "switching discounts" - the temporary reduction in loan interest rates offered by a new bank to attract a borrower from another bank. This detailed dataset enables us to identify borrowers that switch banks, observe the interest rate offered on their new loan at switching time, and track how loan pricing evolves over subsequent loans within this new banking relationship.

The paper addresses the following central questions: First, do firms obtain better loan terms when they switch banks? Second, is the impact homogeneous across the euro area, or is it influenced by regional loan market concentration? Third, does the new bank adjust loan terms when the firm asks for new loans subsequent to the switch?

This paper addresses these issues by examining 19 countries within the euro area encompassing 197 regions. It quantifies the impact of relationship lending and regional loan market concentration on loan terms for firms, particularly lending rates. The paper makes three contributions to the literature on relationship lending. First, it is the first study to examine switching discounts using loan-level data from multiple countries.[2] Second, the paper evaluates the impact of region-specific loan market concentration on switching discounts. Third, it compares euro area countries in terms of the impact of switching banks on lending rates, maturities and amounts contracted from the moment of the switch and extending into the new bank-firm relationship.

Results indicate that switching to a new bank can temporarily improve loan terms. Indeed, switching borrowers benefit from lower interest rates, higher loan amounts and longer maturities than those the new bank grants its existing borrowers with similar characteristics. The paper finds significant differences in switching discounts across euro area countries, as well as a positive correlation between switching discounts and regional loan market concentration. In regions where the loan market is more concentrated, the discount offered to firms that switch banks is larger, but fewer firms switch banks.

[1] Source: Eurostat National Accounts - Annual sector accounts. A recent survey by the European Investment Bank found that most EU firms that rely on external finance identify banks as the dominant source of external funding (European Investment Bank, 2025).

[2] To the best of our knowledge, existing empirical research mostly focused on how the impact of relationship lending affects loan terms in single-country settings or using relatively aggregate data, see for example, Ioannidou and Ongena (2010), Gopalan, Udell, and Yerramilli (2011), Barone et al. (2011), Bonfim et al. (2021), Stein (2015) and Gong et al. (2025).

However, if the switching firm later contracts additional loans from the new bank, then the interest rate, loan amount and maturity all move closer to those set by the bank for non-switching borrowers with comparable characteristics. Although this result is validated for the euro area as a whole, the results at country level are more heterogeneous.

The paper is structured as follows. Section 2 presents the related literature. Section 3 describes the data used in the analysis. Section 4 analyses loan terms at switching time. Section 5 analyses how terms evolve after switching. Section 6 concludes.

2 Literature review

Bank-firm lending relationships allow banks to collect non-public information on their borrowers through multiple interactions over time or across various financial products (Boot, 2000). Studies of relationship lending uncover both positive and negative aspects.

On the one hand, strong bank-firm ties can improve credit conditions by reducing information asymmetries (Kysucky & Norden, 2016). To minimize uncertainty regarding borrowers' creditworthiness due to unobservable actions (moral hazard) and to avoid "bad" borrowers (adverse selection), relationship lending banks invest in the costly collection of private information that goes beyond due diligence (Dell'Ariccia, 2001; Diamond, 1991). From the borrowers' side, a firm might reveal private information to its bank that it does not publish for concern of giving an advantage to competitors (Bhattacharya & Chiesa, 1995). This improved information sharing between the borrower and its main lender could lower lending rates (Petersen & Rajan, 1994). Relationship lending banks can also offer more favourable loan terms to firms that would otherwise be subject to credit rationing due to information asymmetries (Rajan, 1992; Von Thadden, 1995).

On the other hand, incumbent or "inside" banks with existing lending relationships may exploit their informational advantage to extract rents from their borrowers by exercising a form of monopoly power (Ioannidou & Ongena, 2010). In response to this "hold-up", firms may maintain multiple banking relationships or switch between banks. However, when information is costly to acquire, high-quality firms may be "informationally captured" as they struggle to demonstrate their attractiveness to other banks (Sharpe, 1990). In addition, adverse selection prevents "outside" banks from attracting good clients by offering lower rates, as this would also attract riskier clients. Consequently, banks may be reluctant to lend to a firm if they believe it could not obtain additional credit from its inside bank, which benefits from superior information about the firm's risk profile (Bannier, 2010; Greenbaum et al., 2019). Market concentration in the banking sector would exacerbate these effects. Sharpe (1990) and Von Thadden (2004) provide the theoretical foundations of bank competition in this context. In addition, Ioannidou and Ongena (2010) show empirically that banking concentration leads to a rise in loan rates when outside banks become inside banks and start extracting rents. Dell'Ariccia (2001) proposes instead a theoretical model in which more concentrated markets, in the presence of asymmetric information, may be associated with greater competition between incumbent banks and lower lending rates.

An extensive body of empirical research has aimed to measure the strength of bank-firm relationships and evaluate their impact on credit conditions.[3] The literature typically shows that credit terms can deteriorate over the length of a lending relationship.[4] In particular, earlier studies found that loan pricing evolves over a bank-borrower relationship. For example, Petersen and Rajan (1995) showed that US banks provided credit to young firms at a lower cost, expecting to offset these losses through the long-term rents extracted once borrowers are captured. However, Berger and Udell (1995) found that longer bank-firm relationships were associated with lower interest rates.

Overall, the effect of bank-firm relationships on credit conditions differs across studies, depending on several dimensions: data sources, the measurement of bank-firm relationships, the set of control variables, the definition of the dependent credit variable (e.g. loan rates vs. spreads), the borrower pool (e.g. SMEs vs. large enterprises), the degree of banking competition as well as the research methods and modelling techniques chosen.

The literature focusing on firms switching banks tends to produce more consistent results.[5] In particular, most studies agree that firms benefit from a significant discount on loan rates when they switch banks, compared to rates offered to borrowers who stay with their incumbent bank. This result has been established for Bolivia by Ioannidou and Ongena (2010), for Italy by Barone et al. (2011), for Portugal by Bonfim et al. (2021), for Germany by Stein (2015), and for China by Gong et al. (2025).[6] Most studies also find that subsequent loans granted by the new outside bank after the switch carry higher loan rates. For Bolivia, Ioannidou and Ongena (2010) provide evidence that loan rates offered by a firm's outside bank increase one and a half years after switching and reach levels similar to those obtained from inside banks before switching. More recently, Gong et al. (2025) examined firms that had switched branches within the same bank in China, finding similar results. The loan rates charged to these firms reverted to the average, with the firms beginning to pay higher rates within a year of switching.

3 Data

3.1 The AnaCredit database: data selection and cleaning

This study uses data from AnaCredit (or Analytical Credit Datasets), a harmonised database collected and maintained by euro area central banks. The database contains confidential loan-by-loan information on loans to non-financial corporations granted by euro area credit institutions or foreign branches of a credit institution resident in the euro area. In particular, the database includes very detailed information on the characteristics

[3] See Degryse and Ongena (2005), Kysucky and Norden (2016) and López-Espinosa et al. (2017).

[4] See Degryse and Van Cayseele (2000), Degryse and Ongena (2005) and D'Auria et al. (1999).

[5] See Table A1 in Annex A.1

[6] However, Gopalan et al. (2011) found no evidence of loan rate discounts when firms switched banks in the United States of America.

of loans, borrowers and creditors. Every month, AnaCredit collects up to 90 items for each credit instrument, covering financial, accounting and credit risk data. These include information on the instrument and the counterparties involved in the loan (i.e. creditor, debtor, servicer, originator, protection provider).[7]

Our analysis begins in January 2021 and extends to June 2025.[8] To ensure sufficient data quality, we implement data selection and cleaning procedures based on the literature. As in Ioannidou and Ongena (2010) and Bonfim et al. (2021), we restrict the sample to focus on new loans to firms. Consistent with Horan et al. (2023), we limit our sample to credit lines, revolving credit and other loans as they cover most lending to firms in the euro area.

We dropped outliers, missing data or duplicate observations. We also implement sector-specific exclusions for "in-house" banks of automotive groups, as their lending is primarily tied to motor vehicle leasing contracts for households rather than corporate financing. Our final dataset retained 23% of all new loan contracts to euro area firms in AnaCredit, covering 7,268,944 new loan contracts granted to 1,613,647 non-financial corporations by 2,371 banks. Although the proportion of retained loans is relatively low, a significant part of the data that is dropped stems from the focus on the three loan types, which eliminates around 34% of the observations. The additional cleaning steps remove a further 43% of the initial dataset (see Section A.2 on data cleaning).[9] This percentage is particularly high in some countries, where information on specific loan attributes is often missing.

3.2 Definitions and summary statistics

Following Ioannidou and Ongena (2010) and Bonfim et al. (2021), we identify a switch when a firm obtains a new loan from a bank with which it did not have a lending relationship during the prior 12 months.[10] The twelve-month period is common in the literature since empirical evidence suggests that a substantial portion of the bank's inside information is collected during the first year (Cole, 1998). In this case, the bank issuing the new loan is called the "outside" bank. Banks with an existing lending relationship with the firm during the prior 12 months are called "inside" banks. We label any new loan from the inside bank to its existing customers as a nonswitching loan. After a switch, the outside bank immediately becomes an inside bank and any additional loans it grants to the firm in the months following the switch are "subsequent loans".

[7] A detailed description of the AnaCredit dataset can be found in European Central Bank (2019a).

[8] Croatia and Bulgaria are not included since they joined the euro area after January 2021.

[9] Looking at the volume of newly issued loans, we see that our retention rate is 16% (Table A3).

[10] We exclude new loans granted to borrowers who appear in the AnaCredit database for the first time, as these loans cannot be identified as switching loans or attributed to an existing bank relationship. We also do not capture firms that switch from banks to non-bank financial institutions.

Table 1 – Sample composition - Number of new loans and share of switching loans per country

Borrower country	Number of new loans	Share of switching loans in all new loans (%)	Share of country in EA new loans (%)	Share of country in EA switching loans (%)
AT	111,498	11.8	1.5	2.0
BE	347,433	7.7	4.8	4.0
CY	15,720	4.3	0.2	0.1
DE	528,182	17.9	7.3	14.0
EE	8,448	12.1	0.1	0.2
ES	2,900,371	5.2	39.9	22.5
FI	115,649	25.6	1.6	4.4
FR	1,333,978	7.2	18.4	14.3
GR	32,418	19.5	0.4	0.9
IE	32,568	8.2	0.4	0.4
IT	1,430,059	14.8	19.7	31.6
LT	11,026	10.0	0.2	0.2
LU	9,960	9.4	0.1	0.1
LV	3,939	16.4	0.1	0.1
MT	2,366	7.8	0.0	0.0
NL	18,394	9.0	0.3	0.2
PT	338,464	8.3	4.7	4.2
SI	783	27.6	0.0	0.0
SK	27,688	15.5	0.4	0.6
EA	**7,268,944**	**9.2**	**100**	**100**

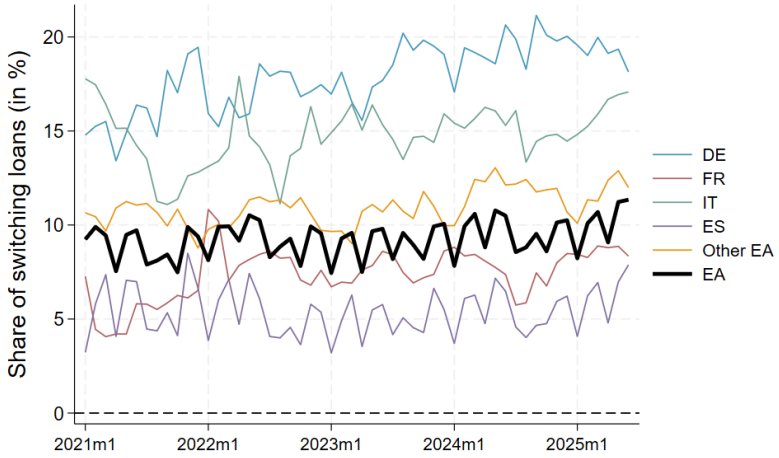
Sources: AnaCredit. Own calculations. Note: EA denotes the euro area.

Table 1 shows the share of switching loans in the total number of loan contracts that we retained for our analysis. While the number of loans might appear disproportionate for some countries compared to the size of their economy, these differences are often due to specificities in the AnaCredit data collection.[11] The country shares of new loans also remain in line with other studies using AnaCredit (see for example Vilerts et al. (2026)). Looking at the volume of new loans, it appears that the country shares are more aligned with the size of their respective economies (Table A4). Our sample contains 671,213 switching loans and 6,597,731 nonswitching loans. At the euro area level, about 9.2% of new loans over this period were switching loans with substantial variation across countries,

[11] In accordance with the confidentiality regime, NCBs may, for example, flag AnaCredit attributes such as the institutional sector as confidential (European Central Bank, 2019b). In this case, these observations are not included in the analysis.

from 28% in Slovenia to 4% in Cyprus. This cross-country difference is in line with the literature, which also identifies large variations in the share of switchers, from 33% for US SMEs (Zhang et al., 2022) to 7% for Chinese firms (Gong et al., 2025).[12] In our sample, switching loans are granted to 474,185 out of 1,613,647 borrowers, implying that 29% of the borrowers in our sample switched banks. Figure 1 shows the evolution over time in the share of switching loans for the four largest euro area countries, the other euro area countries and the euro area average. The figure reveals significant differences in the level across countries.[13]

Figure 1 – Share of switching loans over time



Note: The figure shows the share of all new loan contracts that were attributed to firms switching banks. EA denotes the euro area. The label "Other EA" includes the remaining countries from Table 1.

Table 2 compares loan and borrower characteristics of switching and nonswitching loans. The differences in means are statistically significant.[14] Averaging across regions and time, switching loans tend to be better on some terms and worse on others. On the one hand, the original loan maturity is on average twice as long for switching loans and the average loan amount is substantially higher. On the other hand, 62% of switching loans are secured compared to only 47% for nonswitching loans. In this rough comparison, the average interest rate on switching loans is 10 bps higher than the average interest rate on nonswitching loans. Moreover, switching loans are more likely directed to firms that are younger, smaller in terms of annual turnover but with a lower probability of default. These results suggest that banks offer different credit terms to firms switching

[12] Ioannidou and Ongena (2010) identify 3% using a sample of loans to Bolivian firms.

[13] A standard two-proportion Z-test (also called the two-sample Z-test) confirms that the share of switching loans is statistically different between all country-pairs from Figure 1.

[14] According to the Student's t-test, all differences in means between switching and nonswitching loans are significant at the 1% level.

banks. However, when comparing interest rates and other loan terms between switching and nonswitching loans, one must properly control for loan and borrower characteristics. This is why we use the matching technique described in Section 4.

Table 2 – Summary statistics of selected loan and borrower characteristics for switching and nonswitching loans

	(1) **Switching loans**			(2) **Nonswitching loans**		
	Mean	Median	SD	Mean	Median	SD
Loan terms						
Interest rate (in %)	4.0	4.0	2.1	3.9	3.9	2.1
Initial commitment amount (EUR, thousands)	320.3	80.0	1,377.4	200.5	40.6	1,236.2
Initial maturity (years)	5.0	5.0	4.3	2.6	0.9	3.8
Other loan characteristics						
Floating rate loan (in %)	35.2	0.0	47.7	26.0	0.0	43.9
Secured loan (in %)	62.4	100.0	48.4	47.2	0.0	49.9
Borrower characteristics						
Balance sheet (million EUR)	163.2	1.3	17,009.5	152.0	1.9	22,822.1
Annual turnover (million EUR)	106.5	1.4	9,824.0	131.5	2.3	10,503.5
Probability of default (in %)	2.9	1.1	6.5	3.1	1.1	7.6
Age (years)	16.9	11.5	16.4	20.6	17.4	16.6
Main bank share (% of total outstanding loan amounts)	66.5	64.9	21.2	70.8	71.3	27.2
Multiple bank relations (in %)	46.5	0.0	49.9	65.8	100.0	47.4
Observations	671,213			6,597,731		

Sources: AnaCredit, Own calculations. Note: SD denotes the standard deviation.

3.3 Measures of regional loan market concentration

We calculate regional loan market concentration at the NUTS 2 level, as a more granular classification (NUTS 3) would result in a significant loss of observations in our matching exercise (see Section 4).[15]

In a first step, each borrower is assigned to a NUTS 2 region. Next, we calculate market shares for each lender based on the outstanding loan amounts in a given region.

[15]The EU system of territorial units known as NUTS (*Nomenclature of territorial units for statistics*) identifies the regions of individual countries for statistical purposes. In the NUTS, each EU country is divided into three levels: socioeconomic regions (NUTS 1), base regions for regional policy (NUTS 2) and small regions for specific diagnoses (NUTS 3). For more information, see European Commission (2011).

To measure regional market concentration, we calculate the Herfindahl-Hirschman index (HHI) as the sum of squared market shares of all lenders active in the given region. The HHI can range from 0 (limit case of perfect competition between an infinite number of banks in a given region) to 1 (a single monopolistic bank in a given region).

For each country, Table 3 reports the number of regions in the loan dataset and the average regional HHI of loan market concentration.

Table 3 – Regional loan market concentration by country

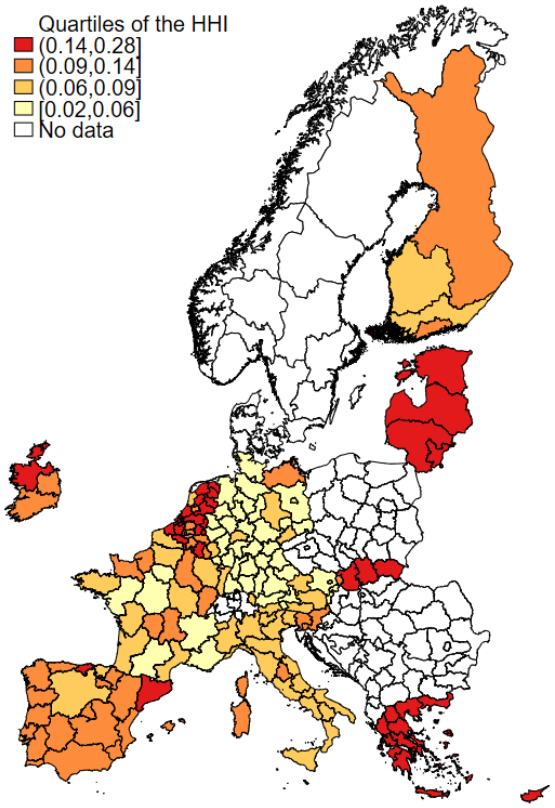
Country	**# Regions**	**Mean**	**Median**	**Min**	**Max**
AT	9	0.06	0.06	0.05	0.07
BE	11	0.15	0.15	0.11	0.17
CY	1	0.19	-	-	-
DE	38	0.04	0.03	0.02	0.10
EE	1	0.18	-	-	-
ES	19	0.12	0.11	0.08	0.20
FI	5	0.12	0.09	0.08	0.22
FR	37	0.10	0.09	0.03	0.26
GR	13	0.18	0.18	0.15	0.19
IE	5	0.29	0.24	0.10	0.61
IT	21	0.09	0.09	0.06	0.15
LT	2	0.16	0.16	0.16	0.17
LU	1	0.07	-	-	-
LV	1	0.15	-	-	-
MT	1	0.14	-	-	-
NL	12	0.17	0.17	0.08	0.24
PT	12	0.10	0.10	0.09	0.14
SI	2	0.10	0.10	0.09	0.11
SK	4	0.14	0.15	0.10	0.17
Euro Area	**197**	**0.11**	**0.10**	**0.02**	**0.61**

Sources: AnaCredit, Own calculations; Note: Regional loan market concentration is measured by the Hirschmann-Herfindahl Index (HHI). The reported HHI is the unweighted average across NUTS 2 regions within each country.

Table 3 shows that loan market concentration, as estimated by the HHI, differs across euro area countries, with average concentration ranging from 0.29 in Ireland (IE) to 0.04 in Germany (DE). Among the four largest euro area countries, average loan market concentration is highest for Spain (ES) at 0.12, while dispersion across regions is highest for France (FR) with an HHI of 0.03 for the region with the lowest market concentration and a maximum HHI of 0.26. Figure 2 plots the average HHI in each NUTS 2 region from our dataset, illustrating the differences in regional loan market concentration. Loan market concentration differs also between regions within the same

country, confirming evidence from Bredl (2025) that within-country variation in market concentration can be high.

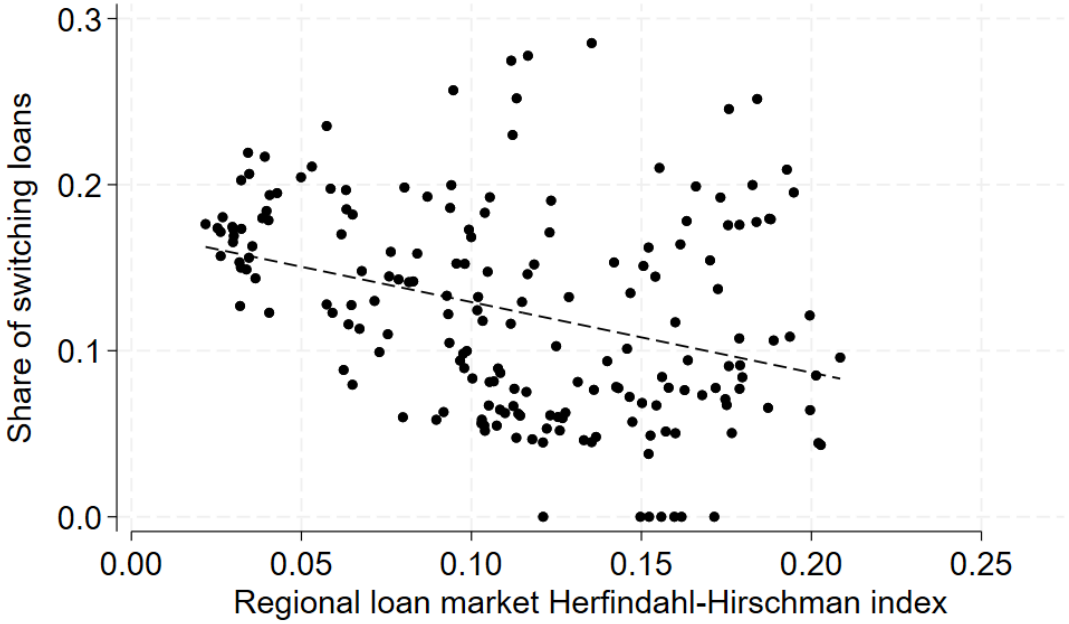
Figure 2 – Regional loan market concentration in the euro area



Note: The chart shows the average regional Herfindahl-Hirschman index (HHI) per NUTS 2 region. Values for HHI are reported for December 2024.

By combining the information on the share of switching loans with the average HHI in each region, we can observe a clear negative relationship: regions with higher concentration tend to feature a lower proportion of switching loans. In fact, Figure 3 shows the share of switching loans compared to the average regional HHI at the country-level. The least squares regression features a negative slope that is statistically significant at a 95% confidence level. This suggests that switching loans account for less of bank lending in regions with higher market concentration. This may be because clients have a limited choice of banks and thus fewer opportunities to switch.

Figure 3 – Share of switching loans in the number of all new loans against regional loan market concentration (NUTS 2)



Note: The share of switching loans is calculated by dividing the number of switching loans by the total number of new loans. The dashed lines corresponds to the least squares regression line. The negative slope is statistically significant at a 95% confidence level. For readability purposes, we omit from this chart the regions above the 95^{th} *percentile in the distribution of the HHI. The relationship between the regional HHI and the share of switching loans per region remains statistically significantly negative in the full sample.*

4 Loan terms when firms switch banks

This section tests for differences between the loan terms set by the outside bank on switching loans compared to those it set for similar loans to comparable firms with which it had an established relationship. For a fair comparison between switching and nonswitching loans, we need to match comparable loans. To this end, we follow the approach of Ioannidou and Ongena (2010). More precisely, we use loan and borrower characteristics to match switching loans with nonswitching loans issued by the same bank in the same month.

4.1 Loan rates

Table 4 provides a complete list of the matching variables and shows the results of regressing the difference in interest rates between switching and non-switching loans on a constant for all matched pairs in the euro area.

In the column Matching (I), using 13 matching variables yields 70,409 switching loans matched with 154,936 nonswitching loans resulting in 215,499 matched pairs. Every switching loan is matched on average with 3.1 nonswitching loans. This means that each switching loan appears on average in 3.1 matched pairs in our dataset.[16] To account for this multiplicity, we cluster the standard errors at the switching loan level and adjust the point estimates by weighting each matched pair by the inverse of the total number matches for the given switching loan. By restricting the comparison to matched pairs, the difference between interest rates on switching and nonswitching loans is now negative (note that this difference was positive without the matching procedure from Table 2, first row). For the euro area, the estimated difference is -6.99 bps for the coarsest matching (Matching (I), without borrower risk variables). When the matching process is improved by adding more borrower risk indicators (Matching (III)), this discount becomes -10.46 bps. This difference compares to an average rate on nonswitching loans of 2.5% in January 2021 and 3.9% in June 2025.[17] Our results suggest that, by switching to a new bank, the interest rate borrowers obtained on new loans was on average around 10 bps lower than the interest rate on new loans the outside bank granted the same month to existing customers with similar borrower and loan characteristics. Put differently, outside banks offer a discount to switching borrowers.

[16] See Table A6 for the number of matched pairs and the average number of nonswitching loans for each switching loan for the largest euro area countries.

[17] See Table 2 for sample averages.

Table 4 – Difference between interest rates on switching loans and matched nonswitching loans

Matching variables	**Matching (I)**	**Matching (II)**	**Matching (III)**
Creditor ID	✓	✓	✓
Date of inception (Year:month)	✓	✓	✓
Type of interest rate	✓	✓	✓
Loan secured	✓	✓	✓
Loan commitment amount at inception	✓	✓	✓
Loan maturity at inception	✓	✓	✓
Loan type	✓	✓	✓
Borrower region (NUTS 2)	✓	✓	✓
Borrower economic activity	✓	✓	✓
Borrower total balance sheet	✓	✓	✓
Borrower annual turnover	✓	✓	✓
Borrower age	✓	✓	✓
Borrower multiple bank relationships	✓	✓	✓
Borrower prob. of default over 1 year		✓	✓
Borrower tot. loans / tot. balance sheet			✓
Borrower share of impaired loans			✓
# Switching loans	*70,409*	*33,694*	*9,535*
# Nonswitching loans	*154,936*	*61,673*	*12,219*
# Matched pairs	*215,499*	*76,535*	*14,470*
Predicted difference in loan rates (bps)			
Euro area	**-6.99*** (0.225)**	**-10.21*** (0.313)**	**-10.46*** (0.555)**

*Note: See Table A5 for more details on the matching variables. The euro area average is obtained by regressing the difference in loan rates from every matched pair on a constant. Standard errors are clustered at the switching loan level and each observation is weighted by one over the number of nonswitching loans matched to the given switching loan. We indicate statistical significance at the 10%, 5% and 1% levels using *, ** and ***. Standard errors are shown in parentheses.*

In a next step, we estimate switching discounts for different countries in the euro area. To do so, we estimate the same regression equation as for Table 4, but this time we also include country dummies. Table 5 shows significant differences across countries. For example, when considering the finest Matching (III), the difference between interest rates on switching and matched nonswitching loans appears to be largest for Spain at 17 bps and lowest for Italy at 5 bps. Overall, these results are consistent in terms of sign with other estimates of switching discounts that can be found in the literature.[18] However, the magnitude of the estimated discounts varies, which can be due to differences in the data sources, the methodology or the time periods considered in previous analyses.

[18] See Table A1 in Annex A.1.

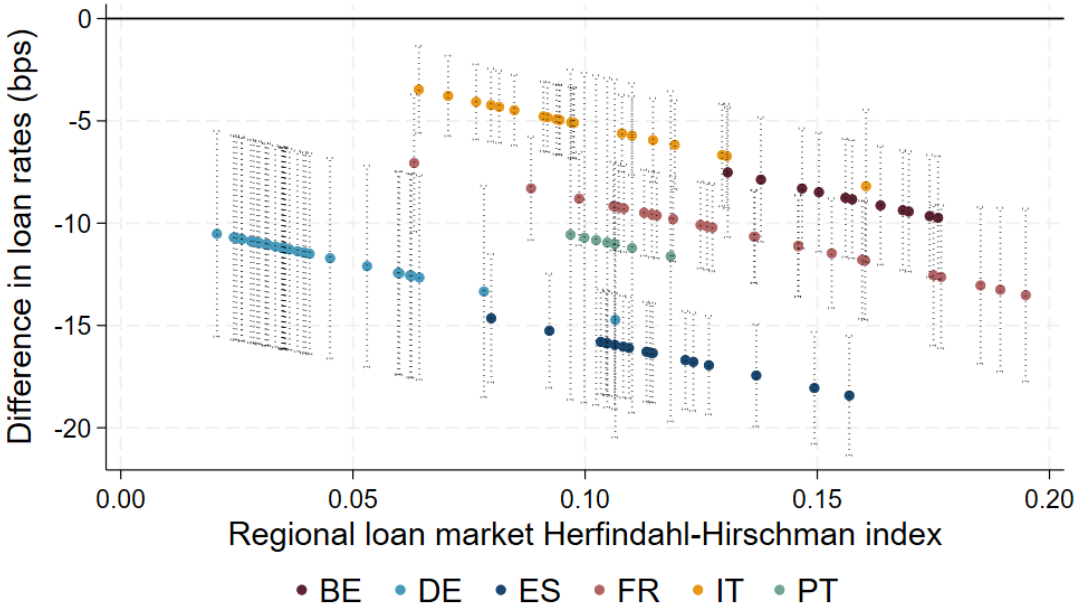
Table 5 – Differences between interest rates on switching loans and matched nonswitching loans by country and marginal effect of regional loan market concentration

	Matching (I)		**Matching (II)**		**Matching (III)**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
			Predicted difference in loan rates (bps)			
BE	-5.218***	-4.260***	-8.041***	-7.106***	-8.911***	-7.021***
	(0.716)	(0.826)	(0.938)	(1.087)	(1.474)	(1.789)
DE	-4.640***	-6.181***	-12.53***	-14.16***	-11.68***	-14.77***
	(0.918)	(1.125)	(2.228)	(2.422)	(2.497)	(3.026)
ES	-9.859***	-9.747***	-14.21***	-14.15***	-16.63***	-16.43***
	(0.477)	(0.480)	(0.650)	(0.651)	(1.225)	(1.234)
FR	-6.292***	-6.263***	-8.492***	-8.536***	-9.697***	-9.640***
	(0.392)	(0.392)	(0.516)	(0.516)	(1.067)	(1.068)
IT	-5.339***	-5.789***	-7.060***	-7.619***	-4.780***	-5.850***
	(0.609)	(0.641)	(0.734)	(0.807)	(0.869)	(1.048)
Other EA	-4.733***	-4.302***	-9.126***	-8.832***	-10.69***	-9.990***
	(0.610)	(0.640)	(0.991)	(1.002)	(3.049)	(3.072)
PT	-11.69***	-11.82***	-16.97***	-17.15***	-11.12***	-11.44***
	(0.994)	(0.995)	(2.186)	(2.188)	(4.107)	(4.111)
			Marginal effects ($\frac{dy}{dx}$)			
HHI		-21.06**		-22.17*		-43.45*
		(8.953)		(12.78)		(23.80)
# Matched pairs	*215,499*	*215,499*	*76,535*	*76,535*	*14,470*	*14,470*

Note: All regressions are limited to matched loan pairs, see Table A5 for details on the matching variables. We estimate the following regression: $\tau_i = \beta_0 + \beta_1 HHI_i + \sum_{c=1}^{C} \beta_c Country_{i,c} + \epsilon_i$*, where* τ_i *is the difference between the interest rate on a switching loan and a matched nonswitching loan.* $Country_{i,c}$ *are borrower country dummies to account for country specific effects. In Columns (2),(4) and (6), the regression specification also includes the regional loan market concentration* HHI_i *(see Section 3.3). Other countries (AT, CY, EE, FI, GR, IE, LT, LU, LV, MT, NL, SI and SK) are combined into the group "Other EA" because of their lower number of matched pairs (see Table A6). Standard errors are shown in parentheses and clustered at the switching loan level. Each matched pair is weighted by one over the number of nonswitching loans matched to the given switching loan. We indicate statistical significance at the 10%, 5% and 1% levels using *, ** and ***. Predicted switching discounts in Columns (1), (3) and (5) for a country c are calculated by linear prediction:* $\widehat{\beta_0} + \widehat{\beta_c}$*. In Columns (2), (4) and (6), they include* $\hat{\beta}_1 \overline{HHI}$*, where* $\overline{HHI}$ *represents the weighted average for the HHI in the matched dataset.*

As described in Section 2, the empirical literature shows that the level of loan market concentration can influence the impact of relationship lending on the interest rate setting behaviour of banks. That is why we control in Columns (2), (4) and (6) of Table 5 not only for country specific effects, but also for the impact of regional loan market concentration on interest rate spreads. The results indicate that the switching discount increases with loan market concentration. Based on the finest matching (Column (6)), an increase of 0.1 in the regional HHI would, on average, lead to an increase in the switching discount of 4.5 basis points. Figure 4 is an illustration of our results. For each region from the set of individual EA countries in Table 5, we calculate the estimated average switching discount based on the regression results from Column (6). Estimates are obtained by using the average HHI in a given region and each dot corresponds to the estimated average interest rate discount in that region. The figure shows how switching discounts not only vary between countries, but also within the same country based on the average loan market concentration in a region. For example, for Italy, the estimated discount in regions with the highest loan market concentration is statistically larger than in regions with the lowest concentration. For Germany however, this difference between regions is not statistically significant.

Figure 4 – Estimated switching discount in selected EA country regions against the regional loan market concentration



Note: Each dot corresponds to the estimated switching discount in a given region based, using the average HHI in that region as the input variable. Estimates are obtained using the regression results from Column (6) in Table 5. The dotted lines indicate 95% confidence intervals around the estimates.

One possible explanation for our results is that banks offer better loan terms to firms that switch as a strategy to attract new customers, especially in more concentrated loan markets. This behavior may signal that incumbent banks seek to preserve their market share and deter smaller banks or new entrants from acquiring market share. As borrowers switch banks less frequently in highly concentrated markets (Figure 3), this raises the expected duration of a bank-firm relationship. Testing these explanations goes however beyond the scope of this paper.

4.2 Loan maturity and amount

Using the same methodology as for the loan rate, Table 6 compares the loan maturity and loan amount between switching loans and matched nonswitching loans. The first column estimates the average difference in loan maturities between switching and nonswitching loans, which requires using the loan interest rate to replace the loan maturity in the set of matching variables. The average difference in loan maturity at the euro area level is 0.26 years, or approximately 3 months longer for switching loans than for matched nonswitching loans. This compares to an average loan maturity of

2.6 years for nonswitching loans (Table 2). Country-level results are positive and highly significant (Table 7), with the largest difference in loan maturity between switching and nonswitching loans in Belgium (±6 months) and lowest in Germany (±1 month).

The second column compares the initial commitment amount, [19] where this is replaced by the loan interest rate in the set of matching variables. Initial commitment amounts are significantly higher for switching loans, by €13,430 on average in the euro area. The average initial commitment amount in the euro area is €200,000. At the country-level (Table 7), we find significant differences, which are the highest in France (±€20,000) and lowest in Spain (±€7,500).

Table 7 also reports the estimated impact of regional loan market concentration (as measured by the regional HHI) on differences in the original loan maturities and the initial commitment amounts. We find a significant impact of loan market concentration on loan maturity. On average, in the euro area, our results suggest that an increase of 0.1 in the regional HHI would increase the difference in loan maturity between switching and nonswitching loans by 0.06 years or roughly 1 month. For the differences in commitment amounts, we do not find a significant impact of the HHI. Our results suggest that higher loan market concentration leads banks to offer switching customers loans with larger rate discounts and longer maturities. This effect is not significant in the context of loan amounts, which could indicate that this loan term is not a significant parameter for banks to use in order to preserve market share.

[19] The initial commitment amount is the maximum agreed amount in the loan contract, as opposed to the amount actually withdrawn by the borrower. For around one third of the loans in our dataset, the initial commitment amount is not fully drawn at loan settlement.

Table 6 – Difference in loan maturity and amount between switching loans and matched nonswitching loans

	Maturity (Years)	**Commitment amount (EUR, thousands)**
Matching variables	**(1)**	**(2)**
Loan interest rate	✓	✓
Loan maturity at inception		✓
Loan commitment amount at inception	✓	
Creditor ID	✓	✓
Date of inception (Year:month)	✓	✓
Type of interest rate	✓	✓
Loan secured	✓	✓
Loan type	✓	✓
Borrower region	✓	✓
Borrower economic activity	✓	✓
Borrower total balance sheet	✓	✓
Borrower annual turnover	✓	✓
Borrower age	✓	✓
Borrower multiple bank relationships	✓	✓
Borrower prob. of default over 1 year	✓	✓
# Switching loans	*30,019*	*31,906*
# Nonswitching loans	*59,769*	*71,119*
# Matched pairs	*73,139*	*89,315*
Predicted differences in other loan terms		
Euro area	**0.261***	**13.43***
	(0.007)	**(0.262)**

*Note: See Table A5 for more details on the matching variables. Average differences are obtained by regressing the difference from every matched pair on a constant. Standard errors are clustered at the switching loan level and each matched pair is weighted by one over the number of nonswitching loans matched to the given switching loan. We indicate statistical significance at the 10%, 5% and 1% levels using *, ** and ***. Standard errors are shown in parentheses.*

Table 7 – Difference in loan maturity and amount between switching and nonswitching loans - by country and marginal effect of regional loan market concentration

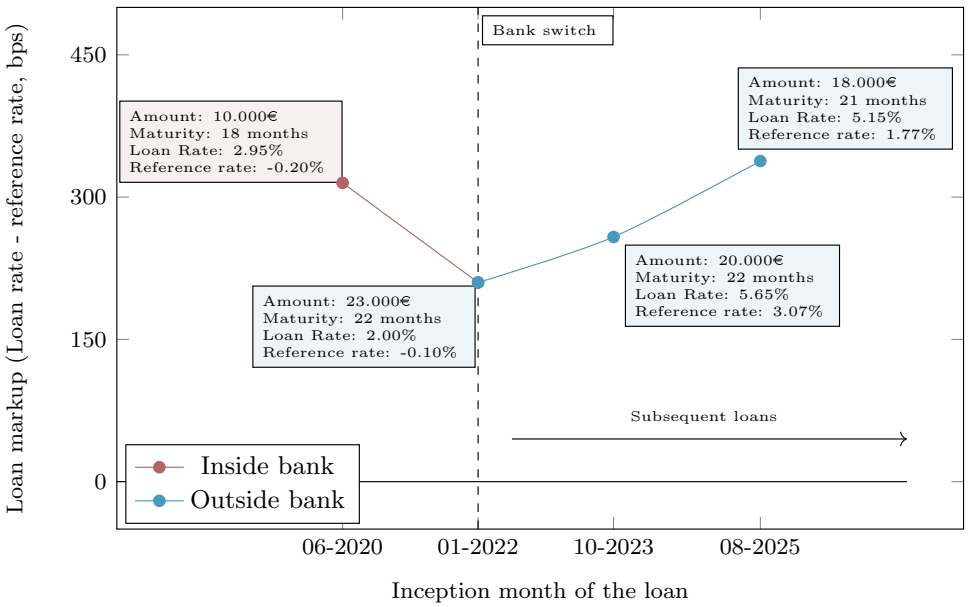
	Maturity (years)		**Commitment amount (EUR, thousands)**	
	(1)	**(2)**	**(3)**	**(4)**
Predicted differences in other loan terms				
BE	0.511***	0.484***	18.53***	19.18***
	(0.0298)	(0.0330)	(0.844)	(0.947)
DE	0.116**	0.163***	8.560***	7.378***
	(0.0463)	(0.0520)	(1.742)	(1.924)
ES	0.128***	0.125***	7.547***	7.554***
	(0.00753)	(0.00764)	(0.350)	(0.350)
FR	0.386***	0.388***	20.03***	19.99***
	(0.0167)	(0.0168)	(0.502)	(0.503)
IT	0.249***	0.265***	13.68***	13.30***
	(0.0171)	(0.0188)	(0.679)	(0.720)
OtherEA	0.281***	0.270***	12.56***	12.80***
	(0.0277)	(0.0284)	(0.878)	(0.900)
PT	0.253***	0.258***	9.801***	9.630***
	(0.0409)	(0.0410)	(1.607)	(1.612)
Marginal effects ($\frac{dy}{dx}$)				
HHI		0.633**		-15.91
		(0.322)		(10.85)
Matched pairs	*73,139*	*73,139*	*89,315*	*89,315*

Note: All regressions are limited to matched pairs, see Table A5 for details on the matching variables. We estimate the following regression: $\tau_i = \beta_0 + \beta_1 HHI_i + \sum_{c=1}^{C} \beta_c Country_{i,c} + \epsilon_i$*, where* τ_i *is the difference in the respective loan terms between a switching and a matched nonswitching loan.* $Country_{i,c}$ *are borrower country dummies to account for country specific effects. In Columns (2), (4) and (6), the regression specification also includes the regional loan market concentration* HHI_i *(see Section 3.3). Other countries (AT, CY, EE, FI, GR, IE, LT, LU, LV, MT, NL, SI and SK) are combined into the group "Other EA" because of their lower number of matched pairs (see Table A6). Standard errors are shown in parentheses and clustered at the switching loan level. Each matched pair is weighted by one over the number of nonswitching loans matched to the given switching loan. We indicate statistical significance at the 10%, 5% and 1% levels using *, ** and ***. Predicted differences in Columns (1), (3) and (5) for a country c are calculated by linear prediction:* $\widehat{\beta_0} + \widehat{\beta_c}$*. In Columns (2), (4) and (6), they include* $\hat{\beta}_1 \overline{HHI}$*, where* $\overline{HHI}$ *represents the weighted average for the HHI in the matched dataset.*

5 Loan terms after firms switched banks

This section analyses the evolution of loan terms on switchers' subsequent loans with the outside bank. Figure 5 shows a stylised example of a switching firm to illustrate why it is important to not only consider possible discounts at the moment of the switch, but also loan terms at the new bank after a firm switched. The figure shows the evolution of the markup over the reference rate before and after a switch to an outside bank.[20]

Figure 5 – Interest rate markup dynamics across multiple banking relationships



Note: The figure plots the interest rate markup for a stylised example of a single firm before and after the switch to a new bank. In AnaCredit, banks can indicate the reference rate that was used to price the loan. If the value is missing, we impute the reference rate by using daily interbank market interest rates with a matched maturity.

However, considering only the evolution of loan markups over time ignores changes in loan and borrower characteristics. Therefore, we again follow Ioannidou and Ongena (2010) and identify all subsequent loans granted by the same bank to the same borrower, controlling for loan characteristics and changes in borrower characteristics as listed in

[20] Since loan interest rates evolve over time relative to a reference rate (usually an interbank rate), this paper controls for the reference rate when comparing loan rates between switching loans and subsequent loans. Therefore, we will refer to the term "loan markup" when comparing interest rates between switching and subsequent loans. We continue to use the term "difference" when comparing non-price terms (commitment amount and maturity) between switching and subsequent loans.

Table A5. Specifically, for a given borrower, we identify new loans obtained from the outside bank and calculate the difference in loan terms between each new loan and the initial switching loan. The comparison is thus now within the same bank and for the same borrower, while controlling for borrower and loan characteristics such that they remain comparable over time.

In a first step, we analyse the differences in loan markups without controlling for the HHI. However, as we now compare loans granted at different time periods, we account for differences in the reference rate. We calculate loan markups using the loan reference rate indicated in AnaCredit for variable rate loans and overnight indexed swap (OIS) rates matched to the loan maturity for fixed rate loans. To further control for the different time periods in which the loans were granted, we introduce dummies for the year and month in which the switching and subsequent loans were granted. To analyse loan rate markups, we match 16,618 switching loans with 20,761 subsequent loans and obtain 37,774 matched pairs. Unlike in Section 4, every pair includes now a switching loan and a subsequent loan from the same bank to the same borrower.

Table 8 presents the results. For the euro area, Column (1) indicates that loan markups increase significantly by 4 bps on average after the switch. This compares to an estimated initial switching discount between 6 and 10 bps, depending on the matching (Table 4). As with the initial switching discount, the results diverge for a number of countries. The average estimated increase in loan markups appears to be higher for France and Italy at ± 6 bps, but not significant for Spain, Portugal and the other euro area countries.

Columns (3) and (5) show the results for the other loan terms. They show that the reduction in maturities and loan amounts on subsequent loans is statistically significant for the euro area. Regarding loan amounts, compared to the initial switching loan, subsequent loans are lower by €4,365. This compares to an average positive difference for the switching loan of €13,430 (Table 6). Regarding the country results, loan amounts on subsequent loans decrease the most in France and the least in Portugal. For loan maturities, however, compared to a decrease of the maturity by 0.26 years at the moment of the switch (Table 6), the magnitude of the estimated decrease appears negligible and corresponds to only a few days. One possible explanation is that switching loans are very often matched with subsequent loans having the same maturity, suggesting that the matched dataset contains mostly loans that are rolled over.[21] Interestingly, even if subsequent loans consist of many rolled-over loans, the results show that loan amounts still decrease and markups increase both significantly.

[21] Considering the shorter time span of our dataset, this explanation could suggest that many loans serve as working capital to firms. Although AnaCredit includes a "loan purpose" variable, we cannot exploit this information as it is mostly missing or set to "Other".

Table 8 – Difference in loan markups between switching and subsequent loans

	Loan markup (bps)		**Maturity (Years)**		**Commitment amount (EUR, thousands)**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Predicted average difference in loan terms						
Euro area	**4.000***** **(0.37)**	**4.043***** **(0.37)**	**-0.012***** **(0.00)**	**-0.012***** **(0.00)**	**-4.365***** **(0.37)**	**-4.546***** **(0.36)**
BE	4.981*** (1.23)	3.828** (1.67)	-0.012** (0.00)	-0.015** (0.01)	-5.553*** (1.21)	-4.869*** (1.42)
DE	5.175*** (1.17)	6.304*** (1.60)	-0.025*** (0.00)	-0.022*** (0.01)	-5.393*** (0.84)	-5.903*** (1.17)
ES	0.563 (1.06)	0.232 (1.06)	-0.007*** (0.00)	-0.008*** (0.00)	-4.329*** (0.58)	-4.299*** (0.61)
FR	6.116*** (0.82)	5.721*** (0.87)	-0.014*** (0.00)	-0.015*** (0.00)	-7.817*** (0.77)	-7.881*** (0.79)
IT	6.203*** (0.51)	6.443*** (0.52)	-0.012*** (0.00)	-0.011*** (0.00)	-3.229*** (0.46)	-3.630*** (0.51)
Other EA	-0.571 (1.40)	-1.048 (1.33)	-0.048*** (0.00)	-0.049*** (0.01)	-4.508*** (1.57)	-4.981*** (1.63)
PT	-2.053 (1.80)	-2.203 (1.81)	-0.001 (0.01)	-0.002 (0.01)	-2.871*** (0.89)	-2.864*** (0.89)
Marginal effects ($\frac{dy}{dx}$)						
HHI		39.285** (18.70)		0.037 (0.05)		-26.860** (12.71)
Year-month dummies	Yes	Yes	Yes	Yes	Yes	Yes
# Switching loans	16,618	16,515	12,719	12,631	14,750	14,669
# Subsequent loans	20,761	20,640	16,303	16,183	18,945	18,803
# Matched pairs	37,774	37,608	30,973	30,815	36,432	35,956

All regressions are limited to matched pairs. Apart from matching on the borrower/lender we also match on the loan characteristics listed in Table A5. We estimate the following regression: $\tau_i = \beta_0 + \beta_1 HHI_i + \sum_{c=1}^{C} \beta_c Country_{i,c} + \sum_{t=1}^{T} \beta_t \delta_{i,t}^{switch} + \sum_{s=1}^{S} \beta_s \delta_{i,s}^{subsequent} + \epsilon_i$*, where* τ_i *is the difference in loan conditions between switching and subsequent loans for the same borrower/bank pair.* $Country_{i,c}$ *are borrower country dummies to account for country specific effects.* δ^{switch} *and* $\delta^{subsequent}$ *are year-month dummies to control for the year and month of the initial switching loan and the subsequent loans. In Columns (2),(4) and (6), the regression specification also includes the regional loan market concentration* HHI_i *(see Section 3.3). Other countries (AT, CY, EE, FI, GR, IE, LT, LU, LV, MT, NL, SI and SK) are combined into the group "Other EA" because of their lower number of matched pairs (see Table A6). Standard errors are shown in parentheses and clustered at the switching loan level. Each matched pair is weighted by one over the number of nonswitching loans matched to the given switching loan. We indicate statistical significance at the 10%, 5% and 1% levels using *, ** and ***. Predicted differences in Columns (1), (3) and (5) for a country c are obtained by a linear combination of* $\widehat{\beta_0}$, $\widehat{\beta_c}$ *and the time dummies* δ^{switch} *and* $\delta^{subsequent}$*. In Columns (2), (4) and (6), they also include* $\hat{\beta}_1 \overline{HHI}$*, where* $\overline{HHI}$ *represents the weighted average for the HHI in the matched dataset.*

Controlling for the level of regional loan market concentration, Columns (2), (4) and (6) show that the estimated marginal effect is positive for loan markups and negative for commitment amounts. For subsequent loans, a 0.1 increase in the average HHI results in an additional increase of loan markups by 4 bps and an additional decrease of loan amounts by €2,686. We do not find a significant effect on loan maturities.

For the euro area as a whole, the results from Sections 4 and 5 suggest that banks offer rate discounts to firms at the moment of the switch (Tables 4 and 5), but charge higher loan markups on subsequent loans. The same interpretation applies to loan amounts (Tables 6 and 7). These effects are larger in regions with higher loan market concentration, which is consistent with the hold-up hypothesis (Section 2). During their relationship with banks, firms can become increasingly held-up and banks may be able to extract rents.[22] To account for the duration of the bank-firm relationship, Table A9 shows the difference of loan terms for subsequent loans by six-month periods. Although the increase in loan rate markups and decrease in maturities and commitment amounts remains statistically significant, we do not observe a significant effect over time. For longer horizons, we even observe a decrease in significance. This can be explained by the fact that our dataset covers 4.5 years and we observe only few observations where the initial switching loan and subsequent loans are more than two years apart. In general, the time span covered by our dataset might be too short to effectively measure a gradual impact of the duration of bank-firm relationships on loan terms.

6 Conclusion

This paper investigates how euro area firms switching banks can improve the loan terms at which they can borrow. The analysis relies on AnaCredit data reported by more than 2,000 banks on more than seven million new loans they granted between January 2021 and June 2025.

Results confirm that switching banks can temporarily improve loan terms. Indeed, borrowers who switch banks can benefit from lower interest rates, larger loan amounts and longer loan maturities than comparable firms that do not switch. One possible explanation is that banks offer better loan terms to firms that switch as a strategy to attract new customers. The rate discount varies across countries and is positively correlated with loan-market concentration at the regional level. In more concentrated markets, banks offer larger discounts, but fewer firms switch banks. This may signal that incumbent banks seek to preserve their market share by deterring smaller banks or new entrants. Testing this hypothesis goes beyond the scope of this paper. Overall, results indicate that market concentration determines how much firms can benefit by switching banks. However, the magnitude and duration of these benefits are limited.

Results also indicate that, for the euro area as a whole, when switching firms take out subsequent loans with their new bank, the interest rate discount shrinks, as do initial maturities and original loan amounts. Again, these effects are larger in regions with

[22] Section A.6 in the Annex provides a robustness check to further test the argument of hold-up costs.

higher loan market concentration. Results at country level are more heterogeneous.

Overall, the findings from this paper are consistent with the literature on hold-up costs applied by banks. In relationship banking, the hold-up problem occurs when an inside bank uses its long-term, proprietary knowledge of a borrower's creditworthiness to charge higher interest rates or impose non-competitive terms. As outside banks lack this detailed information, they face a "winner's curse" (they may only acquire the client because the original bank rejected them), so the borrower is effectively tied to the incumbent bank, enabling the bank to extract informational rents. However, measuring the hold-up cost goes beyond the scope of this paper.

References

Altavilla, C., Boucinha, M., & Bouscasse, P. (2022). Supply or Demand: what drives Fluctuations in the Bank Loan Market? *ECB Working Paper*(2646).

Bannier, C. E. (2010). Is there a Holdup Benefit in Heterogeneous Multiple Bank Financing? *Journal of Institutional and Theoretical Economics (JITE)/Zeitschrift für die gesamte Staatswissenschaft*, 641–661.

Barone, G., Felici, R., & Pagnini, M. (2011). Switching costs in local credit markets. *International Journal of Industrial Organization*, *29*(6), 694–704.

Berger, A. N., & Udell, G. F. (1995). Relationship Lending and Lines of Credit in Small Firm Finance. *Journal of Business*, 351–381.

Bhattacharya, S., & Chiesa, G. (1995). Proprietary Information, Financial Intermediation, and Research Incentives. *Journal of Financial Intermediation*, *4*(4), 328–357.

Bonfim, D., Nogueira, G., & Ongena, S. (2021). "Sorry, we're closed" Bank Branch Closures, Loan Pricing, and Information Asymmetries. *Review of Finance*, *25*(4), 1211–1259.

Boot, A. (2000). Relationship Banking: What Do we Know? *Journal of Financial Intermediation*, *9*(1), 7–25.

Bredl, S. (2025). Regional loan market structure, bank lending rates and monetary transmission. *Deutsche Bundesbank Discussion Paper*, *2025*(30).

Cole, R. A. (1998). The Importance of Relationships to the Availability of Credit. *Journal of Banking & Finance*, *22*(6-8), 959–977.

D'Auria, C., Foglia, A., & Reedtz, P. M. (1999). Bank Interest Rates and Credit Relationships in Italy. *Journal of Banking & Finance*, *23*(7), 1067–1093.

Degryse, H., & Ongena, S. (2005). Distance, Lending Relationships, and Competition. *The Journal of Finance*, *60*(1), 231–266.

Degryse, H., & Van Cayseele, P. (2000). Relationship Lending within a Bank-based System: Evidence from European Small Business Data. *Journal of Financial Intermediation*, *9*(1), 90–109.

Dell'Ariccia, G. (2001). Asymmetric Information and the Structure of the Banking Industry. *European Economic Review*, *45*(10), 1957–1980.

Dell'Ariccia, G., & Marquez, R. (2004). Information and bank credit allocation. *Journal of Financial Economics*, *72*(1), 185–214.

Diamond, D. W. (1991). Monitoring and Reputation: the Choice between Bank Loans and directly placed Debt. *Journal of Political Economy*, *99*(4), 689–721.

European Central Bank. (2019a). *AnaCredit reporting manual . Part I, General methodology – May 2019*. Author.

European Central Bank. (2019b). *GUIDELINE (EU) 2019/1335 OF THE EUROPEAN CENTRAL BANK*. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019O0017.

European Central Bank. (2026, May). *Financial Integration and Structure in the Euro Area.*

European Commission. (2011). *Regions in the European Union. Nomenclature of territorial units for statistics.* Publications offices of the European Union.

European Investment Bank. (2025). *EIB Investment Survey 2025: European Union overview* (Tech. Rep.). Luxembourg: European Investment Bank. https://www.eib.org/en/publications/20250216-econ-eibis-2025-eu

Fu, J., Ioannidou, V., & Mishra, M. (2025). Banking on Competition: The Spillover Effects of Bank Entry into Microfinance. *Journal of Financial and Quantitative Analysis*, 1–49.

Gholizadeh, Y. (2025). Integration level within the European Union banking sector. *Studies in Economics and Finance*, *42*(2), 306–326.

Gong, D., Ongena, S., Qi, S., & Yu, Y. (2025, January). Information Frictions inside a Bank: Evidence from Borrower Switching between Branches. *Swiss Finance Institute Research Paper*(25-10).

Gopalan, R., Udell, G. F., & Yerramilli, V. (2011). Why do Firms form New Banking Relationships? *Journal of Financial and Quantitative Analysis*, *46*(5), 1335–1365.

Greenbaum, S. I., Thakor, A. V., & Boot, A. W. A. (2019). *Contemporary Financial Intermediation*. Academic press.

Horan, A., Jarmulska, B., & Ryan, E. (2023). Asset Prices, Collateral and Bank Lending: the case of Covid-19 and Real Estate. *ECB Working Paper*(2823).

Ioannidou, V., & Ongena, S. (2010). "Time for a Change": Loan Conditions and bank behavior when firms switch banks. *The Journal of Finance*, *65*(5), 1847–1877.

Kosekova, K., Maddaloni, A., Papoutsi, M., & Schivardi, F. (2023). Firm-Bank Relationships: a Cross-Country Comparison. *ECB Working Paper*(2826).

Kysucky, V., & Norden, L. (2016). The benefits of relationship Lending in a cross-country context: A Meta-Analysis. *Management Science*, *62*(1), 90–110.

López-Espinosa, G., Mayordomo, S., & Moreno, A. (2017). When does Relationship Lending start to Pay? *Journal of Financial Intermediation*, *31*, 16–29.

Petersen, M. A., & Rajan, R. G. (1994). The Benefits of Lending Relationships: Evidence from Small Business Data. *The Journal of Finance*, *49*(1), 3–37.

Petersen, M. A., & Rajan, R. G. (1995). The Effect of Credit Market Competition on Lending Relationships. *The Quarterly Journal of Economics*, *110*(2), 407–443.

Rajan, R. G. (1992). Insiders and Outsiders: The Choice between Informed and

Arm's-length Debt. *The Journal of Finance*, *47*(4), 1367–1400.

Sharpe, S. A. (1990). Asymmetric Information, Bank Lending, and Implicit Contracts: A Stylized Model of Customer Relationships. *The Journal of Finance*, *45*(4), 1069–1087.

Stein, I. (2015). The price impact of lending relationships. *German Economic Review*, *16*(3), 367–389.

Vilerts, K., Anyfantaki, S., Benkovskis, K., Bredl, S., Giovannini, M., Horky, F. M., ... others (2026). Details Matter: Loan Pricing and Transmission of Monetary Policy in the Euro Area. *International Journal of Central Banking*, *22*(2), 1–89.

Von Thadden, E.-L. (1995). Long-term contracts, short-term investment and monitoring. *The Review of Economic Studies*, *62*(4), 557–575.

Von Thadden, E.-L. (2004). Asymmetric information, bank lending and implicit contracts: the winner's curse. *Finance Research Letters*, *1*(1), 11–23.

Zhang, S., Han, L., Kallias, K., & Kallias, A. (2022). Bank Switching of US Small Businesses: New Methods and Evidence. *Review of Quantitative Finance and Accounting*, *58*(4), 1573–1616.

A Annexes

A.1 A comparison of switching discount estimates in the literature

Table A1 – Review of switching discount estimates in the literature

Reference	Country	Period	Discount when switching banks	Additional information
Ioannidou and Ongena (2010)	Bolivia	Mar. 1999–Dec. 2003	**J-curve effects:** – 89 bps at switching time – +36 bps within 18 months – After 18 months: rate increases (more than 30 bps per year) – After 3–4 years: rate equals previous inside-bank rate	
Gopalan et al. (2011)	USA	1990–2005	No evidence of switching discount at switching time	Switchers obtain higher loan amounts from outside banks.
Barone et al. (2011)	Italy	Mar. 2004–Mar. 2005	44 bps at switching time	Outside banks may use a "paying customers to switch" strategy: banks lure borrowers from competing main lenders with attractive entry-level offers.
Stein (2015)	Germany	1993–2004	4–25 bps at switching time (depending on the model specification)	Larger discount for borrowers with strong previous relationships; weaker or insignificant for borrowers without a strong relationship.
Bonfim et al. (2021)	Portugal	Jan. 1987–Jul. 2015	89 bps at switching time	Discount is 59 bps lower than comparable new loans offered to existing customers.
Gong et al. (2025)	China	2010–2020	– 6 bps at switching time – +18 bps within 6 months – Within a year: revert to average spread and then pay more	Focus on firms that switch branches within the same bank.

A.2 Data cleaning

The data cleaning process broadly follows the literature and pursues two key objectives: (1) restricting the sample to observations relevant to this analysis and (2) improving data quality by addressing inconsistencies. The latter involves identifying outliers, missing values, redundant entries and observations lacking meaningful interpretation.

Sample Restriction

This paper focuses exclusively on non-financial corporations (ESA sector S.11). Consistent with Altavilla et al. (2022), we therefore exclude firms engaged in financial and insurance activities (NACE sector K), households as employers (NACE sector T) and extraterritorial organizations (NACE sector U).

Following Kosekova et al. (2023), we further refine the sample through the following steps:

- Firms in default are omitted to ensure a homogeneous credit risk profile.

- Syndicated loans are excluded to accurately estimate bank-firm relationships, as AnaCredit only records euro area credit institutions involved in such loans. Consequently, not all participating banks may be captured in the dataset. Other loans with multiple creditors are also removed.

To ensure comparability across credit instruments, the analysis is limited to credit lines, loans and revolving credit. Overdrafts, credit card debt, deposits other than reverse repurchase agreements, trade receivables and finance leases are excluded, consistent with Horan et al. (2023). Additionally, intragroup lending (loans between entities of the same corporate group) is omitted, since these loans usually feature different credit conditions from those in the regular credit market.

The sample is further restricted by excluding:

- Loans with maturities shorter than one month;
- Loans associated with multiple borrowers;
- Loans with multiple settlement or inception dates;
- Creditors with fewer than 10 loans in the dataset.

Data Quality Adjustments

While data are available from September 2018, quality improves significantly between 2019 and 2021. Early data (notably 2018-2020) reveal reporting inconsistencies, such as loan rates recorded in percentages rather than decimals. Thus, the analysis begins in January 2021. Following Altavilla et al. (2022), we:

- Exclude loans with interest rates reported between 30% and 100%;
- Divide rates above 100% by 100;
- Trim interest rates at the 99^{th} percentile in each quarter.

Additional cleaning steps include:

- Excluding loans with outstanding amounts below or equal to zero and above or equal to the 99^{th} percentile in the empirical distribution;
- Dropping loans with positive amounts but negative or zero interest rates.

Sector-Specific Exclusions

The analysis excludes "in-house" banks of automotive groups, as their lending is primarily tied to motor vehicle leasing contracts for households rather than corporate financing.[23] Loans from banks with more than 60% exposure to NACE sectors 45.00, 45.10, 45.11, or 45.19 are removed.[24]

[23] In many cases, the name of the credit institutions already suggests a direct link with a car manufacturer.

[24] Our analysis is not affected by the revised version 2.1 of the NACE classification, which only applies to AnaCredit reporting as of 31 January 2026.

Sample Retention

Table A2 compares the final sample to the initial dataset of new loans, of which 23% are retained. Of the excluded loans:

- 34% are omitted for not being revolving loans, credit lines or standard loans;
- 43% are removed during the other cleaning steps described above.

Retention rates vary across countries, ranging from 9% in Germany (DE) to 41% in Cyprus (CY).

Table A2 – Number of newly issued loan contracts by country before and after data cleaning

	All new loans	Of which: rev loans, credit lines and other lending	Final sample after cleaning	Share of all new loans
AT	521,811	480,656	111,498	21%
BE	1,046,544	906,026	347,433	33%
CY	38,501	20,873	15,720	41%
DE	5,844,661	5,229,304	528,182	9%
EE	41,700	16,919	8,448	20%
ES	8,975,618	5,321,776	2,900,371	32%
FI	1,026,768	261,918	115,649	11%
FR	7,269,104	4,940,653	1,333,978	18%
GR	99,701	84,720	32,418	33%
IE	225,543	136,784	32,568	14%
IT	4,999,494	2,714,705	1,430,059	29%
LT	78,113	25,942	11,026	14%
LU	58,842	33,895	9,960	17%
LV	16,605	8,442	3,939	24%
MT	7,984	5,409	2,366	30%
NL	159,301	124,228	18,394	12%
PT	967,584	634,328	338,464	35%
SI	7,235	1,594	783	11%
SK	238,252	63,575	27,688	12%
EA	**31,623,361**	**21,011,747**	**7,268,944**	**23%**

Table A3 – New loan volumes by country before and after data cleaning (in EUR million)

	All new loans	Of which: rev loans, credit lines and other lending	Final sample after cleaning	Share of all new loans
AT	265,043	262,129	72,563	27%
BE	417,462	408,929	58,693	14%
CY	9,009	10,031	5,173	57%
DE	2,458,003	2,164,993	285,131	12%
EE	8,409	9,388	4,820	57%
ES	1,529,010	539,705	299,395	20%
FI	255,809	111,250	35,599	14%
FR	1,506,321	1,303,247	172,785	11%
GR	76,261	77,450	18,043	24%
IE	249,234	241,767	28,767	12%
IT	801,770	808,464	407,695	51%
LT	10,603	10,135	3,693	35%
LU	238,061	185,800	12,685	5%
LV	4,491	4,479	1,870	42%
MT	7,593	7,593	2,529	33%
NL	1,827 414	1,257,217	88,985	5%
PT	77,872	52,706	25,833	33%
SI	1,808	2,239	1,021	56%
SK	25,063	74,171	12,281	49%
EA	**9,769,235**	**7,531,691**	**1,537,561**	**16%**

Table A4 shows the share of switching loans in the total volume of loan contracts that we retained for our analysis.

Table A4 – Sample composition - Volume of new loans and share of switching loans per country

Borrower country	**Volume of new loans (EUR mn.)**	**Share of switching loans in all new loans (%)**	**Share of country in EA new loans (%)**	**Share of country in EA switching loans (%)**
AT	72,563	16,8%	4,7%	5,7%
BE	58,693	11,4%	3,8%	3,1%
CY	5,173	8,9%	0,3%	0,2%
DE	285,131	17,4%	18,5%	23,1%
EE	4,820	21,5%	0,3%	0,5%
ES	299,395	7,5%	19,5%	10,4%
FI	35,599	25,4%	2,3%	4,2%
FR	172,785	14,3%	11,2%	11,5%
GR	18,043	15,2%	1,2%	1,3%
IE	28,767	8,7%	1,9%	1,2%
IT	407,695	15,9%	26,5%	30,2%
LT	3,693	24,3%	0,2%	0,4%
LU	12,685	13,8%	0,8%	0,8%
LV	1,870	32,7%	0,1%	0,3%
MT	2,529	13,4%	0,2%	0,2%
NL	88,985	10,5%	5,8%	4,3%
PT	25,833	12,6%	1,7%	1,5%
SI	1,021	40,4%	0,1%	0,2%
SK	12,281	17,3%	0,8%	1,0%
EA	**1,537,561**	**14,0%**	**100,0%**	**100,0%**

Sources: AnaCredit. Own calculations. Note: EA denotes the euro area.

A.3 Loan matching

Table A5 – Matching variables

Variable	Possible values	Description
Creditor ID	2371	Creditor RIAD code
Date of inception (Year:month)	54	2021M1 - 2025M6
Type of interest rate	2	Variable or fixed rate loan
Secured loan	2	=1 if loan is collateralized, and =0 otherwise
Loan commitment amount at inception	-	± 25% compared to switching loan
Loan maturity at inception	-	± 25% compared to switching loan
Loan type	3	Credit line, revolving credit and other loans
Borrower regions (NUTS-2)	197	Base regions for regional matching (NUTS 2)
Borrower economic activity	6	Construction (NACEL1 code F), Manufacturing (A, B, C), Real Estate(L), Trade(G), Utilities(D,E) and Services (other NACE codes)
Borrower total balance sheet	4	Balance sheet (BS) <= EUR 2 mn; EUR 2 mn < BS <= EUR 10 mn; EUR 10mn < BS <= EUR 43 mn; BS > EUR 43 mn
Borrower annual turnover	4	Turnover (TN) <= EUR 2 mn; EUR 2 mn < TN <= EUR 10 mn; EUR 10 mn < TN <= EUR 50 mn; TN > EUR 50 mn
Borrower age	3	Age <= 10 years; 10 years > Age <= 20 years; Age > 20 years
Borrower multiple bank relationships	2	=1 if borrower had > 1 previous relationship, and =0 otherwise
Borrower prob. of default over 1 year	-	± 50% compared to switching loan
Borrower tot. loans / tot. balance sheet	-	Total loans/total balance sheet (LTA) ± 150% compared to switching loan
Borrower share of impaired loans	-	Share of impaired loans (IMP) ± 150% compared to switching loan

Note: ± 50% indicates for example that a matching variable X of loan j (X_j) has to be within a range of 50% compared to a switching loan i in order to be matched, such that $X_j \in [X_i * 0.5; X_i * 1.5]$.

Table A6 – Number of matched pairs, switchers and nonswitchers by country

	Pairs	Switching loans	Nonswitching loans	Matched nonswitchers per switcher	# Regions
Matching (I)					
BE	13,031	5,827	11,370	2.2	11
DE	9,912	5,166	6,653	1.9	38
ES	157,593	24,667	100,283	6.4	18
FR	57,750	18,363	46,004	3.1	27
IT	19,627	11,524	14,329	1.7	21
Other EA	28,407	10,730	15,306	2.6	54
PT	8,670	4,340	6,479	2.0	12
EA	294,990	80,617	200,424	3.7	181
Matching (II)					
BE	6,154	3,376	5,524	1.8	11
DE	918	656	697	1.4	37
ES	51,954	13,679	40,415	3.8	17
FR	24,907	10,689	21,630	2.3	26
IT	9,533	6,107	7,155	1.6	21
Other EA	7,999	3,726	4,735	2.1	47
PT	1,261	859	1,068	1.5	12
EA	102,726	39,092	81,224	2.6	171
Matching (III)					
BE	2,127	1,370	1,997	1.6	11
DE	362	248	258	1.5	34
ES	7,624	4,099	6,709	1.9	17
FR	3,551	2,295	3,254	1.5	25
IT	3,963	2,626	2,868	1.5	21
Other EA	720	595	614	1.2	39
PT	224	170	189	1.3	8
EA	18,571	11,403	15,889	1.6	155

Note: See Table 4 for more details on the matching procedure.

Table A7 – Number of matched pairs, switchers and nonswitchers by country

	Pairs	Switching loans	Nonswitching loans	Matched nonswitchers per switcher	# Regions
Matching - Original maturity					
BE	6,124	3,367	5,491	1.8	11
DE	781	550	595	1.4	34
ES	35,729	11,506	28,214	3.1	17
FR	30,942	10,158	26,907	3.0	25
IT	8,734	5,507	6,428	1.6	21
Other EA	7,722	3,476	4,557	2.2	39
PT	1,193	788	1,058	1.5	8
EA	91,225	35,352	73,250	2.6	155
Matching - Commitment amount					
BE	7,112	3,792	6,171	1.9	11
DE	924	633	635	1.5	37
ES	42,977	11,891	33,120	3.6	17
FR	33,926	11,598	29,010	2.9	26
IT	9,195	5,439	6,313	1.7	21
Other EA	10,357	3,823	5,230	2.7	46
PT	1,199	796	995	1.5	12
EA	105,690	37,972	81,474	2.8	170

Note: See Table 6 for more details on the matching procedure.

A.4 Inside matching

As a robustness check, we also match switching and nonswitching loans at the level of the inside bank. Thus, we compare the switching loan to loans with similar borrower and loan characteristics that were granted during the same month by the switchers' previous bank(s). This procedure is described in greater detail in Ioannidou and Ongena (2010) and Fu et al. (2025). Table A8 reports the results.

For the euro area as a whole, we still find an interest rate discount between switching and nonswitching loans around 2 bps. However, this difference between interest rates is smaller than in Table 4. This may reflect the fact that in the robustness exercise we compare loan terms across inside and outside banks, leading to greater variability. In addition, in our cross-country dataset, we observe many large companies switching to a bank in a different country with another institutional framework, adding

to the variability.[25] Other studies cited in the introduction only considered differences within individual countries. With Matching (I), the spreads between switching loans and matched nonswitching loans are significant in the country-level regressions with negative spreads for Belgium, Spain, Portugal and the other (smaller) euro area countries which are comparable to the estimates found in Table 4. The results on regional market concentration are inconclusive.

[25] In our initial (unmatched) dataset, 26% of cross-border loans are switching loans.

Table A8 – Spreads between interest rates on switching loans and matched non-switching loans matched on the inside bank(s)

	Matching (I)		Matching (II)		Matching (III)	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Predicted switching discounts (bps)						
Euro area	**-2.390***** **(0.344)**	**-2.397***** **(0.342)**	**-1.905***** **(0.295)**	**-1.901***** **(0.292)**	**-2.139***** **(0.307)**	**-2.144***** **(0.305)**
BE	-2.163 (2.267)	0.176 (2.498)	-1.646 (1.474)	-3.376* (1.832)	-1.948 (1.714)	-3.673* (2.051)
DE	-0.416 (0.732)	-2.606** (1.169)	0.796* (0.469)	2.134** (0.936)	0.824* (0.475)	2.167** (0.956)
ES	-6.859*** (0.670)	-6.167*** (0.720)	-6.619*** (0.647)	-7.161*** (0.714)	-6.898*** (0.673)	-7.456*** (0.744)
FR	-4.010** (1.714)	-3.189* (1.746)	-5.465*** (1.777)	-6.223*** (1.836)	-4.398** (1.978)	-5.209** (2.047)
IT	1.223** (0.523)	1.212** (0.522)	0.340 (0.458)	0.178 (0.495)	-0.0960 (0.477)	-0.266 (0.517)
OtherEA	-4.835*** (1.233)	-5.036*** (1.243)	-2.710** (1.171)	-2.554** (1.187)	-2.388** (1.195)	-2.174* (1.222)
PT	-12.54*** (3.013)	-12.13*** (3.017)	-8.285** (3.762)	-8.677** (3.769)	-10.34*** (3.991)	-10.75*** (3.998)
Marginal effects ($\frac{dy}{dx}$)						
HHI		-34.99** 14.36		23.59 * (13.89)		23.79 (14.49)
# Matched pairs	48,245	48,224	22,106	22,089	20,995	20,978

Note: All regressions are based on the matched dataset, see Table A5 for details on the matching variables. We estimate the following regression: $\tau_i = \beta_0 + \beta_1 HHI_i + \sum_{c=1}^{C} \beta_c Country_{i,c} + \epsilon_i$*, where* τ_i *is the difference in loan rates between a switching and a matched nonswitching loan at the inside bank(s).* $Country_{i,c}$ *are borrower country dummies to account for country specific effects. In Columns (2),(4) and (6), the regression specification also includes the regional loan market concentration* HHI_i *(see Section 3.3). Other countries (AT, CY, EE, FI, GR, IE, LT, LU, LV, MT, NL, SI and SK) are combined into the group "Other EA" because of their lower number of matched pairs (see Table A6). Standard errors are shown in parentheses and clustered at the switching loan level. Each matched pair is weighted by one over the number of nonswitching loans matched to the given switching loan. We indicate statistical significance at the 10%, 5% and 1% levels using *, ** and ***. Predicted switching discounts in Columns (1), (3) and (5) for a country c are calculated by linear prediction:* $\widehat{\beta_0} + \widehat{\beta_c}$*. In Columns (2), (4) and (6), they include* $\hat{\beta}_1 \overline{HHI}$*, where* $\overline{HHI}$ *represents the weighted average for the HHI in the matched dataset.*

A.5 Loan terms and time between the initial switch and subsequent loans

Table A9 – Difference in loan conditions between switching loans and subsequent loans

	(1) **Loan markup (bps)**	(2) **Maturity (years)**	(3) **Commitment amount (EUR, thousands)**
1-6 months	4.259***	-0.013***	-0.533***
	(0.76)	(0.00)	(0.05)
7-12 months	5.466***	-0.008***	-0.307***
	(0.63)	(0.00)	(0.05)
13-18 months	2.474**	-0.021***	-0.452***
	(1.25)	(0.00)	(0.10)
19-24 months	1.299	-0.012*	-0.465***
	(1.94)	(0.01)	(0.15)
> 24 months	-2.737	-0.019*	0.117
	(3.07)	(0.01)	(0.25)
Country FE	*Yes*	*Yes*	*Yes*
Year-month dummies	*Yes*	*Yes*	*Yes*
# Matched pairs	37,774	30,973	36,432

*Note: The dependent variable is the difference in loan conditions between switching loans and subsequent loans for the same borrower/lender pair. Apart from matching on the borrower/lender we also match on the loan characteristics listed in table A5. We categorize the corresponding matches in half year periods since the switch. Standard errors are clustered at the switching loan level. We indicate statistical significance at the 10%, 5% and 1% levels using *, ** and ***.*

A.6 Subsequent loans and borrower riskiness

Section 5 provides evidence that loan markups increase after switching, suggesting the possible development of a hold-up situation. As borrowers become increasingly held-up, banks charge higher prices on the new loans. However, an alternative explanation can be that banks learn about borrowers as their relationship with new clients develops. If switchers turn out to be lower quality than expected before switching, banks may raise the risk premium. In that case, rising markups would not indicate hold-up costs, but would instead reflect the additional information banks obtain about borrowers after switching banks.

To test this alternative explanation, we estimate the same regression in Column (2) from Table 8, but we restrict our sample to large enterprises with a low probability of default ($< 1\%$). Although our matching procedure already ensures that the riskiness of borrowers remains comparable between the initial and subsequent loans (Table A5), focusing only on firms with a low probability of default further controls for the possibility that riskiness is a driver behind the increase in loan markups. By also restricting the dataset to large firms, we focus on firms whose quality is most discernible by external lenders prior to the switch. This approach follows Dell'Ariccia and Marquez (2004) by assuming that better-quality borrowers also tend to be larger and therefore less likely to be captured by the informed lender. If the alternative explanation holds, we would expect, if any, a less significant rise in markups for the loans that we retained with this sub-sample.

Table A10 shows the results from this exercise and confirms the significantly higher loan markups on subsequent loans for larger, less risky firms, both at the euro area level as well as for individual countries. This result thus provides little evidence that banks increase loan markups because they gather new information about their clients' riskiness as the relationship lengthens.

Table A10 – Difference in loan rate markups between switching loans and subsequent loans for larger and less risky firms

Predicted average difference in markups	
Euro area	**18.867*****
	(0.49)
BE	27.46***
	(9.49)
DE	15.289***
	(3.72)
ES	10.65***
	(3.71)
FR	13.16**
	(6.02)
IT	20.86***
	(0.80)
Other EA	24.58***
	(5.16)
PT	13.32
	(11.47)
Marginal effects ($\frac{dy}{dx}$)	
HHI	73.419
	(60.49)
Year-month dummies	*Yes*
# Matched pairs	*6,128*

All regressions are based on the matched dataset. We estimate the following regression: $\tau_i = \beta_0 + \beta_1 HHI_i + \sum_{c=1}^{C} \beta_c Country_{i,c} + \sum_{t=1}^{T} \beta_t \delta_{i,t}^{switch} + \sum_{s=1}^{S} \beta_s \delta_{i,s}^{subsequent} + \epsilon_i$*, where* τ_i *is the difference in loan conditions between switching and subsequent loans for the same borrower/bank pair.* $Country_{i,c}$ *are borrower country dummies to account for country specific effects.* δ^{switch} *and* $\delta^{subsequent}$ *are year-month dummies to control for the year and month of the initial switching loan and the subsequent loans. The regression specification also includes the regional loan market concentration* HHI_i *(see Section 3.3). Other countries (AT, CY, EE, FI, GR, IE, LT, LU, LV, MT, NL, SI and SK) are combined into the group "Other EA" because of their lower number of matched pairs. Standard errors are shown in parentheses and clustered at the switching loan level. Each matched pair is weighted by one over the nonswitching loans matched to the individual switching loan. We indicate statistical significance at the 10%, 5% and 1% levels using *, ** and ***. Predicted differences for a country c are obtained by a linear combination of* $\widehat{\beta_0}$, $\widehat{\beta_c}$, $\hat{\beta}_1 \overline{HHI}$ *and the time dummies* $Time^{switch}$ *and* $Time^{subsequent}$*.* $\overline{HHI}$ *represents the weighted average for the HHI in the matched dataset.*

List of Figures

List of Tables

BANQUE CENTRALE DU LUXEMBOURG

EUROSYSTÈME

2, boulevard Royal
L-2983 Luxembourg

Tél.: +352 4774-1
Fax: +352 4774 4910

www.bcl.lu • info@bcl.lu