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Collateral and credit

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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 Melina Papoutsi and Gonzalo Paz-Pardo (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.

Abstract

This paper studies the role of collateral using the euro area corporate credit registry, AnaCredit. We document key facts about the importance, distribution, and composition of collateral, including its presence, types, and values. On average, 70% of credit amounts are collateralized. Real estate and financial assets are the most pledged, while physical movable assets and other intangible assets are less present. In addition, we show that the aggregate collateral value pledged to the banking sector is substantial, driven mainly by real estate in most countries. For the first time, we examine the collateral channel in bank credit using the actual value of individual collateral. By exploiting within-firm and within-bank variations for newly issued secured loans, we find that the elasticity of collateral value to loan commitment amounts is around $0.7-0.8$. This collateral value elasticity exhibits substantial country and time heterogeneity, which can be explained by legal, financial, and macro conditions.

JEL classification: E32, G21, G33

Keywords: Collateral channel, Corporate financing, Secured debt, Bank credit

Non-Technical Summary

Collateral plays a crucial role in bank lending. It reduces risk by giving banks the legal right to seize and sell a borrower's assets if the borrower fails to repay. Firms' assets, like land and buildings, both facilitate production and serve as security for loans. This makes collateral a cornerstone of corporate finance and a powerful amplifier of macroeconomic cycles. When asset values drop, firms borrow less, which can worsen economic slowdowns.

Yet, recent evidence from the US suggests a waning reliance on secured debt among large corporations, leaving unclear whether collateral still matters for small and medium-sized enterprises (SMEs) operating within bank-based financial systems. In this paper, we aim to answer two questions: first, to what extent does the *value* of pledged collateral influence loan pricing and volumes? And second, how important is collateral in SME lending?

To answer these questions, we leverage AnaCredit, the euro-area corporate credit register that uniquely links each loan to its full set of pledged assets and records the actual value of every pledged asset. Exploiting within-firm, within-bank, and over-time variation, we isolate the impact of collateral presence, type, and value on credit outcomes.

Our results suggest that roughly 70% of outstanding volume is collateralized, and these loans enjoy 33%-48% larger committed amounts and 10-18 basis points (bps) lower interest rates than comparable uncollateralized loans. The *type* of collateral matters: financial assets are most frequently pledged (46%) but real estate dominates total collateral value (53%). Real estate boosts loan quantity rather than price, while intangibles deliver both modest amount increases and lower rates. For the first time, we show that a 1% increase in collateral *value* translates into a 2-4 bp reduction in loan rates and a 0.7-0.8 elasticity in committed amounts.

Cross-country and over-time analyses reveal that elasticities of loan amounts to collateral value vary, ranging from 64% to 89% across countries and 76% to 86% over years, reflecting differences in collateral composition, legal frameworks, and loan-to-value norms. Taken together, our findings confirm that collateral remains a critical determinant of SME credit outcomes. Models linking asset values to borrowing should continue to incorporate collateral channels, and policymakers designing targeted guarantees or balance-sheet interventions can meaningfully influence both the cost and volume of credit to SMEs.

I Introduction

Collateral plays a central role in corporate financing and is a key driver of macroeconomic fluctuations. In macro-finance models (e.g., Bernanke, 1983, 1999; Kiyotaki and Moore, 1997), firm assets, such as land or buildings, serve dual functions: as productive inputs and as collateral to support borrowing. Negative shocks to asset values reduce borrowing capacity, triggering feedback loops that amplify downturns and business cycle fluctuations. However, recent empirical studies, mainly in the US, cast doubt on the relevance of collateral in current environments. Benmelech et al. (2024) and Lian and Ma (2021) document a declining reliance on secured debt, suggesting a diminished role for collateral.

These findings are drawn from large US firms and may not generalize to small and medium-sized enterprises (SMEs) or bank-based financial systems, where firms remain highly reliant on bank credit and more exposed to collateral constraints. Understanding whether, how, and to what extent collateral still matters is thus critical for both corporate finance and macroeconomic fluctuations. In this paper, we ask two questions: (1) What is the impact of collateral value on credit conditions? (2) How important is collateral in bank-based financial systems with significant SME lending?

Answering these questions has been hindered by three main challenges. First, granular data on the role of collateral in SME financing is rarely available, despite SMEs' importance and sensitivity to collateral requirements. Second, few datasets provide the full composition of collateral types pledged. Most datasets capture only the primary collateral, limiting our understanding of collateral heterogeneity. Third, empirical work lacks information on the pledged value of collateral. Collateral value is typically estimated indirectly by researchers using firm accounting data in the previous literature, rather than measured using direct and actual bank-reported values of collateral at the individual asset level.[1]

We overcome the three aforementioned challenges by using AnaCredit, the standardized corporate credit register for the euro area, and show that collateral plays a crucial role in shaping debt financing. AnaCredit contains granular information on both loan and collateral attributes, with reporting thresholds as low as €25,000 per firm-bank relationship. Crucially, it offers a complete mapping between loans and collateral, along with the bank-reported value of each individual collateral item. To our knowledge, this is the first study of the collateral channel based on actual

[1] Many studies rely on the price of a single asset class, such as the estimated market value of real estate. This value can be further instrumented by land supply elasticities. The assumption is that real estate constitutes the majority of firm assets and is the collateral type most frequently used. Consequently, changes in this price are assumed to directly reflect collateral constraints faced by firms (see, e.g., Chaney et al., 2012; Campello et al., 2022; Catherine et al., 2022).

collateral values rather than asset price indices.

We approach the question, **"How important is collateral in bank-based financial systems involving small and medium-sized enterprises (SMEs)?"** on two fronts. First, we document that collateral is widespread and materially affects loan terms. Over half of all loans are collateralized, and these account for roughly 70% of aggregate outstanding nominal amounts (ONA). Empirically, we find that secured loans are associated with larger credit volumes and modestly lower borrowing costs. Controlling for detailed firm, bank, and time-varying characteristics through high-dimensional fixed effects, we estimate that annualized interest rates on secured loans are 10 to 18 basis points lower than on comparable unsecured loans. In terms of volume, pledged collateral is associated with 33% to 48% higher committed amounts, holding all else equal. These findings suggest that collateral alleviates lender risk and improved credit terms, even after controlling for various time-varying firm and bank characteristics, and non-random firm-bank matching.

Second, the impact of collateral depends critically on its type and features. The former refers to the asset category (e.g., real estate, financial assets), while the latter captures economic properties such as tangibility and redeployability that affect an assets suitability as collateral. Our findings indicate that loans backed by real estate are associated with significantly higher credit volumes, but do not consistently exhibit lower interest rates, which is consistent with the collateral channel mechanism described in Chaney et al. (2012). By contrast, other assets, including intangibles, are associated with both larger loan amounts and lower interest rates. Regarding pledged asset features, we find that immovable collateral is associated with higher credit volumes, consistent with theoretical predictions in Hart and Moore (1994), whereas other features such as liquidity and redeployability show no relationship with price or quantity of credit. To assess the aggregate implications of this result, it is thus important to understand the prevalence of each of these collateral types. We show that financial assets constitute the most frequently pledged collateral category, accounting for 46% of all protection contracts, followed by real estate at 26%. In value terms, however, real estate dominates: it secures 53% of the total value of outstanding collateralized loans, compared to 34% for financial assets. Other asset types, including intangibles and physical movable assets play a marginal role, accounting for 7% and 5.5%, respectively.

While the first question concerns the extensive margin of collateral use, **"What is the impact of collateral value on credit conditions?"** speaks to the intensive margin. In macro-finance models, firms' debt capacity is constrained by the value of pledged collateral; higher collateral

values are assumed to enable greater borrowing, amplifying credit cycles (Chaney et al., 2012; Catherine et al., 2022). While this assumption is widely accepted, direct evidence on whether increases in collateral value translate into higher borrowing amounts remains limited. A central challenge in assessing the magnitude and importance of the collateral channel is the accurate measurement of collateral value. Furthermore, firms often pledge a variety of asset types, such as real estate, financial guarantees, equipment, and others, and individual loans can be secured by multiple protection contracts simultaneously. Yet most existing studies rely on estimated real estate value as proxies for collateral value. While convenient, these measures hide considerable heterogeneity across firms in the actual value of the collateral pledged.

We leverage actual collateral value reported by banks, which is a unique feature of AnaCredit. For each new loan, we observe both the collateral items pledged and the bank's assessment of the value of that protection. This allows us to study the relationship between collateral value and credit terms at the firm-bank-loan level. Our findings indicate a semi-elasticity of loan rates to collateral value of -2.4% to -4.3%. A 1% increase in collateral value is associated with a 2.4 to 4.3 basis points reduction in loan rates. The volume effect is even stronger. We estimate an elasticity of 0.76 to 0.84 for committed amounts with respect to collateral value. To our knowledge, this is the first paper to provide these intensive-margin elasticities using actual, bank-reported collateral values and may thus offer a novel, important input to the macro-finance literature.

To explore heterogeneity in the impacts of collateral, we conduct subsample analyses by year and across the four largest euro area economies. We find that the effects of collateral, including its presence, type, and value are consistently signed but vary in magnitude. For instance, the magnitude of the collateral channel, i.e., the elasticity of loan amounts with respect to collateral value ranges from 64% to 89% across countries, and from 76% to 86% across years. To probe the sources of this variation, we examine the role of three factors: (i) the composition and distribution of collateral types across countries, (ii) legal institutions, and (iii) financial conditions. We find that the collateral channel is weaker in countries where secured lending and real estate collateral are already dominant, but stronger in countries with higher loan-to-value (LTV) ratios. Importantly, the channel remains active even under tight borrowing conditions, underscoring its macroeconomic relevance.

Systematic documentation of the composition and distribution of collateral remains scarce. Leveraging our granular dataset, we provide a detailed description of collateral use in the euro area. We structure the discussion around three key facts: (i) collateral presence, (ii) the types of assets pledged, and (iii) the value of collateral. We begin with **collateral presence** in corporate

lending. As previously discussed, secured loans represent a substantial share of both the number and volume of loans. Among loan types, term loans exhibit the highest likelihood of being collateralized (64%), followed closely by finance leases and credit lines. In contrast, only about 35% of revolving credit facilities are backed by collateral. These patterns exhibit marked cross-country variation. Secured lending is generally more prevalent in Eastern European countries compared to their Western and Southern European counterparts both in frequency and volume.

We then turn to the **collateral type** pledged in corporate lending and how their use varies across countries. We document significant differences in the reliance on specific asset types: real estate and financial assets emerge as the most commonly pledged types of collateral. Firms in Southern Europe rely more heavily on financial assets, primarily financial guarantee, particularly compared to those in Western Europe. Moreover, we identify interactions between collateral types and loan types. Real estate is most frequently associated with term loans and credit lines, while financial assets are more commonly linked to revolving credit and trade receivables. These patterns reflect the inherent alignment between asset characteristics and the structure of the associated credit instruments.

Finally, we document the magnitude and composition of **collateral value** pledged to support corporate bank lending, along with its variation across countries. The aggregate collateral value in the euro area is substantial, ranging between €1,800 and €3,900 billion, which is equivalent to approximately two to four times the total amount of outstanding secured loans. This magnitude varies considerably across countries and represents a significant share of GDP in Eastern and Southern Europe, relative to Western Europe. When scaled by the value of secured loans, over-collateralization emerges as a widespread pattern across all sample countries. We then examine the composition of collateral value in greater detail. Real estate is the dominant contributor to total collateral value in most countries, accounting for roughly 50-60% of the total. Financial assets represent the second-largest category, contributing 28-38%. Despite their frequent use, physical movable and other assets make only a modest fraction of overall collateral value.

Altogether, our paper makes two key contributions to the literature on collateral in corporate finance and macroeconomic fluctuations. First, we offer a comprehensive documentation of the importance, distribution, and composition of individual collateral in the euro area, along with an analysis of cross-country variations. Second, we quantify the effect of collateral on both the pricing and volume of newly originated credit. Using actual collateral value rather than proxies and leveraging an identification strategy based on within-firm and within-bank variation, we estimate the elasticity of the collateral channel for secured lending. This allows us

to directly assess how changes in collateral value affect credit supply. Our findings underscore the continued relevance of collateral in the euro area, supporting earlier US-focused evidence by Rampini and Viswanathan (2024) and Benmelech et al. (2025) on its broad role in debt markets. In line with Benmelech et al. (2024), our results reinforce the view that: *"It is too early, therefore, to write the obituary on secured borrowing by non-financial corporations".*

Literature Review. This paper contributes to three strands of literature. First, it speaks to the ongoing debate regarding the role of collateral in corporate finance and macro-finance. A number of recent studies have challenged the traditional view that firm assets and collateral play a central role in borrowing decisions, especially for large firms in the US (Lian and Ma, 2021; Ivashina et al., 2022; Kermani and Ma, 2023). In contrast, Rampini and Viswanathan (2024) and Benmelech et al. (2025) reaffirm the importance of collateral across a broad spectrum of debt financing. This debate, however, has largely focused on large corporations in capital-market-based systems. Due to data constraints, far less is known about the role of collateral for SMEs, particularly within bank-based financial systems, where collateral constraints may still be binding. Leveraging rich, loan-level data from AnaCredit, we examine the actual use of collateral across asset categories and quantify its importance in SME borrowing. Our findings underscore the need to account for heterogeneity across financial systems and macroeconomic environments, as well as across asset classes, when assessing the role of collateral.

Second, our paper extends the literature on the role of collateral in bank credit. A large body of work demonstrates how collateral mitigates information asymmetries between lenders and borrowers, shapes loan contract terms, and influences bank behavior in screening and monitoring (Bester, 1985; Besanko and Thakor, 1987; Boot and Thakor, 1994; Ioannidou et al., 2022; Rajan and Winton, 1995; Degryse and Van Cayseele, 2000; Manove et al., 2001; Jimenez et al., 2006; Benmelech and Bergman, 2009; Berger et al., 2011; Assunção et al., 2014; Campello and Larrain, 2016; Cerqueiro et al., 2016; Aretz et al., 2020; Gupta et al., 2021; Benmelech et al., 2022; Luck and Santos, 2023; Barbiero et al., 2024). The type and characteristics of collateral also matter. Theoretically, Hart and Moore (1994) show that durable assets increase borrowing capacity. Eisfeldt and Rampini (2009) emphasize the role of low repossession costs, while Shleifer and Vishny (1992) highlight asset liquidity as a key determinant of debt capacity. We advance this literature along several dimensions. First, we incorporate three aspects of collateral, presence, type, and value, into our empirical framework which allows for a comprehensive assessment of collateral's role in loan pricing and volumes. Second, we provide novel evidence on how different collateral types and features affect firm borrowing conditions by focusing on asset tangibility, liquidity, and redeployability. Third, we are the first to quantify the collateral channel

using actual, asset-level collateral value, rather than relying on proxies such as real estate price indices.[2] Finally, the scope of AnaCredit enables us to explore cross-country variation in the relevance of collateral. While we do not formally identify the sources of this heterogeneity, our results yield insights that can inform a wide range of policy discussions on credit access and financial stability in bank-based financial systems.

Third, our work is related to the literature on the consequences of collateralization. As a central enforcement mechanism, collateralization constitutes a microfoundation of financial frictions in macro-finance. A large body of research highlights the importance of collateral values in shaping firm-level borrowing constraints and amplifying macroeconomic fluctuations (Bernanke, 1983; Bernanke and Gertler, 1986; Kiyotaki and Moore, 1997; Chaney et al., 2012; Catherine et al., 2022). A complementary strand of the literature explores potential misallocation introduced by collateralization. For instance, Bleck and Liu (2018) demonstrate how collateralization can distort credit allocation under liquidity injections. Basco et al. (2024) link the collateral channel to capital misallocation, while Donaldson et al. (2021) argue that collateral requirements can inhibit asset reallocation by preventing firms from divesting pledged assets.

A common feature of these studies is that they take the existence of collateralization as given, without examining the underlying process through which it occurs.[3] We address this gap by documenting where collateral is allocated and how collateralization is achieved. First, we investigate how collateral is allocated across loans within a firm, thereby shedding light on whether and how assets are effectively deployed to secure credit. This speaks directly to the problem of collateral allocation. Second, we study the structure of collateralization itself, i.e.,how specific assets are linked to individual loans. Our findings suggest that these mechanisms influence both the interpretation of collateral value and the terms of debt contracting. In doing so, we provide new micro-level evidence on how the process of collateralization shapes credit outcomes.

[2]The magnitude of the collateral channel in the US is usually identified through changes in real estate value on debt issuance, where the collateral value is its market value estimated by researchers. The impact of a $1 increase in real estate value on firm debt issuance, including secured and unsecured loans and bonds, varies from 9-10 cents in Chaney et al. (2012) to 30 cents in Campello et al. (2022). These estimates are identified using mostly publicly listed firms, who are in need for loans and willing to increase their debt as well as having sufficient resources at hand. The core limitation of these studies is that there is no information on *whether firms actually pledge real estate or not*. Gupta et al. (2021) overcome this limitation by using FRY-14Q data that includes the actual pledge of real estate collateral by firms. With the sample covering both publicly listed and large private firms that have loans from 32 large banks, they report that a $1 increase in real estate value leads to an increase of 7-12 basis points in loan growth. Based on our sample, the point estimate of the collateral channel is around 75 cents. It is estimated using a sample of SMEs that take new bank loans. In addition, we use the actual value of individual collateral that consists of several asset types but is not limited to real estate.

[3]We do not take a position on whether collateralization is endogenously or exogenously determined within a model. Instead, our focus is on the mechanics of the collateralization process, which remains underexplored. While "collateral refers to the asset serving as security for repayment, "collateralization describes the act of assigning those assets to specific credit contracts. This distinction matters for understanding firm behavior and lender constraints. For instance, a firm owning two buildings and seeking both a term loan and a credit line must decide how to allocate these assets to secure each loan, highlighting the need to analyze the matching between assets and liabilities.

The remainder of this paper is structured as follows. Section II describes the data and sample. Section III documents facts on collateral in the euro area. IV empirically studies the role of collateral in credit conditions, including loan prices and quantities. Section V concludes.

II Data and Sample

A Data Source

The core dataset for our analysis is AnaCredit, the harmonized credit registry of the euro area. It provides confidential, loan-level data on credit granted by euro area banks to enterprises, along with detailed information on collateral.[4] The first part of the paper (Section III) examines the prevalence and distribution of collateralization in the euro area, based on a cross-sectional snapshot from December 2019. To assess the robustness of our findings, we also report stylized facts in December 2021 and December 2023 (in Tables C3, C4, and C5).[5] The second part of the paper (Section IV) examines the role of collateral for loan characteristics at loan origination. That analysis is based on the universe of newly originated loans during 2019-2023. The sample covers 19 euro area countries: Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain.

B Data Structure

Before describing the sample construction, it is important to highlight how differences in data structure and information availability shape our understanding of collateral. Figure 1 illustrates three different dataset structures with varying granularity. Panel (a) depicts the commonly used firm-bank-loan level data. This structure allows researchers to observe whether a loan is secured and, if so, what the main collateral is, enabling analysis of the presence and role of collateral in debt contracts (see, e.g., Berger et al., 2011, 2016). However, it omits the collateral side, as researchers cannot see all the collateral pledged by a firm.

Panel (b) represents a firm-bank-collateral level structure, which is rare in the literature. It offers a complete view of all collateral pledged by firms but lacks information on how this collateral maps to specific loans. This limits insights into, for instance, how collateral is allocated across

[4] AnaCredit, maintained by the ECB and Eurosystem NCBs, covers loans extended by euro area credit institutions to legal entities with total committed amounts above €25,000. Data are harmonized across Member States and reported monthly since September 2018. While counterparties may be global, we focus on euro area borrowers.

[5] We use December 2019 as our baseline for two reasons. First, it aligns with the analysis in Kosekova et al. (2025), who study firm-bank relationships in the euro area. Our work complements theirs by documenting the role of collateral in these relationships. Second, credit patternsparticularly those involving collateral and guaranteesmay be heavily influenced by COVID-19-era policies. During this period, AnaCredit does not distinguish between financial and government guarantees, which complicates interpretation. Since our goal is to identify stylized facts on collateral use in firm financing, we abstract from pandemic-specific interventions and focus on pre-COVID data.

loan types. Panel (c) shows a firm-bank-loan-collateral structure, providing a comprehensive mapping between loans and collateral without omitting information from any dimension.

AnaCredit is unique in that it supports analysis at all three levels. Depending on the research objective, we draw on different samples. For example, the analysis of collateral types uses the collateral sample alone, isolating collateral from loans. By contrast, the analysis of collateral value combines the collateral and loan-collateral samples to deliver a full picture of the mapping. We now describe the key features of the data at each level.

C Sample Construction

C.1 Loan Sample

We construct a loan-level sample where each observation represents a firm-bank-loan. The sample includes the stock of loans from financial institutions to nonfinancial corporations (NFCs) across 19 countries. Following Kosekova et al. (2025), we exclude firms in NACE codes 64-66, syndicated loans, defaulted loans and firms, and project finance loans, which differ substantially from other types. We classify loans into five categories: (1) term loans; (2) financial leases; (3) trade receivables; (4) credit lines; and (5) revolving credit, which includes overdrafts, revolving credit excluding overdrafts, and credit card debt.

To ensure consistency and comparability, we retain only loans denominated in EUR and involving firms and banks located in the same country. We also drop loans with multiple borrowers or creditors.[6] Loans with multiple creditors often involve transfers to affiliates, leaving seniority arrangements unclear. For loans with multiple debtors, although collateral can be linked, the ownership of the collateral is unclear. We retain loans with outstanding amounts equal to zero, as creditor security interests on collateral may persist even after repayment.[7]

The final sample comprises over 16 million loans to 3 million firms issued by more than 2,000 banks.[8] It includes detailed loan-level information such as commitment amounts, outstanding nominal amounts (ONA), interest rates, loan types, maturity, and security status. Panel A of Table 1 presents summary statistics. The mean commitment and outstanding amounts are around €0.2 million and €0.1 million, respectively, indicating that loans in our sample are relatively small. This contrasts with US studies (e.g., Caglio et al., 2021, Gustafson et al., 2021, Luck and Santos, 2023), which focus on larger loans. The average maturity is 6-7 years, similar to US

[6] This affects the collateral sample too, as collateral linked to loans with multiple parties is excluded.

[7] Collateral release depends on legal and administrative steps that vary by collateral type and jurisdiction. For example, in New York, regulated institutions must release motor vehicle liens within three business days of payment clearance. See https://www.dfs.ny.gov/consumers/auto_insurance/how_to_obtain_a_lien_release_on_a_vehicle.

[8] This covers roughly 57% of the firms included in Orbis Global for 18 countries; see Kalemli-Özcan et al. (2024).

data. However, unlike those studies, which emphasize larger firms and banks, our data provide a broader view of collateral use across firm-size and loan-size distribution.

C.2 Collateral Sample

One objective of this study is to provide a comprehensive analysis of the collateral pledged by NFCs in the euro area. To this end, we construct a collateral-level sample to assess both its value and composition from the perspective of individual collateral. Each observation corresponds to a firm-bank-collateral unit, enabling us to identify the collateral pledged by firms to specific banks. The December 2019 snapshot includes 12 million distinct collateral pledges from 2 million firms to 2,000 banks. For each item, we observe the collateral type, initial and most recent value, valuation method, maturity, and other attributes. This level of detail allows us to study collateral more comprehensively than most existing datasets.

We apply several filters to clean the sample. First, we drop collateral linked to multiple debtors within a bank, as group structures and ownership links are not observed. Second, we exclude observations with missing collateral type. Panel B of Table 1 presents summary statistics. The average initial value per collateral is €0.25 million, rising to €0.33 million in the most recent valuation. The variable "number of loans per collateral" has a mean of 1.47 and a median of 1, indicating that a single piece of collateral often supports multiple loans.

C.3 Loan-Collateral Sample

While both the loan and collateral samples are informative on their own, the unique strength of AnaCredit lies in its ability to link the two. To analyze the interaction between loans and collateral, we construct a firm-bank-loan-collateral sample covering collateral associated with secured loans as of December 2019. This allows us, for the first time, to map the full universe of observed relationships between secured loans and their collateral. Using the previously described samples, we merge detailed information from both sides, enabling analysis of loan-collateral mappings, which is an element often assumed but rarely observed in the literature. Linking loans and collateral is essential. For instance, if a single collateral secures both loan A and loan B, its value cannot be fully attributed to either loan. In such cases, the collaterals effective value from the perspective of any one loan is only a fraction of its total, as banks cannot claim the entire asset in liquidation.

Because of filters applied to the collateral sample, some loans are also excluded. Specifically, loans linked to collateral shared across multiple debtors within a bank, or to collateral with missing type information, are dropped. To ensure consistency, the set of secured loans in both

the loan and loan-collateral samples is defined by those retained in the loan-collateral dataset. The final sample contains 8 million loans secured by 12 million individual collateral contracts. Panel C of Table 1 summarizes this sample. The average allocated collateral value is €0.094 million, while the allocated loan amount is €0.047 million, indicating a high degree of overcollateralization. Note that this yields two distinct measures of outstanding nominal amounts (ONA): for loan-level analysis (Panel A), we use each loans total ONA; for loan-collateral analysis, we apply an allocation key to apportion ONA across linked collateral.[9]

III Collateral in the Euro Area

Collateral plays a central role in financial contracts, credit allocation, and broader economic dynamics. While its importance is well established, aggregate measures of collateral value and its composition remain poorly understood, as does the extent to which different asset types serve as collateral. This section examines three dimensions of collateral. Section III.A analyzes the prevalence of collateral use in the euro area banking sector. Section III.B explores the distribution and composition of collateral types. Section III.C focuses on collateral value, distinguishing between different value concepts and highlighting their relevance for understanding collaterals function. Leveraging the cross-country scope of our data, we also document how these dimensions vary across euro area countries within a common currency framework.

A Collateral Presence

Collateralization entails both benefits and costs. For firms, pledging collateral can lower loan spreads but imposes asset encumbrance, reducing control and flexibility during restructuring (Benmelech and Bergman, 2009; Mello and Ruckes, 2017). For banks, it mitigates credit risk but involves monitoring, repossession, and resale costs (Assunção et al., 2014). Understanding the role of collateral in corporate and macro-finance begins with measuring its prevalence in bank lending. Using our loan sample, we compute two ratios: (i) the share of secured loans in the total number of loans, and (ii) the share of secured loans outstanding nominal amount (ONA) relative to total ONA.

Table 2 reports the results. At the euro area level, secured loans make up 53% of all loans, indicating their central role in bank credit. This aligns with national credit register findings: 51% in Portugal (Degryse et al., 2021), 51% in Spain (Jimenez et al., 2006), and 50% in Germany (Behn et al., 2022). Collateral use varies across loan types: it is most common in term loans (64%), followed by finance leases and credit lines, and least common in revolving credit (35%).

[9] Total secured loan ONA from the two methods differs only marginally.

In volume terms, the role of collateral is even more pronounced: secured loans account for 70% of total ONA, reflecting that larger loans are more likely to be secured. This share is highest for credit lines (76%), followed by term loans (74%) and finance leases (71%).

These ratios are not directly comparable to those in the US or emerging markets. As noted in Section II, US datasets like FRY-14Q and the SNC program cover only large loans from a selection of banks subject to administrative regulation (CCAR) or syndicated loans, while AnaCredit captures a near-universe of exposures due to its low reporting threshold. Our focus is exclusively on bank credit, and we do not consider collateralized corporate bonds (Benmelech et al., 2024). In contrast, emerging markets often feature weaker legal enforcement, which tends to reduce collateral usage (Ioannidou et al., 2022).

Cross-country Heterogeneity. To examine cross-country differences, we compute the two collateral ratios separately for each country. Figure 2a shows the share of secured loans in total loan counts, revealing substantial variation. In Spain and Ireland, the share is below 40%, while in Lithuania, Latvia, and the Netherlands it exceeds 80%. Figure 2b presents the share of secured loans in total ONA, also ranging widely, from 40% in Spain, Ireland, and Luxembourg to over 80% in Estonia, Finland, Lithuania, Latvia, and the Netherlands. These patterns confirm the centrality of collateral in firm financing, but raise the question: what explains the observed variation? One possible explanation is differences in legal institutions. For instance, weaker contract enforcement and limited credit information sharing may explain high collateral use in parts of Eastern Europe (Brown et al., 2011). We study this in more detail in Section IV.D.

B Collateral Types

A key strength of our dataset is its ability to provide direct evidence on the use and importance of different *types of collateral* in securing corporate credit. Collateral assets vary widely in nature, and these differences can influence both firm financing and macro-financial dynamics, such as the transmission of shocks.[10] Theoretical work by Hart and Moore (1994) emphasizes how enforceability and liquidation values make some asset types more suitable as collateral than others. Empirically, Campello and Giambona (2013) examine how firms use tangible and financial assets, particularly real estate and inventory, to ease financing constraints. Benmelech and Bergman (2009) find that assets with high redeployability reduce the cost of credit, while Assunção et al. (2014) show that easily repossessed collateral increases loan supply. Kermani and Ma (2023) document that NFCs hold highly specific assets, allowing them to borrow against only a limited portion of asset value. We begin by defining collateral types in Section B.1, ex-

[10] For example, while real estate is often criticized for amplifying downturns, it is also valued for its durability.

amine their composition in Section B.2, and conclude with an analysis of how collateral types map to loan types in Section B.3.

B.1 Definition

We classify collateral into four broad asset types, bundling several AnaCredit categories to ease the discussion.[11] Importantly, we do not distinguish collateral based on how its value is determined (e.g., asset-based vs. cash-flow based). Instead, our method reflects broad asset characteristics that shape their use in lending, such as redeployability, durability, tangibility, value volatility, and other characteristics.

- **Real estate**. This category includes "residential real estate collateral", "offices and commercial premises", and "commercial real estate collateral" in AnaCredit. While residential and commercial real estate may serve different functions, we treat them jointly due to their similar physical characteristics. Real estate is typically durable, tangible, and has relatively stable value.

- **Physical movable assets**. This group includes "other physical collateral" category in AnaCredit, covering machines, equipment, and inventory that are key collateral types in prior research (Calomiris et al., 2017). We do not group them with real estate for fixed assets because they are different in several dimensions, including durability and redeployability.

- **Financial assets**. This includes "currency and deposits", "securities", "loans", "equity and investment fund shares or units", "credit derivatives", "financial guarantees other than credit derivatives", "life insurance policies pledged", "trade receivables", and "gold" in AnaCredit.[12] Although financial guarantees are not real assets per se and cannot be seized or resold, we group them here for two reasons: (i) they offer loss protection like other collateral, and (ii) their value is linked to the credit quality of an underlying party, which is similar to derivatives to some extent.

- **Other assets**. It includes all assets that are not in the above categories, and can consist of all non-physical and non-financial assets. We interpret this group as one including intellectual property such as patents, trademarks, copyrights, and trade secrets, which can be used as collateral in several countries. Categorizing financial assets and other intangible assets separately provides a better understanding of their magnitude and the distinct roles they play. Like physical movables, IP is vulnerable to agency issues, as its valuation can

[11] For the full list, see Appendix A or Section 9.4.3 of Part 2 of the AnaCredit Manual: https://www.ecb.europa.eu/pub/pdf/other/AnaCredit_Manual_Part_II_Datasets_and_data_attributes.en.pdf.

[12] Loans secured by gold account for less than 0.01% of total loans; excluding gold has no effect on results.

be subjective and prone to information asymmetries (Ward, 2023).

B.2 Composition

Table 3 Column (1) shows the distribution of collateral types in our sample, where each observation is a firm-bank-collateral. Financial assets are the most common, accounting for 46.74% of all collateral, followed by real estate at 26.32%. Notably, within financial assets, "financial guarantees other than credit derivatives make up 86% of the category. Physical movable assets and other assets represent 10.54% and 16.39%, respectively. Column (2) reports the share of ONA backed by each collateral type. As expected, real estate supports the largest share (53%) of secured loan ONA, followed by financial assets (35%), and much smaller shares for other assets (7%) and physical movable assets (5.5%).

Empirical evidence on collateral types is limited. Using US FRY-14Q data, Gupta et al. (2021), Luck and Santos (2023), and Caglio et al. (2021) find receivables and inventories to be dominant. In Bolivia, Berger et al. (2016) report widespread use of movable assets. In Portugal, Degryse et al. (2021) show that 24% of secured loans are backed by real estate, financial guarantees, or similar assets. A key limitation in these studies is that they observe only the main collateral per loan. Our data provide the full set of collateral types associated with each loan, offering a more complete picture. As Table 1 shows, around 25% of loans are backed by multiple collateral items. Table C1 further reveals that 20% of loans are linked to more than one of the four collateral types. Bundling patterns emerge across collateral types. Table C2 presents a co-occurrence matrix. The rows indicate, for loans secured by a given type, the share also backed by other types. For example, among loans with real estate, 7.2% also include physical movable assets, 29.5% include financial assets, and 15.5% include other assets. The columns show the reverse; for each other collateral type, what fraction of those loans also collateral of another type: 13.3% of loans with physical movable assets also include real estate, as do 14.3% of loans with financial assets and 25.1% with other assets.[13]

Cross-country Heterogeneity. To explore cross-country differences in collateral composition, we compute collateral type shares and ratios separately for each euro area country. Figure 3a displays the frequency distribution of collateral types. While real estate and financial assets dominate in most countries, there is substantial heterogeneity. Southern and Eastern European countries rely more heavily on financial assets: in Spain and Italy, financial assets account for around 70% of collateral, rising to 80% in Portugal, far exceeding the shares in Belgium or Germany. As noted earlier, financial guarantees make up 86% of the financial asset category. This

[13]The matrix is not symmetric; rows and columns are conditional on different base groups.

pattern aligns with Mayordomo et al. (2021), who find that in Spain, the use of personal guarantees rose between 2006 and 2014. It is likely due to a scarcity of real assets and real estate devaluation; factors not typically captured in standard capital regulation frameworks. In contrast, physical movable assets are the most common collateral in Ireland and Lithuania.

When considering secured loan amounts, the role of financial assets diminishes. Figure 3b shows that secured ONA is primarily backed by real estate, consistent with euro area-wide findings. In 11 of 19 countries, over 50% of secured loan amounts are backed by real estate; in the remaining countries, the share ranges from 20% to 50%. This suggests that larger loans are more likely to be collateralized with real estate. Only in Portugal, Italy, and Spain do financial assets back a larger share of outstanding secured credit than any other collateral type.

Implications. The distribution of collateral types yields two key insights. First, while many jurisdictions have reformed secured transaction laws to expand the use of tangible and intangible movable assets as collateral given their increasing importance in corporate operations, only a small share of outstanding loan amounts is secured by movable assets in the euro area. Our results challenge the efficiency and impacts of policy and imply potential difficulties in collateralizing these assets such as agency concerns (Degryse et al., 2020; Ward, 2023). Second, the observed heterogeneity across countries contributes to a deeper understanding of the collateral channel. Our findings offer direct evidence on the use of real estate as collateral in the corporate sector, which is an important step toward understanding how real estate value shapes firms debt capacity. Moreover, cross-country variation in collateral composition has broader implications for macro-financial linkages and monetary policy transmission within the euro area. Caglio et al. (2021) show that collateral heterogeneity can amplify the effectiveness of monetary policy by improving loan access and pricing, particularly during tightening cycles.

B.3 Collateral Types and Loan Types

Several studies highlight the heterogeneity across loan types and collateral types as well as their implications (Berger et al., 2016; Ivashina et al., 2022). One unexplored question is: Are loan and collateral types systematically linked? If so, how and what are the implications? This section explores the association between collateral types and loan types. Rather than pre-defining loans as asset-based or cash-flow-based, we use AnaCredits loan categories: term loans, credit lines, revolving credit, finance leases, and trade receivables. Our analysis leverages the unique richness of the loan-collateral dataset, which fully maps loans to their collateral. This means we observe both the number of collateral items securing a loan and the number of loans backed by a given collateral. To interpret the data clearly, we adopt two approaches. First, we analyze

all loans in the loan-collateral sample, regardless of how many collateral items back each loan. Second, we restrict the sample to loans secured by a single collateral item used exclusively for that loan. This comparison helps us assess the extent to which multiple collateral per loan or shared collateral influences the relationship between loan and collateral types.

We begin by examining the frequency of loan-collateral pairings. Figure 4a shows the distribution of collateral types across loan types, using the full loan-collateral sample. Each bar segment represents the share of a given loan-collateral combination. Real estate is most commonly linked to term loans and credit lines, while financial assets are more often associated with revolving credit and trade receivables. Physical movable assets are predominantly tied to finance leases. These patterns reflect intrinsic characteristics: the durability of real estate make it well-suited for longer-term loans like term loans and credit lines, while financial assets align more with short-term, liquidity-driven instruments like revolving credit. We also analyze this mapping by loan amounts. Figure 4b shows the share of ONA by loan-collateral pair. Real estate accounts for a larger share of secured loan amounts in term loans, credit lines, and finance leases. Conversely, physical movable and other assets contribute less to loan amounts in these categories. For revolving credit and trade receivables, the composition by collateral type is broadly unchanged. These findings reinforce that real estate tends to back larger loans.

To assess whether patterns are driven by loans secured by multiple collateral items, we repeat the analysis using only loans backed by a single, exclusive collateral. Figure B2a shows that, under this restriction, the share of loans and credit lines backed by real estate declines, while the share backed by financial assets increases, suggesting real estate is more commonly shared across loans. Nonetheless, as Figure B2b confirms, the overall distribution of loan amounts by collateral type remains broadly stable.

Implications. The observed matching between collateral and loan types can strengthen the collateral channel and contribute to economic procyclicality. Take the frequent use of real estate to secure term loans as one example. In downturns, falling real estate prices reduce collateral values, restricting credit access and curbing investment, particularly in long-term projects typically financed by term loans. This decline in investment further depresses real estate prices, reinforcing a feedback loop between asset values and economic activity (Kiyotaki and Moore, 1997; Bernanke, 1999). The use of real estate as collateral for term loans may thus amplify this dynamic by directly linking investment capacity to asset valuations. In contrast, when real estate backs revolving credit that is less central to long-term investment, the feedback loop may be weaker, as such credit is more closely tied to short-term liquidity needs.

C Collateral Value

AnaCredit not only allows us to identify whether loans are secured and by which type of collateral, but also provides information on collateral value. Collateral value is a central concept in macro-finance literature, yet systematic evidence on its size and distribution remains limited. This section fills this gap. Section C.1 defines key collateral value measures. Sections C.2 and C.3 then examine their overall magnitude and composition, including cross-country variation.

C.1 Definition

AnaCredit distinguishes three types of collateral values. The first is the "original protection value", representing the collaterals initial appraisal when pledged as security for a specific instrument. This value is time-invariant and remains fixed throughout the life of the secured loan. It can correspond to the concept of a collateral constraint, whereby a firms borrowing capacity is limited by the collaterals initial value. The second type is the "protection value", or the most recent valuation of an individual collateral item, based on a pre-agreed method. This value must be updated whenever changes occur, making it inherently time-variant. It reflects the notion of collateral value prevalent in academic literature that is responsive to market conditions and central to the functioning of the collateral channel.

While these two measures capture important dimensions, they do not fully reflect the complex loan-collateral mapping. AnaCredit addresses this with a third value: the "protection allocated value", which refers to the maximum amount a creditor considers to claim against a loan in the event of default. This value is reviewed periodically and determined by banks internal risk management procedures. The allocated value offers three key advantages. First, it encompasses all loan-collateral relationships, including cases where a loan is secured by multiple collateral items which is a scenario often overlooked in existing studies. Second, it accounts for senior third-party claims. For example, a firm pledges the same collateral to banks A and B. If bank B uses the full market value in its assessment, then it risks overestimating recovery in the event of default. The allocated value adjusts for this by incorporating the legal hierarchy of claims, thereby reflecting expected recovery more accurately. Third, this measure reflects banks private assessments. Since AnaCredit does not impose a standardized rule for how value should be allocated across protection contracts, banks retain discretion in distributing collateral value across loan-collateral pairs, implicitly embedding their proprietary risk assessments.[14]

[14]This adjustment mechanism also connects to theoretical work on multi-creditor environments. A strand of literature examines how collateral can mitigate creditor conflicts and address non-exclusivity in debt contracts. For example, DeMarzo and Sannikov (2006); DeMarzo and Fishman (2007); DeMarzo et al. (2012) highlight how optimal collateral structures can align incentives across lenders. DeMarzo (2019) shows that collateral can neutralize the effects of additional leverage, rendering secured debt valuations less sensitive to total indebtedness. Conversely,

C.2 Magnitude

To assess the value of collateral pledged to banks, we examine its magnitude using two types of collateral value. In Table 4 Panel A, we draw on the collateral sample, where valuations reflect the most recent reviews by banks. This approach does not adjust for potential double-counting or third-party claims. Strikingly, the aggregate value of all collateral across 19 countries reaches approximately €3.9 trillion, which is about four times the total volume of secured loans in the euro area. In contrast, Table 4 Panel B presents estimates based on the loan-collateral sample, using the allocated collateral value. Here, total collateral value drops to €1.8 trillion, which is less than half the previous number. This sharp difference stems from the nature of the allocated value, which accounts for overlapping claims across loans and adjusts for senior claims by third parties.

Cross-country Heterogeneity. To analyze cross-country heterogeneity in aggregate collateral value, we compute the ratio of total collateral pledged to GDP. Figure 5a shows results based on the most recent collateral values from the collateral sample. Blue bars represent the total collateral value in each country normalized by GDP in December 2019. The data reveal substantial variation. In Finland, the ratio reaches 1, indicating that the value of collateral pledged to banks is comparable to the countrys GDP. Four other countries have ratios between 0.5 and 1. Figure B1a presents absolute collateral values (red bars). Germany exceeds €1,000 billion, followed by France at €850 billion. In smaller countries like Belgium, values hover around €100 billion, while in nine countries they fall below €30 billion. Unsurprisingly, both absolute and relative collateral volumes correlate with credit market size. More developed markets facilitate greater loan volumes and, in turn, more collateral. To improve interpretability, we also normalize collateral value by the total volume of secured loans. This reveals widespread overcollateralization. In Malta, Finland, and Greece, collateral coverage ratios exceed 6; in Luxembourg, Italy, Spain, Slovakia, and Ireland, they fall below 4.

We repeat the analysis using allocated collateral values from the loan-collateral sample as shown in Figure 5b. Compared to the previous results, both the magnitude and rankings change significantly. The highest GDP-normalized ratio falls from 1 to 0.5, with Portugal now leading, followed by Cyprus, Malta, Greece, and Lithuania (0.25-0.4). Six countries, including Ireland, exhibit ratios below 0.1. Figure B1b presents the absolute allocated values. Germany drops from €1,000 billion to €300 billion under the allocated concept, while France and Italy see more

Donaldson et al. (2020) illustrates how protective collateral structures may lead to collateral overhang. Our findings provide empirical context for these theories, showing that a single unit of collateral can support multiple loans either within or across creditor relationships. Importantly, seniority rules ensure that second-lien creditors are only repaid after the claims of first-lien holders are fully satisfied.

moderate declines, resulting in France now having the highest allocated value (€500 billion), followed by Italy (€400 billion). Collateral coverage ratios under this measure are always below 4 and show more variation across countries. Comparing these two types of collateral value offers insights into differences in banks assessments and the extent of collateral reuse.

C.3 Composition

We next examine the composition of collateral value by asset type, as shown in Table 4. Panel A uses the most recent collateral values from the collateral sample. Real estate constitutes 59.71% of total collateral value, followed by financial assets (28.35%), other assets (6.52%), and physical movable assets (5.41%). Panel B, based on allocated collateral values from the loan-collateral sample, confirms the dominance of real estate in the aggregate collateral value. These patterns highlight real estate as the primary collateral type, while physical movable assets and intangibles play a smaller role in value terms. This does not contradict studies emphasizing their increased use, as those typically focus on application rather than value. The pattern may also reflect high asset specificity in nonfinancial firms, as shown by Kermani and Ma (2023). Finally, the sizeable share of financial assets reaffirms their important role in secured credit.

Cross-country Heterogeneity. We further investigate the composition of collateral values at the country level by aggregating the value of each collateral type and calculating its share of total collateral. Figure 6a presents results based on the most recent collateral values from the collateral sample. Consistent with the euro area aggregate, real estate accounts for over 50% of total collateral value in most countries. In Finland, real estate comprises more than 80%, followed by Germany, Austria, and Malta at around 70%. In contrast, physical movable and other assets generally play a minor role. Exceptions include Belgium, Estonia, and France, where these two categories make up about 30% of total collateral value, while in Spain and Italy their combined share is below 5%. Another notable pattern is the prominence of financial assets as collateral in several Eastern and Southern European countries. In Greece and Portugal, they constitute about 60% of total collateral value, which sharply differs from countries like Finland and Germany. Interestingly, this high usage by count as seen in Figure 3a does not always translate into high value, suggesting that financial assets are frequently pledged but tend to have lower individual value compared to real estate. Results using allocated collateral values from the loan-collateral sample are shown in Figure 6b. Despite adjustments for double-counting and third-party claims, the overall composition remains similar. Real estate continues to dominate, representing over 50% of total value in most countries. Financial assets remain especially prominent in Greece and Portugal, accounting for 60-70% of collateral value even

after allocation adjustments.

Implications. Our analysis of collateral value carries implications. On the one hand, collateral value reflects the extent of collateral constraints and credit availability. On the other hand, Donaldson et al. (2021) argue that using assets as collateral may impede efficient asset allocation, since encumbered assets cannot be sold until debt is repaid. If this holds, our findings suggest a risk of asset misallocation in countries with high collateral intensity. Different types of collateral value can affect our understanding of the importance of collateral channel. Notably, the composition of collateral value remains consistent across valuation methods: real estate dominates in most countries. This underscores the relevance of real estate pricing in determining aggregate collateral value and its role in amplifying economic fluctuations.

IV The Role of Collateral in Bank Credit

So far, we have documented the relevance of collateral in the euro area banking sector, presenting stylized facts on its presence, types, and value. Our analysis also shows strong persistence in both the distribution and composition of collateral. One question remains: What is the benefit of securing a loan? We answer this question by presenting empirical evidence with a focus on credit conditions on new loan contracts. First, we examine how presence, type, and value affect loan pricing. Second, we assess how the *individual* collateral value drives loan amounts. As such, we provide direct evidence on the collateral channel. Our sample includes *new loans* issued between January 2019 and September 2023 by banks in 17 euro area countries to NFC.[15]

Our regression specification takes the form:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral}_i + \boldsymbol{\gamma}' \mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t}, \tag{1}$$

where $\text{Credit}_{f,b,i,t}$ is either the annualized loan rate or the committed amount of loan i issued by bank b to firm f in month t. Collateral_i is the key independent variable, capturing (i) collateral presence, (ii) collateral type, and (iii) collateral value. Each subsection defines these measures. $\mathbf{X}$ includes two loan controls: the bank-firm-time-specific one-year ahead forecasted probability of default ($\text{PD}_{f,b,t}$) and loan maturity ($\text{Maturity}_{f,b,i,t}$). While we do not aim to establish causality, we include a rigorous set of high-dimensional fixed effects to absorb observed and unobserved heterogeneity at the creditor-time, borrower-time, and creditor-borrower relationship level.[16] Standard errors are double-clustered at the bank and time level.

[15] Relative to the stylized facts section, Cyprus and Malta are excluded after cleaning yields too few observations. We retain only loans where both creditor and borrower are legal entities in the same country. We also limit the sample to firms with both secured and unsecured loans in the sample period.

[16] We present two versions of each specification. The most stringent includes borrower-time fixed effects, compar-

The cross-country scope of our dataset, combined with information on both prices and quantities and the richness of collateral information, enables us to push the boundaries of existing research in several ways. First, we are able to discuss the extent to which collateral matters in bank-dominated financial systems with SMEs. Second, we can analyze the differential impacts of collateral depending on its type and underlying economic features. Third, we directly provide elasticity of loan amounts with respect to individual collateral values using the actual value of individual collateral, which is the core of the collateral channel.

We study collateral presence in Section IV.A, collateral types and features in Section IV.B, and collateral value in Section IV.C. Finally, in Section IV.D, we examine heterogeneity in the collateral-credit relationship, linking our regression analysis to documented cross-country differences in legal institutions and financial conditions.

A Does Collateral Presence Matter for Loan Pricing and Quantities?

Having demonstrated the prevalence of collateral use in bank loans in Section III.A, we examine how it affects loan pricing and quantities. A central question in the literature is whether pledging collateral reduces firms borrowing costs compared to unsecured loans. The rationale is that collateral provides banks with security in the event of default, allowing them to offer lower rates for the same expected return (e.g., Benmelech and Bergman, 2009; Benmelech et al., 2022; Luck and Santos, 2023). However, while collateral improves recovery prospects, it is theoretically ambiguous whether pledging it signals strength or weakness (Rajan and Winton, 1995).

Table 6 presents estimates from Eq(1) using **Collateral Presence** as the key independent variable. It is a dummy equal to one if a new loan is secured, and zero otherwise. In columns (1) and (2), the outcome is the annualized interest rate. The coefficient on Collateral Presence is negative and statistically significant, indicating that secured loans carry lower interest rates, even after controlling for time-varying firm and bank characteristics and non-random firm-bank matching. Our results suggest that secured loans are priced 10 to 17.3 basis points lower than unsecured loans. This is consistent with the finding of "secured premium" from Benmelech et al. (2022). We also find that higher PDs are positively associated with interest rates, consistent with the presence of credit risk premia. In columns (3) and (4), where the outcome is the committed loan amount, we find that secured loans are associated with significantly larger amounts. The economic effect is substantial: committed amounts for secured loans are 33-48%

ing loan terms across two new loans to the same borrower in the same period, similar to Khwaja and Mian (2008). To accommodate borrowers with only one loan or one bank, we also use sector-country-time fixed effects, as in Degryse et al. (2019). This alternative is especially informative in cross-country settings where multiple-bank relationships vary widely (Kosekova et al., 2025).

higher than for unsecured loans, holding other factors constant.

Subsample Analyses. AnaCredit as a harmonized credit and collateral register spanning many countries and multiple years, allows us to examine whether the results in Table 6 vary across time and jurisdiction. Does collateral presence have a uniform effect across countries? Is its impact stable between 2019 and 2023, a period marked by the pandemic, inflation, and monetary tightening? If not, how large are these differences?

Tables C6 to C9 replicate the baseline regressions, but split by year and country. We group countries into five categories: France, Italy, Germany, Spain, and a pooled "Others" group. Each table has two panels: the upper uses sector-country-time fixed effects; the lower uses firm-time fixed effects. We have three main findings. First, we show consistent effects that Collateral Presence reduces loan pricing and increases volume. Second, these effects are larger in the sample with more smaller firms. This aligns with Kosekova et al. (2025), who show that relationship lending does not necessarily lead to better pricing, as banks retain part of the surplus. Third, the positive association between collateral presence and loan size is highly robust, while the magnitudes vary significantly. In Germany and Spain, secured loans are 10-15% larger than unsecured ones; in Italy and the pooled group, the gap widens to 50%. Over time, the loan size differential ranges from 24% to 62%.

These findings collectively confirm that banks value collateral pledges, and borrowers benefit through larger, cheaper loans. Our analysis lays the groundwork for understanding whether collateralization enables firms to borrow more. The answer is yes, and this effect is consistent across institutional settings. However, the magnitude vary significantly by time, country, and borrower type. Hence, caution is warranted when generalizing from studies based on a single country or period (e.g., Berger et al., 2016; Degryse and Van Cayseele, 2000).

B The Role of Collateral Types and Features

B.1 The Role of Collateral Type

The composition of collateral types shown in Section III.B may suggest its role in the association between collateralization and loan conditions (Luck and Santos, 2023). We perform exercises using our sample with different composition of firms, loan types and collateral types.

Table 7 shows the results from estimating Eq(1) with **Collateral Type** as the key independent variable. We construct a dummy for each of the four collateral types. If a loan is secured with a given type, the corresponding dummy equals one; if secured by multiple types, multiple dummies can equal one. For example, if loan i is backed by both real estate and financial assets, both

dummies are one, while the others are zero. Coefficients are interpreted relative to unsecured loans. In columns (1) and (2), the outcome is the interest rate. The coefficients on real estate are positive and significant, suggesting it even increase loan rates relative to unsecured loans. In contrast, the other three types yield negative, significant coefficients. Financial assets lower rates by about 20 basis points when ILT fixed effects are included. Columns (3) and (4) use committed amounts as outcome variables. All collateral types are positively and significantly associated with loan size. Real estate shows the largest effects, potentially offsetting its lack of a pricing benefit. These findings confirm that collateral types matter for credit terms, a distinction that would be missed without knowing the asset type.

Subsample Analyses. We repeat the analysis by year and country, with results in Tables C10 to C13. Not surprisingly, the pricing effects have substantial heterogeneity but still show some general patterns. In Italy and France, loans backed by real estate sometimes carry higher interest rates than unsecured loans or those backed by other collateral types. This suggests that the pricing impact of collateral is highly context-dependent, varying by both collateral type and its temporal or geographic use. The results are more consistent when focusing on loan quantities. Real estate is associated with larger loan amounts across years and in France, Italy, and Spain. In Germany and the pooled group, financial assets yield the largest effect, particularly under firm-time fixed effects. Our results caution against using real estate as a general proxy for collateral. Doing so ignores other relevant types and overstates real estates role in reducing borrowing costs since its main benefit appears to be in boosting loan volumes rather than lowering rates.

B.2 The Role of Collateral Features

Beyond examining collateral types, we also investigate the underlying economic features of collateral assets that influence their effectiveness in debt contracts. Specifically, we classify collateral according to three key attributes: immovability, liquidity, and redeployability, which are shown to drive the role of collateral. Appendix Table A1 outlines how each of the fourteen collateral categories reported in AnaCredit maps to these features. Our choice is motivated by the previous literature. For example, Degryse et al. (2020) highlight that movable collateral typically has lower recovery rates than immovable assets. Berger et al. (2016) show that liquid collateral is associated with lower loan spreads and better ex-post loan performance. Similarly, Benmelech and Bergman (2009) emphasizes the importance of redeployability and finds that more redeployable assets enhance firms debt capacity.

We investigate whether specific economic features of collateral help explain why collateralized loans tend to exhibit lower interest rates and larger loan amounts compared to unsecured loans.

To this end, we estimate the following specification:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Presence}_i + \mu \text{Collateral Feature}_i + \boldsymbol{\gamma}'\mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t}, \tag{2}$$

where Collateral Presence$_i$ is an indicator for whether the loan is secured by any collateral. The key independent variable, Collateral Feature$_i$, is a dummy variable capturing the presence of a particular collateral characteristic. Specifically, Immovable$_i$ equals one if the loan is backed by at least one immovable asset; Liquid$_i$ equals one if the collateral includes any liquid asset; and Redeployable$_i$ equals one if the collateral includes a redeployable asset. In each case, the indicator takes the value zero if the loan is either unsecured or collateralized by assets lacking the relevant feature. The coefficient of interest, μ, captures the marginal effect of each collateral feature on credit terms, conditional on collateral presence. We expect that the presence of collateral with desirable characteristics should be associated with more favorable lending terms, that is, lower loan rates and larger committed amounts.

Table 8 presents the regression results for each of the three collateral features considered individually. Across all panels, we again confirm that secured loans are generally associated with lower interest rates and higher committed amounts. Turning to the role of specific features, we find that pledging immovable collateral appears to amplify the quantity effect: committed loan amounts are between 26% and 40% higher compared to loans backed by movable assets. However, the associated reduction in interest rates is more modest, suggesting that while immovable assets facilitate lending capacity, they have limited impacts on lowering price. Panel B shows weaker evidence regarding the influence of liquidity on loan amount in Column (4). Redeployability does not exhibit any statistically significant association with either interest rates or loan amounts, as displayed in Panel C. Although this can be surprising given its theoretical importance, it may reflect practical limitations such as enforcement frictions or high asset specificity that reduce the effective value of redeployable assets in credit contracting. To further assess the effects of each feature, Table 9 reports results from a regression that includes all three attributes simultaneously. The primary findings remains. The lack of significance for redeployability persists, which motivates further analysis of how institutional factors, such as legal enforcement frameworks, may condition the extent to which certain collateral features translate into better credit terms.

C The Collateral Channel: Collateral Value Elasticity

Accurately measuring collateral value is key to studying the collateral channel. Traditionally, researchers have relied on aggregate real estate price indices due to the lack of data on individual

asset values (e.g., Chaney et al., 2012; Lian and Ma, 2021; Campello et al., 2022). In this section, we overcome that limitation by using actual collateral values reported by banks, as detailed in Section III.C.

Here, the collateral variable in Eq(1) is **Collateral Value**, the total value of all collateral associated with loan i. For the first time, we can examine whether higher collateral values are linked to larger loan amounts, which is an underlying assumption of the collateral channel. Unlike earlier analyses in Tables 6 and 7, which focused on the extensive margin (presence or type of collateral), the current analysis focuses on the intensive margin: conditional on pledging collateral, how does its value affect loan pricing and volume?

Table 10 report the results. Columns (1) and (2) use loan rate as the outcome variable. We find a strong negative relationship between collateral value and interest rates. As the collateral value is in logs, the coefficient can be interpreted as a semi-elasticity: A 1% increase in collateral value reduces loan rates by 2.4-4.3 basis points. At sample means, this equates to a 0.42 basis point rate reduction for a €10,000 increase in collateral value. The dependent variables in Columns (3) and (4) are committed amounts. The benefits of high collateral are pronounced: A 1% increase in collateral value leads to a 0.76-0.84% increase in loan amounts. At the sample mean, each €1 increase in collateral value raises the commitment amount by roughly 76 cents. Importantly, these estimates capture the intensive margin, as the sample includes only newly issued secured loans. Therefore, they are not directly comparable to studies using aggregate indices, such as Gupta et al. (2021), whose results are based on real estate price proxies.

Subsample Analyses. We again repeat the analysis using samples split by year and country. Results are shown in Tables C14 to C17. We find that the impact of collateral value on loan rates is economically and statistically significant in all years except 2023. When estimating by country, coefficients are negative in Italy, Germany, and pooled countries in Table C15. Moreover, higher collateral value consistently leads to larger loan amounts across all countries as shown in Table C17. Notably, the strength of the collateral channel varies across countries. In Italy and Spain, the elasticity of committed loan amounts to collateral value ranges from 0.86 to 0.96, while in France and the pooled "Other" countries, it is below 0.70. The effect also varies with business conditions. Over time, elasticities range from 76% to 89%, depending on year and specification. Our results provide robust empirical support for the collateral channel central to the macro-finance literature. They confirm that the collateral value plays a key role in determining both the price and quantity of credit, especially in periods of financial stress.

D Understanding Heterogeneity

D.1 Heterogeneity in Collateral Facts

To assess how the cross-country heterogeneity in collateral composition and distribution documented in Sections III.A, III.B, and III.C shape the role of collateral, we estimate the following equation:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral}_i + \mu \text{Collateral}_i \times \text{Feature}_c + \boldsymbol{\gamma}' \mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t}, \tag{3}$$

where Feature_c captures a stylized fact as described in Section III as of December 2019.[17] We focus on four standardized country features: (i) Presence ONA_c is the share of outstanding nominal amounts (ONA) of secured loans over total loan ONA in a country c, corresponding to Figure 2b; (ii) RE ONA_c is the share of real estate-backed ONA among all secured loans, corresponding to Figure 3b; (iii) Value LTV_c is the ratio of secured loan ONA to total collateral value; and (iv) Value RE_c is the share of real estate in total collateral value, corresponding to Figure 6b. To ease the interpretation, each of these four variables has been standardized, with a mean of 0 and a standard deviation of 1.

Table 11 reports how these cross-country characteristics interact with collateral presence. We first study whether the prevalence of secured credit in a country affects the benefits of collateral. The results in Panel A indicate that in countries where secured lending is more widespread, the interest rate discount associated with pledging collateral is significantly larger. Nevertheless, the effects on increasing loan amounts are only evident for firms with single bank relationships. These findings suggest that the benefits of secured borrowing are more pronounced in environments where collateral use is more common. The effect is economically meaningful: A one standard deviation increase in Presence ONA_c increases the collateral-related interest rate reduction by approximately 50% and loan volume effect by 20%. This helps explain a significant portion of the cross-country variation documented earlier (e.g., Table C9). The other country features do not systematically predict heterogeneity, although Panels C and D show suggestive evidence in specific subsamples.

Turning to the intensive margin, we explore whether cross-country differences in collateral environments shape the relationship between collateral value and loan terms. Table 12 investigates how the elasticity of interest rates and loan amounts with respect to collateral value varies with the four country-level features described earlier. We find no consistent evidence that these features explain cross-country variation in the effect of collateral value on loan interest rates.

[17] Cross-country heterogeneity is highly persistent, despite that the exact magnitude of each country can be slightly different.

However, they do significantly shape the elasticity of loan amounts with respect to collateral value. Specifically, in countries where secured lending is more prevalent and real estate dominates as the primary collateral type measured by outstanding amounts, the collateral channel is weaker. In contrast, countries with higher average LTV demonstrate stronger collateral value elasticities, suggesting greater response of loan amounts to changes in collateral value.

The economic magnitude is substantial. Consider two hypothetical countries: one that lies one standard deviation below the mean on the prevalence of secured loans and share of real estate collateral, and one standard deviation above the mean in LTV ratio; and another country with the reverse situation. Under an additive interpretation, the implied elasticity of loan amounts to collateral value is +/- 0.60 for the first country, and approximately 0.90 for the second country, closely matching the cross-country dispersion documented in Table C17. Taken together, these findings suggest that the efficiency of collateral in shaping loan conditions depends critically on the underlying structure of collateral usage, i.e., its prevalence, composition by type, and relative valuation in each country.

D.2 Heterogeneity in Legal, Financial and Macro Conditions

We now extend our analysis of cross-country and time heterogeneity by examining how legal, financial, and macroeconomic conditions shape the role of collateral in lending. While providing concrete answers of the drivers of heterogeneity lies beyond the scope of this paper, this section offers evidence of how institutional and macro-financial environments moderate the effects of collateral. Legal institutions have long been recognized as a key determinant of credit conditions. For instance, Bae and Goyal (2009) show that in countries with weak contract enforcement, banks respond by reducing loan amounts, shortening maturities, and raising loan spreads. On the macroeconomic side, Caglio et al. (2021) find that the effect of collateral on loan pricing varies across monetary policy regimes.

To explore these dimensions, we estimate the following specification, where we interact collateral presence or collateral value with macro-institutional characteristics:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral}_i + \mu \text{Collateral}_i \times \text{Macro}_{c,(t)} + \boldsymbol{\gamma}' \mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t}. \tag{4}$$

Here, $\text{Macro}_{c,(t)}$ refers to a set of legal and macro-financial variables, including (i) Rule of Law: An aggregate index capturing perceptions of institutional quality-especially contract enforcement, property rights, and legal reliability; (ii) Enforcement Time: The number of years required to enforce a contract; (iii) Insolvency Duration: The average time to resolve insolvency proceedings. All three legal indicators are standardized and measured as of 2019. We further

include: (iv) GDP Growth: Country-specific annual growth rates from Eurostat; (v) Cost of Borrowing: Time-varying bank lending rates; and (vi) Monetary Policy Shocks (MP shocks): High-frequency surprises from Altavilla et al. (2019). Our coefficient of interest, μ, captures how the effectiveness of collateral presence or value varies with these institutional and macroeconomic conditions.

Table 13 presents the results. Panels A through C focus on legal institutional quality. We find that stronger legal institutions increase the benefits of pledging collateral. Specifically, in countries with a one standard deviation higher rule of law score, the interest rate on secured loans is 7 to 8 basis points lower. This implies that the institutional context amplifies the pricing advantage of collateral. It is consistent with the previous literature that where legal systems enforce contracts effectively, collateral serves as a more credible signal, enabling lenders to offer more favorable rates. We also find suggestive evidence that longer contract enforcement periods are associated with weaker collateral effects, that is, smaller loan volumes. These patterns indicate that in settings with inefficient judicial enforcement, the benefits of collateral are attenuated. Insolvency duration appears to have limited influence on the initial pricing or size of credit, implying that lenders place greater weight on near-term enforcement prospects rather than long-run recovery timelines.

Panels D, E, and F examine how macroeconomic and financial conditions influence the effects of collateral presence. Each is interacted with the collateral dummy. The interaction with GDP growth is small but positive and significant for interest rates. It indicates that in stronger macro environments, the pricing benefit of collateral diminishes, possibly because lenders rely less on security when risk tolerance is higher. Higher aggregate borrowing costs are associated with weaker effects: secured loans show slightly higher interest rates and lower committed amounts, meaning that the marginal value of collateral declines in tighter credit conditions. Monetary policy surprises do not affect collateralized loans, which may imply that collateral terms are more responsive to structural or expected conditions than to transitory monetary shocks.

Table 14 investigates the intensive margin of collateral by examining how its effects on loan pricing and volumes vary across legal and macro-financial environments. As in the baseline regressions, higher collateral values are associated with lower interest rates and larger committed amounts. We then interact collateral value with the same institutional variables to explore heterogeneity. The findings on legal institutions reveal an interesting pattern: The marginal effect of collateral value is stronger in weaker legal environments. In countries with lower rule of law or longer contract enforcement periods, the positive effect of collateral value on loan size

is facilitated. While seemingly counterintuitive, these results suggest that in jurisdictions with weaker enforcement, banks' lending decisions may rely more heavily on the value of pledged collateral, which can be possibly a substitute for legal protection. Effects related to insolvency regimes are less consistent and generally weak.

Financial conditions also influence the role of collateral. In environments with higher borrowing costs, the interest rate discount from collateral value is diminished. Surprisingly, the effects on loan amounts become larger even when borrowing conditions are tight. It highlights the strength of collateral channel: the high collateral value becomes more helpful to enlarge firm borrowing capacity in tight credit conditions. By contrast, GDP growth and monetary policy shocks do not significantly alter the relationship between collateral value and loan terms, echoing earlier findings based on collateral presence.

Overall, the results underscore that the relevance of collateral value can be highly context-dependent. Its impact on loan pricing and size varies with the strength of legal institutions and the financial environment. These findings highlight the importance of incorporating institutional and macroeconomic context when evaluating how collateral affects credit outcomes.

V Conclusion

This paper examines the role of collateral in the euro area using credit registry data from AnaCredit. We document the presence, composition, and value of collateral in bank credit, highlighting significant cross-country heterogeneity. Three main findings emerge. First, collateral is widespread in the euro area: 53% of new loans are secured, with secured credit volumes representing an even higher share. Second, real estate and financial assets dominate the collateral landscape, and we observe systematic variation in how collateral types map onto loan types. Third, the aggregate value of collateral in the banking sector is substantial and primarily driven by real estate.

We then investigate how collateral affects credit conditions, distinguishing between its extensive margin (presence and type) and intensive margin (value). Leveraging actual collateral values and a rich set of fixed effects, we estimate the elasticity of loan pricing and volumes to collateral value. Our findings provide direct evidence on the role of collateral: higher collateral value reduce loan rates and increases loan amounts. This supports the broader view that collateral remains beneficial for firm financing, echoing the arguments of Rampini and Viswanathan (2024) and Benmelech et al. (2025).

Our findings have significant relevance and importance for policymakers. They contribute to

the debate regarding the function of collateral in corporate finance by providing comprehensive evidence of the relationship between collateral and credit conditions. Furthermore, our findings substantiate the dominant role of real estate as collateral in driving the collateral channel and macroeconomic fluctuation. Our analysis leaves several questions open for future research. For example, we do not examine the significance of collateral and its heterogeneity at the industry and firm levels, which would be instrumental in understanding firms' collateral constraints. In addition, we do not investigate the economic consequences associated with the composition of collateral types and values. Countries with a substantial dependency on real estate as collateral may be more susceptible to credit misallocation and the exacerbation of economic downturns (Calomiris et al., 2017; Müller and Verner, 2024).

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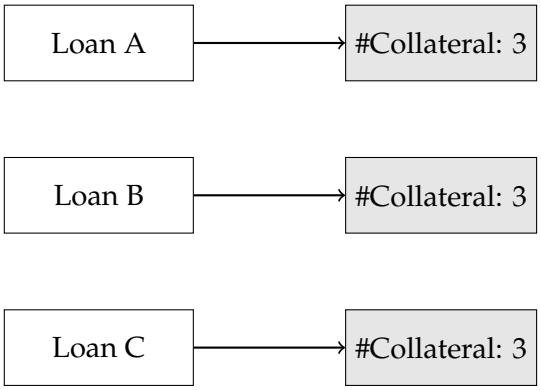
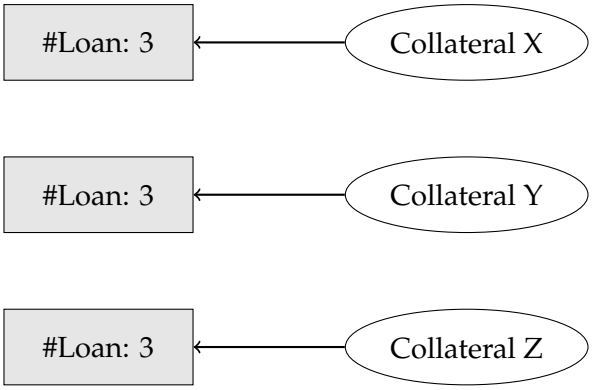
Figure 1: Data Structure Illustration

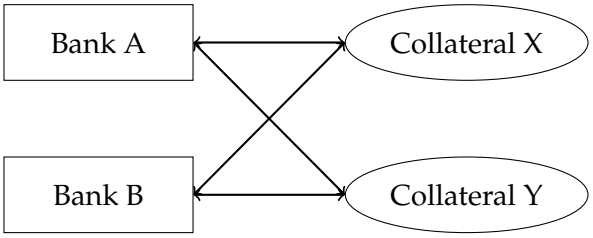
(a) Loan level dataset



(b) Collateral level dataset



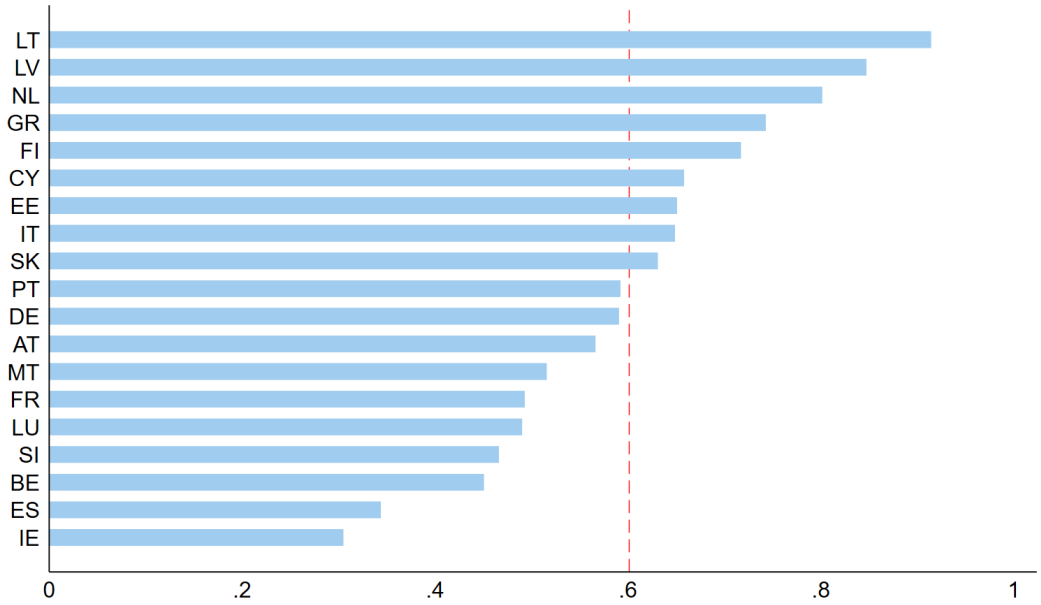
(c) Loan-collateral level dataset



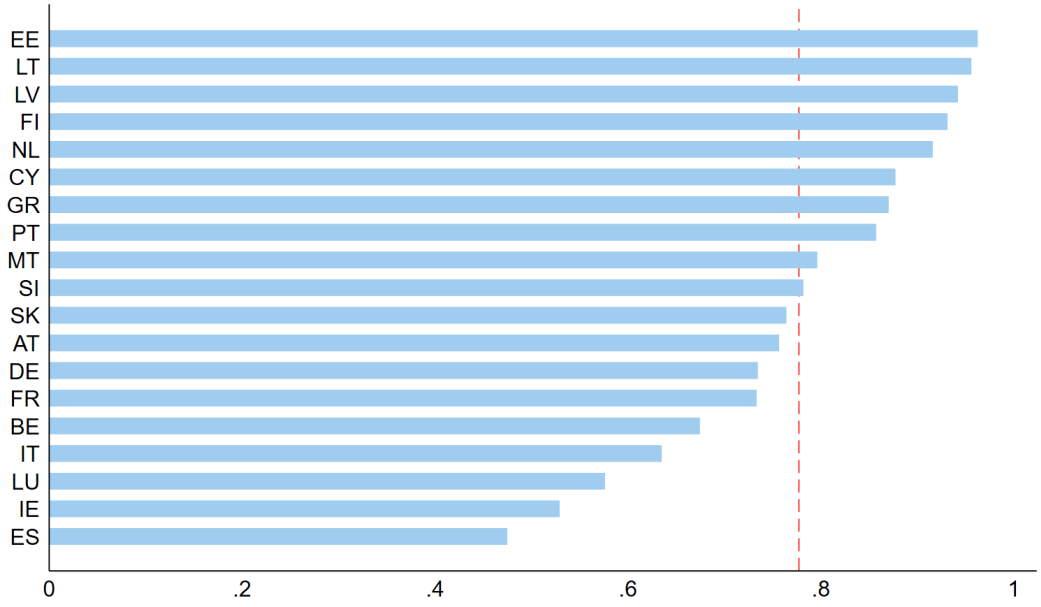
Notes: This figure illustrates the structural differences across three types of datasets used to study collateral in credit markets. Panel (a) represents a loan-level dataset, where each observation corresponds to a loan and includes information on whether collateral is pledged, but not the identity or details of the individual collateral items. Panel (b) illustrates a collateral-level dataset, where each observation corresponds to a specific piece of collateral, including its characteristics and potentially the number of loans it supports, but without precise information on how it maps to individual loan contracts. Panel (c) shows a loan-collateral-level dataset, which enables a one-to-one mapping between specific loans and collateral items. This structure is unique to AnaCredit and allows researchers to directly observe and quantify the relationship between loan characteristics and collateral features, enabling both extensive and intensive margin analyses of the collateral channel.

Figure 2: Collateral Presence: Cross-country

(a) Frequency



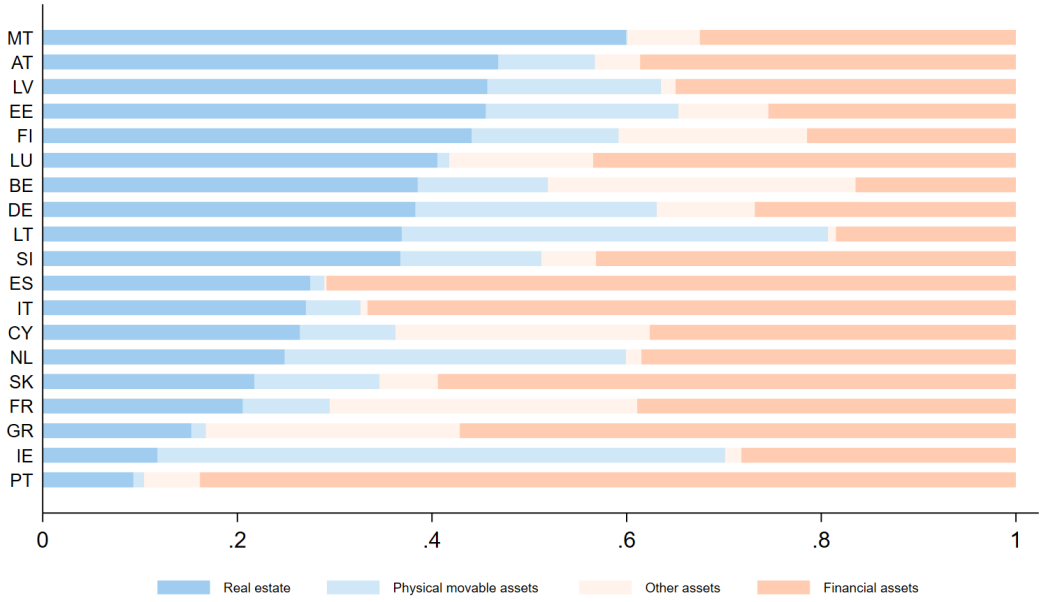
(b) Loan volume



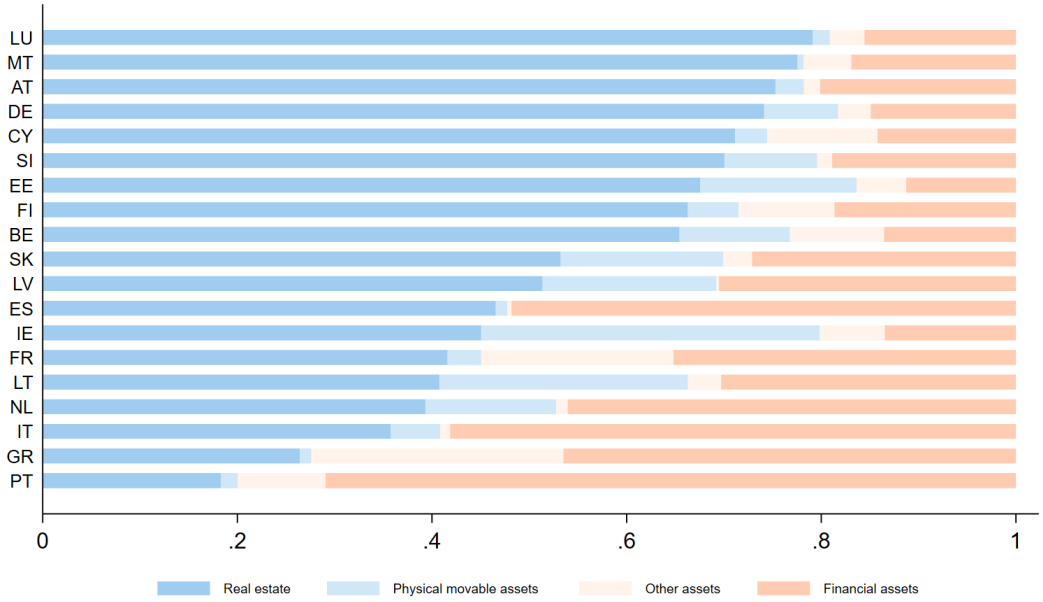
Notes: This figure depicts cross-country variation in the use of secured credit among non-financial corporations in the euro area. Panel (a) reports the proportion of secured loans relative to the total number of new loanssecured and unsecuredfor each country. Panel (b) presents the ratio of the outstanding nominal amounts of secured loans to the total outstanding amounts of all loans. In both panels, the red vertical dashed line represents the unweighted average across all countries in the sample.

Figure 3: Collateral Type Composition

(a) Frequency



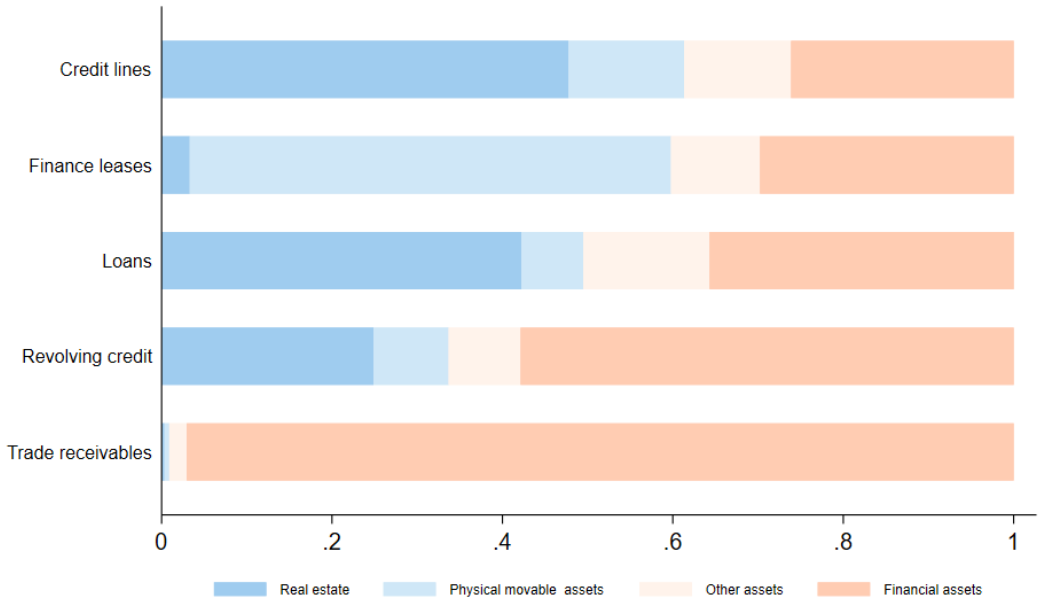
(b) Loan volume



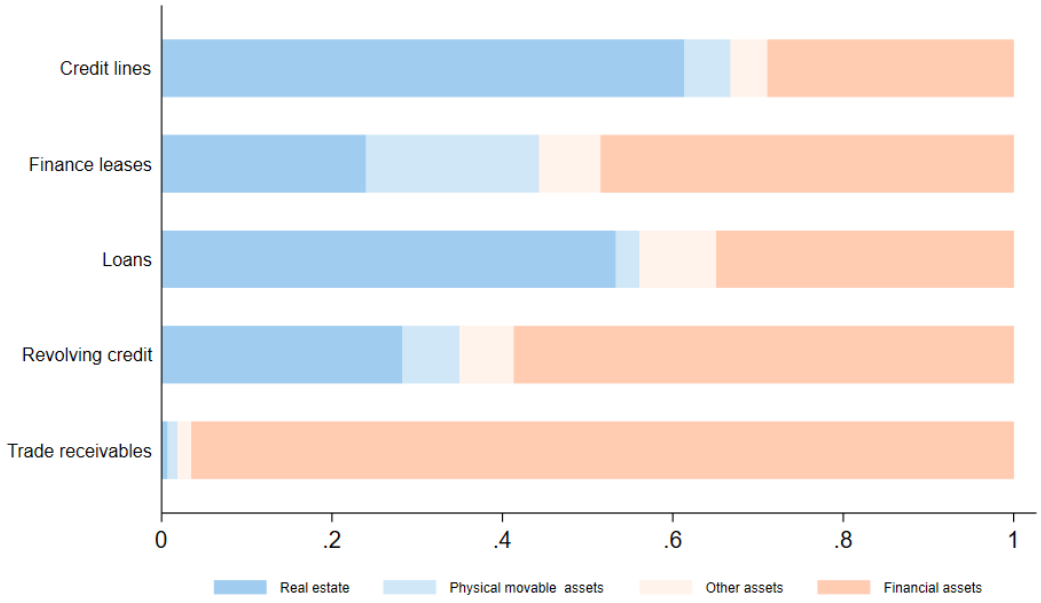
Notes: This figure illustrates cross-country variation in the composition of collateral types securing corporate credit. Panel (a) presents the distribution of collateral types by frequency, defined as the proportion of collateral observations falling into each type. Panel (b) reports the distribution by value, based on the share of the outstanding nominal amounts secured by each collateral type. The four categoriesreal estate, physical movable assets, other assets, and financial assetsare defined according to the AnaCredit classification and aggregated as described in the text.

Figure 4: Collateral Types and Loan Types

(a) Frequency



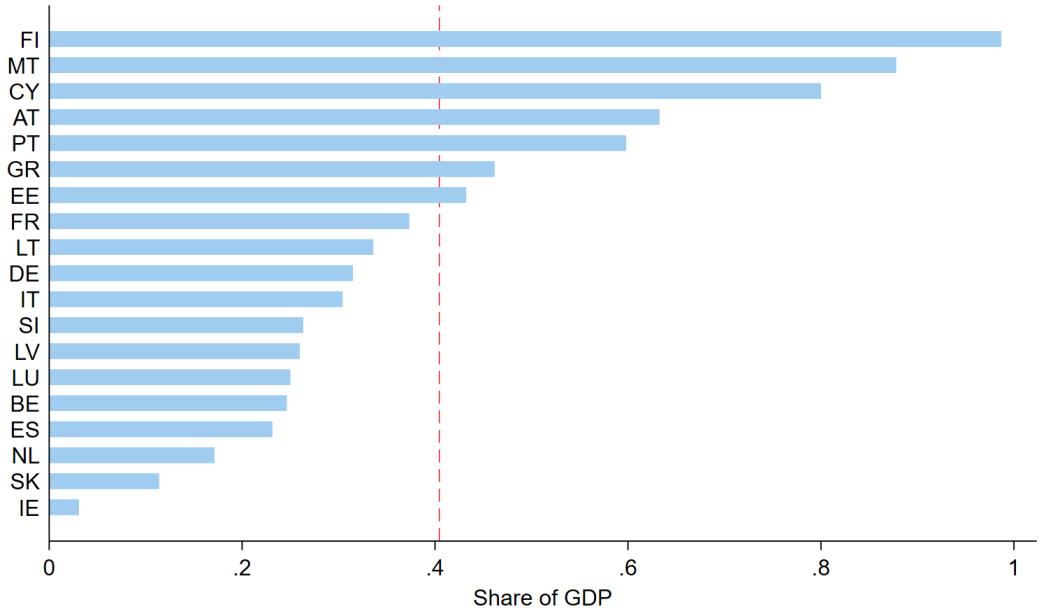
(b) Loan volume



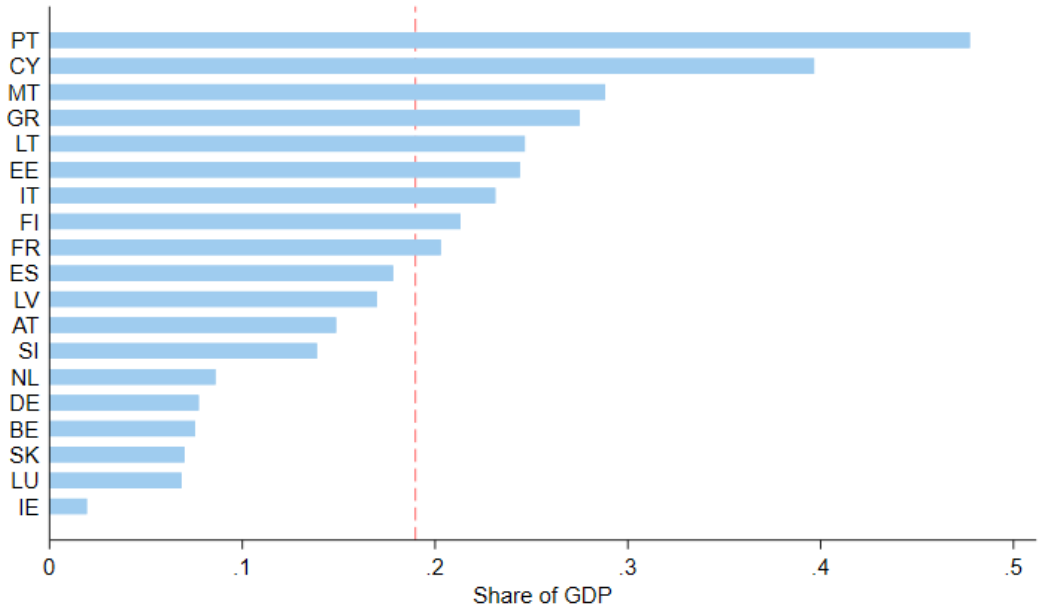
Notes: This figure displays the relationship between collateral types and loan types using a sample restricted to secured loans. Panel (a) shows the distribution of collateral types by frequency, where each bar segment indicates the share of loan-collateral observations involving a given collateral type within each loan type. Panel (b) presents the distribution by value, where each segment reflects the share of the total outstanding nominal amount (ONA) associated with each collateral type for a given loan type. Collateral categories correspond to the classification used in AnaCredit and are defined as described in the main text.

Figure 5: Collateral Value Magnitude: Cross-country

(a) Latest value



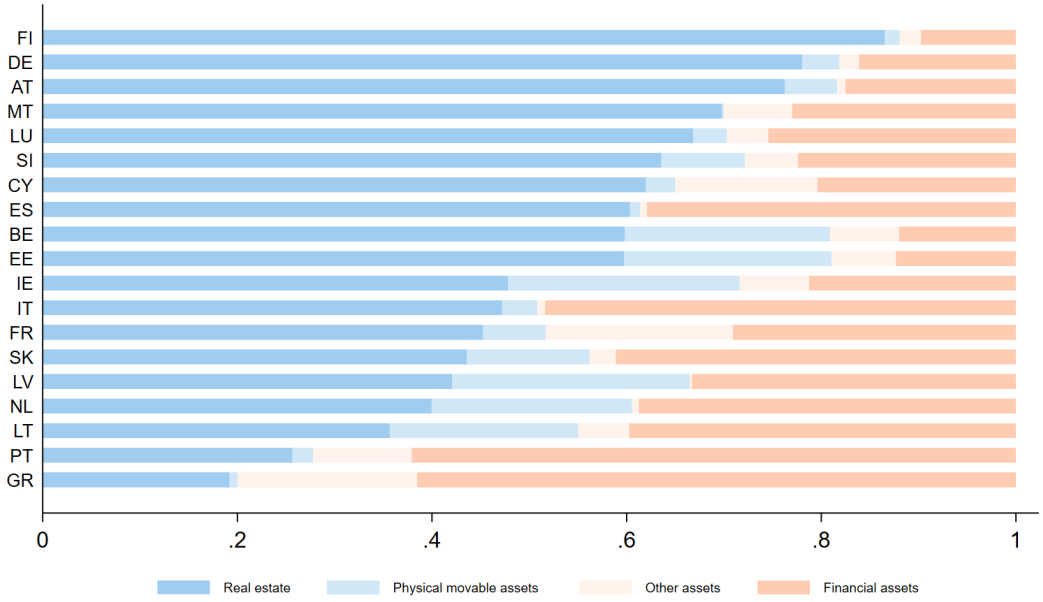
(b) Allocated value



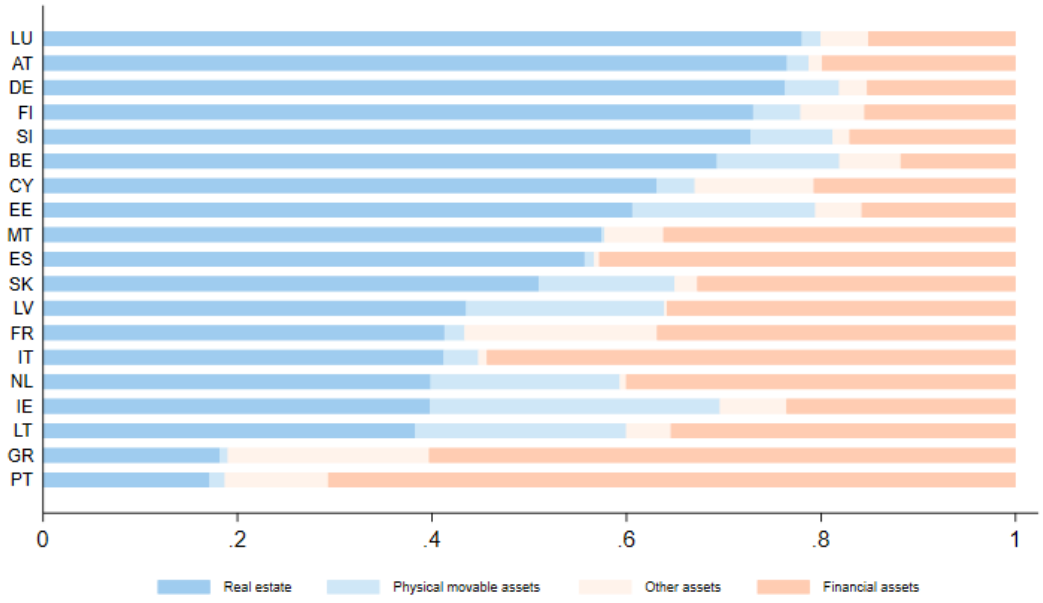
Notes: This figure depicts the magnitude of collateral values across euro area countries, expressed as a share of GDP. Panel (a) is based on the most recent collateral valuations from the collateral-level sample, while Panel (b) uses allocated collateral values from the loan-collateral sample, which adjust for multi-loan pledges and third-party claims. Each blue bar indicates the ratio of total collateral value to GDP for a given country. The red vertical dashed line marks the unweighted average across the 19 countries in the sample.

Figure 6: Collateral Value Composition: Cross-country

(a) Latest value



(b) Allocated value



Notes: This figure displays the composition of collateral values across countries by collateral type. Panel (a) shows the distribution based on the most recent collateral valuations from the collateral-level sample, with each bar segment representing the share of a given collateral type in the total collateral value for that country. Panel (b) presents the distribution based on allocated collateral values from the loan-collateral sample, which accounts for multiple loan pledges and adjustments for enforceability. Collateral categories are defined according to the AnaCredit classification and are described in the main text.

Table 1: Summary Statistics for Stylized Facts Sample

Variable	Mean	p25	p50	p75	SD	N
Panel A: Loan sample						
ONA (million €)	0.111	0.001	0.016	0.061	0.384	16,390,989
Commit amount (million €)	0.215	0.010	0.040	0.135	0.682	14,393,339
Interest rate	2.947	1.000	1.943	3.608	3.532	13,825,756
Secured	0.530	0.000	1.000	1.000	0.499	16,448,152
#Collateral per loan	1.119	0.000	1.000	1.000	1.927	16,448,152
#Collateral per secured loan	2.112	1.000	1.000	2.000	2.216	8,713,550
Panel B: Collateral sample						
Original value (million €)	0.252	0.016	0.060	0.187	0.761	9,236,569
Latest value (million €)	0.329	0.013	0.059	0.206	1.040	11,950,006
#Loans per collateral	1.474	1.000	1.000	1.000	1.804	12,036,072
Panel C: Loan-collateral sample						
Allocated value (million €)	0.094	0.000	0.004	0.053	0.317	19,567,847
Allocated loan ONA (million €)	0.047	0.000	0.001	0.023	0.178	19,562,609

Notes: This table reports descriptive statistics for the three levels of data used in the analysis. Panel A presents summary statistics at the loan level, including measures of loan size, pricing, maturity, and collateralization. Panel B provides statistics at the collateral level, including the original and most recent valuations of collateral as reported by banks, as well as the number of loans secured by each collateral item. Panel C reports statistics at the loan-collateral level, capturing the allocated value of collateral linked to a specific loan and the corresponding outstanding nominal amount (ONA). All continuous variables are winsorized at the 0.5th and 99.5th percentiles to mitigate the influence of outliers.

Table 2: Collateral Presence

Panel A: Loan frequency				
Share in total loans	53%			
Loan types				
Credit lines	Finance leases	Term loans	Revolving credit	Trade receivables
60.5%	61.4%	63.9%	35%	43%
Panel B: Loan ONA				
Share in total ONA	70%			
Loan types				
Credit lines	Finance leases	Term loans	Revolving credit	Trade receivables
75.6%	71.1%	74%	57.6%	31.2%

Notes: This table reports summary statistics on the presence of collateral across corporate loans. Panel A shows the share of secured loans as a percentage of total loan counts, overall and by loan type. Panel B reports the share of the outstanding nominal amount (ONA) of secured loans relative to the total ONA, again disaggregated by loan type. Loan types include credit lines, finance leases, term loans, revolving credit, and trade receivables.

Table 3: Collateral Types Composition

	Frequency	Loan volume
Real estate	26.32%	52.80%
Physical movable assets	10.54%	5.53%
Financial assets	46.74%	34.63%
Other assets	16.39%	7.04%
Total	100%	100%

Notes: This table summarizes the composition of collateral types in the collateral sample. Real estate includes residential and commercial real estate collateral, such as offices and commercial premises. Physical movable assets comprise other physical collateral (e.g., machinery or equipment). Financial assets encompass currency and deposits, securities, loans, equity and fund shares, credit derivatives, financial guarantees (excluding credit derivatives), life insurance policies, trade receivables, and gold. Other assets include all remaining types, primarily intangible or non-financial assets such as intellectual property. Column (1) reports the frequency distribution of each collateral type across secured loans. Column (2) shows the share of total outstanding nominal amounts (ONA) of secured loans backed by each collateral type.

Table 4: Collateral Value and Composition

Panel A: Latest collateral value

Aggregate collateral value

	Collateral value	Secured loan ONA
Value	3933.61	925.92
Share	424.83%	

Value composition

	Real estate	Physical movable assets	Other assets	Financial assets
Value	2348.94	212.82	256.59	1115.26
Share	59.71%	5.41%	6.52%	28.35%

Panel B: Allocated collateral value

Aggregate collateral value

	Collateral	Secured loan ONA
Value	1837.16	925.92
Share	198.41%	

Value composition

	Real estate	Physical movable assets	Other assets	Financial assets
Value	903.61	75.74	141.93	715.88
Share	49.19%	4.12%	7.73%	38.97%

Notes: This table reports the aggregate collateral value and its composition across collateral types. Panel A uses the collateral-level sample and reports the total value of all individual collateral items ("Collateral value") and the total outstanding nominal amount (ONA) of the secured loans they back. The share represents the ratio of total collateral value to secured loan ONA. The composition breakdown reports the value and share of each collateral type relative to the total collateral value. Panel B uses the loan-collateral-level sample and reports "Allocated collateral value", which reflects the value attributed to a specific loan-collateral pair as assessed by the reporting bank. The aggregate allocated collateral value and its associated secured loan ONA are calculated by summing the values across all loan-collateral pairs. Shares are computed by dividing the collateral value of each type by the total allocated collateral value. All values are expressed in billion EUR.

Table 5: Summary Statistics for Regression Sample

Variable	Mean	p25	p50	p75	SD	N
Interest rate	2.985	1.239	2.273	4.32	2.231	6,088,099
PD	0.041	0.005	0.013	0.032	0.102	6,088,709
Secured	0.454	0	0	1	0.498	6,088,709
Commit amount (million €)	0.227	0.013	0.031	0.102	0.82	6,088,709
Maturity (days)	840.727	91	355	1277	1199.681	6,088,709
Collateral value	0.284	0.009	0.025	0.088	10.083	2,762,553

Notes: This table presents summary statistics for the regression sample, which includes monthly new loans issued to nonfinancial corporations by banks between 2019 and 2023. The variables include the contractual interest rate (in percentage points), the one-year-ahead probability of default (PD) as assessed by the lender, a binary indicator for whether the loan is secured, the committed loan amount (in millions of euros), the contractual maturity (in months), and the total value of collateral pledged at origination (in millions of euros). Summary statistics for collateral value are restricted to the subsample of secured loans.

Table 6: Collateral Presence

	(1)	(2)	(3)	(4)
	Annualized interest rate		ln(Committed amount)	
Collateral presence	-0.173**	-0.099**	0.481***	0.331**
	(0.073)	(0.042)	(0.076)	(0.138)
PD	0.251***	0.663***	-0.054	0.061
	(0.075)	(0.127)	(0.036)	(0.058)
Maturity	-0.188***	-0.164***	0.302***	0.423***
	(0.044)	(0.058)	(0.053)	(0.080)
Loan type dummies	✓	✓	✓	✓
Firm-Time FE		✓		✓
Bank-Time FE	✓	✓	✓	✓
Bank-Firm FE	✓	✓	✓	✓
Sector-Country-Time FE	✓		✓	
N	5,835,528	3,779,951	5,836,153	3,780,446
AdjR^2	0.85	0.93	0.77	0.77

Notes: This table shows the estimation results of the following specification:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Presence}_i + \boldsymbol{\gamma}'\mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ denotes either (i) the annualized loan interest rate (Columns 1–2), or (ii) the natural logarithm of the committed loan amount (Columns 3–4), for loan i extended by bank b to firm f in month t. The variable $\text{Collateral Presence}_i$ is a binary indicator equal to 1 if the loan is collateralized, and zero otherwise. The control vector $\mathbf{X}$ includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). All regressions include loan type fixed effects and additional high-dimensional fixed effects as specified in the table. Robust standard errors are double-clustered at the bank and time level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7: Collateral Types

	(1)	(2)	(3)	(4)
	Annualized interest rate		ln(Committed amount)	
Real estate	0.062**	0.086*	0.460***	0.515***
	(0.030)	(0.044)	(0.111)	(0.070)
Physical movable assets	-0.127***	-0.073	0.397***	0.344***
	(0.046)	(0.053)	(0.074)	(0.107)
Other assets	-0.163**	-0.150**	0.322***	0.406***
	(0.067)	(0.063)	(0.069)	(0.041)
Financial assets	-0.203*	-0.129	0.385***	0.180
	(0.107)	(0.086)	(0.097)	(0.270)
PD	0.252***	0.657***	-0.050	0.049
	(0.076)	(0.130)	(0.037)	(0.059)
Maturity	-0.191***	-0.166***	0.308***	0.426***
	(0.045)	(0.057)	(0.053)	(0.078)
Loan type dummies	✓	✓	✓	✓
Firm-Time FE		✓		✓
Bank-Time FE	✓	✓	✓	✓
Bank-Firm FE	✓	✓	✓	✓
Sector-Country-Time FE	✓		✓	
N	5,774,951	3,738,979	5,775,576	3,739,471
AdjR^2	0.85	0.93	0.76	0.77

Notes: This table shows the estimation results of the following specification:

$$\text{Credit}_{f,b,i,t} = \beta' \textbf{Collateral Type}_i + \gamma' \mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ denotes either (i) the annualized loan interest rate (Columns 1–2), or (ii) the natural logarithm of the committed loan amount (Columns 3–4), for loan i extended by bank b to firm f in month t. **Collateral Type**$_i$ includes a set of dummy variables indicating the collateral types securing loan i. Each dummy takes the value of one if the loan is secured by a specific collateral type, and zero otherwise. For example, if loan i is backed by both real estate and financial assets, then the dummies for those two types will equal one, while the dummies for physical movable assets and other assets will equal zero. The control vector **X** includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). All regressions include loan type fixed effects and additional high-dimensional fixed effects as specified in the table. Robust standard errors are double-clustered at the bank and time level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 8: Collateral Feature

	(1)	(2)	(3)	(4)
	Annualized interest rate		ln(Committed amount)	
Panel A: Immovable				
Collateral presence	-0.193**	-0.109**	0.452***	0.302**
	(0.080)	(0.045)	(0.077)	(0.142)
Immovable	0.146**	0.128***	0.257***	0.399***
	(0.057)	(0.047)	(0.092)	(0.105)
PD	0.253***	0.660***	-0.054	0.049
	(0.076)	(0.129)	(0.036)	(0.058)
Maturity	-0.189***	-0.165***	0.303***	0.426***
	(0.045)	(0.058)	(0.053)	(0.080)
Panel B: Liquidity				
Collateral presence	-0.175**	-0.100**	0.482***	0.324**
	(0.074)	(0.043)	(0.077)	(0.141)
Liquid	0.001	-0.010	0.033	0.293***
	(0.034)	(0.038)	(0.062)	(0.091)
PD	0.253***	0.663***	-0.054	0.061
	(0.076)	(0.129)	(0.037)	(0.059)
Maturity	-0.189***	-0.165***	0.304***	0.426***
	(0.045)	(0.058)	(0.053)	(0.080)
Panel C: Redeployable				
Collateral presence	-0.221*	-0.134	0.414***	0.150
	(0.124)	(0.094)	(0.112)	(0.306)
Redeployable	0.083	0.050	0.125	0.269
	(0.097)	(0.096)	(0.106)	(0.293)
PD	0.253***	0.662***	-0.054	0.048
	(0.076)	(0.129)	(0.036)	(0.059)
Maturity	-0.189***	-0.165***	0.304***	0.425***
	(0.045)	(0.058)	(0.053)	(0.079)
Loan type dummies	✓	✓	✓	✓
Firm-Time FE		✓		✓
Bank-Time FE	✓	✓	✓	✓
Bank-Firm FE	✓	✓	✓	✓
Sector-Country-Time FE	✓		✓	
N	5,774,951	3,738,979	5,775,576	3,739,471
AdjR^2	0.85	0.93	0.76	0.77

Notes: This table shows the estimation results of the following specification:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Presence}_i + \mu \text{Collateral Feature}_i + \boldsymbol{\gamma}'\mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ denotes either (i) the annualized loan interest rate (Columns 1–2), or (ii) the natural logarithm of the committed loan amount (Columns 3–4), for loan i extended by bank b to firm f in month t. Collateral Presence$_i$ is a binary indicator equal to one if the loan is secured by any collateral, and zero otherwise. Collateral Feature$_i$ is a dummy variable equal to one if the loan is secured by collateral with a given characteristic*immovable* (panel A), *liquid* (panel B), or *redeployable* (panel C)and zero if the loan is either unsecured or secured with collateral lacking that characteristic. The control vector $\mathbf{X}$ includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). All regressions include loan type fixed effects and additional high-dimensional fixed effects as specified in the table. Robust standard errors are double-clustered at the bank and time level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 9: Collateral Feature: Jointly

	(1)	(2)	(3)	(4)
	Annualized interest rate		ln(Committed amount)	
Collateral presence	-0.221*	-0.132	0.415***	0.156
	(0.124)	(0.095)	(0.112)	(0.307)
Immovable	0.120***	0.117**	0.224**	0.315***
	(0.040)	(0.058)	(0.094)	(0.091)
Liquid	-0.023	-0.032	-0.002	0.200***
	(0.043)	(0.047)	(0.049)	(0.072)
Redeployable	0.058	0.037	0.074	0.223
	(0.098)	(0.099)	(0.109)	(0.297)
PD	0.253***	0.659***	-0.054	0.046
	(0.076)	(0.129)	(0.036)	(0.058)
Maturity	-0.189***	-0.165***	0.303***	0.425***
	(0.045)	(0.058)	(0.053)	(0.079)
Loan type dummies	✓	✓	✓	✓
Firm-Time FE		✓		✓
Bank-Time FE	✓	✓	✓	✓
Bank-Firm FE	✓	✓	✓	✓
Sector-Country-Time FE	✓		✓	
N	5,774,951	3,738,979	5,775,576	3,739,471
AdjR^2	0.85	0.93	0.77	0.77

Notes: This table shows the estimation results of the following specification:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Presence}_i + \boldsymbol{\mu}' \textbf{Collateral Feature}_i + \boldsymbol{\gamma}' \mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ denotes either (i) the annualized loan interest rate (Columns 1–2), or (ii) the natural logarithm of the committed loan amount (Columns 3–4), for loan i extended by bank b to firm f in month t. $\text{Collateral Presence}_i$ is a binary indicator equal to one if the loan is secured by any collateral, and zero otherwise. $\text{Collateral Feature}_i$ is a dummy variable equal to one if the loan is secured by collateral with a given characteristic*immovable*, *liquid*, or *redeployable*and zero if the loan is either unsecured or secured with collateral lacking that characteristic. The control vector **X** includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). All regressions include loan type fixed effects and additional high-dimensional fixed effects as specified in the table. Robust standard errors are double-clustered at the bank and time level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 10: Collateral Value

	(1)	(2)	(3)	(4)
	Annualized interest rate		ln(Committed amount)	
Collateral value	-0.043***	-0.024**	0.757***	0.842***
	(0.015)	(0.009)	(0.041)	(0.043)
PD	0.338***	0.997**	-0.039*	-0.168
	(0.121)	(0.408)	(0.023)	(0.130)
Maturity	-0.145*	-0.113**	0.034**	0.011
	(0.073)	(0.056)	(0.016)	(0.025)
Loan type dummies	✓	✓	✓	✓
Firm-Time FE		✓		✓
Bank-Time FE	✓	✓	✓	✓
Bank-Firm FE	✓	✓	✓	✓
Sector-Country-Time FE	✓		✓	
N	2,096,755	1,388,813	2,096,837	1,388,863
AdjR^2	0.90	0.96	0.94	0.96

Notes: This table shows the estimation results of the following specification:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Value}_i + \boldsymbol{\gamma}'\mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ denotes either (i) the annualized loan interest rate (Columns 1–2), or (ii) the natural logarithm of the committed loan amount (Columns 3–4), for loan i issued by bank b to firm f in month t. Collateral Value$_i$ is the collateral values. It is the natural logarithm of sum allocated value of all collateral used for a loan i. The control vector $\mathbf{X}$ includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). All regressions include loan type fixed effects and additional high-dimensional fixed effects as specified in the table. Robust standard errors are double-clustered at the bank and time level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 11: Collateral Presence and 2019 Feature

	(1)	(2)	(3)	(4)
	Annualized interest rate		ln(Committed amount)	
Panel A: Importance of collateral presence				
Collateral presence	-0.158**	-0.082*	0.463***	0.330**
	(0.068)	(0.044)	(0.072)	(0.128)
Collateral presence × Presence ONA	-0.083**	-0.058*	0.105**	0.003
	(0.039)	(0.032)	(0.040)	(0.053)
Panel B: Importance of real estate collateral				
Collateral presence	-0.175**	-0.079	0.484***	0.310*
	(0.075)	(0.057)	(0.076)	(0.165)
Collateral presence × RE ONA	0.013	-0.050	-0.024	0.051
	(0.033)	(0.032)	(0.033)	(0.063)
Panel C: Importance of collateral value				
Collateral presence	-0.156**	-0.080*	0.449***	0.343***
	(0.062)	(0.044)	(0.069)	(0.115)
Collateral presence × Value LTV	0.075	0.046	-0.141***	0.028
	(0.054)	(0.044)	(0.046)	(0.077)
Panel D: Importance of real estate collateral value				
Collateral presence	-0.173**	-0.086	0.481***	0.319*
	(0.072)	(0.055)	(0.070)	(0.163)
Collateral presence × Value RE	0.037	-0.039	-0.070*	0.037
	(0.044)	(0.033)	(0.037)	(0.070)
Loan controls	✓	✓	✓	✓
Firm×Time FE		✓		✓
Bank×Time FE	✓	✓	✓	✓
Bank×Firm FE	✓	✓	✓	✓
Sector×Country×Time FE	✓		✓	
N	5,835,528	3,779,951	5,836,153	3,780,446
AdjR^2	0.85	0.93	0.77	0.77

Notes: This table shows the estimation results of the following specification:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Presence}_i + \mu \text{Collateral Presence}_i \times \text{Feature}_c + \boldsymbol{\gamma}'\mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ denotes either (i) the annualized loan interest rate (Columns 1–2), or (ii) the natural logarithm of the committed loan amount (Columns 3–4), for loan i issued by bank b to firm f in month t. $\text{Collateral Presence}_i$ is a dummy variable that equals one if a loan i has a collateral, zero otherwise. Feature_c is one of the features of a country c in December 2019 calculated from stylized facts. Presence ONA_c is the ratio of secured loans ONA scaled by total loans ONA shown in Figure 2b. RE ONA_c is the ratio of loans ONA secured by real estate collateral scaled by loans ONA secured by all collateral shown in Figure 3b. Value LTV_c is the ratio of secured loan ONA scaled by all collateral values. Value RE_c is the ratio of real estate collateral values scaled by all collateral values shown in Figure 6b. The control vector $\mathbf{X}$ includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). All regressions include loan type fixed effects and additional high-dimensional fixed effects as specified in the table. Robust standard errors are double-clustered at the bank and time level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 12: Collateral Value and 2019 Feature

	(1)	(2)	(3)	(4)
	Annualized interest rate		ln(Committed amount)	
Panel A: Importance of collateral presence				
Collateral value	-0.045***	-0.026**	0.755***	0.837***
	(0.014)	(0.010)	(0.038)	(0.040)
Collateral value × Presence ONA	-0.046	-0.020	-0.046**	-0.043**
	(0.030)	(0.019)	(0.022)	(0.021)
Panel B: Importance of real estate collateral				
Collateral value	-0.045**	-0.025**	0.759***	0.848***
	(0.017)	(0.012)	(0.035)	(0.033)
Collateral value × RE ONA	0.034	0.009	-0.044*	-0.054**
	(0.025)	(0.018)	(0.026)	(0.026)
Panel C: Importance of collateral value				
Collateral value	-0.046***	-0.026**	0.747***	0.828***
	(0.016)	(0.010)	(0.033)	(0.037)
Collateral value × Value LTV	0.016	0.008	0.073***	0.067**
	(0.013)	(0.008)	(0.027)	(0.027)
Panel D: Importance of real estate collateral value				
Collateral value	-0.045***	-0.026**	0.758***	0.846***
	(0.016)	(0.013)	(0.040)	(0.040)
Collateral value × Value RE	0.041	0.010	-0.009	-0.023
	(0.030)	(0.020)	(0.022)	(0.026)
Loan controls	✓	✓	✓	✓
Firm×Time FE		✓		✓
Bank×Time FE	✓	✓	✓	✓
Bank×Firm FE	✓	✓	✓	✓
Sector×Country×Time FE	✓		✓	
N	2,096,755	1,388,813	2,096,837	1,388,863
AdjR^2	0.90	0.96	0.94	0.96

Notes: This table shows the estimation results of the following specification:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Value}_i + \mu \text{Collateral Value}_i \times \text{Feature}_c + \boldsymbol{\gamma}'\mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ denotes either (i) the annualized loan interest rate (Columns 1–2), or (ii) the natural logarithm of the committed loan amount (Columns 3–4), for loan i issued by bank b to firm f in month t. $\text{Collateral Value}_i$ is the collateral values. It is the natural logarithm of sum allocated value of all collateral used for a loan i. Feature_c is one of the features of a country c in December 2019 calculated from stylized facts. Presence ONA_c is the ratio of secured loans ONA scaled by total loans ONA shown in Figure 2b. RE ONA_c is the ratio of loans ONA secured by real estate collateral scaled by loans ONA secured by all collateral shown in Figure 3b. Value LTV_c is the ratio of secured loan ONA scaled by all collateral values. Value RE_c is the ratio of real estate collateral values scaled by all collateral values shown in Figure 6b. The control vector $\mathbf{X}$ includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). All regressions include loan type fixed effects and additional high-dimensional fixed effects as specified in the table. Robust standard errors are double-clustered at the bank and time level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 13: Collateral Presence and Macro Features

	(1)	(2)	(3)	(4)
	Annualized interest rate		ln(Committed amount)	
Panel A: Rule of law				
Collateral presence	-0.156**	-0.066	0.456***	0.345***
	(0.064)	(0.049)	(0.071)	(0.124)
Collateral presence × Rule of law	-0.082*	-0.078*	0.119***	-0.032
	(0.045)	(0.042)	(0.040)	(0.054)
N	5,835,528	3,779,951	5,836,153	3,780,446
Panel B: Years of enforce contracts				
Collateral presence	-0.156**	-0.082**	0.455***	0.354***
	(0.061)	(0.039)	(0.069)	(0.109)
Collateral presence × Enforcement	0.086	0.055	-0.136***	0.074
	(0.054)	(0.051)	(0.043)	(0.096)
N	5,835,528	3,779,951	5,836,153	3,780,446
Panel C: Years of insolvency				
Collateral presence	-0.174**	-0.098**	0.482***	0.324**
	(0.073)	(0.044)	(0.075)	(0.147)
Collateral presence × Insolvency	-0.050	0.009	0.036	-0.058
	(0.031)	(0.047)	(0.035)	(0.070)
N	5,835,528	3,779,951	5,836,153	3,780,446
Panel D: GDP growth				
Collateral presence	-0.183**	-0.108**	0.481***	0.334**
	(0.077)	(0.045)	(0.076)	(0.137)
Collateral presence × GDP growth	0.011*	0.011**	0.000	-0.004
	(0.006)	(0.005)	(0.002)	(0.004)
N	5,835,528	3,779,951	5,836,153	3,780,446
Panel E: Cost of borrowing				
Collateral presence	-0.196*	-0.165***	0.525***	0.483***
	(0.113)	(0.056)	(0.070)	(0.067)
Collateral presence × Cost of borrowing	0.010	0.032**	-0.020**	-0.074*
	(0.022)	(0.013)	(0.009)	(0.042)
N	5,835,528	3,779,951	5,836,153	3,780,446
Panel F: MP shock (Altavilla et al., 2019)				
Collateral presence	-0.179**	-0.103**	0.485***	0.330**
	(0.076)	(0.042)	(0.077)	(0.140)
Collateral presence × MP shock	0.002	0.001	0.000	0.005
	(0.002)	(0.002)	(0.002)	(0.007)
N	5,618,456	3,639,074	5,619,080	3,639,565
Loan controls	✓	✓	✓	✓
Loan type dummies	✓	✓	✓	✓
Firm-Time FE		✓		✓
Bank-Time FE	✓	✓	✓	✓
Bank-Firm FE	✓	✓	✓	✓
Sector-Country-Time FE	✓		✓	

Notes: This table shows the estimation results of the following specification:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Presence}_i + \mu \text{Collateral Presence}_i \times \text{Macro Feature}_{c,(t)} + \boldsymbol{\gamma}'\mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ denotes either (i) the annualized loan interest rate (Columns 1–2), or (ii) the natural logarithm of the committed loan amount (Columns 3–4), for loan i issued by bank b to firm f in month t. $textCollateralPresence_i$is a dummy variable taking value of one if a loan is secured by collateral or not. $\text{Macro Feature}_{c,(t)}$ is (i) the legal feature of a country c in Panel A-C, and (ii) economic/monetary conditions at time t in Panel D-F. In Panel A, Rule of Law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. The value gives the country's score on the aggregate indicator. In Panel B, Enforcement denotes number of years required to enforce a contract. In Panel C, Insolvency denotes number of years to resolve insolvency. All legal variables are standardized and measured by values in 2019. In Panel D, GDP growth rates extracted from Euro Statistics. In Panel E, Cost of borrowing is time-varying borrowing costs on bank credit. In Panel F, MP shock denotes monetary policy surprises extracted from Altavilla et al. (2019) from 201901 to 202310. The control vector $\mathbf{X}$ includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). All regressions include loan type fixed effects and additional high-dimensional fixed effects as specified in the table. Robust standard errors are double-clustered at the bank and time level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 14: Collateral Value and Macro Features

	(1)	(2)	(3)	(4)
	Annualized interest rate		ln(Committed amount)	
Panel A: Rule of law				
Collateral value	-0.045***	-0.026***	0.743***	0.825***
	(0.016)	(0.009)	(0.032)	(0.036)
Collateral value × Rule of law	-0.009	-0.007*	-0.069***	-0.065***
	(0.009)	(0.004)	(0.022)	(0.021)
N	2,096,755	1,388,813	2,096,837	1,388,863
Panel B: Years of enforce contracts				
Collateral value	-0.044***	-0.025**	0.740***	0.821***
	(0.016)	(0.009)	(0.033)	(0.039)
Collateral value × Enforcement	0.002	0.003	0.068***	0.063**
	(0.010)	(0.007)	(0.023)	(0.024)
N	2,096,755	1,388,813	2,096,837	1,388,863
Panel C:Years of insolvency				
Collateral value	-0.050***	-0.029**	0.761***	0.851***
	(0.017)	(0.014)	(0.038)	(0.037)
Collateral value × Insolvency	-0.056*	-0.029	0.035	0.055
	(0.029)	(0.026)	(0.027)	(0.037)
N	2,096,755	1,388,813	2,096,837	1,388,863
Panel D: GDP growth				
Collateral value	-0.043***	-0.027**	0.758***	0.844***
	(0.015)	(0.010)	(0.040)	(0.042)
Collateral value × GDP growth	0.000	0.002*	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.002)
N	2,096,755	1,388,813	2,096,837	1,388,863
Panel E: Cost of borrowing				
Collateral value	-0.077***	-0.050***	0.741***	0.793***
	(0.028)	(0.018)	(0.045)	(0.062)
Collateral value × Cost of borrowing	0.015	0.011***	0.007*	0.021*
	(0.009)	(0.004)	(0.004)	(0.011)
N	2,096,755	1,388,813	2,096,837	1,388,863
Panel F: MP shock (Altavilla et al., 2019)				
Collateral value	-0.043***	-0.025**	0.756***	0.838***
	(0.015)	(0.010)	(0.042)	(0.050)
Collateral value × MP shock	0.000	0.001	0.001	0.002
	(0.001)	(0.001)	(0.001)	(0.002)
N	2,026,575	1,343,956	2,026,658	1,344,007
Loan controls	✓	✓	✓	✓
Loan type dummies	✓	✓	✓	✓
Firm-Time FE		✓		✓
Bank-Time FE	✓	✓	✓	✓
Bank-Firm FE	✓	✓	✓	✓
Sector-Country-Time FE	✓		✓	

Notes: This table shows the estimation results of the following specification:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Value}_i + \mu \text{Collateral Value}_i \times \text{Macro Feature}_{c,(t)} + \boldsymbol{\gamma}'\mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ is the annualized loan rate or log committed amounts of new loans i issued to firm f by bank b in month t. $\text{Collateral Value}_i$ is the collateral values. It is the natural logarithm of sum allocated value of all collateral used for a loan i. $\text{Macro Feature}_{c,(t)}$ is (i) the legal feature of a country c in Panel A-C, and (ii) economic/monetary conditions at time t in Panel D-F. In Panel A, Rule of Law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. The value gives the country's score on the aggregate indicator. In Panel B, Enforcement denotes number of years required to enforce a contract. In Panel C, Insolvency denotes number of years to resolve insolvency. All legal variables are standardized and measured by values in 2019. In Panel D, GDP growth rates extracted from Euro Statistics. In Panel E, Cost of borrowing is time-varying borrowing costs on bank credit. In Panel F, MP shock denotes monetary policy surprises extracted from Altavilla et al. (2019) from 201901 to 202310. The control vector $\mathbf{X}$ includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). All regressions include loan type fixed effects and additional high-dimensional fixed effects as specified in the table. Robust standard errors are double-clustered at the bank and time level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Online Appendix

List of Figures

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A Definitions of Collateral Type in AnaCredit

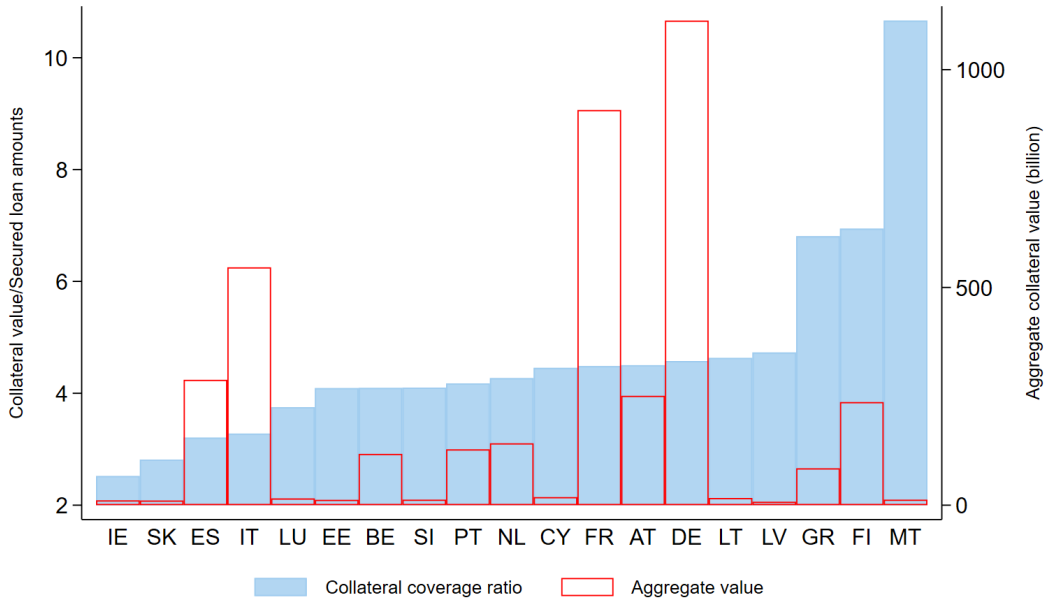
- Commercial real estate collateral: any real estate collateral other than residential real estate collateral under Article 4(1)(75) of the CRR and other than offices and commercial premises for the purposes of Article 126(1) of the CRR
- Credit derivatives: Credit derivatives that are: credit derivatives meeting the definition of financial guarantees (as defined in paragraph 114(b) of Part 2 of Annex V to the amended Implementing Regulation (EU) No 680/2014), and credit derivatives other than financial guarantees (as defined in paragraph 129(d) of Part 2 of Annex V to the amended Implementing Regulation (EU) No 680/2014). Credit derivatives include the eligible credit derivatives indicated in Article 204 of Regulation (EU) No 575/2013
- Currency and deposits: Currency in circulation and deposits, both in national currency and in foreign currencies, as defined in paragraph 5.74 of Annex A to Regulation (EU) No 549/2013
- Equity and investment fund shares or units: Equity and investment fund shares or units as defined in paragraph 5.139 of Annex A to Regulation (EU) No 549/2013
- Financial guarantees other than credit derivatives: Guarantees having the character of credit substitute and irrevocable standby letters of credit having the character of credit substitute
- Gold: Gold in accordance with Regulation (EU) No 575/2013
- Life insurance policies pledged: Life insurance policies pledged to the lending institutions in accordance with Regulation (EU) No 575/2013
- Loans: Funds extended by creditors to debtors, as defined in paragraph 5.112 of Annex A to Regulation (EU) No 549/2013
- Offices and commercial premises: real estate other than residential real estate that qualifies as "offices or other commercial premises for the purposes of Article 126(1) of the CRR
- Other physical collateral: Any physical object other than real estate and other than gold that is pledged to secure a reported instrument
- Other protection: All other non-physical collateral that is used to secure a reported instrument.
- Residential real estate collateral: Residential property as defined in Article 4(1)(75) of Regulation (EU) No 575/2013
- Securities: Securities as defined in paragraph 5.89 of Annex A to Regulation (EU) No 549/2013
- Trade receivables: Bills or other documents that give the right to receive the proceeds of transactions for the sale of goods or provision of services, that are pledged as a form of funded protection

Table A1: Collateral Feature Classification

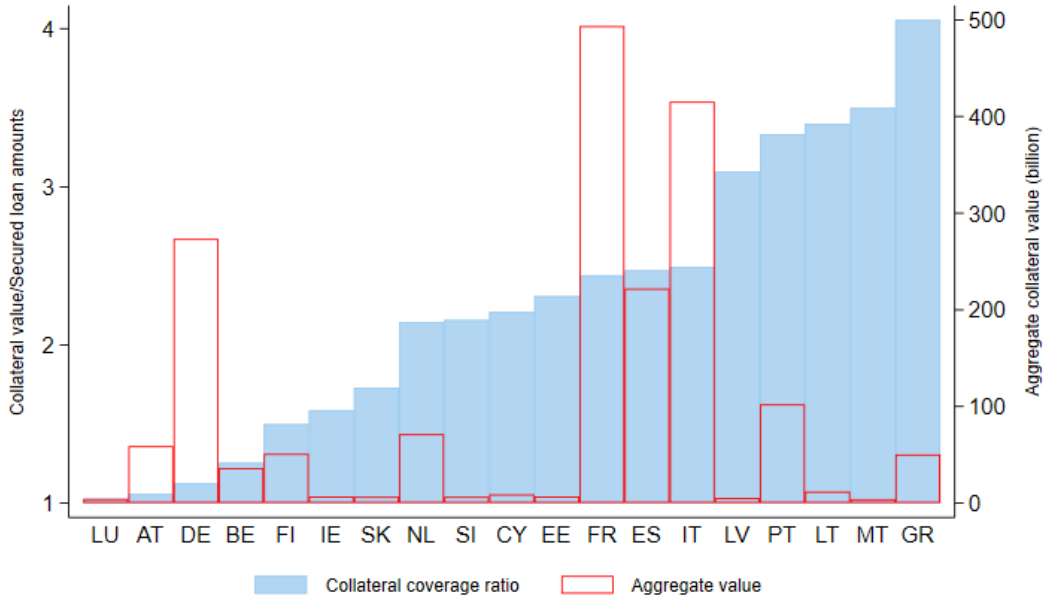
Protection Type	**Immovable**	**Liquid**	**Redeployable**
Gold	No	Yes	Yes
Currency and deposits	No	Yes	Yes
Securities (debt)	No	Yes	Yes
Loans	No	No	No
Equity and investment fund shares or units	No	Yes	Yes
Credit derivatives	No	Yes	Yes
Financial guarantees other than credit derivatives	No	No	No
Trade receivables	No	No	No
Life insurance policies pledged	No	No	No
Residential real estate collateral	Yes	No	Yes
Offices and commercial premises	Yes	No	Yes
Commercial real estate collateral	Yes	No	Yes
Other physical collateral (e.g. Machinery)	No	No	Yes
Other protection (non-physical)	No	No	Yes

B Figures

Figure B1: Collateral Value Magnitude: Cross-country Absolute Level



(a) Latest value

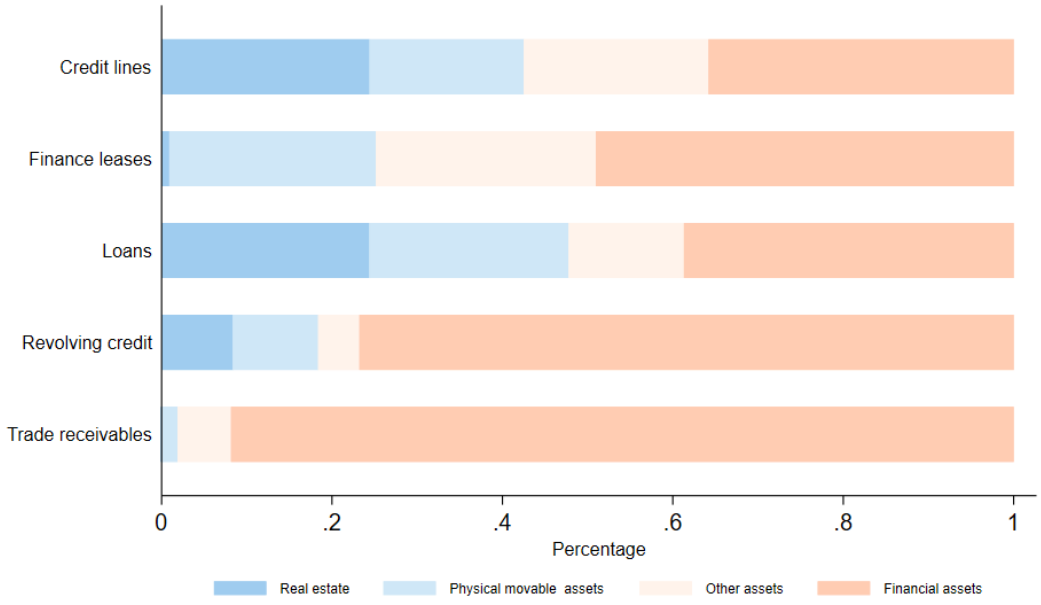


(b) Allocated value

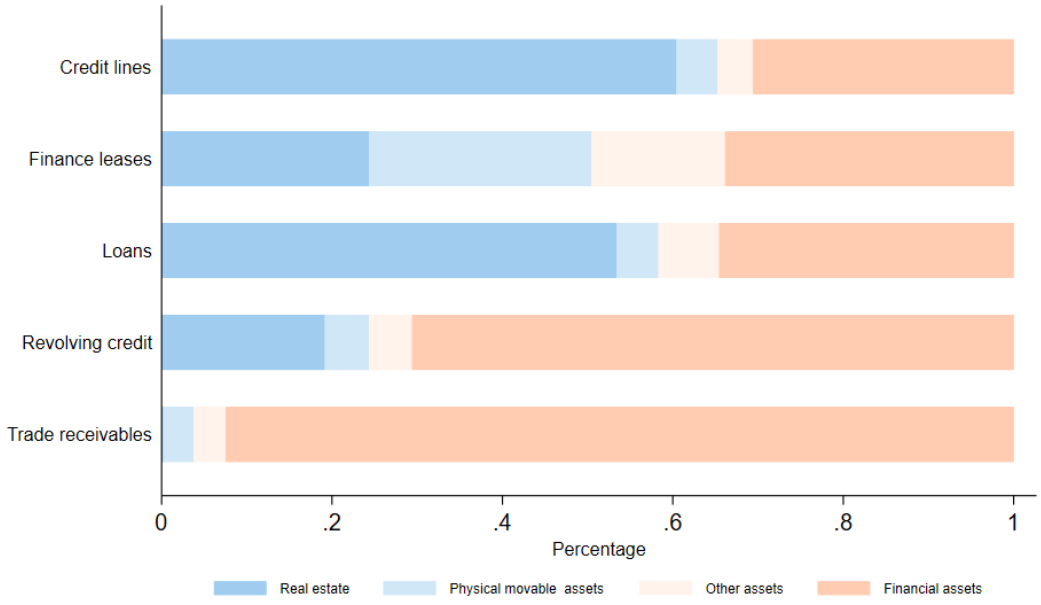
Notes: This figure presents the magnitude of collateral values across countries, measured in absolute terms and relative to secured loan amounts. Panel (a) is based on the most recent collateral values from the collateral-level sample, while Panel (b) uses allocated collateral values from the loan-collateral sample. In both panels, blue bars represent the collateral coverage ratio, defined as the ratio of total collateral value to total secured loan amounts. Red bars indicate the aggregate collateral value pledged by borrowers in each country, expressed in billions of euros. This visualization highlights the degree of overcollateralization and cross-country variation in the level and intensity of collateral use.

Figure B2: Collateral Types and Loan Types: Alternative

(a) Frequency



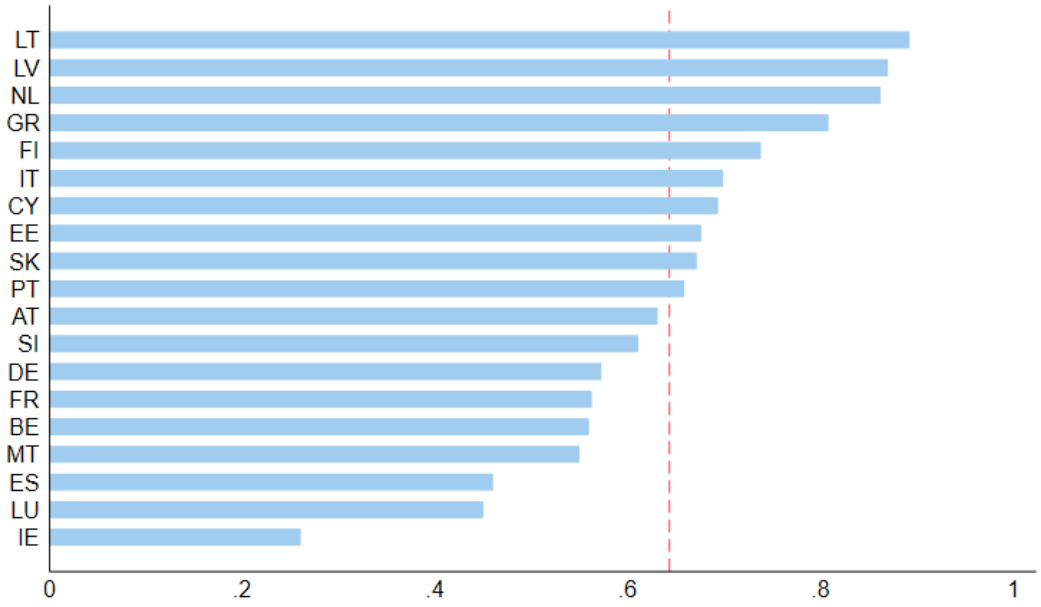
(b) ONA



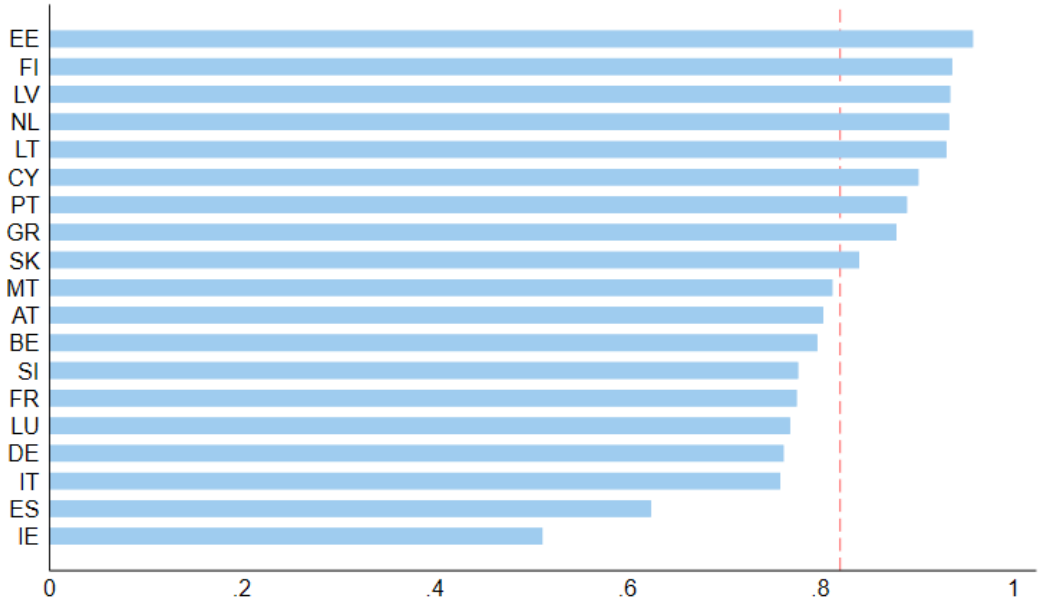
Notes: This figure plots the mapping between collateral types and loan types using loan-collateral sample that only includes secured loans. We limit the sample to loans with one collateral that only secures one (this) loan. In Figure B2a, each color of the bar represents the fraction of number of loan-collateral with certain collateral types in total number of loan-collateral with certain loan types. In Figure B2b, each color of the bar represents ONA of loan-collateral with certain collateral types in total ONA of loan-collateral with certain loan types.

Figure B3: Collateral Presence 2021: Cross-country

(a) Frequency



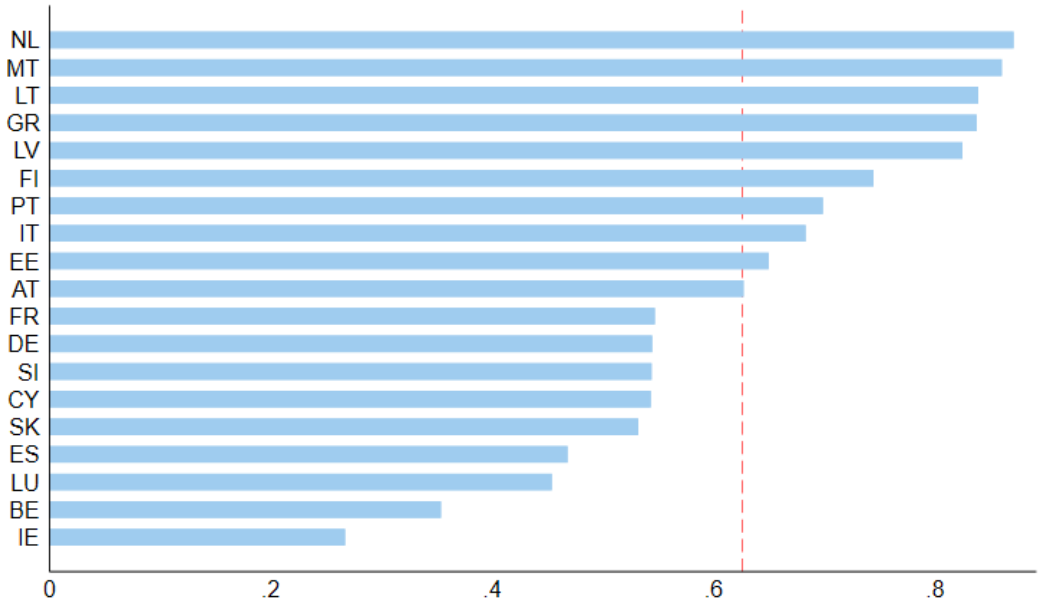
(b) ONA



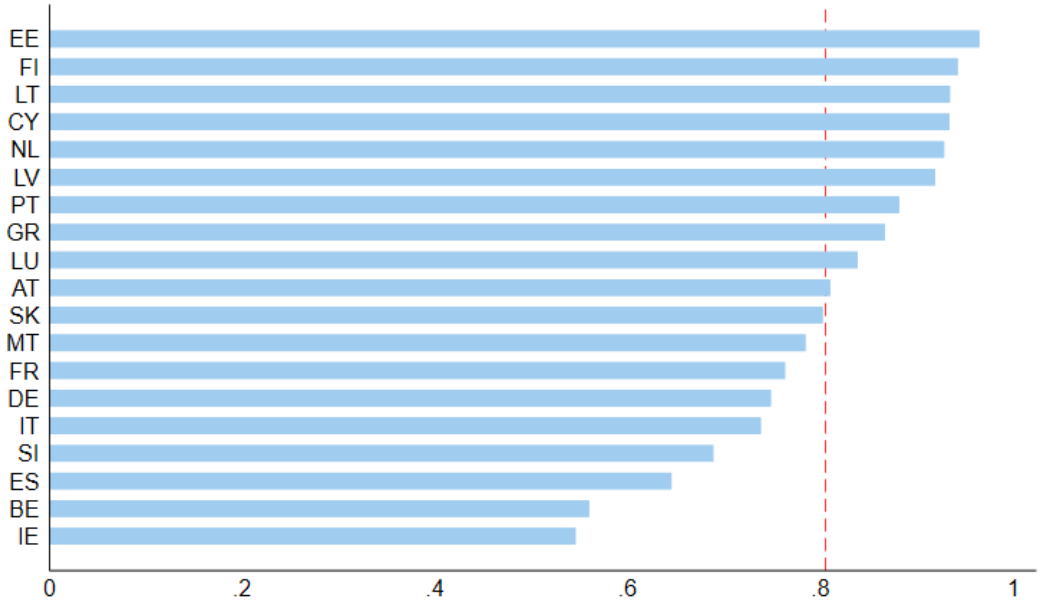
Notes: This figure shows the cross-country heterogeneity in secured credit using loan sample of December 2021. The top panel shows the fraction of number of secured loan over number of secured and unsecured loans for each country. The bottom panel shows the fraction of secured loan outstanding amounts over total outstanding amounts for each country. Red dotted lines denote the average number of sample countries.

Figure B4: Collateral Presence 2023: Cross-country

(a) Frequency



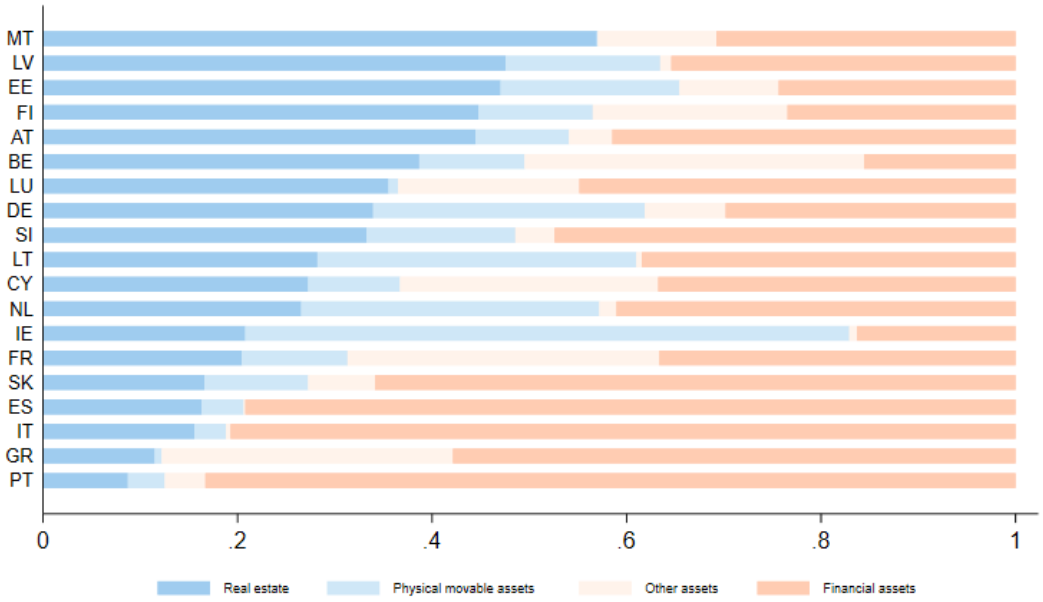
(b) ONA



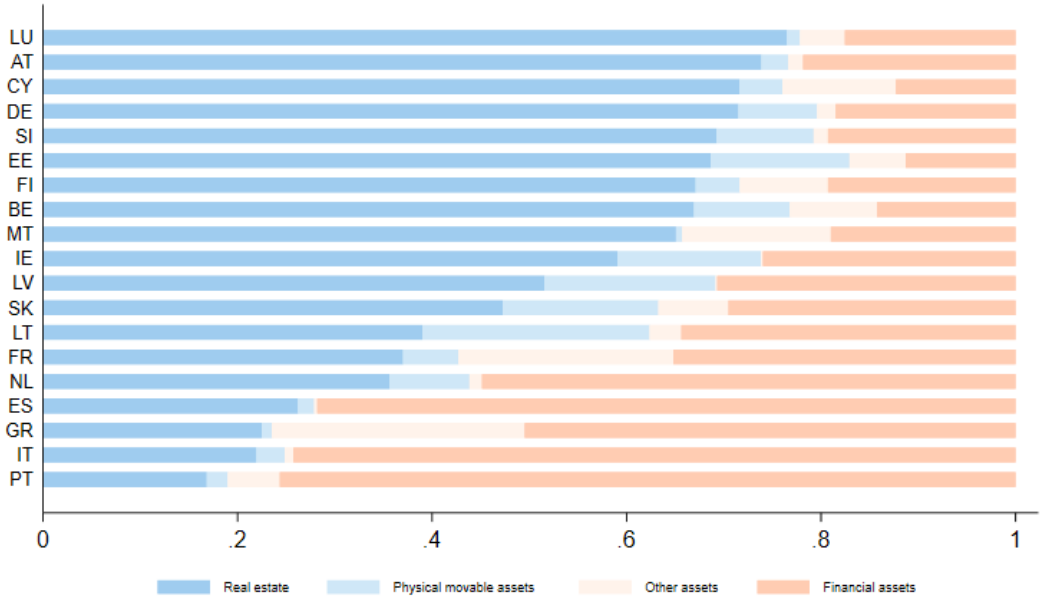
Notes: This figure shows the cross-country heterogeneity in secured credit using loan sample of December 2023. The top panel shows the fraction of number of secured loan over number of secured and unsecured loans for each country. The bottom panel shows the fraction of secured loan outstanding amounts over total outstanding amounts for each country. Red dotted lines denote the average number of sample countries.

Figure B5: Collateral Type Composition 2021

(a) Frequency



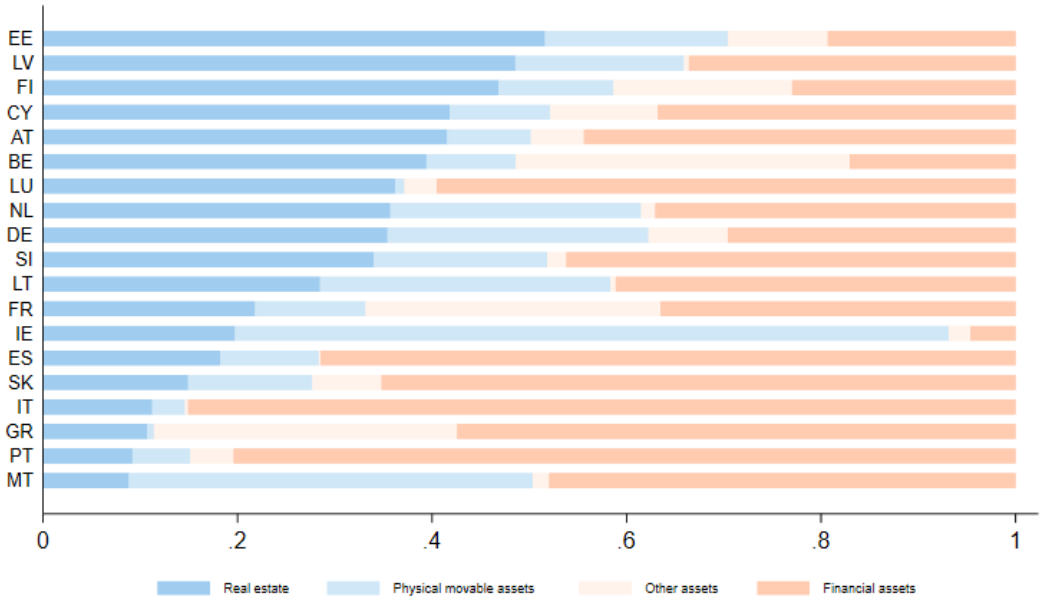
(b) ONA



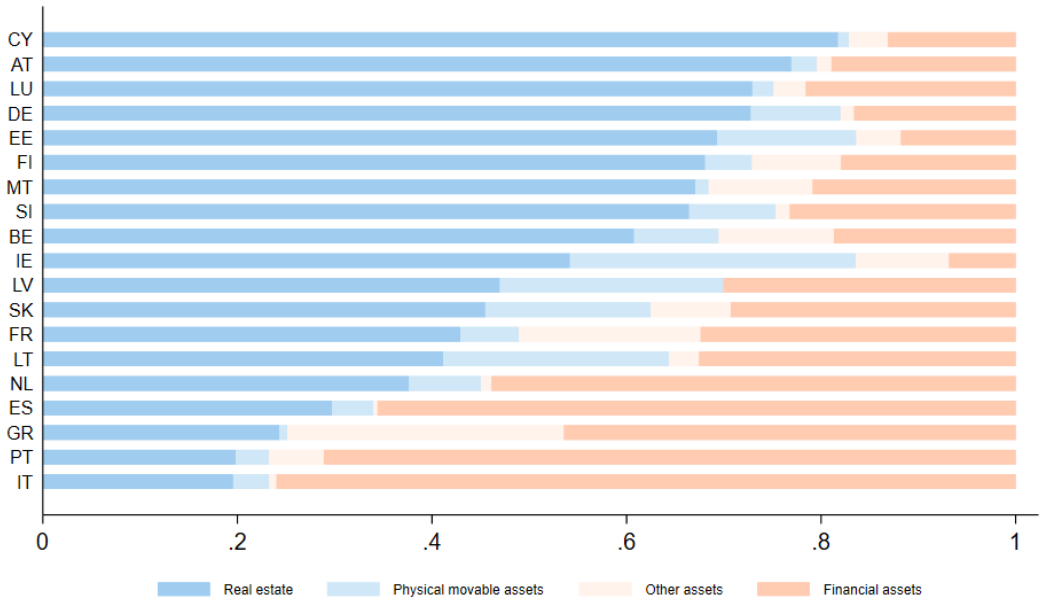
Notes: This figure shows the cross-country heterogeneity in secured credit for December 2021. The top panel shows the fraction of the number of secured loans over the number of secured and unsecured loans for each country. The bottom panel shows the fraction of secured loan outstanding amounts over total loan outstanding amounts for each country. Red dotted lines denote the average number of sample countries.

Figure B6: Collateral Type Composition 2023

(a) Frequency



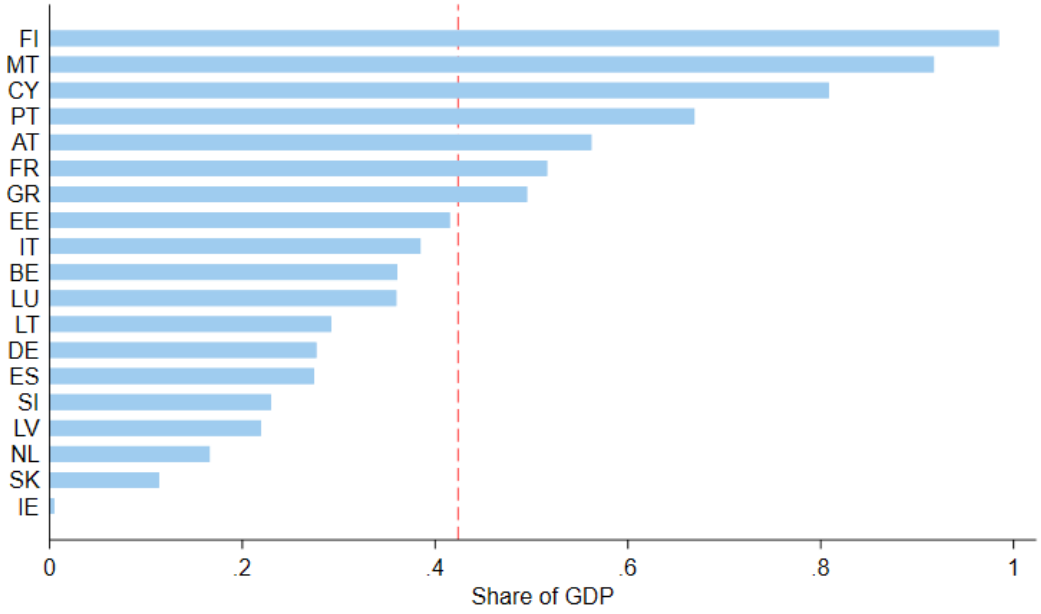
(b) ONA



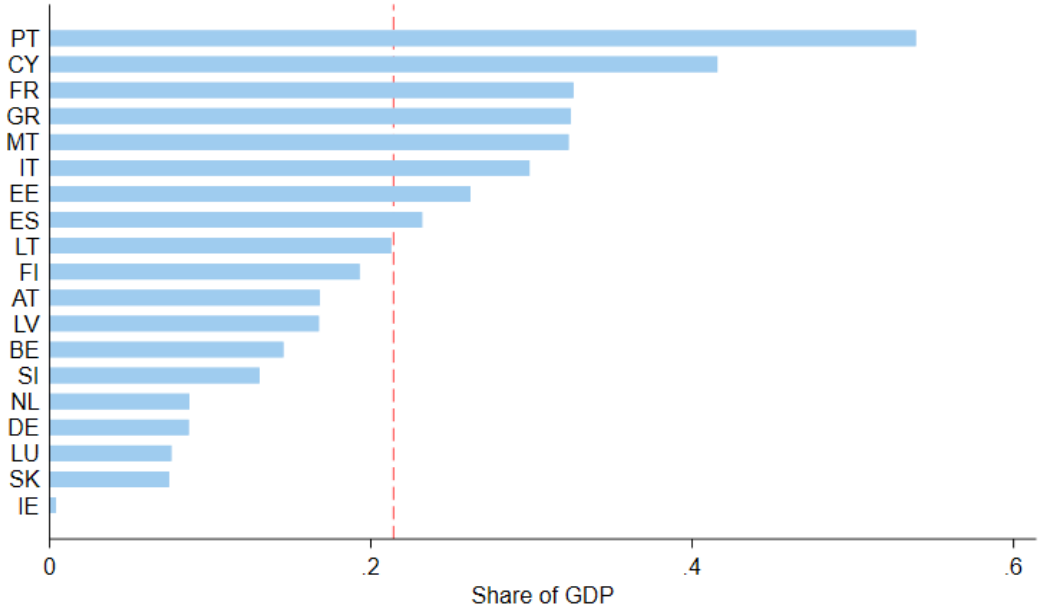
Notes: This figure shows the cross-country heterogeneity in secured credit for December 2023. The top panel shows the fraction of the number of secured loans over the number of secured and unsecured loans for each country. The bottom panel shows the fraction of secured loan outstanding amounts over total loan outstanding amounts for each country. Red dotted lines denote the average number of sample countries.

Figure B7: Collateral Value Magnitude 2021: Cross-country

(a) Latest value



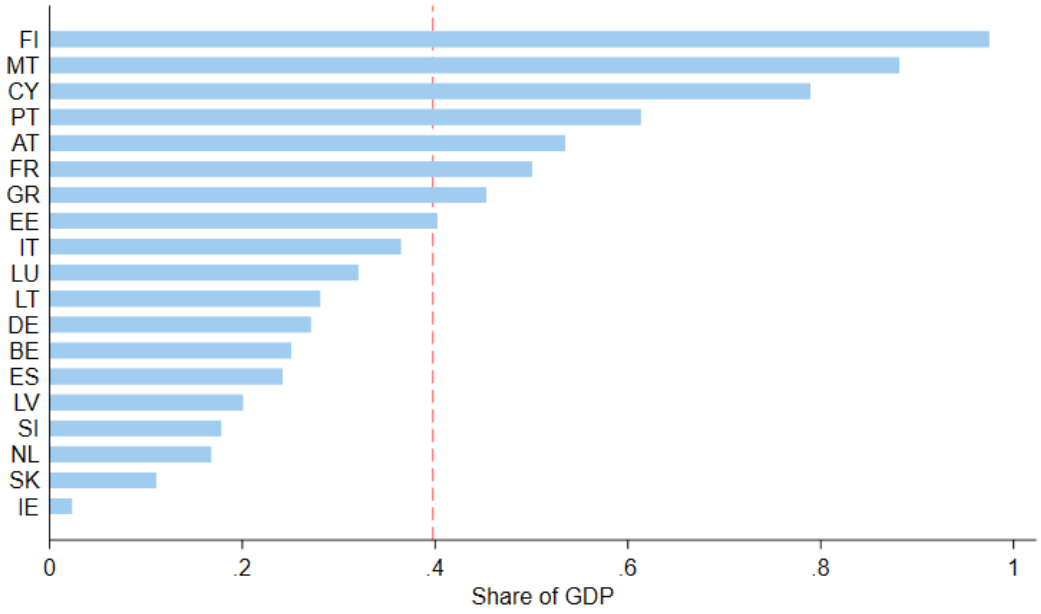
(b) Allocated value



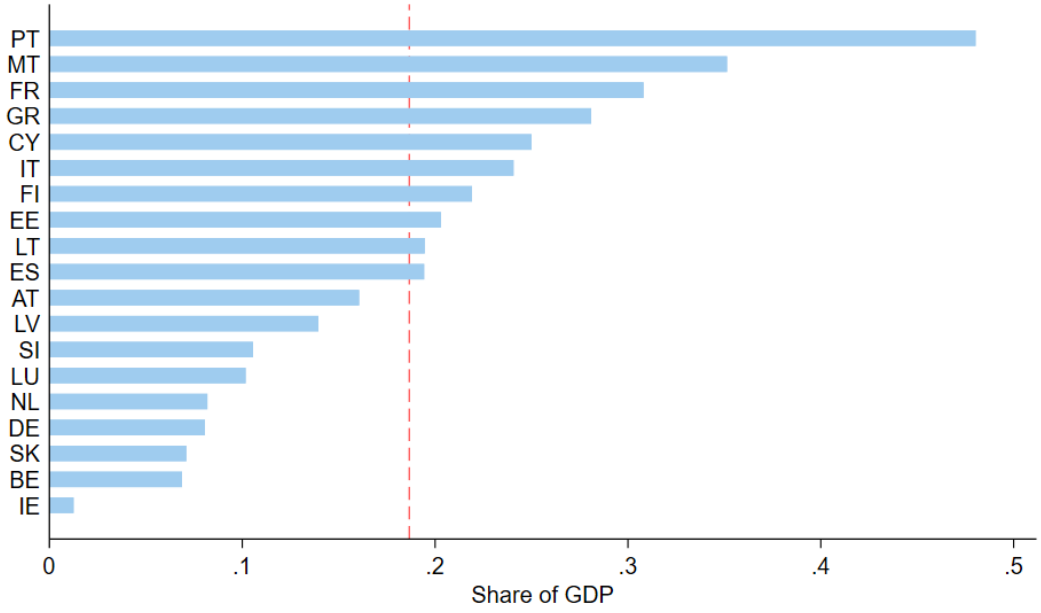
Notes: This figure plots the collateral value magnitude across countries for December 2021. The top panel uses use our collateral sample with latest collateral value. The bottom panel uses our loan-collateral sample with allocated collateral value. Blue bar denotes the share of total collateral value in the economy scaled by GDP. Red dotted line denotes mean share of 19 countries.

Figure B8: Collateral Value Magnitude 2023: Cross-country

(a) Latest value



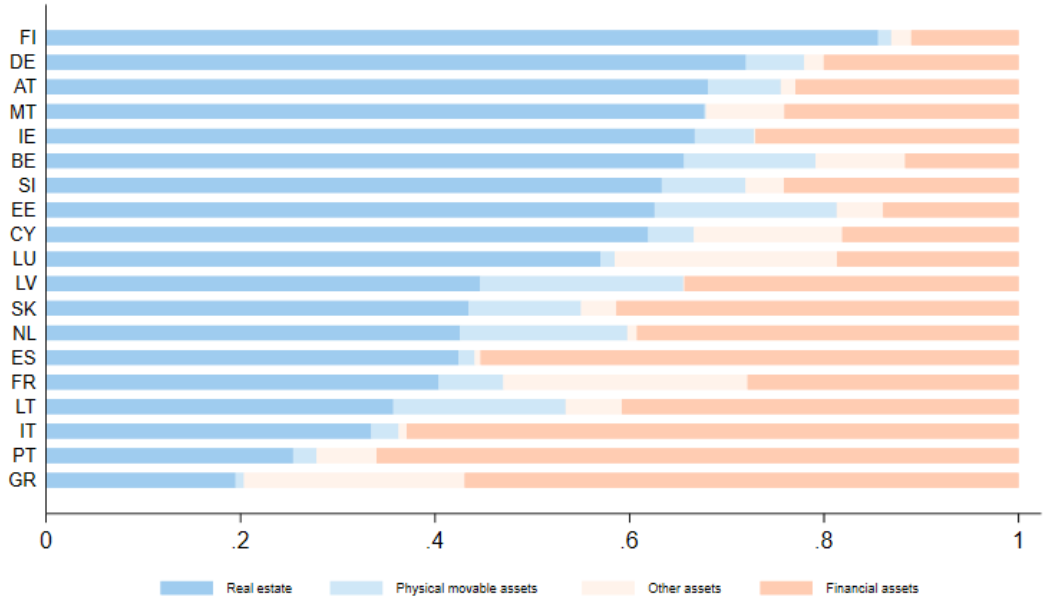
(b) Allocated value



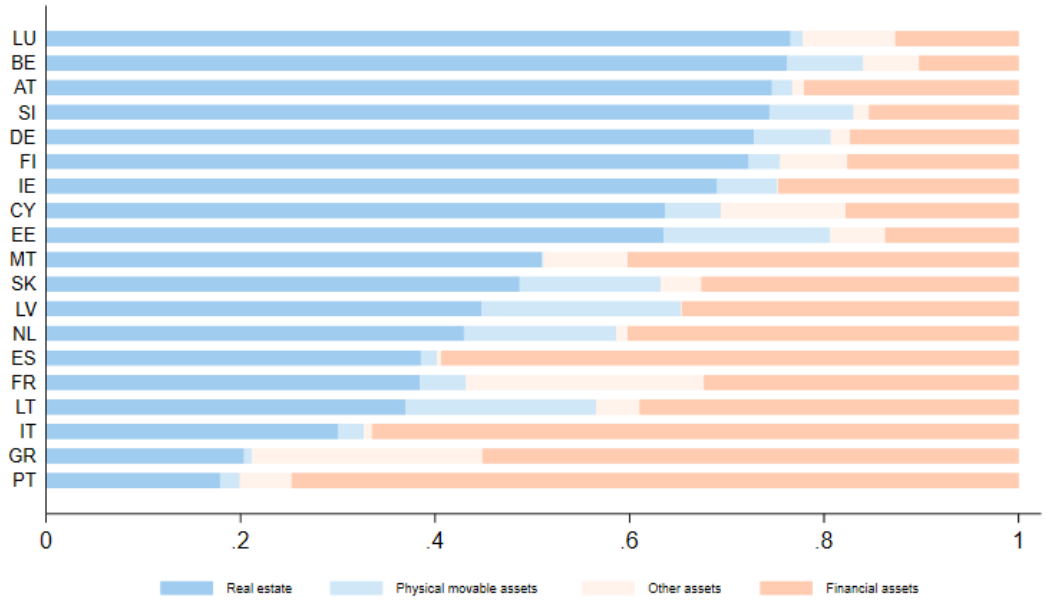
Notes: This figure plots the collateral value magnitude across countries for December 2023. The top panel uses use our collateral sample with latest collateral value. The bottom panel uses our loan-collateral sample with allocated collateral value. Blue bar denotes the share of total collateral value in the economy scaled by GDP. Red dotted line denotes mean share of 19 countries.

Figure B9: Collateral Value Composition 2021: Cross-country

(a) Latest value



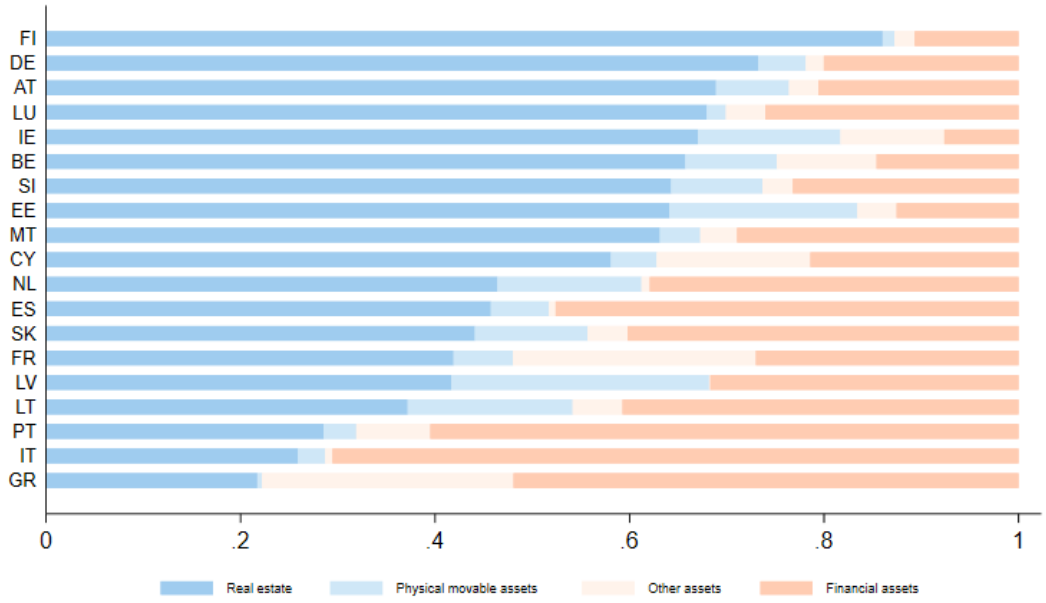
(b) Allocated value



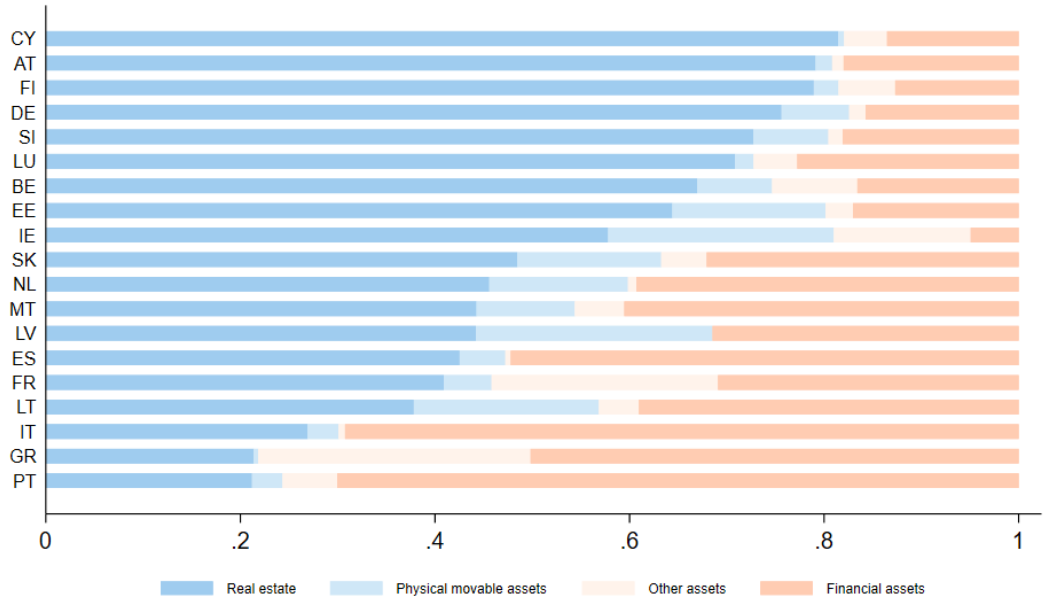
Notes: This figure plots the collateral value composition for December 2021. The top panel illustrates the fraction of the value of each collateral type relative to the value of all collateral types using the collateral sample with the latest collateral value. The bottom panel illustrates the fraction of the value of each collateral type relative to the value of all collateral types using our loan-collateral sample with the allocated collateral value.

Figure B10: Collateral Value Composition 2021: Cross-country

(a) Latest value



(b) Allocated value



Notes: This figure plots the collateral value composition for December 2023. The top panel illustrates the fraction of the value of each collateral type relative to the value of all collateral types using the collateral sample with the latest collateral value. The bottom panel illustrates the fraction of the value of each collateral type relative to the value of all collateral types using our loan-collateral sample with the allocated collateral value.

C Tables

Table C1: Number of Collateral Types of Loans

	All secured loans	Secured loans with more than one collateral
1	81.59%	58.74%
2	16.31%	36.54%
3	1.95%	4.38%
4	0.15%	0.34%
Total	100%	100%

Notes: This table presents the number of collateral types. The unit of observation is loan. For each loan, we count the number of collateral types.

Table C2: Co-use of Collateral Types

	Real estate	Physical movable assets	Financial assets	Other assets
Real estate	1	7.22%	29.54%	15.51%
Physical movable assets	13.26%	1	27.44%	7.64%
Financial assets	14.32%	7.24%	1	4.58%
Other assets	25.08%	6.72%	15.27%	1

Notes: This table reports the co-use of collateral types. The unit of observation is loan. The first row shows, among loans that use real estate, what fraction also use other types. For instance, Real estate - Physical movable assets: 7.2% of loans secured by real estate also have physical movable assets as collateral. The first column shows, for each other type, what fraction of those loans also have real estate. Physical movable assets - Real estate: 13.26% of loans with physical movable assets also have real estate.

A Persistence

Table C3: Collateral Presence Persistence

	2019	2021	2023
Panel A: Frequency			
Share in total loans	53%	58.8%	56.4%
Loan types			
Credit lines	60.5%	72.1%	65.9%
Finance leases	61.4%	71.6%	75.8%
Loans	63.9%	70.4%	68.7%
Revolving credit	35.0%	35.1%	33.6%
Trade receivables	43.0%	44.5%	40.1%
Panel B: ONA			
Share in total ONA	70.0%	76.7%	75.2%
Loan types			
Credit lines	75.6%	79.1%	76.8%
Finance leases	71.1%	77.3%	83.3%
Loans	74.0%	80.6%	79.5%
Revolving credit	57.6%	64.0%	62.7%
Trade receivables	31.2%	36.4%	38.5%

Notes: This table presents collateral presence for December 2019, December 2021, and December 2023. Panel A shows the share of secured loans in the total number of loans. Panel B reports the share of the outstanding nominal amount (ONA) of secured loans over the ONA of all loans.

Table C4: Collateral Types Persistence

Panel A: Frequency Share of Collateral Types in Number of Observations

	2019	2021	2023
Real estate	26.32%	21.73%	21.43%
Physical movable assets	10.54%	10.40%	11.20%
Financial assets	46.74%	52.19%	53.18%
Other assets	16.39%	15.68%	14.18%

Panel B: ONA Share of Collateral Types in Outstanding Nominal Amount

	2019	2021	2023
Real estate	52.80%	43.64%	46.70%
Physical movable assets	5.53%	5.25%	6.15%
Financial assets	34.63%	42.74%	39.56%
Other assets	7.04%	8.37%	7.59%

Notes: This table presents the composition of collateral types using the collateral sample. Panel A shows the share of each type in the number of collateral observations. Panel B reports the share in terms of outstanding nominal amounts (ONA). "Real estate includes residential and commercial real estate. "Physical movable assets include other physical collateral. "Financial assets include deposits, securities, loans, equities, derivatives, guarantees, insurance policies, receivables, and gold. "Other assets refers to all non-physical, non-financial types not elsewhere classified.

Table C5: Collateral Value Persistence

Panel A: Latest Collateral Value (Collateral-Level Sample)

	2019	**2021**	**2023**
Aggregate collateral value			
Value (EUR billion)	3933.61	4512.68	4918.45
Secured loan ONA	925.92	1351.12	1361.37
Share (%)	424.83%	333.40%	361.29%
Value composition (share of total collateral value)			
Real estate	59.71%	51.07%	51.22%
Physical movable assets	5.41%	5.72%	5.44%
Other assets	6.52%	9.35%	9.34%
Financial assets	28.35%	33.86%	33.99%

Panel B: Allocated Collateral Value (Loan-Collateral Sample)

	2019	**2021**	**2023**
Aggregate collateral value			
Value (EUR billion)	1837.16	2740.92	2519.38
Secured loan ONA	925.92	1351.12	1361.37
Share (%)	198.41%	182.88%	185.06%
Value composition (share of total collateral value)			
Real estate	49.19%	43.02%	44.58%
Physical movable assets	4.12%	4.64%	5.06%
Other assets	7.73%	9.93%	9.90%
Financial assets	38.97%	42.41%	40.46%

Notes: This table reports collateral value and composition for December 2019, 2021, and 2023. *Panel A* uses a collateral-level sample and aggregates the value of all individual collateral items. Secured loan ONA is the sum of outstanding nominal amounts of loans secured by any collateral. The share is computed as the total collateral value divided by secured loan ONA. Composition shares represent the fraction of total collateral value by asset type. *Panel B* uses a loan-collateral sample where collateral is allocated to specific loans. The allocated collateral value is the total value of all loan-level allocations. Secured loan ONA is similarly aggregated, and shares are calculated using the same method.

B Regressions: Presence

Table C6: Presence: Collateral Pricing by Year

	2019	2020	2021	2022	2023
	Annualized interest rate				
Collateral presence	-0.025	-0.384*	-0.186**	-0.186***	-0.072
	(0.026)	(0.195)	(0.071)	(0.056)	(0.054)
PD	0.135**	0.023	0.038*	0.151*	0.151
	(0.056)	(0.025)	(0.020)	(0.075)	(0.134)
Maturity	-0.272***	-0.240***	-0.134***	-0.080	-0.128**
	(0.056)	(0.053)	(0.043)	(0.060)	(0.057)
N	1,071,454	1,003,828	967,816	988,083	1,018,886
Adj R^2	0.87	0.81	0.88	0.88	0.87
ILT + BT + BF FE	✓	✓	✓	✓	✓
Collateral presence	0.001	-0.197*	-0.152***	-0.141***	0.040
	(0.031)	(0.101)	(0.045)	(0.043)	(0.067)
PD	0.791**	-0.175	0.202	0.061	0.130
	(0.346)	(0.268)	(0.164)	(0.143)	(0.135)
Maturity	-0.217***	-0.203***	-0.143**	-0.098	-0.146
	(0.055)	(0.055)	(0.049)	(0.077)	(0.085)
N	842,172	705,222	689,245	718,841	755,568
Adj R^2	0.90	0.87	0.90	0.92	0.91
FT + BT + BF FE	✓	✓	✓	✓	✓

Notes: This table shows the estimation results of the following specification by year:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Presence}_i + \boldsymbol{\gamma}'\mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ is the annualized loan rate of new loans i issued to firm f by bank b in month t. $\text{Collateral Presence}_i$ is a dummy variable equal to one if loan i is collateralized. The control vector $\mathbf{X}$ includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the log of original maturity (months). ILT, BT, BF, and FT denote Sector-Country-Time, Bank-Time, Bank-Firm, and Firm-Time fixed effects, respectively. Robust standard errors are double clustered at the bank and time levels. *** p<0.01, ** p<0.05, * p<0.1.

Table C7: Presence: Collateral Pricing by Country

	FR	IT	DE	ES	Others
	Annualized interest rate				
Collateral presence	-0.231*	-0.048	-0.092***	0.024	-0.018
	(0.117)	(0.039)	(0.010)	(0.068)	(0.074)
PD	0.070**	2.529***	0.006	0.509***	0.801**
	(0.031)	(0.259)	(0.265)	(0.064)	(0.318)
Maturity	-0.172***	-0.100***	-0.352***	-0.149	-0.223
	(0.047)	(0.023)	(0.034)	(0.091)	(0.155)
N	2,144,799	1,371,401	678,234	678,919	962,166
Adj R^2	0.84	0.87	0.91	0.85	0.86
ILT + BT + BF FE	✓	✓	✓	✓	✓
Collateral presence	-0.097	0.003	-0.046***	-0.039	-0.065
	(0.067)	(0.081)	(0.014)	(0.072)	(0.086)
PD	0.068	2.158***	-1.800	0.489***	0.336
	(0.125)	(0.274)	(1.342)	(0.063)	(0.213)
Maturity	-0.075***	-0.046**	-0.382***	-0.140	-0.230
	(0.020)	(0.017)	(0.020)	(0.127)	(0.155)
N	1,026,266	984,066	640,868	593,599	535,145
Adj R^2	0.92	0.96	0.96	0.91	0.90
FT + BT + BF FE	✓	✓	✓	✓	✓

Notes: This table shows the estimation results of the following specification by country:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Presence}_i + \boldsymbol{\gamma}'\mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ is the annualized loan rate of new loans i issued to firm f by bank b in month t. $\text{Collateral Presence}_i$ is a dummy equal to 1 if loan i has collateral. $\mathbf{X}$ includes the one-year-ahead probability of default (PD) and the log of loan maturity in months. FE includes ILT (Sector-Country-Time), BT (Bank-Time), BF (Bank-Firm), and FT (Firm-Time) fixed effects. Standard errors are double-clustered at bank and time levels. *** p<0.01, ** p<0.05, * p<0.1.

Table C8: Presence: Collateral Channel by Year

	2019	2020	2021	2022	2023
	ln(Committed amount)				
Collateral presence	0.342***	0.553***	0.622***	0.385**	0.456***
	(0.099)	(0.089)	(0.071)	(0.160)	(0.111)
PD	0.003	0.003	0.041**	-0.072	-0.058
	(0.034)	(0.021)	(0.017)	(0.065)	(0.078)
Maturity	0.375***	0.333***	0.333***	0.303***	0.301***
	(0.068)	(0.058)	(0.055)	(0.077)	(0.081)
N	1,071,584	1,003,940	968,108	988,141	1,018,886
Adj R^2	0.78	0.78	0.80	0.79	0.79
ILT + BT + BF FE	✓	✓	✓	✓	✓
Collateral presence	0.249*	0.444***	0.514***	0.155	0.276
	(0.121)	(0.112)	(0.102)	(0.300)	(0.199)
PD	-0.172	0.227	0.183	0.197	-0.108
	(0.341)	(0.193)	(0.142)	(0.203)	(0.152)
Maturity	0.458***	0.440***	0.432***	0.417***	0.397***
	(0.084)	(0.070)	(0.065)	(0.099)	(0.103)
N	842,272	705,315	689,469	718,885	755,568
Adj R^2	0.74	0.75	0.77	0.76	0.76
FT + BT + BF FE	✓	✓	✓	✓	✓

Notes: This table shows the estimation results of the following specification by year:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Presence}_i + \boldsymbol{\gamma}'\mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ is the log of committed amounts of new loans i issued to firm f by bank b in month t. $\text{Collateral Presence}_i$ is a dummy variable equal to one if loan i is collateralized. $\mathbf{X}$ includes the one-year-ahead PD and the log of original loan maturity. FE includes ILT, BT, BF, and FT as defined above. Standard errors are double clustered at the bank and time levels. *** p<0.01, ** p<0.05, * p<0.1.

Table C9: Presence: Collateral Channel by Country

	FR	IT	DE	ES	Others
	ln(Committed amount)				
Collateral presence	0.668***	0.248***	0.153***	0.102***	0.366***
	(0.125)	(0.027)	(0.039)	(0.022)	(0.076)
PD	0.020*	-1.208***	-0.029	-0.169***	-0.139*
	(0.011)	(0.200)	(0.018)	(0.043)	(0.078)
Maturity	0.249***	0.286***	0.673***	0.510***	0.220***
	(0.030)	(0.029)	(0.090)	(0.026)	(0.050)
N	2,144,908	1,371,623	678,467	678,928	962,218
Adj R^2	0.73	0.74	0.77	0.71	0.82
ILT + BT + BF FE	✓	✓	✓	✓	✓
Collateral presence	0.225	0.543***	0.164***	0.169**	0.513***
	(0.306)	(0.066)	(0.032)	(0.058)	(0.087)
PD	-0.099	-0.265*	2.315**	0.124*	0.155
	(0.157)	(0.150)	(1.001)	(0.058)	(0.116)
Maturity	0.394***	0.296***	0.717***	0.482***	0.174***
	(0.047)	(0.037)	(0.047)	(0.025)	(0.062)
N	1,026,363	984,255	641,038	593,601	535,182
Adj R^2	0.75	0.73	0.74	0.71	0.84
FT + BT + BF FE	✓	✓	✓	✓	✓

Notes: This table shows the estimation results of the following specification by country:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Presence}_i + \boldsymbol{\gamma}'\mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ is the natural logarithm of committed amounts of new loans i issued to firm f by bank b in month t. $\text{Collateral Presence}_i$ is a dummy variable equal to one if loan i has collateral. The control vector $\mathbf{X}$ includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). ILT, BT, BF, FT denote Sector-Country-Time, Bank-Time, Bank-Firm, and Firm-Time fixed effects, respectively. Robust standard errors are double clustered at the bank and time levels. *** p<0.01, ** p<0.05, * p<0.1.

C Regressions: Collateral Types

Table C10: Types: Collateral Pricing by Year

	2019	2020	2021	2022	2023
	Annualized interest rate				
Real estate	0.102*	0.224***	0.028	0.009	-0.006
	(0.048)	(0.046)	(0.041)	(0.040)	(0.031)
Physical movable assets	0.023	-0.022	-0.160**	-0.229***	-0.168*
	(0.061)	(0.054)	(0.065)	(0.047)	(0.080)
Other assets	-0.230*	-0.315**	-0.258**	-0.187*	-0.069
	(0.114)	(0.104)	(0.114)	(0.096)	(0.052)
Financial assets	-0.045	-0.647*	-0.143*	-0.122*	-0.005
	(0.037)	(0.326)	(0.079)	(0.060)	(0.048)
PD	0.134**	0.017	0.038*	0.150*	0.139
	(0.057)	(0.027)	(0.019)	(0.076)	(0.131)
Maturity	-0.277***	-0.244***	-0.135***	-0.081	-0.131**
	(0.057)	(0.054)	(0.042)	(0.059)	(0.058)
N	1060430	995593	958166	978943	1004919
AdjR^2	0.87	0.81	0.88	0.88	0.87
ILT+BT+BF FE	✓	✓	✓	✓	✓
Real estate	0.157*	0.190***	0.052	0.041	0.006
	(0.072)	(0.055)	(0.046)	(0.050)	(0.047)
Physical movable assets	0.014	-0.020	-0.126	-0.215***	-0.013
	(0.069)	(0.081)	(0.075)	(0.044)	(0.084)
Other assets	-0.168*	-0.201**	-0.255**	-0.118	-0.027
	(0.086)	(0.071)	(0.101)	(0.084)	(0.079)
Financial assets	-0.035	-0.469*	-0.126*	-0.040	0.078
	(0.042)	(0.245)	(0.066)	(0.059)	(0.080)
PD	0.779**	-0.172	0.210	0.058	0.125
	(0.348)	(0.279)	(0.164)	(0.141)	(0.134)
Maturity	-0.220***	-0.205***	-0.145**	-0.097	-0.148
	(0.054)	(0.054)	(0.048)	(0.076)	(0.087)
N	835088	699311	681870	711406	743647
AdjR^2	0.90	0.87	0.90	0.92	0.91
FT+BT+BF FE	✓	✓	✓	✓	✓

Notes: This table shows the estimation results of the following specification by year:

$$\text{Credit}_{f,b,i,t} = \boldsymbol{\beta}' \textbf{Collateral Type}_i + \boldsymbol{\gamma}' \mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ is the annualized loan rate of new loans i issued to firm f by bank b in month t. **Collateral Type**$_i$ includes a set of variables of collateral types used for a loan i. It is a dummy variable taking value of one if a loan is secured by one collateral type. Suppose a loan i is backed by two collateral types, real estate and financial assets. The value of Collateral Type$_i$ for physical movable assets and other assets will be recorded as zero. The control vector **X** includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). ILT, BT, BF, FT denotes Sector-Country-Time FE, Bank-Time FE, Bank-Firm FE, Firm-Time FE, respectively. Robust standard errors are double clustered at bank and time level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table C11: Types: Collateral Pricing by Country

	FR	IT	DE	ES	Others
	Annualized interest rate				
Real estate	0.161***	0.377***	0.039	-0.055	-0.011
	(0.035)	(0.115)	(0.028)	(0.136)	(0.025)
Physical movable assets	-0.020	-0.010	-0.100***	0.136	0.011
	(0.028)	(0.122)	(0.014)	(0.124)	(0.093)
Other assets	-0.210***	-0.214***	0.222	0.123	0.111
	(0.053)	(0.054)	(0.320)	(0.240)	(0.074)
Financial assets	-0.380*	-0.059	-0.064	0.016	-0.096*
	(0.226)	(0.041)	(0.042)	(0.081)	(0.055)
PD	0.067**	2.530***	0.003	0.505***	0.833**
	(0.029)	(0.260)	(0.266)	(0.063)	(0.338)
Maturity	-0.184***	-0.103***	-0.354***	-0.144	-0.220
	(0.051)	(0.023)	(0.031)	(0.093)	(0.156)
N	2126828	1368095	666012	667747	946269
AdjR^2	0.84	0.87	0.91	0.85	0.86
ILT+BT+BF FE	✓	✓	✓	✓	✓
Real estate	0.094**	0.414**	0.031	-0.036	0.028
	(0.043)	(0.188)	(0.078)	(0.117)	(0.031)
Physical movable assets	0.051**	0.203	-0.040***	-0.200**	-0.012
	(0.023)	(0.162)	(0.012)	(0.079)	(0.108)
Other assets	-0.148***	-0.197	0.498	-0.600	0.091
	(0.051)	(0.151)	(0.554)	(0.920)	(0.136)
Financial assets	-0.236	-0.006	-0.102*	-0.042	-0.119**
	(0.165)	(0.082)	(0.059)	(0.080)	(0.054)
PD	0.077	2.150***	-1.519	0.474***	0.345
	(0.123)	(0.274)	(1.341)	(0.069)	(0.217)
Maturity	-0.083***	-0.047**	-0.385***	-0.138	-0.233
	(0.023)	(0.018)	(0.018)	(0.131)	(0.157)
N	1018063	982788	630014	584246	523868
AdjR^2	0.92	0.96	0.96	0.91	0.90
FT+BT+BF FE	✓	✓	✓	✓	✓

Notes: This table shows the estimation results of the following specification by country:

$$\text{Credit}_{f,b,i,t} = \beta' \textbf{Collateral Type}_i + \gamma' \mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ is the annualized loan rate of new loans i issued to firm f by bank b in month t. **Collateral Type**$_i$ includes a set of variables of collateral types used for a loan i. It is a dummy variable taking value of one if a loan is secured by one collateral type. Suppose a loan i is backed by two collateral types, real estate and financial assets. The value of Collateral Type$_i$ for physical movable assets and other assets will be recorded as zero. The control vector **X** includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). ILT, BT, BF, FT denotes Sector-Country-Time FE, Bank-Time FE, Bank-Firm FE, Firm-Time FE, respectively. Robust standard errors are double clustered at bank and time level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table C12: Types: Collateral Channel by Year

	2019	2020	2021	2022	2023
	ln(Committed amount)				
Real estate	0.540***	0.508***	0.420***	0.378***	0.330**
	(0.096)	(0.113)	(0.106)	(0.113)	(0.124)
Physical movable assets	0.293***	0.409***	0.477***	0.433***	0.341*
	(0.080)	(0.082)	(0.094)	(0.072)	(0.170)
Other assets	0.367***	0.432***	0.346***	0.397***	0.321***
	(0.065)	(0.080)	(0.078)	(0.053)	(0.088)
Financial assets	0.307*	0.541***	0.534***	0.115	0.313**
	(0.169)	(0.115)	(0.083)	(0.284)	(0.139)
PD	0.004	0.004	0.044**	-0.071	-0.065
	(0.033)	(0.022)	(0.017)	(0.066)	(0.081)
Maturity	0.372***	0.336***	0.341***	0.308***	0.315***
	(0.068)	(0.057)	(0.055)	(0.074)	(0.081)
N	1060560	995705	958459	979000	1004919
AdjR^2	0.78	0.78	0.80	0.79	0.79
ILT+BT+BF FE	✓	✓	✓	✓	✓
Real estate	0.516***	0.569***	0.595***	0.462***	0.544***
	(0.122)	(0.083)	(0.073)	(0.095)	(0.091)
Physical movable assets	0.257**	0.389***	0.428***	0.380***	0.128
	(0.086)	(0.108)	(0.127)	(0.101)	(0.286)
Other assets	0.412***	0.392***	0.423***	0.459***	0.490***
	(0.091)	(0.051)	(0.056)	(0.052)	(0.051)
Financial assets	0.122	0.426**	0.417***	-0.324	0.214
	(0.331)	(0.180)	(0.113)	(0.577)	(0.260)
PD	-0.157	0.204	0.188	0.156	-0.069
	(0.342)	(0.193)	(0.148)	(0.216)	(0.156)
Maturity	0.456***	0.441***	0.438***	0.410***	0.409***
	(0.085)	(0.069)	(0.063)	(0.092)	(0.102)
N	835188	699404	682094	711450	743647
AdjR^2	0.74	0.75	0.77	0.76	0.76
FT+BT+BF FE	✓	✓	✓	✓	✓

Notes: This table shows the estimation results of the following specification by year:

$$\text{Credit}_{f,b,i,t} = \boldsymbol{\beta}' \textbf{Collateral Type}_i + \boldsymbol{\gamma}' \mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ is the natural logarithm of the committed amounts of a new loan i issued to firm f by bank b in month t. **Collateral Type**$_i$ includes a set of variables of collateral types used for a loan i. It is a dummy variable taking value of one if a loan is secured by one collateral type. Suppose a loan i is backed by two collateral types, real estate and financial assets. The value of Collateral Type$_i$ for physical movable assets and other assets will be recorded as zero. The control vector **X** includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). ILT, BT, BF, FT denotes Sector-Country-Time FE, Bank-Time FE, Bank-Firm FE, Firm-Time FE, respectively. Robust standard errors are double clustered at bank and time level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table C13: Types: Collateral Channel by Country

	FR	IT	DE	ES	Others
	ln(Committed amount)				
Real estate	0.931***	0.534***	0.040	0.464***	0.149
	(0.060)	(0.082)	(0.070)	(0.074)	(0.096)
Physical movable assets	0.536***	0.242	0.156***	-0.026	0.222
	(0.152)	(0.199)	(0.045)	(0.041)	(0.138)
Other assets	0.469***	0.232**	-0.793*	0.541***	0.129**
	(0.066)	(0.101)	(0.470)	(0.117)	(0.055)
Financial assets	0.661***	0.246***	0.017	0.100***	0.248***
	(0.223)	(0.026)	(0.022)	(0.026)	(0.089)
PD	0.026**	-1.211***	-0.027	-0.176***	-0.140*
	(0.011)	(0.198)	(0.019)	(0.039)	(0.079)
Maturity	0.246***	0.282***	0.677***	0.500***	0.223***
	(0.029)	(0.029)	(0.086)	(0.026)	(0.049)
N	2126937	1368317	666245	667756	946321
AdjR^2	0.74	0.74	0.76	0.71	0.83
ILT+BT+BF FE	✓	✓	✓	✓	✓
Real estate	0.724***	0.879***	-0.104	0.439***	0.167***
	(0.063)	(0.168)	(0.235)	(0.083)	(0.056)
Physical movable assets	0.255	0.261	0.157***	-0.342	0.430**
	(0.257)	(0.211)	(0.033)	(0.259)	(0.178)
Other assets	0.487***	0.414***	-0.953	1.200***	0.215***
	(0.052)	(0.095)	(0.693)	(0.336)	(0.076)
Financial assets	-0.042	0.539***	0.228**	0.175**	0.374***
	(0.598)	(0.065)	(0.107)	(0.063)	(0.106)
PD	-0.131	-0.261*	1.748*	0.114*	0.184*
	(0.161)	(0.148)	(0.900)	(0.055)	(0.104)
Maturity	0.392***	0.294***	0.718***	0.475***	0.177***
	(0.039)	(0.037)	(0.045)	(0.026)	(0.061)
N	1018160	982977	630181	584248	523905
AdjR^2	0.75	0.73	0.73	0.72	0.85
FT+BT+BF FE	✓	✓	✓	✓	✓

Notes: This table shows the estimation results of the following specification by country:

$$\text{Credit}_{f,b,i,t} = \boldsymbol{\beta}' \textbf{Collateral Type}_i + \boldsymbol{\gamma}' \mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ is the natural logarithm of the committed amounts of a new loan i issued to firm f by bank b in month t. **Collateral Type**$_i$ includes a set of variables of collateral types used for a loan i. It is a dummy variable taking value of one if a loan is secured by one collateral type. Suppose a loan i is backed by two collateral types, real estate and financial assets. The value of Collateral Type$_i$ for physical movable assets and other assets will be recorded as zero. The control vector **X** includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). ILT, BT, BF, FT denotes Sector-Country-Time FE, Bank-Time FE, Bank-Firm FE, Firm-Time FE, respectively. Robust standard errors are double clustered at bank and time level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

D Regressions: Collateral values

Table C14: Value: Collateral Pricing by Year

	2019	2020	2021	2022	2023
	Annualized interest rate				
Collateral value	-0.047**	-0.031	-0.038**	-0.027**	-0.017
	(0.018)	(0.018)	(0.014)	(0.010)	(0.011)
PD	0.143*	0.084**	0.093**	0.255*	0.339
	(0.078)	(0.038)	(0.038)	(0.120)	(0.192)
Maturity	-0.220*	-0.294**	-0.144**	-0.009	-0.032
	(0.101)	(0.120)	(0.057)	(0.050)	(0.031)
N	303254	354619	415409	405370	344309
AdjR^2	0.91	0.91	0.94	0.92	0.91
ILT+BT+BF FE	✓	✓	✓	✓	✓
Collateral value	-0.044**	-0.028*	-0.025**	-0.014*	-0.004
	(0.017)	(0.013)	(0.008)	(0.007)	(0.006)
PD	0.860**	-0.537	-0.440	0.397	0.003
	(0.376)	(0.554)	(0.403)	(0.859)	(0.705)
Maturity	-0.208**	-0.257**	-0.106**	-0.007	-0.033
	(0.080)	(0.110)	(0.046)	(0.038)	(0.024)
N	253353	254921	301984	308030	260200
AdjR^2	0.94	0.94	0.96	0.96	0.94
FT+BT+BF FE	✓	✓	✓	✓	✓

Notes: This table shows the estimation results of the following specification by year:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Value}_i + \boldsymbol{\gamma}'\mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ is the annualized loan rate of new loans i issued to firm f by bank b in month t. $\text{Collateral Value}_i$ is the collateral values. It is the natural logarithm of sum allocated value of all collateral used for a loan i. The control vector $\mathbf{X}$ includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). ILT, BT, BF, FT denotes Sector-Country-Time FE, Bank-Time FE, Bank-Firm FE, Firm-Time FE, respectively. Robust standard errors are double clustered at bank and time level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table C15: Value: Collateral Pricing by Country

	FR	IT	DE	ES	Others
	Annualized interest rate				
Collateral value	-0.055	-0.011	-0.018**	-0.037	-0.092*
	(0.037)	(0.010)	(0.009)	(0.032)	(0.047)
PD	0.020	2.482***	0.344	0.482***	1.158***
	(0.027)	(0.169)	(0.433)	(0.127)	(0.379)
Maturity	-0.012	-0.163***	-0.223***	-0.057	-0.273
	(0.022)	(0.024)	(0.040)	(0.043)	(0.187)
N	628149	482836	424112	160282	401369
AdjR^2	0.93	0.86	0.89	0.90	0.88
ILT+BT+BF FE	✓	✓	✓	✓	✓
Collateral value	-0.018	-0.006**	-0.020**	-0.036	-0.061
	(0.019)	(0.002)	(0.009)	(0.033)	(0.040)
PD	-1.366	1.581***	-5.014**	0.063	1.930
	(0.852)	(0.346)	(1.826)	(0.327)	(1.497)
Maturity	-0.010	-0.102***	-0.267***	-0.048	-0.236
	(0.021)	(0.028)	(0.059)	(0.049)	(0.185)
N	346202	322517	405767	128159	186168
AdjR^2	0.97	0.96	0.96	0.96	0.92
FT+BT+BF FE	✓	✓	✓	✓	✓

Notes: This table shows the estimation results of the following specification by country:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Value}_i + \boldsymbol{\gamma}'\mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ is the annualized loan rate of new loans i issued to firm f by bank b in month t. $\text{Collateral Value}_i$ is the collateral values. It is the natural logarithm of sum allocated value of all collateral used for a loan i. The control vector $\mathbf{X}$ includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). ILT, BT, BF, FT denotes Sector-Country-Time FE, Bank-Time FE, Bank-Firm FE, Firm-Time FE, respectively. Robust standard errors are double clustered at bank and time level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table C16: Value: Collateral Channel by Year

	2019	2020	2021	2022	2023
	ln(Committed amount)				
Collateral value	0.856***	0.793***	0.756***	0.777***	0.836***
	(0.045)	(0.044)	(0.061)	(0.055)	(0.036)
PD	-0.020	-0.000	0.007	-0.002	-0.013
	(0.024)	(0.020)	(0.013)	(0.025)	(0.048)
Maturity	0.009	0.025	0.026	0.026	0.033*
	(0.011)	(0.017)	(0.031)	(0.024)	(0.018)
N	303268	354647	415440	405370	344309
AdjR^2	0.96	0.95	0.95	0.95	0.95
ILT+BT+BF FE	✓	✓	✓	✓	✓
Collateral value	0.877***	0.822***	0.803***	0.829***	0.892***
	(0.047)	(0.049)	(0.061)	(0.054)	(0.031)
PD	-0.415	-0.131	0.360	-0.017	-0.342*
	(0.250)	(0.297)	(0.221)	(0.279)	(0.183)
Maturity	-0.014	0.006	0.011	0.017	0.034
	(0.011)	(0.025)	(0.047)	(0.033)	(0.021)
N	253362	254938	302010	308030	260200
AdjR^2	0.96	0.95	0.95	0.95	0.96
FT+BT+BF FE	✓	✓	✓	✓	✓

Notes: This table shows the estimation results of the following specification by year:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Value}_i + \boldsymbol{\gamma}'\mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ is the natural logarithm of the committed amounts of a new loan i issued to firm f by bank b in month t. $\text{Collateral Value}_i$ is the collateral values. It is the natural logarithm of sum allocated value of all collateral used for a loan i. The control vector $\mathbf{X}$ includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). ILT, BT, BF, FT denotes Sector-Country-Time FE, Bank-Time FE, Bank-Firm FE, Firm-Time FE, respectively. Robust standard errors are double clustered at bank and time level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table C17: Value: Collateral Channel by Country

	FR	IT	DE	ES	Others
	ln(Committed amount)				
Collateral value	0.665***	0.862***	0.762***	0.886***	0.638***
	(0.085)	(0.030)	(0.065)	(0.043)	(0.074)
PD	0.010	-0.456***	-0.035***	0.001	-0.086**
	(0.013)	(0.054)	(0.008)	(0.037)	(0.040)
Maturity	0.089**	-0.001	0.002	0.002	0.050**
	(0.043)	(0.013)	(0.025)	(0.061)	(0.020)
N	628149	482871	424112	160285	401413
AdjR^2	0.91	0.96	0.93	0.97	0.92
ILT+BT+BF FE	✓	✓	✓	✓	✓
Collateral value	0.765***	0.934***	0.807	0.957***	0.682***
	(0.119)	(0.017)	(0.076)	(0.014)	(0.103)
PD	0.206	-0.367***	0.001	-0.177	0.170
	(0.216)	(0.117)	(0.066)	(0.116)	(0.286)
Maturity	0.080	0.001	-0.027	-0.087	0.032
	(0.071)	(0.013)	(0.021)	(0.073)	(0.027)
N	346202	322540	405767	128159	186195
AdjR^2	0.94	0.98	0.94	0.98	0.92
FT+BT+BF FE	✓	✓	✓	✓	✓

Notes: This table shows the estimation results of the following specification by country:

$$\text{Credit}_{f,b,i,t} = \beta \text{Collateral Value}_i + \boldsymbol{\gamma}'\mathbf{X} + \text{FE} + \varepsilon_{f,b,i,t},$$

where $\text{Credit}_{f,b,i,t}$ is the natural logarithm of the committed amounts of a new loan i issued to firm f by bank b in month. $\text{Collateral Value}_i$ is the collateral values. It is the natural logarithm of sum allocated value of all collateral used for a loan i. The control vector $\mathbf{X}$ includes: (i) the one-year-ahead probability of default (PD) as assessed by the lender, and (ii) the natural logarithm of the loans original maturity (in months). ILT, BT, BF, FT denotes Sector-Country-Time FE, Bank-Time FE, Bank-Firm FE, Firm-Time FE, respectively. Robust standard errors are double clustered at bank and time level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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