TÜRKİYE CUMHURİYET MERKEZ BANKASI

Research Notes in Economics

Eight Observations on Relationship Lending in Türkiye

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Özet

Bu not, Türkiye için borç veren ve borç alan arasındaki faydalı ittifak anlamına gelen "ilişki bankacılığı" (İB) kavramına genel bir bakış sağlamayı amaçlamaktadır. Gözlemler şöyle özetlenebilir: 1) "güçlü İlişki", kredi payı (bankanın firmanın toplam borcu içindeki ağırlığı) ile ölçüldüğünde, daha güçlü ilişkiler daha uzun vadeler ve daha düşük faiz oranları ile doğru orantılıdır. 2) Bu gözlemler küçük ve orta ölçekli firmalar için daha da güçlüdür. 3) Bunlar arasındaki (kredi payı ile faiz oranları ve vade) korelasyon zaman içinde değişmektedir. 4) İlişki bankacılığı, bankanın ana borç veren olduğu durumlarda faiz oranları ve vadeler üzerinde daha belirgin bir etkiye sahiptir. 5) Bir ilişki göstergesi olarak süre (banka ile firma arasındaki ilişkinin uzunluğu) değişkeni, kredi payı ile benzer yönde çalışmaktadır. 6) Ayrıca süre, daha yüksek tutarlı yeni krediler ile güçlü şekilde ilişkilidir. 7) Kredi sağlayan banka sayısı önemlidir. Birden fazla banka ile kredi ilişkisine girmesi, firmaların kredi riskliliğine işaret edebilir. Daha fazla banka ile çalışmak daha yüksek faiz oranları ve daha kısa kredi vadeleri ile sonuçlanmaktadır. 8) Bir çeyrek içinde aynı bankadan birden fazla yeni kredi sözleşmesi daha yüksek faiz oranı ve daha kısa vadeler ile doğru orantılıdır. Bu gözlemler, Türk bankacılık sektöründe İB olgusunun varlığını göstermekte ve böylece güçlü ilişkilere sahip firmaların daha uygun kredi koşullarına erişim sağladıklarını göstermektedir. Bu gözlemler çoğunlukla ilişki bankacılığı literatürü ile uyumludur. Bulguların kredi piyasaları ve aktarım kanallarına ilişkin pek çok araştırmayı motive edeceği değerlendirilmektedir.

Abstract

This note aims to provide an overview of "relationship lending" (RL) which represents the beneficial alliance between the lender and the borrower in terms of available funds and affordable rates for Türkiye. The examination of the data provides following findings: 1) When the relationship is measured by loan share (the weight of the bank in the overall debt of the firm), it is strongly associated with loans having longer maturities and lower interest rates. 2) These observations are even stronger for small and medium-sized firms. 3) The correlation between loan share with interest rates and maturity changes over time. 4) RL has a more pronounced effect on interest rates and maturities when the bank is the main lender. 5) The duration (length of the relationship between bank and the firm) as an RL indicator works in the same direction as loan share. 6) Duration is also strongly associated with larger amounts of new loans. 7) The number of lenders matters. A firm's engagement with multiple banks might signal its riskiness. Having more lenders results in higher interest rates and shorter loan maturities. 8) Securing multiple new loans from the same bank within a quarter often leads to slightly higher interest rates and shorter maturities. These observations demonstrate the existence of the phenomenon of RL within the Turkish banking sector, thereby affording borrowers with strong relations access to more favorable credit conditions. The results are mostly in line with the literature on relationship lending and likely to motivate further research on credit markets and transmission channels.

1. Introduction

This note aims to provide an overview of "relationship lending" (RL from here on) which represents the beneficial alliance between the lender and the borrower in terms of available funds and affordable rates for Türkiye. RL generally involves a financial institution's ongoing commitment to gathering detailed and often exclusive information about a customer through repeated interactions. Boot (2000) explains that RL entails investing in customer-specific data and evaluating the profitability of this investment through sustained engagements across different products and over time. Berger and Udell (2002) add that RL enables banks to gain insights into various aspects of a business and its community, which informs decisions regarding credit availability and terms. Ongena and Smith (2000) further describe RL as a meaningful connection between a bank and its customer that goes beyond simple, transactional exchanges. RL is often highlighted for its role in mitigating information asymmetries between firms and banks through long-term and sustained relations. This note highlights some characteristics of this phenomenon in Türkiye, with eight observations based on historical data.

The ongoing literature on RL provides substantial evidence of the benefits that such lending offers, particularly in terms of favorable credit conditions, such as greater loan amounts and lower interest rates. This note presents several observations on relationship lending indicators and their association with credit conditions, with a specific focus on interest rates and maturity. Visualizing these associations and applying panel regressions could deepen the understanding of credit markets and the mechanisms of relationship lending. This research may, in turn, inspire further questions and assist future researchers in examining credit channels and transmission mechanisms with greater precision.

Türkiye stands as an interesting case for several reasons. First, it experienced a notable credit deepening process and a set of banking reforms since the early 2000s, making it a natural laboratory to analyze RL in an emerging market context. Türkiye's domestic credit-to-GDP ratio increased at a rapid rate, catching up with the emerging market average in 2015. Moreover, over the last decade, the Turkish government provided credit guarantee schemes (CGS) for corporate loans. Since 2016 there have been two significant episodes when CGSs were instrumental in boosting bank credit and domestic demand. The first is when the Credit Guarantee Fund (CGF) program was implemented in 2017, contributing 7.6 percent of credit stimulus as a share of GDP provided (Akçiğit et al., 2021). The second program was introduced to support credit growth as a response to the Covid-19 pandemic (Kara, 2021). It is therefore crucial to evaluate and quantify the credit channel in Türkiye by examining evidence on the relationship between RL and macroeconomic episodes, as well as different policy transmissions. This note serves as an initial step in exploring this issue.

The hallmark of this paper is the use of granular loan-level data, which allows us to observe loan characteristics over the sample period and think multidimensionally in constructing firm-bank level RL measures. The uniqueness of the Turkish case and our dataset enable us to dive into RL deeply. In this respect, our RL analysis intends to shed light on RL dynamics. The examination of the data provides the following findings: 1) When the relationship is measured by loan share (the weight of the bank in the overall debt of the firm), it is strongly associated with loans having longer maturities and lower interest rates. 2) These observations are even stronger for small and medium-sized firms. 3) The correlation of loan share with interest rates and maturity changes over time. 4) RL has a more pronounced effect on interest rates and maturities when the bank is the main lender. 5) The duration (length of the relationship between bank and the firm) as an RL indicator works in the same direction as loan share. 6) Duration is also strongly associated with larger amounts of new loans. 7) The number of lenders matters. A firm's engagement with multiple banks might signal its riskiness. Having more lenders results in higher interest rates and shorter loan maturities. 8) Securing multiple new loans from the same bank within a quarter often leads to slightly higher interest rates and shorter maturities.

These observations demonstrate the existence of the phenomenon of RL within the Turkish banking sector, thereby affording borrowers with strong relations access to more favorable credit conditions. The results are mostly in line with the literature on relationship lending and likely to motivate further research on credit markets and transmission channels.

2. Literature on Relationship Lending

The literature on RL encompasses several dimensions, with notable focus on its impact on loan terms, its behavior across financial cycles, and its connection to supply chains. A significant body of work examines the influence of RL on loan terms, particularly how it affects both the availability of credit and the cost of borrowing. Early studies, such as those by Berger, Goldberg, and White (2001) and Berger, Kashyap, and Scalise (1995), emphasize that small banks, through their long-term interactions with small businesses, are better positioned to provide more favorable lending conditions. These findings are further supported by Elyasiani and Goldberg (2004), who provide evidence of the positive effects of RL, especially for firms facing credit constraints. Recent research, such as that by Acosta-Henao et al. (2023), adds to this literature by demonstrating that stronger lending relationships in the Chilean economy are linked to both larger loan amounts and lower interest rates, making it a closely related study in understanding RL dynamics in the context of a developing economy.

Another area of significant research looks at the role of RL over financial cycles, especially in times of economic stress. Studies by Petersen and Rajan (1994) and Berger and Udell (1992) show that firms tend to rely more on their relationships with lenders during periods of financial crisis, helping to alleviate the impact of credit restrictions. More recent studies, including those by Puri, Rocholl, and Steffen (2011), Sette and Gobbi (2015), and Bolton et al. (2016), highlight that RL can help stabilize credit flows during economic downturns. Bolton et al. (2016), for example, discuss how firms are often willing to pay higher interest rates in good times to secure favorable credit terms during economic challenges. Similarly, Beatriz et al. (2018) confirm that relationship lenders charge higher rates during periods of economic growth but offer lower rates in times of economic contraction. However, they caution that RL may not be as beneficial for firms perceived as risky or for those relying on a single banking relationship. Beck et al. (2018) argue that while RL alleviates credit constraints during downturns, it does not provide similar benefits during economic expansions. Banerjee, Gambacorta, and Sette (2021) provide further evidence that strong relationships help maintain investment and employment levels during economic downturns, particularly during episodes like the 2008 global financial crisis. However, a different trend is observed during the Covid-19 pandemic, where Berger et al. (2021) found that banks were reluctant to lend to relationship borrowers, as the crisis primarily affected borrowers rather than lenders.

Recent studies have also begun exploring the link between RL and supply chains. Martins, Schiozer, and de Menezes Linardi (2023) examine how lending relationships provide banks with valuable information about firms' supply chains, improving their decision-making in lending. While this is an emerging area of study, it points to the potential of RL to support firms within supply networks, leading to more favorable loan conditions and better financial outcomes.

A smaller, yet growing, body of work looks at the interaction between RL and monetary policy. Hachem (2011) presents a theoretical model that suggests RL can help buffer the effects of monetary policy shocks, reducing the volatility in lending responses to policy changes. Haan (2002) finds that firms in the euro area and the UK that are more reliant on RL are more negatively affected by tightening monetary policies. Additionally, Cahn et al. (2020) investigate the European Central Bank's Very Long-Term Refinancing Operations and demonstrate that firms with strong RL benefited more from long-term funding and increased investment opportunities.

Though studies on RL in the Turkish context remain limited, a few have explored its influence on bank lending, including works by Erdoğan (2014) and Baziki and Capacioglu (2020, 2021). However, a

micro-level analysis of RL in Turkey is still lacking. This paper seeks to fill that gap, focusing on the role of RL as a central variable in the Turkish banking sector, and offering fresh insights into its implications for lending practices.

3. Data and Findings

This paper explores relationship lending using deposit and investment banks operating in Türkiye from 2006Q1 to 2019Q4. These banks account for more than 90% of the overall banking sector, thereby making their coverage sufficient to represent the Turkish banking landscape. The visual analysis has been separated into sub-periods to identify the RL dynamics at different stages of financial cycles.

An extremely detailed firm-bank matched dataset sourced from banks' supervisory reports to the Central Bank is utilized. This dataset encompasses loan-level data that include various characteristics of each loan contract, such as maturity, interest rate, loan size, and currency type. Only commercial loans denominated in TL are included. Loan amounts, interest rates, and original maturity are trimmed at 5 percent, and observations with a maturity of less than 3 days are excluded. This variety allows us to calculate RL measures accordingly. RL indicators are derived by aggregating micro-level loan information providing an accurate depiction of RL dynamics over the sample horizon. Table 1 presents a summary of how variables of interest are constructed. The loan share of a specific bank in the credit portfolio of a firm, duration of the relationship and whether the bank serves as the main lender are assumed to be relationship indicators. Duration is measured as the number of quarters between the current date and initial date of borrowing. It is assumed that the relationship terminates if the relationship between a bank and a firm is interrupted for more than six consecutive quarters. Duration is corrected by dividing the relationship duration of firm i with bank j at time t by the time elapsed since 2006, following the approach outlined in Acosta-Henao et al. (2023). The number of new loans is adjusted by trimming the top and bottom 1 percent, leaving observations ranging between 0 and 5. Our analysis investigates whether these relationship indicators are associated with more favorable credit conditions, specifically examining interest rates and maturity. Interest rate and maturity (in quarters) are weighted by the amount of the debt obtained within a quarter.

For the regression analysis, this paper uses banks' supervisory reports, along with firms' balance sheet and income statements obtained from the Firm Tax Registry. Firm covariates including firm age, size, investment to total assets ratio, net sales growth and export share are incorporated into the regression model. All firm level variables are realized by CPI and size refers to natural logarithm of total assets.

Table 1: Variable Definitions*

Variable	***Calculation***
Loan share - debt exposure of the firm i for each bank j at time t (Relationship measure)	$RL^1_{ijt} = \sum_{k \epsilon i,j} \frac{D_{ijkt}}{TD_{it}}$
Duration of relation– The number of quarters elapsed since the initial borrowing date (Relationship measure)	RL^2_{ijt}= t-t$^1_{ij}$ (If there is more than 6 quarters gap, renew the relation; corrected by dividing the relationship duration of firm i with bank j at time t by the time elapsed since 2006)
Main lender (Relationship measure)	$RL^3_{ijt} = 1$ if the bank has the largest share in a firm's loan portfolio, 0 otherwise
Average interest rate for the firm-bank pair, weighted by debt issued in a quarter	$i_{ijt} = \sum_{k \epsilon i,j} \frac{F_{ijkt}}{TF_{ijt}} i_{ijkt}$
Average maturity for the firm-bank pair, weighted by debt issued in a quarter	$M_{ijt} = \sum_{k \epsilon i,j} \frac{F_{ijkt}}{TF_{ijt}} M_{ijkt}$
Number of banks	Number of banks with whom the firm has an ongoing contract within a quarter
New Loans	Amount of new loans firm obtains within a quarter from a specific bank realized by CPI
Number of new loans	Number of new loans firm obtains within a quarter from a specific bank

*i stands for the firm, j stands for the bank, k stands for loan contracts, t stands for time (in quarters). D is for the outstanding debt amount for a specific contract between the firm and the bank. TD is the total outstanding debt of the firm. Similarly, F is for the debt amount obtained within a quarter for a specific contract between the firm and the bank. TF is the total debt of the firm obtained within a quarter.

Several Observations on RL and Credit Market Conditions in Turkish Economy

The following part presents evidence that shows the association across relationship lending indicators and credit market conditions in terms of maturity, interest rates and quantity wherever applicable.

Panel regressions include controls for firm, bank*time and sector*time fixed effects as follows:

$$y_{i,j,t} = RL_{i,j,t-1} + Firm\ Controls_{i,t-1} + \alpha_i + \lambda_j * T_t + \omega_s * T_t + u_{i,j,t}$$

"$y_{i,j,t}$" is average interest rate or maturity of the loans that the firm "i" obtains from bank "j". RL is the relationship lending indicator like bank's loan share or duration. $\alpha_i, \lambda_j, \omega_s, T_t$ denote firm, bank, sector and time fixed effects respectively.

The visual presentation of the data uses the entire credit data at the firm-bank level. The regression results, on the other hand, use a smaller sample due to the availability of data in the Firm Tax Registry. RL indicators and firm-level controls are included with their one-quarter and one-year lag respectively to avoid endogeneity. Controlling for bank*time and sector*time fixed effects implies that the regressions compare two firms borrowing from the same bank and operating in the same

sector. Thus, the significance of the coefficient of interest in these regressions provides strong evidence that relationship lending facilitates more favorable credit conditions.

Observation #1: Relationships are linked to more favorable interest rates and longer debt maturity.

Chart 1.1 and Chart 1.2 demonstrate the correlation between loan share and interest rates and maturity respectively, using collapsed data across 100 x-tile groups of loan share. Both charts indicate a strong link between the relationship (as measured by the loan share) and credit conditions. Table 2 verifies the graphical representation with a panel regression at the firm-bank loan level. The coefficients on loan share are significant at the 1 percent level, indicating that higher loan shares are associated with lower interest rates and longer maturities.

When loan share is used as a measure for evaluating relationship lending, a phenomenon emerges where interest rates display a downward trend corresponding to the strength of the relationship. Firms with robust relationships experience a significant financing advantage, characterized by a notable decrease in interest rates as the relationship solidifies. These findings could be related to the effectiveness of relationship lending in reducing information asymmetries. By fostering stronger relationships with firms, banks gain deeper insights into their activities and better manage their risks, thereby reducing uncertainty, particularly regarding loan quality. This is directly reflected in loan pricing, as the credit risk premium is one of the most crucial components of the interest rate that banks must accurately model before granting the loan.

Examining the impact of RL on loan maturities is crucial for revealing another facet of its role within the credit mechanism. As the share of loans increases, so does the maturity. This validates the idea that banks extend loans with longer maturities as relationships strengthen. There is a fairly linear relationship between loan share and maturity, indicating that for each unit of relationship, firms can benefit from an extension in maturity. In Türkiye, investment loans typically have longer maturities, while loans for working capital needs are granted for shorter periods to assist firms in meeting their short-term requirements. Banks usually implement more stringent and information-intensive procedures for longer-term loans, as they bear counterparty risks on their balance sheets for extended periods and are exposed to funding risks when financing these long-term loans. They assess the underlying risks more thoroughly for firms with which they have a relationship, and consequently, extend loans to these firms with longer maturities. For long-term investment and project finance loans, banks often have a business model in place where they disburse loans based on the progress achieved by the firm. This process is better managed when the relationship between the bank and the firm is strong.

Chart 1.1: Loan Share and Interest Rate

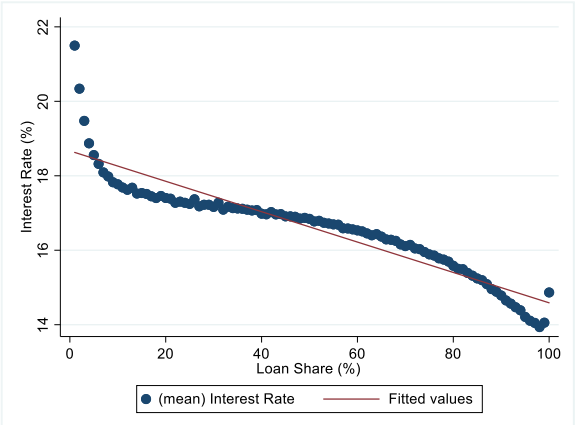


Chart 1.2: Loan Share and Maturity

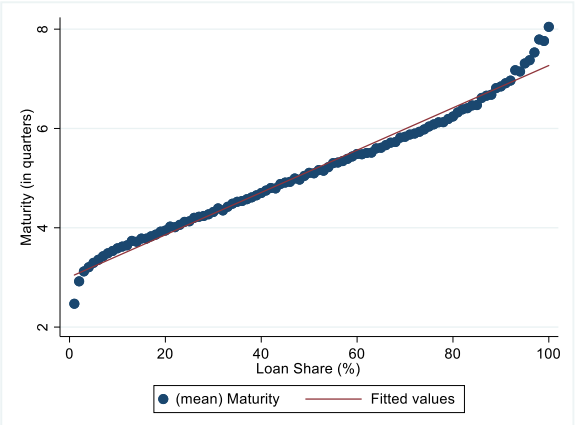


Table 2. Loan Share and Credit Conditions

	Interest Rate	Maturity
Loan Share (-1)	-0.38***	0.17***
	(0.01)	(0.01)
Observations	3,579,388	3,528,509
R-squared	0.70	0.38
Firm Controls	Yes	Yes
Firm FE	Yes	Yes
Bank x Time FE	Yes	Yes
Sector x Time FE	Yes	Yes

This table presents the results of equations estimated using panel fixed effects. The dependent variables are interest rate and maturity, relationship lending measure is loan share. Each regression controls for firm covariates. Regressions include firm FEs, bank x time FEs and sector x time FEs. All variables are defined in Table 1. Standard errors in parentheses are clustered at firm level. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Observation #2: Firm size matters.

The reduction in interest rates provides tangible benefits to firms, but maintaining such relational ties incurs associated costs (opportunity costs) for banks, particularly when the firm is strong and financially stable. Naturally, market conditions and competitiveness influence the extent of interaction between relationship lending and interest rates. Since corporates typically manage their risks better, most banks are keen to establish and maintain business relationships with corporate firms, especially during adverse market conditions (Peterson and Rajan, 1995). However, it might not be possible or reasonable for a bank to assign a sole limit to such large corporates due to risk limits, and so firms are inclined to work with multiple banks to finance their large-scale activities. This also affects banks' motivation to be the main lender to financially stable SMEs. Banks are likely to exert more control in their relationships with relatively smaller firms. Historically, SMEs have had a higher non-performing loan ratio compared to large corporates, and typically secure loans at a higher cost. For SMEs, interest rates appear to be a key consideration for fostering relationships. Charts 2.1-2.4 show that the association between the relationship indicator (loan share) and credit conditions (interest rate and maturity) is stronger for SMEs. This is in line with existing literature (see for example Beatriz et al., 2018). Table 3 shows regression results for different sub-groups. For the corporates, the coefficient of the loan share for the maturity is not statistically significant. For interest rates, however, the relationship is significant for corporates as well. For SMEs regression results are both statistically significant and show higher coefficients.

Chart 2.1: Loan Share and Interest Rate for Large Companies

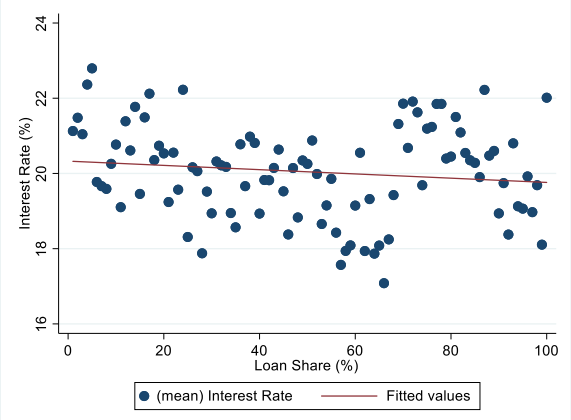


Chart 2.2: Loan Share and Maturity for Large Companies

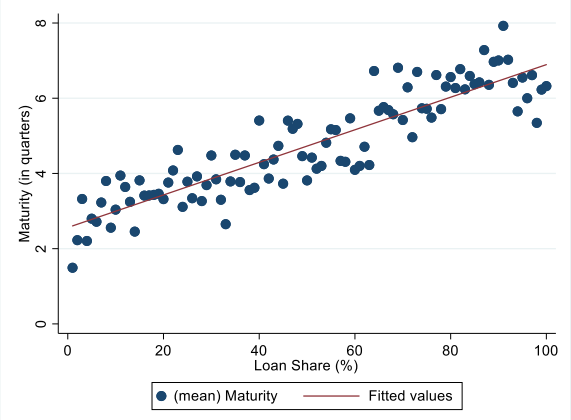


Chart 2.3: Loan Share and Interest Rate for SMEs

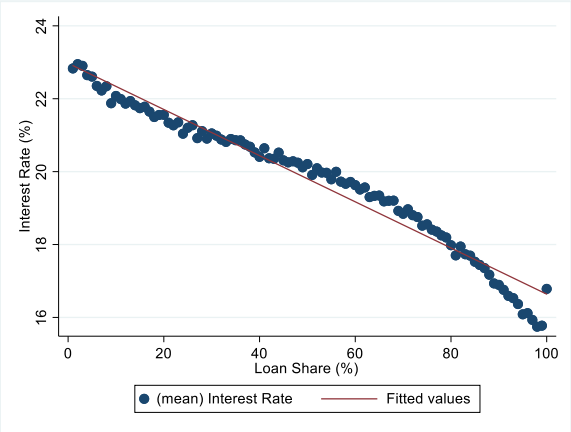


Chart 2.4: Loan Share and Maturity for SMEs

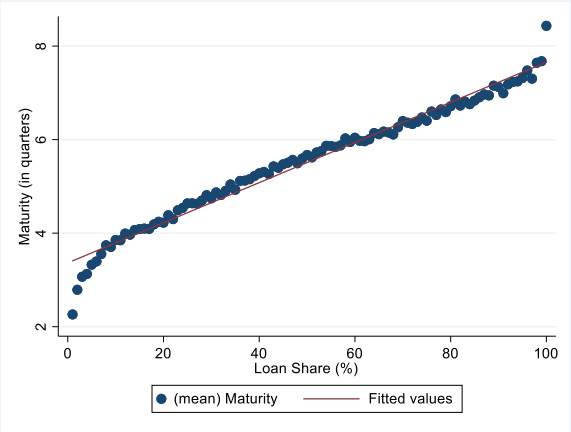


Table 3. Loan Share and Credit Conditions for Different Sizes

	(Corporate) Interest rate	(Corporate) Maturity	(SME) Interest rate	(SME) Maturity
Loan Share (-1)	-0.59***	0.04	-0.37***	0.17***
	(0.05)	(0.05)	(0.01)	(0.01)
Observations	135,238	132,183	3,442,590	3,394,768
R-squared	0.71	0.42	0.70	0.39
Firm Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Bank x Time FE	Yes	Yes	Yes	Yes
Sector x Time FE	Yes	Yes	Yes	Yes

This table presents the results of equations estimated using panel fixed effects. The dependent variables are interest rate and maturity by firm size, relationship lending measure is loan share. Each regression controls for firm covariates. Regressions include firm FEs, bank x time FEs and sector x time FEs. All variables are defined in Table 1. Standard errors in parentheses are clustered at firm level. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Observation #3: The strength is not constant. It changes.

Chart 3.1 and Chart 3.2 recreate the charts presented in Chart 1.1 and Chart 1.2 for different years. The relationship between loan share and interest rate is not linear and varies significantly over time. This verifies the intuition and findings in the literature that macroeconomic conditions (good times vs. bad times or policy changes) can influence the strength of the relationship between loan share and credit conditions.

With the exception of 2012, in every year examined, as the relationship strengthens, the interest rates decrease. This downward trend is particularly notable in 2017 and 2019. 2017 was a year marked by the Credit Guarantee Fund loan facility that was initiated to support SMEs and other firms. This facility was also extended in 2019. Under this facility, firms had the opportunity to access loans at lower rates with longer maturities. These loans were partially guaranteed by the government, and banks could use these guarantees to mitigate credit risk, thus reducing the capital cost of loans. The features of this facility incentivized banks to renew their existing loan portfolios with these loans. This strengthened their relationship with firms as banks were more likely to offer these loans to existing customers. Additionally, banks were motivated to provide loans to their existing customers for longer periods to avoid hitting the non-performing loan ratio threshold set by the facility, which would jeopardize their participation in the program.

The relationship between loan share and interest rate appears relatively flat in 2012. The years 2010 and 2012 followed the Global Financial Crisis (GFC), during which loan rates decreased significantly

due to a decline in policy rates. Türkiye also experienced an influx of capital flows during these years, which positively impacted financial conditions. This may have led banks to become less sensitive to firm-specific risks, diminishing the importance of having a strong relationship with firms in loan pricing. However, the benefits of RL seem to manifest at longer maturities even in 2010 and 2012. Providing long-term loans has the potential to support firms in achieving their long-term growth objectives. Therefore, the effects of relationship lending on loan maturities for firms also carry significant implications for the broader economy.

Chart 3.1: Loan Share and Interest Rate

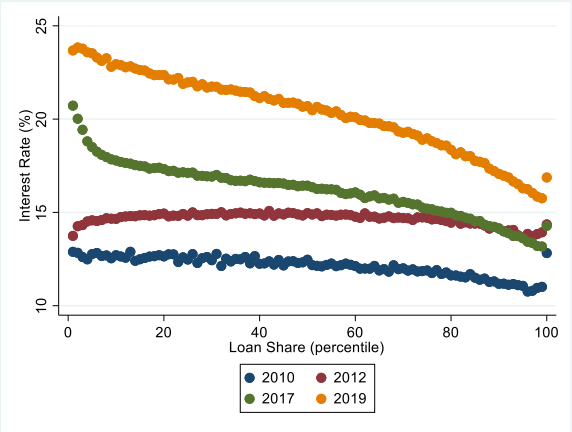
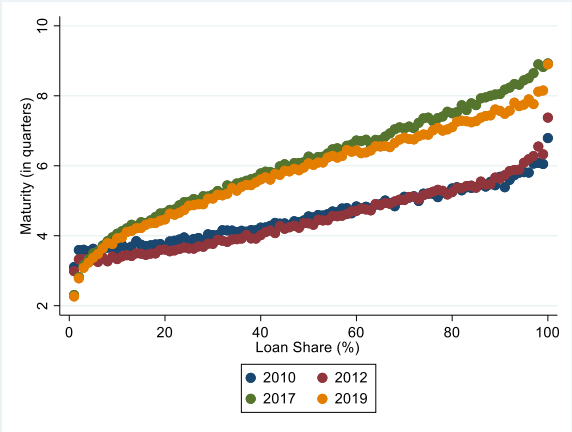


Chart 3.2: Loan Share and Maturity



Observation #4: RL has a more pronounced effect on interest rates and maturities where the bank is the main lender.

If a bank holds the largest share of loans to a firm, it is identified as the main bank. The extent to which a firm relies on loans from its main bank is a significant measure of the strength of the firm-bank relationship. Chart 4.1 and Chart 4.2 present bar graphs where weighted interest rates and maturities are averaged across groups of main lender dummy. Table 4 includes the main lender dummy as an explanatory variable in the regressions for interest rate and maturity. When the bank is the main lender to the firm, interest rates are lower, and maturities are longer on average. Although it is common for firms in Turkiye to work with multiple banks, they often have a main lender with whom they maintain a more extensive loan relationship. Focusing their business with a main bank reduces information production costs and expenses associated with monitoring loans over their life. In firm-bank pairs, the bank being the main lender for the firm reflects a stronger relationship, thereby amplifying the effects of relationship lending on the loan pricing and loan maturities. The overall picture suggests that when a bank is the main lender, firms benefit from lower interest rates and longer loan maturities.

Chart 4.1: Main Lender and Interest Rate

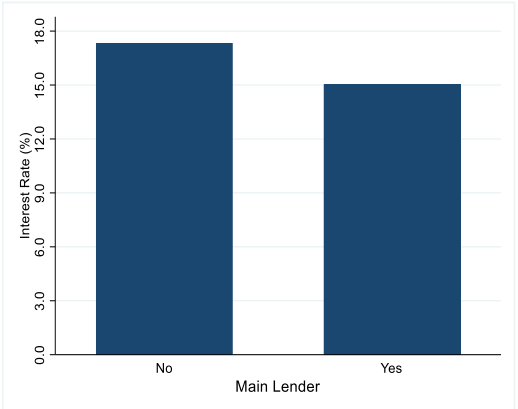


Chart 4.2: Main Lender and Maturity

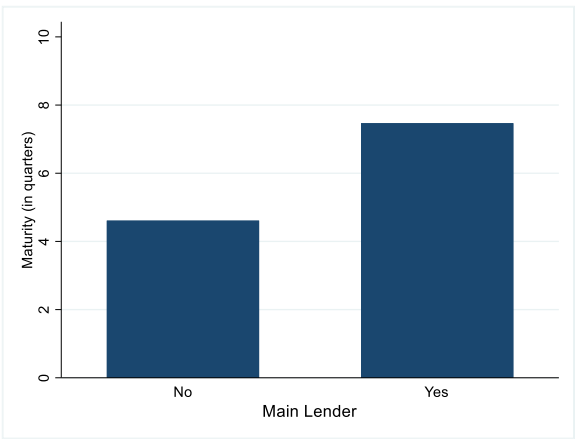


Table 4. Main Lender Dummy and Credit Conditions

	Interest rate	Maturity
Main Lender (-1)	-0.38***	0.35***
	(0.00)	(0.00)
Observations	4,722,795	4,592,396
R-squared	0.70	0.39
Firm Controls	Yes	Yes
Firm FE	Yes	Yes
Bank x Time FE	Yes	Yes
Sector x Time FE	Yes	Yes

Notes: This table presents the results of equations estimated using panel fixed effects. The dependent variables are interest rate and maturity, relationship lending measure is main lender dummy, which takes 1 where bank holds the largest share of loans to a firm. Each regression controls for firm covariates. Regressions include firm Fes, bank x time FEs and sector x time FEs. All variables are defined in Table 1. errors in parentheses are clustered at firm level. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Observation #5: As an RL indicator, duration works in the same direction as loan share, although less pronounced.

Duration[1] is also one of the most referenced metrics in relationship lending, measured by the number of quarters that banks and firms maintain an uninterrupted loan relationship. The literature provides mixed guidance about the interaction between duration and RL. Earlier studies indicate that the longer the duration, the greater the availability of credit (Berger & Udell, 1995; Petersen and Rajan, 1994). Boot (2000) finds that with higher duration, interest rates and collateral requirements decline. Conversely, Degryse and van Cayseele (2000) report the opposite trend in a European context, where the terms of the contract appear to deteriorate with the duration of the relationship. Blackwell and Winters (1997) find no evidence that the duration of the relationship affects the interest rates charged on loans. Elsas (2005) also claims duration is the least informative indicator among RL indicators. Banerjee et al. (2021) show that after the financial crisis banks offered more favorable credit conditions to those with higher duration.

The correlations regarding the duration of relationships in Türkiye as shown in Chart 5.1 and Chart 5.2 present a less clear picture about the association between duration as a RL indicator with interest rates and maturity. There is no apparent direction in terms of interest rates. As the firm-bank relationship ages, the loan maturity decreases slightly. The figures do not provide guidance on whether longer-lasting relationships with firms provide banks with a better understanding of firm performance, leading to more favorable credit conditions. The regression results, on the other hand, provide much clearer evidence of the presence of a negative relation between duration and interest rate and a positive relationship between duration and maturity. When controlling for firm characteristics and firm, bank*time, sector*time fixed effects, duration works in the same direction as loan share, as shown in Table 2.

[1] Duration is measured as the number of quarters between the current date and the initial date of borrowing divided by the time elapsed since 2006. It is assumed that the relationship terminates if the relationship between a bank and a firm is interrupted for more than six consecutive quarters. The analysis was repeated with alternative calculations of RL, and duration indicators were constructed with assumptions that the relationship ends if interrupted for more than four consecutive quarters or the relationship continues even if there are gaps in a firm's credit history with the bank. The results remain robust.

Chart 5.1: Duration and Interest Rate

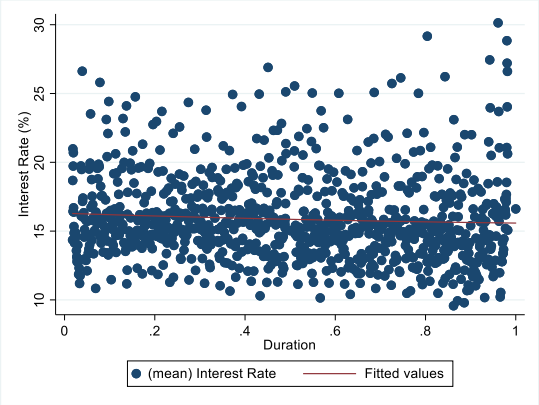


Chart 5.2: Duration and Maturity

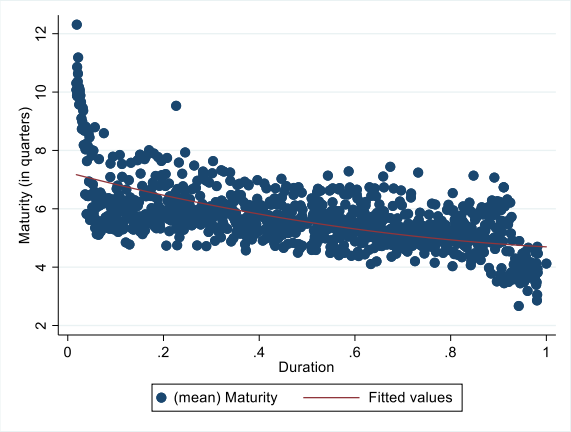


Table 5. Duration and Credit Conditions

	Interest rate	Maturity
Duration (-1)	-0.10***	0.29***
	(0.01)	(0.01)
Observations	3,713,041	3,657,017
R-squared	0.70	0.38
Firm Controls	Yes	Yes
Firm FE	Yes	Yes
Bank x Time FE	Yes	Yes
Sector x Time FE	Yes	Yes

Notes: This table presents the results of equations estimated using panel fixed effects. The dependent variables are interest rate and maturity, relationship lending measure is duration. Each regression controls for firm covariates. Regressions include firm FEs, bank x time FEs and sector x time FEs. All variables are defined in Table 1. errors in parentheses are clustered at firm level. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Observation #6: Duration is strongly associated with larger amounts of new loans.

In addition to the relationship between duration and interest rate and maturity, duration also shows a strong correlation with new loans. Chart 6.1 and Chart 6.2 show that longer durations yield larger amounts of new loans and also a higher number of new loans for a given quarter. The regressions of new loans and the number of new loans on duration, while controlling for interest rate and maturity in Table 6, confirm a strong association between duration and new loans.[2] Therefore, firms that have established longer credit histories with a bank tend to experience greater access to credits. This relationship is reflected in the ability of these firms to engage in multiple loan contracts and accumulate greater debt over time as the bank becomes more familiar with the firm's financial behavior and risk profile. The longer a firm maintains a relationship with a bank, the better the bank can evaluate its creditworthiness, leading to more informed lending decisions.

[2] The results are robust when controlling for loan share as well.

Chart 6.1: Duration and New Loans (Real)

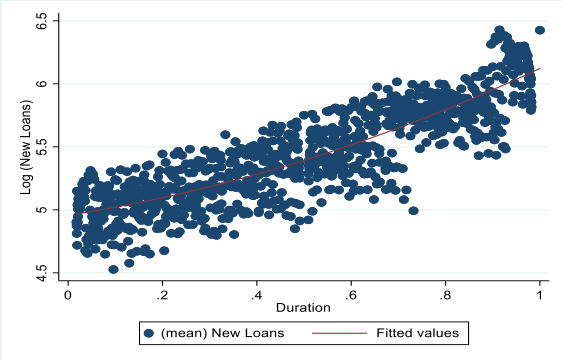


Chart 6.2: Duration and Number of New Loans

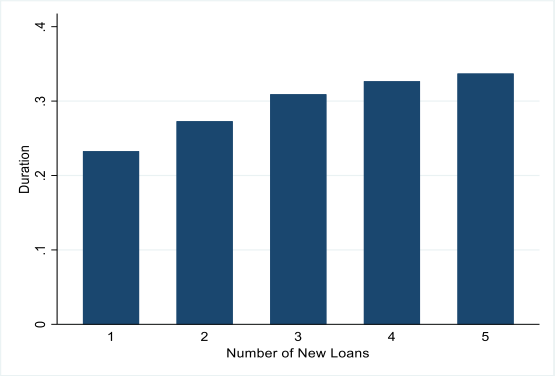


Table 6. Duration and Amount of Loans

	New Loans (Real)	Number of New Loans
Duration (-1)	0.21***	0.78***
	(0.01)	(0.02)
Interest rate (-1)	-0.32***	-0.19*
	(0.04)	(0.11)
Maturity (-1)	-0.01***	-0.08***
	(0.00)	(0.00)
Observations	4,146,901	4,170,922
R-squared	0.43	0.76
Firm Controls	Yes	Yes
Firm FE	Yes	Yes
Bank x Time FE	Yes	Yes
Sector x Time FE	Yes	Yes

Notes: This table presents the results of equations estimated using panel fixed effects. The dependent variables are new loans amount and number of new loans, relationship lending measure is duration. The models include interest rate and maturity. Each regression controls for firm covariates. Regressions include firm FEs, bank x time FEs and sector x time FEs. All variables are defined in Table 1. Standard errors in parentheses are clustered at firm level. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Observation #7: The number of lenders matters in determining the credit conditions and relationship dynamics.

Charts 7.1 and 7.2 show the link between the number of lenders and average interest rates and maturity respectively. Chart 7.1 shows that as the number of banks increases the firms benefit from lower interest rates. However, the regression of interest rates in relation to the number of lenders as presented in Table 7 reveals the opposite result. This is probably because the majority of the data consists of firms working with five or fewer banks. Table 8 shows the percentile distribution for the variable number of banks. The majority work with a single lender and the 95th percentile is 6 banks. Charts 7.3 and 7.4 show the relation with the observations for the number of banks trimmed from the 1 percent peak. These illustrations confirm our intuition and the regression results. Having loan relationships with multiple banks allows firms to access more loans. However, it also incurs additional costs. As the number of banks increases, firms face higher interest rates, and shorter loan maturities. This may also indicate increased riskiness, as firms become more reliant on loan financing, suggesting a worsening in their financial soundness. The literature on multiple lenders has reached a consensus that the existence of multiple relationships reduces the value of information obtained by each and imposes costs to the firm as higher prices (see for example, Peterson and Rajan (1994); Cole et al. (2004)).

Chart 7.1: Number of Banks and Interest Rate

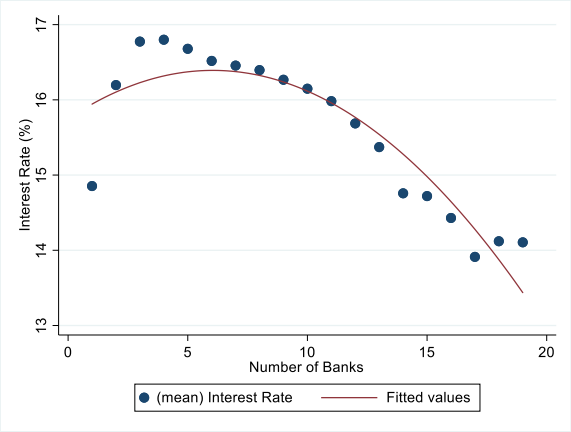


Chart 7.2: Number of Banks and Maturity

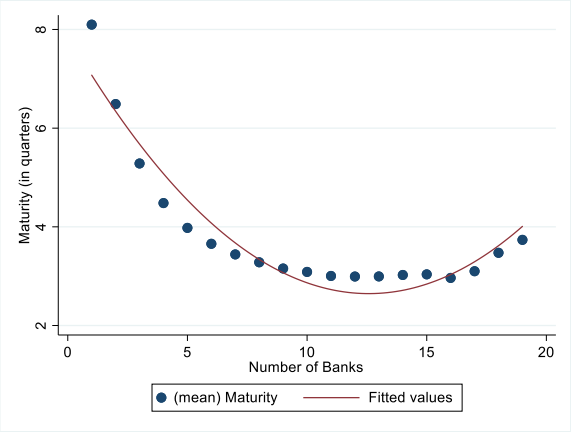


Table 7. Number of Banks and Credit Conditions

	Interest rate	Maturity
Number of Banks (-1)	0.04***	-0.06***
	(0.00)	(0.00)
Observations	3,713,041	3,657,017
R-squared	0.70	0.38
Firm Controls	Yes	Yes
Firm FE	Yes	Yes
Bank x Time FE	Yes	Yes
Sector x Time FE	Yes	Yes

Notes: This table presents the results of equations estimated using panel fixed effects. The dependent variables are interest rate and maturity, relationship lending measure is number of banks. Each regression controls for firm covariates. Regressions include firm FEs, bank x time FEs and sector x time FEs. All variables are defined in Table 1. Standard errors in parentheses are clustered at firm level. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Table 8: Summary of 'Number of Banks'

Percentile	1%	5%	10%	25%	50%	75%	90%	95%	99%
Value	1	1	1	1	1	2	4	6	9

Chart 7.3: Number of Banks and Interest Rate
('Number of banks' trimmed at top 5 percent)

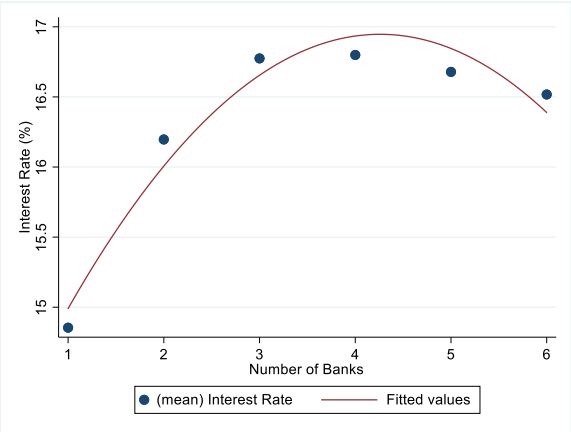
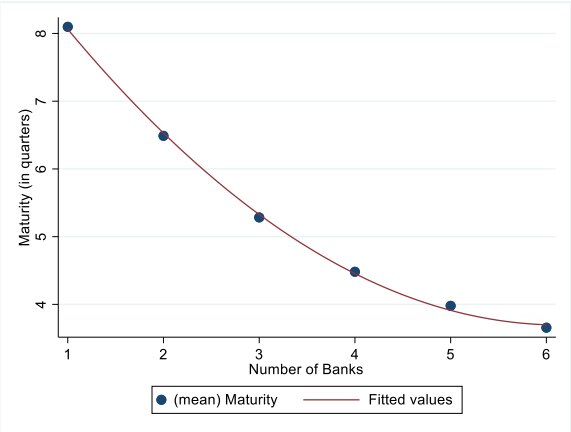


Chart 7.4: Number of Banks and Maturity
('Number of banks' trimmed at top 5 percent)



Observation #8: Taking out multiple new loan contracts within a quarter from the same bank tends to result in higher interest rates and shorter maturities.

Charts 8.1 and 8.2 illustrate the correlation between the number of loans granted from a specific bank in a given quarter and the interest rate and maturity of those loans. As the number of new loans within a quarter increases the interest rate rises slightly and the maturity seems to be shorter. Table 9 regresses interest rates and maturity to the number of new loans within the same quarter. The coefficients are statistically significant at 1 percent and show that higher number of new loans are associated with higher interest rates albeit to a very slight degree and with shorter maturity when controlling for firm, bank*time and sector*time fixed effects. Firms' multiple borrowings from banks to meet their financial needs within a quarter can increase their debt levels and raise concerns about their ability to repay loans. An increase in a company's credit risk results in a rise in the credit risk premium component of interest rates. Generally, financially strong firms tend to have more prudent borrowing behavior. However, even these firms sometimes enter into multiple short-term loan relationships to address immediate cash flow needs. The number of credit contracts includes loans originated during the quarter and still outstanding at its end, excluding loans mainly for short-term financing due to the reporting structure. Observations with maturities under 3 days were also removed for data consistency. Therefore, it's highly likely that the increase in the number of credit contracts is driven by financing needs. The increase in interest rates and shortening of loan maturities by banks while extending more loans can be interpreted as a response to heightened risk for the firm. Our findings, however, appear to align with intuition and the dynamics of financial intermediaries.

Chart 8.1: Number of New Loans and Interest Rate

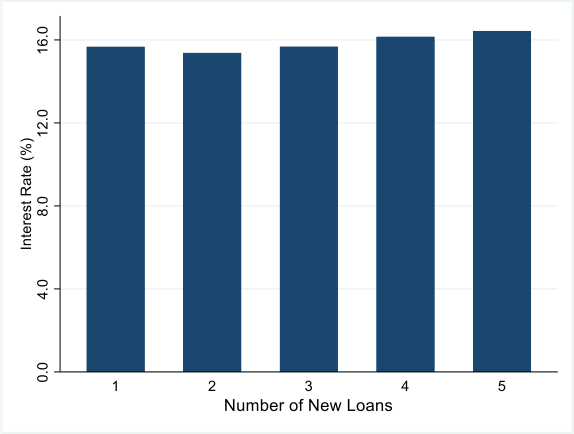


Chart 8.2: Number of New Loans and Maturity

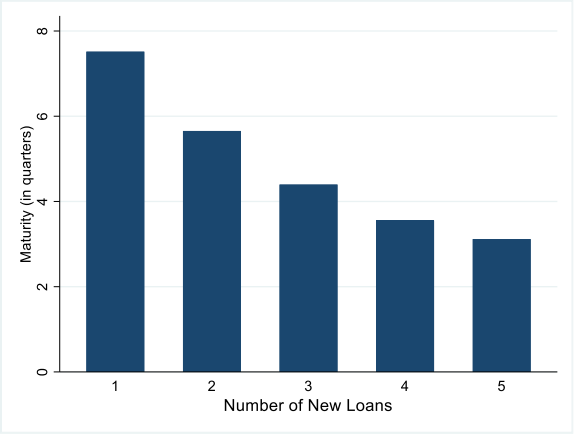


Table 9. Number of New Loans and Credit Conditions[3]

	Interest rate	Maturity
Number of New Loans (-1)	0.03***	-0.22***
	(0.00)	(0.00)
Observations	3,617,398	3,564,927
R-squared	0.70	0.39
Firm Controls	Yes	Yes
Firm FE	Yes	Yes
Bank x Time FE	Yes	Yes
Sector x Time FE	Yes	Yes

Notes: This table presents the results of equations estimated using panel fixed effects. The dependent variables are interest rate and maturity, relationship lending measure is number of new loans. Each regression controls for firm covariates. Regressions include firm FEs, bank x time FEs and sector x time FEs. All variables are defined in Table 1. Standard errors in parentheses are clustered at firm level. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

4. Conclusion

This note offers an exploration of the relationship lending phenomenon in the Turkish economy. Our findings validate many findings in the literature: relationship indeed matters for credit conditions.

It is worth understanding relationship lending. The longer and well-established relations might reduce information asymmetry between banks and firms, leading to better evaluation of a firm's creditworthiness by the bank. Banks may choose to prolong their relationship only with financially sound borrowers, influencing how various macroeconomic shocks are transmitted. Therefore, it is important for policy makers to gain an understanding of the mechanics of the credit market and RL process. This understanding will enable informed decisions regarding the lags of policy, the speed of the transmission process and the design of effective credit policies. This note aims to highlight this topic and encourage further research in this area. How does RL affect the functioning of the bank lending channel of monetary policy for Türkiye? What was its role in the CGF or Covid-19 period? These questions will be part of our future research agenda.

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[3] The estimation results remain robust when duration is taken into account.

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