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Firms' Strategic Choice of Loan Delinquencies*

Paola Morales-Acevedo †

Sveriges Riksbank Working Paper Series
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Abstract

I analyze the repayment decisions of firms with multiple loans that, for liquidity constraints or strategic reasons, stop making payments in some but not all their loans. Using a sample of commercial loans from Colombia over the period 2002:03 – 2012:06, I find that firms are less likely to stop making payments on loans granted by banks with which they have long relationships and by banks with which they have a clean repayment history. These results suggest that firms are concerned with losing the benefits gained through the relationship. I also find that firms are more likely to stop making payments on loans from foreign banks when compared to domestic banks, and equally on loans from state owned banks when compared to private banks. This suggests that the ability and willingness of the bank to punish the firm for misbehaving play an important role in a firm's decision. Overall, the results suggest that firms assess their delinquency choices based on their perceived ability to obtain new loans in the future.

Key words: Payment delinquencies, strategic choice, lending relationship, foreign ownership, state banks.

JEL Codes: G21, G32, G33

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I. INTRODUCTION

Corporate finance literature has often analyzed the main causes of debt defaults. A liquidity default occurs when a firm does not have the money to make debt payments. However, a strategic default occurs when the firm despite having the financial ability to cover its debt obligations decides to stop making payments[1]. The literature has mainly focused on finding the optimal debt structure of a firm, *ex ante* liquidity constraints, that deters strategic defaults and makes unavoidable liquidity defaults less expensive (Hart and Moore (1998), Bolton and Scharfstein (1990, 1996), Acharya, Huang, Subrahmanyam and Sundaram (2011)). However, the optimal decision of a firm *ex post* liquidity constraints has been left unexplored. For instance, no research has attempted to analyze the trade-offs of a firm when deciding which type of debt to delinquent on.

In this paper, I empirically analyze the delinquency decisions of firms with multiple loans that, due to liquidity constraints or strategic reasons, stop making payments in some but not all their loans. The decision on which type of loan to stop making payments is important as it might have asymmetric influences on the ability of the firm to obtain new credit in the future. Understanding this decision and its main drivers helps to shed light on the trade-offs faced by a firm when its cash flows are not enough to cover all of its debt payments. I focus my analysis on three aspects that can influence the delinquency choice of a firm: i) the strength of the relationship between the firm and the bank, ii) the ability and willingness of the bank to punish the firm for misbehaving and iii) the likelihood that a loan will end up in a renegotiation process. A unique dataset with detailed information on all commercial loans granted in Colombia from 1998 to 2012 is used in this analysis. The set of observable characteristics includes: collateral, loan amount, maturity, interest rate, currency and loan rating. This loan data is merged with the firms' financial statements as well as with bank characteristics. This provides a rich data set ideal to analyze the choice of arrears of a firm. In addition, Colombia is a country in which rating agencies do not

[1] Strategic defaults of big corporations are often associated with agency problems between managers and owners of a firm.

monitor firms and therefore there are large information asymmetries between firms and potential public investors. As a result, less than just 0.9 percent of total firms have public debt and the predominant source of financing is bank credit. Thus, relationship lending should be particularly important in Colombia.

My empirical strategy consists of two steps. First, I isolate a group of firms with multiple loans that is forced to stop making payments on some of its bank debt obligations. I do so by selecting firms that have all their loan payments up to date in a given quarter t, but who start having payment delinquencies[2] on some of their loans, but not in all of them, in the following quarter, $t + 1$. Firms that are forced to stop all their loan payments are excluded, as they do not face the decision on which loan to stop making payments. Similarly, firms that manage to make all their loan payments are not included. The selected sample is comprised off firms that face heterogeneous liquidity shocks in terms of origin[3], timing and magnitude. Nonetheless, the outcome of the shocks is homogeneous as they evaluate a common set of decisions. This helps me to assess what the primary factors impacting firm delinquency decision are, in isolation of other concerns.

Next, the main drivers of the delinquency choice are obtained from a linear probability model in which the dependent variable is an indicator variable for loan delinquency. This variable takes the value of 1 for the loans that the firm chooses to stop making payments and 0 otherwise. There are several potential reasons why a firm would prefer to stop making payments on one loan instead of another one. I focus my analysis on a diverse set of variables that include type of relationship, type of bank and loan characteristics. In addition, and crucial for my identification strategy, I include a set of firm-time fixed effects in order to account for any observable and unobservable firm, time and firm-time heterogeneity. Thus, identification comes from a firm's choice to stop making payments on one loan versus another.

I find that firms are less likely to stop making payments on loans granted by banks with which they have long relationships, suggesting that firms are concerned with losing the

[2] In this paper "payment delinquency" and "arrear" make reference to stop making payments on a loan.
[3] The origin might be linked to limited liquidity and/or strategic reasons.

benefits gained through the relationship. For the average relationship (9.6 quarters), the likelihood to start an arrear in a loan decreases by 2.2 percentage points. This effect as a percentage of the mean likelihood is equal to 9.6%. I further test if a variation on the value of bank-firms relationships (provided by a change in regulation that modified the memory of the credit bureaus[4]) has an effect on this result. I find that firms are even less likely to stop making payments on long relationships when the value of the relationship increases (i.e. when there is more asymmetric of information in the credit market). In addition, I find that firms that had arrears in the past are more likely to stop making payments on loans granted by banks victims of their previous arrears (the likelihood increases by 10.1 percentage points) and are less likely to choose to stop making payments on loans with banks that have not experienced any of their previous arrears (the likelihood decreases by 10.7 percentage points). This suggests that firms strategically keep clean records with some banks.

I also find that firms are more likely to stop making payments on loans granted by foreign banks when compared to domestic banks (the likelihood increases by 1.4 percentage points), and equally on loans granted by state owned banks when compared to private banks (the likelihood increases by 6.2 percentage points). In robustness, however, I show that firms are more likely to stop making payments on loans granted by foreign banks when the bank enters the market as a Greenfield Investment. These results suggest that the ability and willingness of the bank to punish the firm for misbehaving play a role in the firm's decision. This is in line with previous empirical findings that suggest that compared to domestic banks foreign banks generally face informational disadvantages that can affect their ability to succeed at recovering defaults (Mian (2006)). Furthermore, state owned banks are less active in monitoring and punishing their clients. This is due to the fact that they maximize social objectives instead of profits, and are considered to be inefficient compared to private banks (Gerschenkron (1962), Banerjee (1997), Hart, Shleifer and Vishny (1997)).

[4] Refers to the Habeas Data law.

Finally, I find that firms seem more likely to stop making payments on loans that are prone to end up in renegotiation process. Three main results stand out. Firms are more likely to stop making payments: i) on collateralized loans (that give the bank more certainty that the firm will repay), ii) on larger loans (that give the bank more motivation to start a renegotiation process) and iii) on loans that still have a relatively long time until maturity (that provide more time for renegotiation).

In order to understand whether the selection of loan delinquencies is linked to the ex post availability and cost of credit, I analyze the benefits of bank-firm relationships and the cost of past loan delinquencies in terms of the loan conditions of new loans. I find that as the relationship lengthens firms get loans with lower interest rates, lower collateral requirements and higher loan amounts. This is consistent with previous theory and empirical findings according to which banks gain private information about the prospects of a firm during the relationship, and based on this they decide whether to extend more credit and/or change the loan terms (e.g., Petersen and Rajan (1995), Boot and Thakor (1994), Berger and Udell (1995)). On the contrary, it provides evidence against theories of 'hold up' problem according to which borrowers become locked in to their banks as the relationship matures and banks extract monopoly rents (e.g., Sharpe (1990), Rajan (1992)). This result might be associated to the existence of multiple relationships in Colombia[5]. According to Sharpe (1990) and Rajan (1992) the competition from an additional informed bank eliminates the "hold-up" costs. In addition, this exercise provides evidence that firms with previous arrears get loans with higher interest rates, higher collateral requirements and lower loan amounts; in particular when the previous arrears were with the bank granting the new loan. This is consistent with previous empirical findings that suggest

[5] In Colombia the average number of bank –firm relationships is 3 and the maximum 23. The distribution of the number of bank relationships per firm varies a lot across countries, with Italy and Norway in opposite extremes. While in Italy on average firms have 15 relationships, in Norway no firm has more than 6 relationships.

banks write tighter loan contracts than their peers after suffering payment defaults to their own loan portfolio (Murfin (2006)).

To the best of my knowledge, this paper is the first to analyze the payment delinquency choice for firms[6]. Other work has studied this question for households taking into account relevant aspects for them. Cohen-Cole and Morse (2010) analyze a sample of individuals that experience a liquidity shock and are forced to stop making payments in at least one of their loans[7]. They find that due to precautionary liquidity concerns, individuals prefer to default on mortgage loans than on credit cards. Trautmann and Vlahu (2012) find experimentally that expectations that the bank will become distressed reduce the repayment incentive for solvent borrowers, because the benefits of the relationship are lost if the bank fails. Guiso, Sapienza and Zingales (2013) study the determinants of homeowners' attitudes towards strategic default. They find that the cost of defaulting strategically increases with wealth and that it is driven by monetary and non-monetary factors like fairness and morality. They also find that people who know somebody who defaulted strategically are more willing to do so themselves, due to a decrease in the perceived probability that a bank would go after a borrower who defaults.

This paper contributes to the literature by analyzing how firms with multiple loans react when they are forced to stop making payments on one or more of their loans. An empirical analysis of this particular aspect of firms' decision making in periods of financial distress is new to the literature. Importantly, in the strategic choice of delinquencies, the analysis takes into account certain aspects of the lender-borrower relationship, the type of bank and

[6] Later work by Shäfer (2015) studies how relationship banks treat differently firms and consumers, allowing the firsts to make temporary loan delinquencies. On the other hand, Schiantarelli, Stacchini and Strahan (2016) study loan repayment delays in Italy, focusing mainly on the health of the bank granting the loan. Although, the health of the bank was also considered at an early stage of this paper, no interesting results were found. I relate the absence of significant results to the low financial literacy in Colombia. As reported by the OECD (2012), Colombia placed last in an international financial literacy exam performed to 550,000 students of 65 different nations. Therefore, it results hard to believe that Colombian borrowers will analyze the quality of their banks' balance sheets before deciding to whom to stop making payments.

[7] My empirical strategy follows closely the approach taken by Cohen-Cole and Morse.

the loan characteristics, and it is able to identify the trade-offs faced by a firm when deciding which type of loans to delinquent on.

The rest of the paper proceeds as follows. Section II provides a review of the related theoretical and empirical literature. Section III presents the hypothesis and the methodology. Section IV describes the data and provides descriptive statistics. Section V contains the empirical results, including tests for robustness. Conclusions and a brief summary of future work follow in Section VI.

II. LITERATURE REVIEW

The corporate finance literature has studied the optimal debt structure of a firm, *ex ante* liquidity constraints, that deters strategic defaults and makes unavoidable liquidity defaults less expensive. Bolton and Scharfstein (1996), for instance, analyze what is the optimal debt structure of a firm, in terms of number of lenders, allocation of security interests and voting rules. The key to their analysis is the idea that these aspects of the debt structure affect the outcome of debt renegotiation following a default. They, however, do not take into consideration that the characteristics of the lender and/or the relationship between the firm and the lender might also affect the outcome of debt renegotiation. According to their findings it is optimal for firms with low credit quality to borrow from just one creditor, making the liquidation cost cheap. And it is optimal for firms with high credit quality to have debt structures that make strategic default less attractive by borrowing from multiple creditors, by giving each equal security interests, and by adopting voting rules that allow some creditors to block asset sales. However, to the best of my knowledge, there are no theoretical studies that analyze the optimal decision of a firm, *ex post* unavoidable liquidity constraints, regarding which loans to pay and which loans to delinquent on.

Recent empirical studies have analyzed several aspects of delinquency decisions, however, they have focused mostly on households.[8] Cohen-Cole and Morse (2010) analyze

[8] An exception is a recent paper by Baele, Farooq and Ongena (2014). Using a monthly dataset of business loans from Pakistan over the period 2006 to 2008, they analyze the effect of religion on the loan default rate. They find evidence that the default rate of Islamic loans is less than half the

the drivers of delinquency decisions using a sample of US consumer loans from 2006 to 2007. Their analysis is focused on individuals that experience a liquidity shock which force them to stop making payments on at least one loan. These individuals face the decision to choose the type of debt they wish to keep and the type of debt on which they wish to enter delinquency. They find that individual liquidity considerations and local housing prices are significant predictors of the delinquency decision for individuals under moderate stress. Moreover, they find that due to precautionary liquidity concerns, individuals prefer to default on mortgage loans than on credit cards. Trautmann and Vlahu (2012), experimentally study the impact of bank and borrower fundamentals on loan repayment. They find that solvent borrowers are more likely to strategically delay or even default on their loans when the bank's expected strength is low and when other borrowers' expected repayment capacity is low. The authors argue that the repayment incentives are reduced because the benefits of maintaining the relationship are lost if the bank fails. Another branch of the literature investigates non-monetary factors that affect the default decision. Guiso, Sapienza and Zingales (2013) use a survey made of US households during the period 2008 to 2010 to study the determinants of homeowners' attitudes towards strategic default. They find that the cost of defaulting strategically increases with wealth and that it is driven by monetary and non-monetary factors like fairness and morality. People who are angrier about the economic situation and who distrust banks are more likely to default strategically. While people who consider it immoral to default are less willing to default. They also find that people who know somebody who defaulted strategically are more willing to do so themselves, due to a decrease in the perceived probability that the bank will go after a borrower who defaults.

In this paper I study the decisions of firms that for liquidity constraints or strategic reasons are forced to stop making payments in some of their loans. The analysis focuses in understanding why a firm would prefer to delinquent on one loan instead of another one. It follows closely the approach taken by Cohen-Cole and Morse (2010), however, instead

default rate of conventional loans. Islamic loans are less likely to default during Ramadan and in big cities if the share of votes to religious-political parties increases. Their findings suggest that individual religious belief and/or those of their fellow believers affect the decisions on loan defaults.

of focusing on a period of global financial distress; I take advantage of the richness of my dataset by selecting all the periods in which a firm faced a situation of distress. In addition, I focus on loan delinquencies rather than on permanent defaults. This is important, as the life of a firm is likely to continue after a loan delinquency such that the future availability of financial resources should play an important role in a firm's decisions. Loan delinquencies typically have a cost for a firm in terms of future financial constraints and this cost can vary across lenders depending on the relationship and/or bank specific characteristics. Therefore, the firm's decision in regards to which loan to delinquent on, should take this cost into account. However, as the firm approaches a permanent default, considerations around the cost of liquidation should start to play a more important role as in Bolton and Scharfstein (1996).

This paper aims to contribute to the current literature by providing an empirical analysis of a firms' decision-making process in periods of financial distress. It is the first paper that studies how firms react when they are forced to delinquent on some of their loans. Importantly, the analysis takes into account aspects of the relationship, the bank and the loan characteristics that were not taken into account before in the literature of strategic choice of defaults.

III. HYPOTHESIS AND METHODOLOGY

This paper, as discussed, aims to understand the decision making of firms that due to liquidity constraints or strategic reasons are forced to stop making payments in some of their loans. The analysis is focused on firms that have all their loan payments up to date on quarter t, but delinquent on some of their loans, but not in all of them, in quarter $t + 1$. Firms that are forced to stop all their loan payments, are excluded, as they do not face a decision as to which loan to stop making payments on. Similarly, firms that manage to make all its loan payments are also not included.

Although each firm included in the analysis is likely to experience a liquidity shock[9] with a different intensity, the decision faced by each of them is the same: Which loan do I delinquent on? The decision might be driven by several reasons that aim to favor the current and/or future financial conditions of a firm. Among those reasons are: the strength of the relationship with the bank, the ability and willingness of the bank to punish the firm for misbehaving, and the likelihood that a loan could be driven into a renegotiation process.

In order to identify what the main drivers of the delinquency choice are, I estimate the following linear probability model:

$$1\{Delinquency_{ijkt}\} = \gamma\ Relationship_{ijt} + \beta\ Bank_{jk} + \alpha\ Loan_{ijkt} + \theta_{it} + \varepsilon_{ijkt} \quad (1)$$

where i, j, k and t index firm, bank, loan and time (in quarters) respectively. θ_{it} corresponds to firm-time fixed effects. They capture any systematic differences across firms for each quarter. The specifications saturated with firm-time fixed effects rule out the possibility that observed and/or unobserved firm, time and/or firm-time heterogeneity explain the decision as to which loan to stop making payments on. Thus, identification comes from a firm's choice to stop making payments on one loan versus another. The standard errors are clustered at firm level to account for correlations in the residuals across observations of the same firm.

$Delinquency_{ijkt}$ is equal to 1 if the loan is delinquent and is equal to 0 otherwise. Among the relationship characteristics I include: $Length\ of\ Relationship_{ijt}$, which is the length in quarters of the relationship between firm i and bank j at time t. $Previous\ Delinquencies\ same\ Bank_{ijt}$, which is an indicator variable that equals 1 if firm i has been delinquent only on loans granted by bank j before time t and equals 0 otherwise. $Previous\ Delinquencies\ other\ Bank_{ijt}$ which is an indicator variable that equals 1 if firm i has been delinquent only on loans granted by banks different to j before time t and equals 0 otherwise. $Number\ of\ Loans_{ijt}$ which is the number of loans that

[9] The liquidity shock is experienced as a result of liquidity constraints or strategic decisions of the firm.

firm i has with bank j and $Share\ of\ Wallet_{ijt}$ which is the proportion of bank debt that firm i has with the bank j at time t. Within the bank characteristics I include $Foreign_{jk}$, which indicates whether the bank j that granted loan k is foreign (equals one) or domestic (equals zero). $Public_{jk}$, which indicates whether the bank j that granted loan k is state owned (equals one) or private (equals zero) and $Bank\ Size_{jk}$ which is measured as the natural logarithm of bank assets. Between the loan characteristics I include $Collateral_{ijkt}$, which is an indicator variable that equals 1 if the loan is collateralized and equals 0 otherwise, $Loan\ Amount_{ijkt}$, that is the amount of the loan in millions of Colombian pesos (COP), $Interest\ Rate_{ijkt}$, that is the interest rate of the loan in percent and $Time\ to\ Maturity_{ijkt}$, which is the number of months remaining until the end of the contract.

According to the literature on relationship lending[10], banks gather private information about the prospects of a firm through the relationship, and based on this information determine whether to extend more credit or change the loan terms. Thus, an important dimension of a relationship is its duration (Diamond (1991)). Petersen and Rajan (1995) and Boot and Thakor (1994) have formally modeled the association between the duration of a relationship and the loan interest rate. Their models predict that loan interest rates decline as the relationship lengthens. Boot and Thakor (1994) also found that collateral requirements decrease with the duration of the relationship[11]. In this scenario, a firm might be concerned with losing the benefits generated through the relationship and therefore would avoid a situation where it has to delinquent on loans granted by banks with which they had long relationships. Nonetheless, if by means of having a long relationship, banks are also more willing to subsidize the firm in times of distress, at the expense of having a recovery of profits during good times, then firms should be more likely to delinquent on

[10] See Degryse, Kim and Ongena (2009) for an extensive review.

[11] The value of lending relationship, however, depends on the level of competition in the credit market, as is shown by Petersen and Rajan (1995). When credit markets are concentrated, lenders are more likely to finance young or distressed firms because it is easier for them to extract rents later. In addition, the flexibility of a firm to switch banks is limited in a concentrated market. These aspects make a lending relationship more valuable to a firm in concentrated markets.

loans granted by banks with which they have long relationships (Bolton, Freixas, Gambacorta and Mistrulli (2013)). The empirical analysis will uncover which behavior between firms and banks is the most predominant.

Another dimension of a lending relationship is the previous loan delinquency of a firm. Based on how the bank has reacted to previous loan delinquencies made to its own portfolio and/or to portfolios of other banks, the firm will decide whether to delinquent on loans granted by the same bank or on loans granted by a bank with which the firm has a clean repayment history. If banks punishes the delinquencies made to their own portfolio more than the ones made to other banks (learned through the credit bureau), firms may choose to strategically keep clean records with some banks. Although there is not theoretical literature that supports this hypothesis, Murfin (2006) shows empirically that banks write tighter loan contracts than their peers after suffering payment defaults to their own loan portfolio.

In addition, the scope of the relationship and its importance on the portfolio of the firm is another indicator of the quality of the relationship between the firm and the bank. A higher number of loans or a higher proportion of debt with a bank could indicate not only that the firm has built a good reputation with the bank, but also that the firm holds its main bank account with the bank (not observed to me) and thus, the bank could seize the money when available.

Moreover, the ability and willingness of the bank to punish the firm for misbehaving may play a key role when the firm has to decide which loan to delinquent on. The origin (domestic or foreign) and the nature (state owned or private) of a bank are important characteristics that might indicate how strict a bank will be in punishing the firm for misbehaving. Compared to domestic banks, foreign banks generally face distance constraints and informational disadvantages that can affect their ability to succeed at recovering defaults. Although there is no theory paper that supports this notion, there are empirical papers that favor this view. Mian (2006) shows that cultural and geographical differences between the foreign bank's country of origin and its subsidiary make it difficult for foreign banks to perform relational functions such as bilateral renegotiation and recovery of bad loans. These difficulties are stronger, the more geographically, or

culturally distant a foreign bank is. If firms perceive the lack of ability at recovering defaults as a less threatening reaction of a bank, then firms may be more likely to delinquent on loans granted by foreign banks.

On the other hand, there are three main views that explain the existence of state owned banks (social, agency and political). The social view sees state owned banks as institutions created to promote financial development for economic growth (Gerschenkron (1962)). They allocate funds to socially profitable projects or to firms that do not have access to other funds. According to this view, private and state owned banks differ because the former maximizes profits and the later maximizes social objectives. La Porta (2002), nonetheless, documents that higher government ownership of banks is associated with slower subsequent financial development and lower growth of per capita income and productivity. Under the agency view, state owned banks also channel resources to socially profitable activities, but public managers exert less effort than would private managers (Banerjee (1997), Hart, Shleifer and Vishny (1997)). They could, among others, perform less monitoring activities and less effort in recovering defaults. In the political view, state owned banks enable the government to finance inefficient, but politically desirable projects. Politicians divert resources to supporters who return the favor in the form of votes, political contributions, and bribes (Shleifer and Vishny, 1994). Thus, they could allow friends and supporters to misbehave in return of additional support. According to the three views, state owned banks are expected to be less active in monitoring and punishing their clients. Consequently, firms may be more likely to delinquent on loans granted by state owned banks.

IV. DATA AND DESCRIPTIVE STATISTICS

I mainly use two datasets in this analysis. The first one is a credit registry that contains information about individual commercial loans reported by financial institutions to the *Superintendencia Financiera de Colombia*, the regulator of Colombian's financial

system[12]. It provides a detailed look at all the loans granted by the financial system to firms. Characteristics such as loan maturity, collateral, interest rate, amount, rating and the exact date of origination are included from 1998:12 to 2012:03 on a quarterly basis.

The second data set contains yearly information on the financial statements reported to the *Superintendencia de Sociedades*, the regulator of firms in Colombia [13]. On average, 18,000 firms report their financial statements every year and less than 0.8 percent of them have public debt. Thus, the primary source of external financing for Colombian firms is bank debt. Both datasets are merged and the resulting dataset contains 2.5 million loan observations made to 32,965 different firms by 120 different financial institutions.

In this paper, a sample of outstanding loans of firms that are facing liquidity constraints is used. I classify firms as facing liquidity constraints if they are able to cover some of their debt payments but not all of them. In other words, firms that face a situation in which they have to decide on which loan they stop making payments. In order to determine whether a firm has stopped making payments on a loan, I use the loan rating included in the credit register. The loan rating indicates the level of credit risk intrinsic on a loan (see Table 1). It is determined and updated periodically by the entity granting the loan at the moment of origination based on quantitative and qualitative information of the firm and the projects to be finance with the loan. The loan rating ranks from 'A' to 'E', where 'A' is the best category and 'E' is the worst. Most of the commercial loans in Colombia are classified in category 'A' at the moment of origination. During the sample period 95.2 percent of the loans were born in category 'A', 3.6 percent in category 'B' and the remained 1.2 percent were born in a lower category ('C', 'D' or 'E'). After origination, the main and only mandatory quantitative measurement used to update the rating of the loan is the number of days of delinquency[14], and it is used according to Table 1. If a non-performing loan goes back to performance, its rating is upgraded. The ratings among lenders of the same firm

[12] The dataset was provided due to a direct link of the author of this paper with the Central Bank of Colombia.

[13] By the Colombian law 590 of 1990, all firms whose total assets are greater than the equivalent of 501 minimum salaries, are required to report their financial statements to the *Superintendencia de Sociedades*.

[14] See Superintendencia Bancaria de Colombia (2002).

must be align when two conditions are meet: first, at least two financial institutions have classified the loans of the firm in a lower credit rating and second, the loans with those entities represent more than 20 percent of the loan portfolio of the firm. When these conditions are not meet discrepancy between the ratings of the loans of a firm with different banks is allowed. Moreover, in the interim, while the ratings of the institutions are not updated in the credit bureaus (thus it is not yet shared) discrepancy of ratings is also allowed. Figure 1 shows the evolution of the proportion of loans at risk in the commercial loan portfolio of the financial system. The elevated levels of loans at risk at the beginning of the sample is associated with the crisis of the late nineties experienced by the Colombian economy.

[Table 1 around here]

[Figure 1 around here]

Table 2 presents the quarterly transition matrix for commercial loans estimated for the period comprised between 1999-I and 2011-I. The probability of a loan having a credit rating j at the end of a quarter, given that its rating at the beginning of the quarter was (p_{ij}), is given by the simple ratio of the number of loans that began the quarter with rating i and ended it with rating j (n_{ij}), to the total number of loans that began with an i rating $(\sum_j n_{ij})$, that is $p_{ij} = \frac{n_{ij}}{\sum_j n_{ij}}$. Assuming that the Markov process is stationary $p_{ij}(t) = p_{ij}$, that is, the individual probabilities do not change over time. The transition matrix presented in Table 2 suggest that loans with a credit rating of 'B' are more likely to migrate to a rating of 'A', while loans with a rating of 'C' or 'D' are more likely to migrate to a rating of 'D' or 'E', respectively. That is, loans in 'D' or 'E' are more likely to end up in a permanent default.

[Table 2 around here]

Gómez, Morales-Acevedo, Pineda and Zamudio (2009), however, find that the transition probabilities are different when estimated separately for crisis times and normal times. During crisis times transitions to worse categories are more common than during normal times. Similarly, upgrading is less probably during crisis times. The authors conclude that

the assumption that the transition probabilities are stationary is violated for credit transitions in Colombia, as credit ratings seem to react to changes in economic fundamentals.

I use the loan rating to isolate the sample of interest. I classify a firm as facing liquidity constraints between quarter t and quarter t+1, if having had a clean record in period t (all loans in A), it makes a payment default on some of its loans, but not in all of them, in period t+1 (B, C, D or E). Firms that delinquent on all their loans are excluded, because they do not face a decision as to which loan to delinquent on and they are more likely to reach an insolvency state. In robustness, I use the exact number of days of delinquency (available in the credit register for a short period of time), instead of a change in the credit rating of the loan, to determine if a loan becomes delinquent.

Given the censoring nature of some variables used in the analysis, i.e., *Length of Relationship, Previous Payment Default same Bank* and *Previous Payment Default other Bank*, the loan observations of the first four years are excluded. The final sample contains 49,968 loan observations given to 6,867 firms. The loans were granted by 71 banks, 17 of them were foreign banks, 6 state owned banks and the rest private domestic banks. Table 3 presents summary statistics of firms' characteristics for the excluded and the selected sample. The excluded sample is split by firms that repaid all their loans and firms that delinquent on all their loans. The last column reports the differences in means between the selected sample and the excluded sample. The excluded sample comprises 403,918 firm-quarter observations of firms that keep their loans up to date from one quarter to the next and 1,763 firm-quarter observations of firms that stop making payments on all their loans from one quarter to the next. The selected sample, on the other hand, is composed by 9,671 firm-quarter observations of firms that stop making payments on some of their loans but not in all of them. The firms in the selected sample seem to have poor financial performance compared to the excluded sample. The mean *Return on Equity (ROE)* is 5.0 percentage points lower, the *Current Ratio (CR)* is 43.3 percentage points lower and the *Debt to Equity Ratio* is 41.0 percentage points higher. Moreover, firms are smaller in terms of assets size, have a higher number of lenders and loans and have a higher number of previous non-performing loans. All this differences in means are statistically significant.

[Table 3 around here]

Figure 2 represents an average firm in the selected sample. It has five outstanding loans with four different banks. The payments in all its loans are up to date in quarter t. However, in quarter t+1 the firm stops making payments on one of its loans.

[Figure 2 around here]

V. RESULTS

1. Main Findings

Table 4 presents summary statistics of the variables used in this analysis. The average *Length of Relationship* is 9.6 quarters. Around 5.7 percent of the loans were granted by a bank with which the firm had its unique payment delinquency and 25.6 percent by a bank that had not experienced any of the previous delinquencies of the firm. The average number of loans that a firm has with a bank is equal to 1.3. The mean *Share of Wallet* is 24.8 percent, which is in line with the total number of loans and lenders of the average firm represented in Graph 1. Foreign banks granted 13.7 percent of the loans in the sample, and domestic banks granted the other 86.3 percent. Moreover, state owned banks granted 2.9 percent of the loans and private banks granted the rest. With respect to the loan characteristic, 45.8 percent of the loans have collateral, the average loan amount is 452.2 million COP (about 250 thousand USD) and the average interest rate is 17.3 percent. About 40 percent of the loans have a short-term maturity and the average time to maturity is 20.8 months.

[Table 4 around here]

A considerable insight can be obtained simply by analyzing the differences in means of relationship, bank and loan characteristics between delinquent loans and loans that kept their payments up to date (see Table 5). The delinquent loans represent 23.3 percent of the total sample. The *Length of Relationship* is slightly shorter for the delinquent loans. The proportion of loans granted by a bank to which the firm had its unique payment

delinquency in the past (*Previous Delinquencies Same Bank*), is higher for the delinquent loans. Moreover, the proportion of loans granted by banks that had not experienced any of the previous delinquencies of the firm (*Previous Delinquencies Different Bank*), is lower for the delinquent loans. Thus, firms seem to choose to stop making payments to the banks with which they had delinquencies in the past. The difference in the number of loans that the firm holds with a bank is not economically significant. The *Share of Wallet* is higher for the delinquent loans, which indicates that firms seem to prefer to stop making payments to the banks with which they have a higher percentage of debt.

The proportion of loans granted by foreign banks is lower in the group of delinquent loans than on the group of loans that remain with their payments up to date. And the proportion of loans granted by state owned banks is higher in the group of delinquent loans. With respect to the loan terms, the delinquent loans have higher collateral, less loan amount, lower interest rates, shorter maturity and longer time to maturity. All these differences in means are statistically significant.

[Table 5 around here]

Table 6 shows the results of a linear probability regression of the binary variable *Delinquency* on relationship, bank and loan characteristics[15]. As discussed before, an important part of the methodology is to isolate the population of interest. Only firms that stop making payments in some of their loans but not in all of them are included. Given that in the selected sample firms have more than one loan in the same quarter, firm-time fixed effects can be included to control for all the time-varying and invariant, observable and unobservable firm characteristics.

[Table 6 around here]

The dependent variable equals 1 for delinquent loans and equals 0 if the payments of the loans remain up to date. The results in Column I suggest the probability to make a payment

[15] As robustness, I use the exact number of days of delinquency instead of a change in the credit rating of the loan, to determine if a loan becomes delinquent. The results are presented in Appendix Table A.3 and are consistent with the results presented in Table 6.

delinquency on a loan decreases with the length of the relationship between the firm and the bank. This result is both statistically and economically significant[16]. For the average relationship (9.6 quarters), the coefficient of -0.23 represents a decrease of 2.2 percentage points in the likelihood to delinquent on a loan. This effect as a percentage of the mean likelihood is equal to 9.6%. I performed additional exercises in order to check the robustness of this result. Table 7 present the results of several models that include dummy variables for the length of the relationship instead of the variable in quarters. *Long Relationship* is an indicator variable that takes the value of one if the length of the relationship is above the 95 percentile (13 quarters). *Short Relationship* is an indicator variable that takes the value of one if the length of the relationship is below the 25 percentile (4 quarters). When the variable *Long Relationship* is included in the model (Columns I and II) the results suggest that firms are 3.03 percentage points less likely to delinquent on loans granted by banks with whom they have a long relationship. If instead the variable *Short Relationship* is included the results suggest that firms are 1.7 percentage points more likely to delinquent on loans granted by banks with which they have a short relationship. Table 8 presents the results for a sample of firms that have both, loans with banks with which they have very short relationships (below the 25 percentile) and loans with banks with which they have very long relationships (above the 95 percentile). The sample is composed by 2.723 observations. The results show that firms are 8.4 to 11.5 percentage points less likely to delinquent on long relationships. These exercises confirm the results found in Table 6 where the length of the relationship was included in quarters.

[Table 7 around here]

[Table 8 around here]

These result are in line with the hypothesis that firms get financial benefits through the relationship and therefore they are less likely to default on banks with which they have long relationships. In order to determine what are the benefits of bank-firm relationships in Colombia, I estimated the effect of relationship characteristics on the loan terms

[16] Appendix Table A.1 reports the results of a model that includes as an alternative measure for the length of relationship the *Number of Old and New Loans* with the bank. The results are in line with the ones found with the more standard measure length of relationship.

(*Interest Rate, Collateral, Collateralization, Maturity* and *Ln(loan amount)* of all new loans granted between 2002 and 2011. The results, presented in Table 9, suggest that as the relationship lengthens firms get loans with lower interest rates, lower collateral requirements and higher loan amounts. However, the *Maturity* has a slight decrease. For an average relationship there is a decrease of 90 basis points on the interest rate, which represent a decrease by 5,2 percent on the average interest rate. The decrease on the likelihood to be required to pledge collateral corresponds to 80 basis points. And the increase on the loan amount is equivalent to 1.6 million COP. These results are robust to the inclusion of loan characteristics.

[Table 9 around here]

Moreover, I find that if the firm has had delinquencies in the past only with the bank that granted the loan, it is more likely to stop making payments on loans granted by that bank. The coefficient reported in Column 1 of Table 6, indicates that the likelihood to be delinquent on a loan increases by 10.1 percentage points. In contrast, if the borrower has had delinquencies only with other banks, different to the one that granted the loan, it will be less likely to stop making payments on loans granted by that bank. The coefficient reported in Column 1, indicates that the likelihood to be delinquent on a loan decreases by 10.8 percentage points. In order to test the robustness of this result, I re-estimate the model including the *Number of Previous Delinquencies Same Bank* instead of the binary variables for previous delinquencies. The results, reported on Appendix Table A.2, suggest that each arrear with a bank will increase the likelihood to stop making payments on loans with that bank by 4.2 to 4.9 percentage points. This is consistent with the idea that firms strategically keep clean records with some banks, because they anticipate that banks punish more harshly those defaults made to their own loan portfolio. This can be evidenced in Table 9, which aims to analyze not only the benefits of the relationship by also the costs of loan delinquencies. It shows that firms that had arrears in the past get loans with interest rates that are 90 basis points higher (see coefficient on *Previous Delinquent Loans)*. However, if some of the arrears were with the bank granting the new loan, the interest rate is even higher by additional 44 basis points (see coefficient on *Previous Delinquencies to Bank*). This translates on a total increase of 1.3 percentage points on the interest rate if the firm

had arrears in the past with the bank granting the loan (compare to an increase of 90 basis points if the firm only has arrears with other banks). The likelihood to be required to pledge collateral on a new loan is also affected by the previous loan delinquencies. It increases by 2.4 percentage points if a firm had arrears in the past with other banks and by 6.3 percentage points if the arrears were with the bank that is granting the new loan. In turn, the loan amount decreases for new loans when the firm had arrears in the past with other banks by 1.1 million COP, and if some of the arrears where with the bank granting the loan, the loan amount decrease by 2.3 million COP. All together, the results on Table 9 confirms not only that banks punish more the delinquencies make to their own portfolio but also that most of the benefits of the relationship in terms of better loan conditions described before are loss with the existence of previous loan delinquencies.

Lastly, the number of loans with a bank seems to decrease the likelihood to stop making payments on a loan. According to Table 6 (Column I) an additional loan with a bank decreases the likelihood of delinquency with that bank by 3.28 percentage points. *Share of Wallet*, however, does not seem to be a determinant factor on the delinquency choice.

With respect to the bank characteristics, the results suggest that firms are more likely to delinquent on loans granted by foreign banks than on loans granted by domestic banks. If a loan is granted by a foreign bank the likelihood that a firm delinquent on it increases by 1.37 percentage points. This corresponds to an increase in the mean likelihood of 5.9%. Nonetheless, in robustness I interact the variable *Foreign Bank* with a variable that indicates whether the bank enter the through an acquisition or through *Greenfield Investment*. The results, presents in Appendix A.2 (Column I), suggest that firms are more likely to delinquent on foreign banks only when the bank that granted to loan enter the market as a Greenfield Investment. This is consistent with previous empirical findings that show that foreign banks are less successful at recovering defaults due to distance constraints (Mian (2006)). In order to check the robustness of this result, I performed an additional exercise. Column I of Table 10 presents the results for a sample of firms that have loans granted by both foreign and domestic banks. The sample is composed by 28,922 observations. The results show that firms are 94 basis points more likely to delinquent on loans granted by foreign banks, however the coefficient is not statistically significant.

Looking at the loan characteristics of loans granted by foreign banks also show that foreign banks do not price their loans or include additional collateral requirements anticipating more delinquencies. In Table 11, I analyze the determinants of loan contracts for a sample of loans granted to firms that received loans from both domestic and foreign banks during the same quarter. Loans granted by foreign banks have lower interest rates (-37 basis points)[17] and are less likely to be required to pledge collateral (-9.7 percentage points). They, however, have shorter maturities (-5.3 months) and lower loan amounts (these results are robust to the inclusion of loan characteristics).

[Table 10 around here]

[Table 11 around here]

Moreover, firms are more likely to delinquent on loans granted by state owned banks than on loans granted by private banks. If a loan is granted by a state owned bank the likelihood that the firm stop making payment on it increases by 6.2 percentage points. This is consistent with the view that state owned banks are less active in monitoring and punishing their clients. In order to check the robustness of this result, I performed an additional exercise. Column II of Table 10 presents the results for a sample of 8,774 observations of firms that have loans granted by both state owned and private banks. The results show that firms are 4.6 percentage points more likely to delinquent on loans granted by state owned banks, consistent with the results of Table 6. State owned banks tend to grant loans with softer loan conditions. In Table 12, I analyze the determinants of loan contracts for a sample of 3,024 loans, granted to firms that received loans from both state owned banks and private banks during the same quarter. Loans granted by state owned banks have lower interest rates (-23 basis points) and are less likely to be required to pledge collateral (-3.8 percentage points). They, however, have shorter maturities (-2.1 months) and slightly lower loan amounts.

[Table 12 around here]

[17] Consistent with Degryse and Ongena (2005), who find that loan rates decrease with the distance between the firm and the lending bank.

The results in the loan characteristics suggest that firms are more likely to stop making payments on collateralized loans. The likelihood to be delinquent on a collateralized loan is 11.5 percentage points higher compared to non-collateralized loans (Table 6)[18]. A possible explanation for this is that firms anticipate that banks that included collateral on the loan contract are more certain that the firm will repay the loan. While banks that did not include collateral on the loan terms might panic and might try to push the firm into a bankruptcy process. Collateralized loans also give a firm more bargaining power in case the loan ends up in a renegotiation process. The results for collateral, however, are less pronounced when the firm is experiencing a long-term distress, as it is analyzed in robustness (see Table 17). Moreover, the results suggest that firms are more likely to delinquent on larger loans. For a loan with an amount equal to the mean amount of the sample the probability to delinquent is 2.5 percent higher. A potential explanation for this is that firms anticipate that banks might be more willing to start a renegotiation process if the loan is larger.

In line with this, firms are more likely to delinquent on loans with a relatively long time to maturity[19]. An average loan, with a time to maturity equal to 20.8 months, will be 1.7 percentage points more likely to be delinquent. This suggests that firms prefer to default on the loan that gives them more time to renegotiate. Finally, higher interest rates seem to decrease the likelihood of making a payment delinquency but this result is not robust to stronger specifications presented below. Overall, the results for the loan conditions suggest that firms anticipate the bank's willingness to renegotiate a loan contract.

In Column II of Table 6, I present the results for the model including bank fixed effects. The magnitude of the coefficients is slightly different but the sign and significance of the results remain the same for most of the variables, excluding the interest rate that loses its

[18] Appendix Table A.2 presents the results of a model that includes Collateralization instead of Collateral and the results suggest that firms are more likely to stop making payments on loans with a higher collateralization.

[19] In Appendix Table A.1, I re-estimate the model excluding the sample of firms that start a new relationship (have had only one existing loan with any of their banks) as in these cases the length of relationship is determined by the duration of a single loan and a long time to maturity might translate into a short relationship. The results show that even excluding this sample of firms the time to maturity remain positive and significant.

significance. In Column III, instead of including firm-time and bank fixed effects, I include firm-bank-time fixed effects. The size of the sample has a considerable reduction. The reason for this is that only firms that have more than one loan with the same bank and that make a payment delinquency on some of them, but not in all, are included. This exercise is useful to understand which loan characteristics play a more important role in the delinquency choice of a firm. The results are similar to the ones presented before. The sign and the significance of the coefficients remain the same, however, the magnitude of the coefficients increased. Collateral seems to be the most important characteristic in the delinquency choice of a portfolio of loans with the same bank.

2. Various Robustness

a. Methodology:

I estimate the model using a conditional Logit model instead of a Linear Probability model[20]. The results reported in Table 13 as odds ratios, are in line with the ones obtained using a Linear Probability Model. The sign and significance of the coefficients remain the same as the ones reported in Table 6.

In addition, I estimate the model using a Probit model. I exclude all the sets of fixed effects and include firm and macroeconomic characteristics instead. I estimate the model not only using the sample of firms that stop making payments in some of their loans but also considering the firms that stop making payments in all of their loans and the firms that repaid all their loans. Characteristics of these three different groups are presented on Table 3. Notice that only a minority of firms delinquent on all their loans from one quarter to the next, and the ones that do have on average 1.2 loans and only one lender.

The results for the Probit model are presented in Table 14. Column I shows the results for the sample of firms that stop making payments in some of their loans, which are also in line with the results from the linear probability model reported in Table 6. Column II

[20] This model has the disadvantages that predicted values may by less than zero or greater than one, and that the OLS covariance matrix estimate is inconsistent.

adds the sample of firms that stop making payments in all their loans. The sample size increases from 49,962 loan observations to 51,975 loan observations, which also reveals that only few firms faced extreme liquidity constrains during the sample period. The coefficients have the same sign and significance compared to Column I, however their magnitude has a slight increase. Finally, Column III adds the firms that repaid all their loans and it corresponds to the population of loans. It is composed by 1,275,994 loan observations and it indicates that most of the firms experience no distress during the sample period. The average likelihood of delinquency of the sample drops to 0.9%. Interestingly, most of the coefficients remain with the same sign and significance, however, and consistent with the composition of the sample, the magnitude of the coefficients drops. Overall these exercises show that my results are robust to different methodologies and sample compositions.

[Table 13 around here]

[Table 14 around here]

b. Effect of a Change in the Value of Bank-Firm Relationships

In this section I analyze if a change in the value of bank-firm relationships have an effect on the firms' selection of arrears. I do so by exploring a variation on the amount of credit information shared between financial institutions through credit bureaus. The variation is generated thanks to the introduction of the Habeas Data Law in December of 2008. Prior to the introduction of this law, banks could observe the entire credit history of a firm. Both positive and negative information was observable for an unlimited length of time. In other words, the memory of the credit bureau was 'infinite'. With the introduction of the Habeas Data law, the memory of the credit bureaus was shortened and limited to a length equal to twice the length of the delinquency period of a loan.

The decrease on the information shared through credit bureaus naturally increased the level of asymmetric information in the credit market (now it results more difficult for banks to distinguish between good and bad borrowers). This in turn allows banks to extract more private information through the relationships with their clients. Thus, the value of the relationship should increase. Under this scenario firms should be even less likely to stop

making payments on loans granted by banks with who they have long relationships after the introduction of the Habeas data law. In order to test if that is the case, I include interactions in the main specification with a dummy that represents the introduction of the law.

The results, presented in Table 15, suggest that after the introduction of the Habeas Data law firms are even less likely to stop making payments on loans granted by banks with who they have a strong relationship. A longer length of relationship, a higher number of loans and/or a higher share of wallet with a bank will translate on a lower probability that a firm choose to stop making payment on loans granted by that bank. This result highlights the finding that bank firm relationships play a very important role on the selection of the arrears of a firm.

[Table 15 around here]

c. Short Term vs Long Term Distress:

In order to determine if the delinquency decisions are affected by the length of the period of distress of a firm, I include interaction terms with the variable *Long Term Distress*. This is in indicator variable that takes the value of 1 if the firm remains in a state of delinquency for more than three quarters and zero otherwise. Of the 6,867 firms included in the sample, only 728 firms were in delinquency for more than three consecutive quarters. That is, most of the delinquencies in the sample are short-term temporal delinquencies rather than long-term permanent defaults. The results, presented in Table 16, show that most of the interaction terms turn out to be insignificant. That is, the length of the period of distress of the firm does not seems to modify most of its preferences with respect to which loan to delinquent on. There are however some exceptions, if the firm is facing a long term distress it is even less likely to stop making payments on loans granted by banks with which they have a higher number of outstanding loans. This might be reflecting that the firm has additional products with the bank, i.e., main bank account that could be automatically sized by the bank in case of default. In addition, firms seem to be less likely to stop making payments on collateralized loans than on uncollateralized loans. This suggests that firms are more afraid of loosing the collateral when the distress is not for a short time of period.

Finally, firms also seem to be even more likely to stop making payments on larger loans. This might be reflecting that in case of default firms might prefer to deal with a big loan granted by one bank rather than with several small loans granted by more than one bank.

[Table 16 around here]

d. Renegotiations vs Loan Delinquencies:

The existence of renegotiations might naturally impact the decision of a firm as on which loan to stop making payments. Nonetheless, there is little information available about renegotiations of commercial loans in Colombia and, in particular, there is not detailed information that indicates whether and when a loan has been renegotiated. According to press reports and general statistics, the most common practice among banks in Colombia in terms of renegotiations is to extend the maturity of the loan[21]. Based on this information, I analyze the dynamic of the *Maturity* in the lifetime of a loan, and classify a loan as being renegotiated when its *Maturity* increases from one quarter to the next one.

From 2002 to 2010 there are in total 93.907 loan renegotiations made on 54.223 different loans (some loans are renegotiated more than once). According to these numbers about 8.3% of the loans in the credit register are renegotiated at some point in time. The proportion of renegotiations in the sample of loans used for my main empirical exercise is somehow lower and represents 5.4% of the total sample (compared to a 23.3% of loans that stop making payments). This is not surprising, as previous literature has reported that the majority of renegotiations occur outside of default or financial distress. For example, Roberts and Sufi (2008) using a sample of credit agreements between U.S. publicly traded firms and financial institutions; find that renegotiations are rarely associated with a covenant violation or a payment default.

[21] See http://ape.com.co/finanzas/item/710-crece-la-restructuracion-de-creditos-a-las-empresas.

I use a Multinomial Logit Model[22] with a categorical dependent variable that takes the value of 0 if the loan is repaid, 1 if the loan is renegotiated and 2 if the loan starts an arrear, to analyze the likelihood of each of these outcomes. I estimate the model using the sample selected for the main empirical exercise and define as a 'base outcome' the repayment of the loan. The results, presented in Appendix Table A.4, suggest that a higher length of relationship is associated with a both, a lower probability to renegotiate a loan and a lower probability to stop making payments on a loan. On the other hand the existence of previous loan delinquencies with the bank that grant the loans increases both the likelihood of renegotiation and the likelihood of loan delinquency, however it has a higher contribution for the likelihood of loan delinquency. The existence of previous delinquencies with other banks influences negatively the likelihood to stop making payments on a loan and do not seem to have an impact on the likelihood of renegotiation. In addition, the results suggest that firms are less likely to stop making payments on loans granted by banks that have renegotiated their loans in the past. In turn, the results suggest that if there have been renegotiations before between the bank and the firm; it is more likely that renegotiation take place again (see the coefficient on *Previous Renegotiations Same Bank*, which show that the likelihood of renegotiation increases by 7.4 percentage points).

With respect to the bank characteristics I find that loans with foreign banks are more likely to end up in either renegotiation or delinquency, however the likelihood to end up in a delinquency increases relatively more. Loans granted by state owned banks are less likely to be renegotiated and more likely to become delinquent on their payments. Finally, the loan characteristics reveal that loans with collateral or longer time to maturity are less likely to be renegotiated and more likely to start having arrears, while loans with higher loan amounts or higher interest rates are more likely to be renegotiated.

As an additional robustness, I re-estimate the Linear Probability Model of my main speciation including as an additional relationship characteristic the indicator variable

[22] The Multinomial Logit model was first introduced by McFadden (1974) to explain the choice of transportation modes of urban commuters.

Previous Renegotiations Same Bank. The results, presented in Appendix A.5, are in line with the main results presented in Table 6 and suggest that the existence of previous renegotiations between the firm and the bank decreases the probability of loan delinquency.

Overall the results help to uncover the role of renegotiation in the firm's choice of loan delinquencies. However, further research needs to be done to understand the role of renegotiation ex post payment delinquencies.

VI. CONCLUSIONS

In this paper I analyze the repayment decisions of firms with multiple loans that experience a liquidity shock and are forced to stop making payments on at least one of their loans. My empirical strategy consists of two steps. First, I isolate the group of firms that having had all their loan payments up to date in a given quarter t, start having payment delinquencies in some of their loans but not in all of them on the following quarter, $t + 1$. Second, in order to understand how these decisions are made and what their main drivers are, I use a linear probability model in which the dependent variable is an indicator variable for loan delinquency. I focus my analysis on a diverse set of variables that include relationship, bank and loan characteristics. In addition, I include a set of firm-time fixed effects in order to account for any observable and unobservable firm, time and firm-time heterogeneity.

I find that firms are less likely to delinquent on loans granted by banks with which they have long relationships and by banks with which they have a clean repayment history. These results suggest that firms are concerned about losing the benefits gained through the relationship and that from previous experience, they anticipate that banks will punish more the delinquencies made to their own loan portfolio than to the one of their peers. I also find that firms are more likely to delinquent on loans granted by foreign and by state owned banks and on loans that are more likely to end up in a renegotiation process. This suggests that the ability and willingness of the bank to punish the firm for misbehaving play an

important role on firm's decision. Overall, the results suggest that firms assess the influence of their delinquency choices on their ability to obtain new credit in the future.

In future versions of the paper I plan to analyze how the degree of financial distress of the firm affects its decision in regards to which loan to delinquent on. In principal, whereas an illiquid firm might be concerned about its ability to access financial resources after a payment delinquency, an insolvent firm might be more concerned about the liquidation cost after a default. Nonetheless, whereas solvency defaults are quite rare, liquidity defaults are relatively common. Therefore, I expect my current result to be mainly driven by liquidity defaults.

In addition, I will examine how the level of information asymmetries in the credit market affects the repayment decisions of firms. This analysis will be possible thanks to a variation on the memory of the credit bureaus provided by the introduction of the Habeas Data law in Colombia. The law was ratified in 2009, and it prohibited institutions in Colombia to access the entire credit history of borrowers. Since then, the negative credit information is observable only for a period that depends on the length of the delinquency period. The decrease on the amount of information shared among financial institutions could have an effect on firm's decision, as now banks can accumulate more private information about the firm. Thus, the monopoly power attached to exclusive customer information is increased (Jappelli and Pagano, 1993).

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FIGURE 1

Late Payments (1999 – 2010)

The Graph shows the evolution of proportion of loans at risk in the commercial loan portfolio of the financial system. It is disaggregated by the loan ratings, as defined in Table 1.

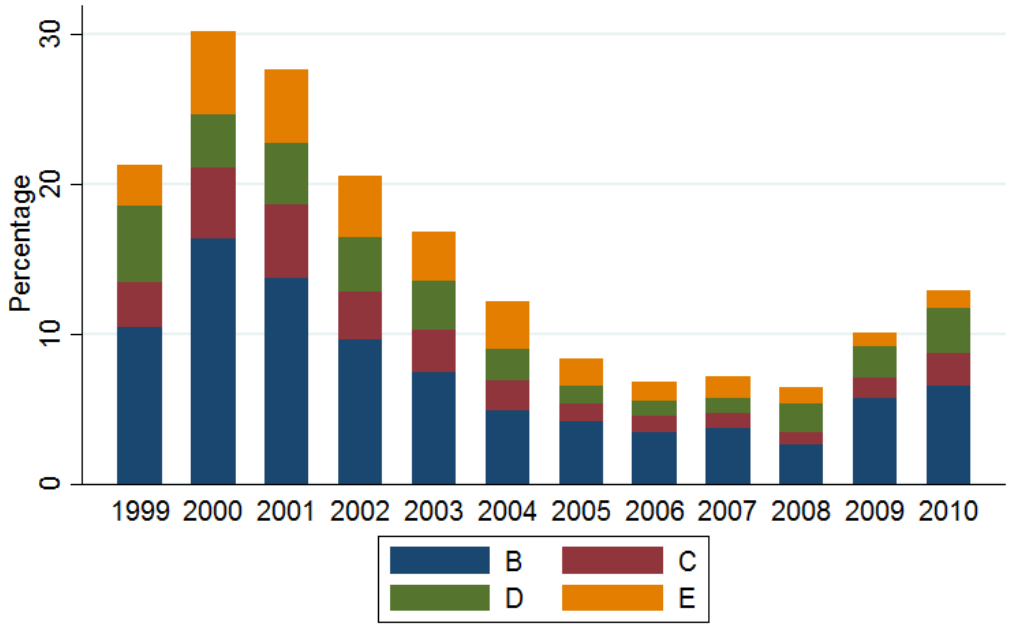

FIGURE 2

The Graph represents an average firm on the selected sample. It is a firm that has five loans with four different banks. It has two loans with Bank 1 and one loan with each of the other banks. In quarter t, all its loans have a rating equal to "A" (best loan rating = the loan is up to date). In quarter t+1, one of the loans jumps to rating "B" (there is a delinquency on that loan). The other four loans remain in rating "A".

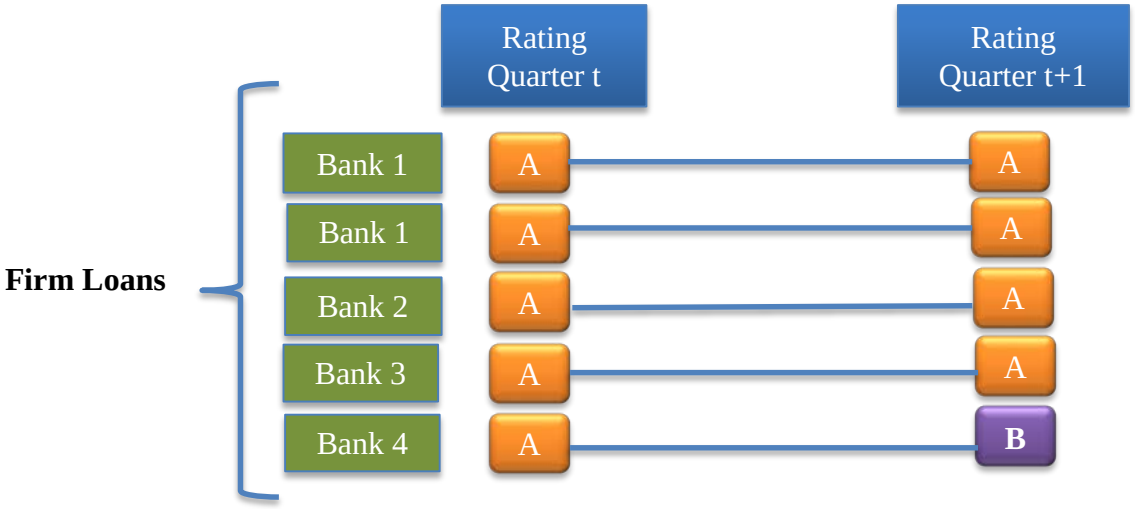

TABLE 1

The Table presents the loan rating classification of the Colombian credit register. The loan rating depends on the number of days of delinquency on the loan and also in the amount of collateral for the category E.

Loan rating	Days delinquent
A	< 30
B	30 - 89
C	90 - 149
D	150 - more
E	Loss given default = 100%

TABLE 2

Estimated Quarterly Transition Matrix for Colombian Commercial loans

The Table presents the estimated quarterly transition matrix for Colombian Commercial loans. It is estimated based on a Markov transition probability model, using information comprised between 1999-I and 2011-II. The categories are defined in Table 1. The matrix show the likelihood of a credit quality staying unchanged or moving to any other category over a period of one quarter. Each element of the matrix, p_{ij}, shows the probability of the credit quality of a loan being equal to i in period t, and equal to j in period t+1.

	A	B	C	D	E
A	0.966	0.029	0.004	0.001	0.000
B	0.305	0.558	0.097	0.035	0.005
C	0.070	0.085	0.561	0.258	0.026
D	0.024	0.016	0.031	0.801	0.129
E	0.013	0.005	0.007	0.036	0.938

TABLE 3

Differences in Means of Firm's Characteristics Between the Selected Sample and the Excluded Sample.

The Table reports the mean of firm characteristics for both, the sample of firm observations excluded and the sample of firm observations selected. The sample of firm observations excluded is subdivided by whether they repay all their loans or whether they delinquent on all of them. The last column presents a t-test for the differences in means between the Selected Sample and the Excluded Sample. The number of total firm observations equals 415,352. COP: Colombian Peso. In June 2011: 1,800 COP = 1 US Dollar or 1 Million COP = 555 US Dollars. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Firm Characteristic	**Definition**	**Unit**	**Excluded Sample**		**Selected Sample**	**Difference in Means**
		Firms with arrears on:	**No Loan**	**All Loans**	**Some Loans**	
Return on Equity (ROE)	= Net Income/Equity.	%	15.1	7.6	10.1	-4.97***
Current Ratio (CR)	= Current Assets/Current Liabilities.	%	218.3	253.5	175.1	-43.26***
Debt to Equity Ratio	= Liabilities/Equity.	%	219.1	241.6	260.2	41.02***
Assets	= Total Assets.	Million COP	25 717.4	12 124.7	19 162.7	-6495.6**
Small Firm	= 1 if the firm is small in terms of assets size, = 0 otherwise.	%	44.8	64.8	46.2	1.26*
Age as Borrower	Time in which the firm has had a loan with the financial system.	Quarters	14.8	10.9	15.2	0.44***
Number of Lenders	Number of lenders with whom the firm has a loan.	-	2.7	1.0	4.3	1.623***
Number of Loans	Number of outstanding loans.	-	3.0	1.2	5.2	2.143***
Delinquent Loans	Number of delinquent loans.	-	0.0	1.2	1.2	1.2***
Previous Delinquent Loans	= 1 if the firm delinquent on a loan in the past, = 0 otherwise.	0/1 %	12.3	20.8	31.4	19.10***
Firm Rating	Weighted quality of the loans of the firm (1 lowest, 5 highest)	1-5	5.0	5.0	5.0	0.00
Number of Firm Observations			403 918	1 763	9 671	415 352

TABLE 4

The table provides the definition of relationship, bank and loan characteristics (a) and reports loan level summary statistics of relationship, bank and loan characteristics. The mean, median and standard deviation (SD), min and max are presented for every variable (b). The number of loan observations equals 49,986. COP: Colombian Peso. In June 2011: 1,800 COP = 1 US Dollar or 1 Million COP = 555 US Dollars.

a. Definition of Variables.

Variable	Description	Unit
Relationship Characteristics		
Length of Relationship	Length of the bank-firm relationship.	Quarters
Number of Old and New Loans	Number of old and new loans between a bank and a firm.	-
Previous Delinquencies to Bank	= 1 if firm has have an arrear before with the bank, = 0 otherwise.	0/1 %
Previous Delinquencies Same Bank	= 1 if firm has have an arrear before **only** with the bank, = 0 otherwise.	0/1 %
Previous Delinquencies Different Bank	= 1 if firm has have an arrear before **only** with other banks, = 0 otherwise.	0/1 %
Number of Previous Delinquencies Same Bank	Number of previous arrears that the firm has with the bank.	-
Number of Previous Delinquencies Different Bank	Number of previous arrears that the firm has with other banks.	-
Previous Renegotiations with Bank	= 1 if firm has have a renegotiation before with the bank, = 0 otherwise.	0/1 %
Number of Previous Renegotiations with Bank	Number of previous renegotiations that the firm has with the bank.	-
Number of Loans	Number of outstanding loans the firm has with the bank.	-
Share of Wallet	Proportion of loans that the firm has with the bank.	%
Bank Characteristics		
Foreign Bank	= 1 if loan granted by foreign bank, = 0 otherwise.	0/1 %
State Owned Bank	= 1 if loan granted by public bank, = 0 otherwise.	0/1 %
Bank Size	Natural logarithm of the assets of the bank.	-
Loan Characteristics		
Collateral	= 1 if loan is collateralized, = 0 otherwise.	0/1 %
Collateralization	Proportion of the loan amount that is collateralized.	%
Loan Amount	Outstanding loan size.	Million COP
Ln Loan Amount	Natural logarithm of loan size.	-
Interest Rate	Interest rate on the loan.	%
Fixed Interest Rate	= 1 if loan has a fixed interest rate, = 0 otherwise.	0/1 %
Maturity	Loan maturity	Months
Short Term	= 1 if maturity of loan is less than a year, = 0 otherwise.	0/1 %
Time to Maturity	The time remaining until the end of the loan contract.	Months

TABLE 4 (continued)

b. Summary Statistics for Relationship, Bank and Loan Characteristics.

Variable	Mean	Median	SD	Min	Max
Relationship Characteristics					
Length of Relationship	9.6	7.0	7.8	1.0	49.0
Number of Old and New Loans	6.2	4.0	6.3	1.0	65.0
Previous Delinquencies to Bank	10.5	0.0	30.7	0.0	100.0
Previous Delinquencies Same Bank	5.7	0.0	23.1	0.0	100.0
Previous Delinquencies Different Bank	25.6	0.0	43.6	0.0	100.0
Number of Previous Delinquencies Same Bank	0.2	0.0	0.8	0.0	23.0
Number of Previous Delinquencies Different Bank	1.2	0.0	3.2	0.0	70.0
Previous Renegotiations with Bank	22.9	0.0	42.0	0.0	100.0
Number of Previous Renegotiations with Bank	0.5	0.0	1.4	0.0	24.0
Number of Loans	1.3	1.0	0.5	1.0	2.0
Share of Wallet	24.8	16.4	24.8	0.0	100.0
Bank Characteristics					
Foreign Bank	13.7	0.0	34.4	0.0	100.0
State Owned Bank	2.9	0.0	16.7	0.0	100.0
Bank Size	22.7	23.0	1.5	0.0	24.8
Loan Characteristics					
Collateral	45.8	0.0	49.8	0.0	100.0
Collateralization	55.4	0.0	95.9	0.0	500.0
Loan Amount	451.1	82.5	1836.2	0.0	50000.0
Ln Loan Amount	4.2	4.4	2.2	18.4	10.8
Interest Rate	17.3	16.8	6.7	0.4	40.0
Fixed Interest Rate	8.3	0.0	27.5	0.0	100.0
Maturity	36.0	25.0	42.1	0.0	360.0
Short Term	37.7	0.0	48.5	0.0	100.0
Time to Maturity	21.1	11.0	33.2	0.0	331.0

TABLE 5

Differences in Means of Relationship, Bank and Loan Characteristics between Delinquent Loans and Loans that Remain Up to Date

The Table compares the means of Relationship, Bank and Loan Characteristics between loans that start having an arrear and loans that remain up to date, using a t-test. The number of observations equals 49,967. Definitions of the variables can be found in the Table 4. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Variable	**Delinquency == 0**	**Delinquency == 1**	**Difference in means**	
Relationship Characteristics				
Length of Relationship	9.7	9.0	-0.70	***
Previous Delinquencies Same Bank	4.3	10.2	5.90	***
Previous Delinquencies Different Bank	28.2	16.9	-11.30	***
Number of Loans	1.3	1.3	-0.03	***
Share of Wallet	22.7	32.0	9.30	***
Bank Characteristics				
Foreign Bank	14.1	12.5	-1.60	***
State Owned Bank	2.6	3.6	1.00	
Bank Size	22.7	22.6	-0.06	***
Loan Characteristics				
Collateral	41.9	58.5	16.60	***
Loan Amount	483.0	347.0	-136.00	***
Interest Rate	17.4	17.2	-0.20	***
Short Term	0.4	0.2	-0.20	***
Time to Maturity	19.4	25.3	5.90	***
Number of observations	38 345	11 622		

TABLE 6

Likelihood to Make a Payment Delinquency on a Loan.

The Table reports regression results from a linear probability model. The dependent variable is *Delinquency* that equals one when a loan is delinquent and zero otherwise. Column (I) report results of a model that includes relationship, bank and loan characteristics as independent variables, firm-time fixed effects are included. In Column (II) bank fixed effect are added. In Column (III) firm-bank-time fixed effects are included. Definitions of the variables can be found in the Table 4. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Dependent Variable	**Delinquency**		
Models	I	II	III
Relationship Characteristics			
Length of Relationship	-0.23***	-0.16***	
	(0.05)	(0.05)	
Previous Delinquencies Same Bank	10.11***	9.41***	
	(2.12)	(2.10)	
Previous Delinquencies Different Bank	-10.77***	-8.96***	
	(1.53)	(1.52)	
Number of Loans	-3.28***	-3.67***	
	(0.72)	(0.73)	
Share of Wallet	0.03	0.03*	
	(0.02)	(0.02)	
Bank Characteristics			
Foreign Bank	1.37*		
	(0.73)		
State Owned Bank	6.20***		
	(1.64)		
Bank Size	-0.12		
	(0.21)		
Loan Characteristics			
Collateral	11.46***	12.89***	47.72***
	(0.49)	(0.54)	(3.55)
Ln Loan Amount	0.42***	0.32**	3.29***
	(0.14)	(0.14)	(1.01)
Interest Rate	-0.19***	-0.03	-0.32
	(0.04)	(0.05)	(0.35)
Time to Maturity	0.08***	0.10***	1.12***
	(0.01)	(0.01)	(0.17)
Constant	28.38***	62.12*	3.64
	(4.75)	(36.48)	(8.66)
Firm-Time Fixed Effects	YES	YES	NO
Bank Fixed Effects	NO	YES	NO
Firm-Bank-Time Fixed Effects	NO	NO	YES
R-squared	0.15	0.17	0.49
Number of observations	49,967	49,967	3,728

TABLE 7

Likelihood to Make a Payment Delinquency on a Loan. Discrete Definition of Relationship.

The Table reports regression results from a linear probability model. The dependent variable is *Delinquency* that equals one when a loan is delinquent and zero otherwise. Columns (I) and (III) report results of a model that includes relationship, bank and loan characteristics as independent variables, firm-time fixed effects are included. In Columns (II) and (IV) bank fixed effect are added. *Long Relationship* is an indicator variable that takes the value of one if the length of the relationship is above the 95 percentile (13 quarters). *Short Relationship* is an indicator variable that takes the value of one if the length of the relationship is below the 25 percentile (4 quarters). Definitions of the rest of the variables can be found in Table 4. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Dependent Variable	**Delinquency**			
Models	I	II	III	IV
Relationship Characteristics				
Long Relationship	-3.03***	-2.02***		
	(0.75)	(0.76)		
Short Relationship			1.69**	1.15
			(0.74)	(0.75)
Previous Delinquencies Same Bank	10.29***	9.56***	10.56***	9.73***
	(2.12)	(2.11)	(2.13)	(2.11)
Previous Delinquencies Different Bank	-10.26***	-8.56***	-9.78***	-8.26***
	(1.53)	(1.52)	(1.52)	(1.51)
Number of Loans	-3.39***	-3.72***	-3.50***	-3.74***
	(0.72)	(0.73)	(0.72)	(0.73)
Share of Wallet	0.02	0.03*	0.02	0.03
	(0.02)	(0.02)	(0.02)	(0.02)
Bank Characteristics				
Foreign Bank	1.41*		1.42*	
	(0.73)		(0.73)	
State Owned Bank	6.41***		6.67***	
	(1.64)		(1.64)	
Bank Size	-0.17		-0.22	
	(0.21)			
Loan Characteristics				
Collateral	11.46***	12.91***	11.46***	12.92***
	(0.49)	(0.54)	(0.50)	(0.54)
Ln Loan Amount	0.41***	0.32**	0.40***	0.31**
	(0.14)	(0.14)	(0.14)	(0.14)
Interest Rate	-0.19***	-0.03	-0.20***	-0.03
	(0.04)	(0.05)	(0.04)	(0.05)
Time to Maturity	0.08***	0.10***	0.08***	0.10***
	(0.01)	(0.01)	(0.01)	(0.01)
Constant	28.30***	61.08*	28.28***	59.95*
	(4.75)	(36.03)	(4.81)	(36.38)
Firm-Time Fixed Effects	YES	YES	YES	YES
Bank Fixed Effects	NO	YES	NO	YES
R-squared	0.15	0.17	0.15	0.17
Number of observations	49,967	49,967	49,967	49,967

TABLE 8

Likelihood to Make a Payment Delinquency on a Loan.
Sample of Firms with **both** Short and Long Relationships

The Table reports regression results from a linear probability model. The dependent variable is Delinquency that equals one when a loan is delinquent and zero otherwise. The sample is composed by 2,723 loan observations of firms that have both, loans with banks with which they have very short relationships (below the 25 percentile: 4 quarters) and loans with banks with which they have very long relationships (above the 95 percentile: 13 quarters). Column (I) report results of a model that includes relationship, bank and loan characteristics as independent variables, firm-time fixed effects are included. In Column (II) bank fixed effect are added. Long Relationship is an indicator variable that takes the value of one if the length of the relationship is above the 95 percentile. Definitions of the variables can be found in the Table 4. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Dependent Variable	**Delinquency**	
Models	I	II
Relationship Characteristics		
Long Relationship	-11.53***	-8.40***
	(3.00)	(3.05)
Previous Delinquencies Same Bank	-2.32	1.46
	(7.74)	(7.80)
Previous Delinquencies Different Bank	-13.22**	-6.94
	(5.91)	(5.93)
Number of Loans	0.50	0.73
	(3.38)	(3.40)
Share of Wallet	0.06	0.06
	(0.07)	(0.07)
Bank Characteristics		
Foreign Bank	1.70	
	(3.59)	
State Owned Bank	-11.40	
	(8.42)	
Bank Size	0.06	
	(0.91)	
Loan Characteristics		
Collateral	15.60***	16.97***
	(2.20)	(2.31)
Ln Loan Amount	-0.78	-0.94
	(0.80)	(0.80)
Interest Rate	-0.15	0.07
	(0.21)	(0.22)
Time to Maturity	0.03	0.04
	(0.03)	(0.03)
Constant	31.83	-27.98*
	(20.94)	(14.56)
Firm-Time Fixed Effects	YES	YES
Bank Fixed Effects	NO	YES
R-squared	0.14	0.22
Number of observations	2 723	2,723

TABLE 9
Benefits of the Relationship and Cost of Loan Delinquencies.

The Table reports OLS regressions for a sample of 470.085 new loans. Columns I-IV report specifications for each of the loan characteristics: *Interest Rate*, *Collateral*, *Ln(loan amount)* and *Maturity*. The models include relationship and firm characteristics as independent variables. Bank x Time Fixed effects are included in all specifications. Definitions of the variables can be found in the Table 3 and the Table 4. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Methodology	OLS			
Model	I	II	III	IV
Dependent Variable	Interest Rate	Collateral	ln(loan amount)	Maturity
Relationship Characteristics				
Length of Relationship	-0.09***	-0.06***	0.05***	-0.10***
	(0.00)	(0.02)	(0.00)	(0.01)
Previous Delinquencies to Bank	0.44***	3.84***	-0.20***	1.37***
	(0.08)	(0.45)	(0.03)	(0.17)
Share of Wallet	-0.03***	0.11***	0.02***	0.06***
	(0.00)	(0.00)	(0.00)	(0.00)
Firm Characteristics				
Previous Delinquent Loans	0.90***	2.54***	-0.12***	0.06
	(0.06)	(0.28)	(0.03)	(0.11)
Number of Lenders	-0.36***	0.57***	0.27***	0.40***
	(0.01)	(0.06)	(0.01)	(0.02)
Small Firm	3.55***	6.43***	-1.73***	0.66***
	(0.05)	(0.25)	(0.02)	(0.10)
Return on Equity (ROE)	-0.29***	1.78***	0.06**	-0.07
	(0.06)	(0.27)	(0.02)	(0.11)
Current Ratio (CR)	0.16***	-0.35***	-0.16***	-0.06**
	(0.01)	(0.06)	(0.01)	(0.03)
Debt to Equity Ratio	0.03***	0.26***	0.02***	-0.06***
	(0.01)	(0.03)	(0.00)	(0.01)
Firm Rating	-1.10***	1.19***	0.44***	-2.15***
	(0.05)	(0.25)	(0.02)	(0.19)
Constant	24.07***	9.08***	0.53***	19.94***
	(0.27)	(1.28)	(0.13)	(0.97)
Bank x Time Fixed Effects	YES	YES	YES	YES
R-squared	0.35	0.25	0.32	0.36
Number of observations	470,085	470,085	470,085	470,085

TABLE 10

Likelihood to Make a Payment Delinquency on a Loan.

Foreign vs Domestic Banks. Private vs State Owned Banks

The Table reports regression results from a linear probability model. The dependent variable is *Delinquency* that equals one when a loan is delinquent and zero otherwise. Column (I) report results for a sample of 28,922 loans of firms that have outstanding loans with both foreign and domestic banks. Column (II) report results for a sample of 8,774 loans of firms that have outstanding loans with both state owned and private banks. The models include relationship, bank and loan characteristics as independent variables. Firm x Time Fixed effects are included in all specifications. Definitions of the variables can be found in the Table 4. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Dependent Variable	**Delinquency**	
Models	I	II
	Foreign/Domestic	State Owned/Private
Relationship Characteristics		
Length of Relationship	-0.15***	-0.09
	(0.05)	(0.09)
Previous Delinquencies Same Bank	10.16***	7.69*
	(2.58)	(4.62)
Previous Delinquencies Different Bank	-8.06***	-12.69***
	(1.78)	(3.04)
Number of Loans	-2.33***	-3.09**
	(0.82)	(1.41)
Share of Wallet	-0.01	0.17***
	(0.02)	(0.05)
Bank Characteristics		
Foreign Bank	0.94	0.52
	(0.72)	(1.35)
State Owned Bank	4.57**	6.19***
	(1.82)	(1.64)
Bank Size	-0.30	0.19
	(0.24)	(0.39)
Loan Characteristics		
Collateral	10.04***	7.81***
	(0.58)	(0.98)
Ln Loan Amount	0.28	0.23
	(0.17)	(0.30)
Interest Rate	-0.19***	-0.16*
	(0.05)	(0.09)
Time to Maturity	0.08***	0.09***
	(0.01)	(0.02)
Constant	28.35***	14.45
	(5.46)	(8.88)
Firm x Time Fixed Effects	YES	YES
R-squared	0.13	0.15
Number of observations	28 922	8 774

TABLE 11
Determinants of Loan Contracts. Foreign vs Domestic Banks

The Table reports OLS regressions for a sample of 144,107 new loans granted to firms that received a loan from at least one foreign and one domestic bank in the same quarter. Columns I-IV report specifications for each of the loan characteristics: *Interest Rate* (%), *Collateral* (%), *Maturity* (months) and *Ln(loan amount).* The models include bank and relationship characteristics as independent variables. Firm x Time Fixed effects are included in all specifications. Definitions of the variables can be found in Table 4. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Methodology	OLS			
Model	I	II	III	IV
Dependent Variable	Interest Rate	Collateral	Maturity	ln(loan amount)
Bank Characteristics				
Foreign Bank	-0.37***	-9.73***	-5.27***	-0.15***
	(0.07)	(0.39)	(0.17)	(0.02)
Bank Size	-0.12***	-6.40***	-2.49***	0.03***
	(0.03)	(0.24)	(0.10)	(0.01)
Relationship Characteristics				
Length of Relationship	0.07***	0.18***	-0.14***	0.00
	(0.01)	(0.03)	(0.02)	(0.00)
Previous Delinquencies to Bank	-0.53***	5.87***	2.38***	-0.13**
	(0.17)	(1.03)	(0.51)	(0.06)
Share of Wallet	-0.07***	0.22***	0.08***	0.06***
	(0.00)	(0.01)	(0.01)	(0.00)
Constant	18.92***	159.13***	67.50***	3.48***
	(0.70)	(5.36)	(2.25)	(0.18)
Firm x Time Fixed Effects	YES	YES	YES	YES
R-squared	0.53	0.36	0.37	0.67
Number of observations	144,107	144,107	144,107	144,107

TABLE 12
Determinants of Loan Contracts. State Owned vs Private Banks

The Table reports OLS regressions for a sample of 3,024 new loans granted to firms that received a loan from at least one state owned bank and one private bank in the same quarter. Columns I-IV report specifications for each of the loan characteristics: Interest Rate (%), Collateral (%), Maturity (months) and Ln(loan amount). The models include bank and relationship characteristics as independent variables. Firm x Time Fixed effects are included in all specifications. Definitions of the variables can be found in Table 4. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Methodology	Linear Probability Model			
Model	I	II	III	IV
Dependent Variable	Interest Rate	Collateral	Maturity	ln(loan amount)
Bank Characteristics				
State Owned Bank	-0.23**	-3.81***	-2.07***	-0.23***
	(0.12)	(0.85)	(0.28)	(0.05)
Bank Size	-0.05	-5.87***	-2.93***	-0.01
	(0.05)	(0.39)	(0.17)	(0.01)
Relationship Characteristics				
Length of Relationship	0.09***	0.05	-0.19***	-0.00
	(0.01)	(0.07)	(0.03)	(0.00)
Previous Delinquencies to Bank	-0.22	7.07***	3.68***	-0.11
	(0.29)	(1.96)	(0.91)	(0.09)
Share of Wallet	-0.08***	0.29***	0.12***	0.07***
	(0.00)	(0.02)	(0.01)	(0.00)
Constant	17.10***	146.73***	75.93***	4.34***
	(1.08)	(8.68)	(3.84)	(0.31)
Firm x Time Fixed Effects	YES	YES	YES	YES
R-squared	0.51	0.32	0.37	0.69
Number of observations	3,024	3,024	3,024	3,024

TABLE 13

Likelihood to Make a Payment Delinquency on a Loan. Conditional Logit Model.

The Table reports regression results from a Conditional Logit model. The dependent variable is *Delinquency* that equals one when a loan is delinquent and zero otherwise. The model includes relationship, bank and loan characteristics as independent variables. Definitions of the variables can be found in the Table 3 and the Table 4. Odds ratios are listed in the first row, robust standard errors that are corrected for clustering at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Dependent Variable	**Delinquency**		
Models	I	II	III
Relationship Characteristics			
Length of Relationship	-0.01***	-0.01***	
	(0.00)	(0.00)	
Previous Delinquencies Same Bank	0.22**	0.19*	
	(0.10)	(0.10)	
Previous Delinquencies Different Bank	-0.66***	-0.57***	
	(0.08)	(0.09)	
Number of Loans	-0.18***	-0.21***	
	(0.04)	(0.04)	
Share of Wallet	-0.00	-0.00	
	(0.00)	(0.00)	
Bank Characteristics			
Foreign Bank	0.06*		
	(0.04)		
State Owned Bank	0.30***		
	(0.07)		
Bank Size	-0.00		
	(0.01)		
Loan Characteristics			
Dummy Collateral	0.59***	0.68***	1.13***
	(0.02)	(0.03)	(0.07)
Ln Loan Amount	0.03***	0.02***	0.18***
	(0.01)	(0.01)	(0.04)
Interest Rate	-0.01***	-0.00	-0.02**
	(0.00)	(0.00)	(0.01)
Time to Maturity	0.00***	0.01***	0.06***
	(0.00)	(0.00)	(0.01)
Firm-Time Fixed Effects	YES	YES	NO
Bank Fixed Effects	NO	YES	NO
Firm-Bank-Time Fixed Effects	NO	NO	YES
Number of observations	49,967	49,967	3,728

TABLE 14
Likelihood to Make a Payment Delinquency on a Loan. Probit Model.

The Table reports regression results from a Probit model. The dependent variable is *Delinquency* that equals one when a loan is delinquent and zero otherwise. Column I shows the results for the sample of firms that face moderate liquidity constrains, Column II adds the sample of firms that face extreme liquidity constrains and Column III adds firms that face few or no liquidity constrains (it corresponds to the population of loans). The model includes relationship, bank, loan, firm and macroeconomic characteristics as independent variables. Definitions of the variables can be found in the Table 3 and the Table 4. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Dependent Variable	**Delinquency**		
Methodology	**Probit**		
Models	I	II	III
Relationship Characteristics			
Length of Relationship	-0.13***	-0.15***	-0.03***
	(0.03)	(0.03)	(0.00)
Previous Delinquencies Same Bank	7.46***	9.20***	-0.06
	(1.23)	(1.29)	(0.06)
Previous Delinquencies Different Bank	-10.25***	-10.66***	-0.68***
	(0.77)	(0.85)	(0.03)
Number of Loans	-6.09***	-9.77***	0.08***
	(0.50)	(0.52)	(0.02)
Share of Wallet	0.11***	0.29***	0.00
	(0.01)	(0.01)	(0.00)
Bank Characteristics			
Foreign Bank	0.77	0.57	0.15***
	(0.60)	(0.63)	(0.03)
State Owned Bank	4.80***	4.33***	0.30***
	(1.29)	(1.33)	(0.06)
Bank Size	-0.10	-0.13	0.11***
	(0.15)	(0.15)	(0.01)
Loan Characteristics			
Collateral	10.33***	10.77***	0.76***
	(0.38)	(0.40)	(0.02)
Ln Loan Amount	-0.14	-0.98***	0.00
	(0.09)	(0.09)	(0.00)
Interest Rate	-0.10***	-0.09***	0.01***
	(0.03)	(0.03)	(0.00)
Time to Maturity	0.07***	0.07***	0.00***
	(0.01)	(0.01)	(0.00)

TABLE 14 (continued)
Likelihood to Make a Payment Delinquency on a Loan. Probit Model.

Models	I	II	III
Firm Characteristics			
Previous Delinquent Loans	6.70***	6.26***	2.09***
	(0.83)	(0.89)	(0.13)
Number of Lenders	-2.37***	-2.47***	-0.01**
	(0.10)	(0.11)	(0.01)
Small Firm	0.99***	-0.44	0.41***
	(0.30)	(0.32)	(0.03)
Return on Equity (ROE)	-2.74***	-3.15***	-0.47***
	(0.45)	(0.49)	(0.03)
Current Ratio (CR)	0.05	0.27***	-0.02***
	(0.08)	(0.09)	(0.01)
Debt to Equity Ratio	-0.06	-0.07*	0.01***
	(0.04)	(0.04)	(0.00)
Macroeconomic Characteristics			
GDP Growth	23.96***	28.89***	-4.34***
	(4.65)	(5.10)	(0.34)
Arrears in **some** loans	YES	YES	YES
Arrears in **all** loans	NO	YES	YES
Arrears in **no** loan	NO	NO	YES
Average Likelihood	21.3%	23.6%	0.9%
Number of observations	49,967	51,997	1,276,502

TABLE 15
Likelihood to Make a Payment Delinquency on a Loan.
Interactions with Habeas Data Law

The Table reports regression results from a linear probability model. The dependent variable is Delinquency that equals one when a loan is delinquent and zero otherwise. Column (I) report results of a model that includes relationship, bank and loan characteristics as independent variables, firm-time fixed effects are included. The variables are interacted with a dummy variable for the Habeas Data Law, which takes the value of one from the date of introduction of the Habeas Data Law (December 2008) and zero before that date. In Column (II) bank fixed effect are added. In Column (III) firm-bank-time fixed effects are included. Definitions of the variables can be found in the Table 4. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Dependent Variable	**Delinquency**		
Models	I	II	III
Relationship Characteristics			
Length of Relationship	-0.11*	-0.06	
	(0.06)	(0.06)	
Length of Relationship x Habeas Data	-0.19**	-0.20**	
	(0.09)	(0.09)	
Previous Delinquencies Same Bank	12.66***	12.02***	
	(2.74)	(2.75)	
Previous Delinquencies Same Bank x Habeas Data	-6.66	-6.59	
	(4.17)	(4.09)	
Previous Delinquencies Different Bank	11.47***	10.34***	
	(1.95)	(1.98)	
Previous Delinquencies Different Bank x Habeas Data	1.59	3.45	
	(2.93)	(2.87)	
Number of Loans	-2.65***	-2.01**	
	(0.91)	(0.91)	
Number of Loans x Habeas Data	-1.87	-3.75***	
	(1.45)	(1.39)	
Share of Wallet	0.07***	0.07***	
	(0.02)	(0.02)	
Share of Wallet x Habeas Data	-0.11***	-0.11***	
	(0.04)	(0.03)	

TABLE 15 (continued)
Likelihood to Make a Payment Delinquency on a Loan.
Interactions with Habeas Data Law

Models	I	II	III
Bank Characteristics			
Foreign Bank	-0.72		
	(0.88)		
Foreign Bank x Habeas Data	5.53***		
	(1.58)		
State Owned Bank	6.39***		
	(1.82)		
State Owned Bank x Habeas Data	-2.28		
	(4.13)		
Bank Size	0.65**		
	(0.27)		
Bank Size x Habeas Data	-1.82***		
	(0.43)		
Loan Characteristics			
Dummy Collateral	10.43***	11.04***	44.66***
	(0.62)	(0.66)	(4.47)
Dummy Collateral x Habeas Data	2.77***	4.61***	8.41
	(1.00)	(0.98)	(7.33)
Ln Loan Amount	0.53***	0.47***	3.89***
	(0.17)	(0.17)	(1.16)
Ln Loan Amount x Habeas Data	-0.43	-0.49	-1.65
	(0.31)	(0.30)	(2.32)
Interest Rate	-0.15***	-0.04	-0.28
	(0.05)	(0.06)	(0.41)
Interest Rate x Habeas Data	-0.09	0.06	-0.04
	(0.09)	(0.09)	(0.77)
Time to Maturity	0.08***	0.11***	1.31***
	(0.01)	(0.01)	(0.23)
Time to Maturity x Habeas Data	-0.00	-0.01	-0.45
	(0.02)	(0.02)	(0.33)
Constant	26.10***	63.58*	3.01
	(4.76)	(36.56)	(8.77)
Firm-Time Fixed Effects	YES	YES	NO
Bank Fixed Effects	NO	YES	NO
Firm-Bank-Time Fixed Effects	NO	NO	YES
R-squared	0.15	0.18	0.5
Number of observations	49 967	49 967	3 728

TABLE 16
Likelihood to Make a Payment Delinquency on a Loan.
Interactions with Loan Term Distress

The Table reports regression results from a Linear Probability model. The dependent variable is Delinquency that equals one when a loan is delinquent and zero otherwise. The model includes relationship, bank and loan characteristics as independent variables. Interactions with the variable Long Term Distress are included in order to determine differences in the delinquency decisions related to length of the period of distress of the firm. Long Term Distress is in indicator variable that takes the value of 1 if the firm remains in a state of delinquency for more than three quarters and zero otherwise. Definitions of the variables can be found in the Table 2 and the Table 3. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Dependent Variable			
Methodology	**Linear Probability Model**		
Models	I	II	III
Relationship Characteristics			
Length of Relationship	-0.23***	-0.17***	
	(0.05)	(0.05)	
Length of Relationship x Long Term Distress	0.05	0.10	
	(0.15)	(0.15)	
Previous Delinquencies Same Bank	10.80***	9.93***	
	(2.25)	(2.24)	
Previous Delinquencies Same Bank x Long Term Distress	-7.02	-5.25	
	(6.15)	(6.12)	
Previous Delinquencies Different Bank	-10.79***	-9.04***	
	(1.66)	(1.66)	
Previous Delinquencies Different Bank x Long Term Distress	0.12	0.48	
	(4.06)	(3.96)	
Number of Loans	-2.69***	-3.22***	
	(0.76)	(0.77)	
Number of Loans x Long Term Distress	-6.11***	-4.48**	
	(2.34)	(2.20)	
Share of Wallet	0.02	0.03	
	(0.02)	(0.02)	
Share of Wallet x Long Term Distress	0.06	0.06	
	(0.07)	(0.07)	
Bank Characteristics			
Foreign Bank	1.52**		
	(0.77)		
Foreign Bank x Long Term Distress	-1.76		
	(2.40)		
State Owned Bank	6.49***		
	(1.76)		
State Owned Bank x Long Term Distress	-3.26		
	(5.06)		
Bank Size	-0.22		
	(0.22)		
Bank Size x Long Term Distress	1.15		
	(0.71)		

TABLE 16 (continued)
Likelihood to Make a Payment Delinquency on a Loan.
Interactions with Loan Term Distress

Models	I	II	III
Loan Characteristics			
Dummy Collateral	11.69***	13.14***	47.54***
	(0.52)	(0.57)	(3.72)
Dummy Collateral x Long Term Distress	-2.80*	-3.20**	-0.29
	(1.60)	(1.52)	(10.74)
Ln Loan Amount	0.27*	0.17	2.89***
	(0.15)	(0.15)	(1.02)
Ln Loan Amount x Long Term Distress	1.94***	2.11***	6.54*
	(0.61)	(0.60)	(3.69)
Interest Rate	-0.21***	-0.05	-0.41
	(0.05)	(0.05)	(0.37)
Interest Rate x Long Term Distress	0.18	0.23	1.25
	(0.14)	(0.14)	(0.86)
Time to Maturity	0.08***	0.11***	1.09***
	(0.01)	(0.01)	(0.17)
Time to Maturity x Long Term Distress	-0.01	-0.02	0.64*
	(0.02)	(0.02)	(0.36)
Constant	28.15***	61.99*	1.80
	(4.75)	(36.52)	(8.53)
Firm-Time Fixed Effects	YES	YES	NO
Bank Fixed Effects	NO	YES	NO
Firm-Bank-Time Fixed Effects	NO	NO	YES
R-squared	0.15	0.17	0.49
Number of observations	49,967	49,967	3,728

APPENDIX TABLE A.1

Likelihood to Make a Payment Delinquency on a Loan. Various Robustness

The Table reports regression results from a linear probability model. The dependent variable is *Delinquency* that equals one when a loan is delinquent and zero otherwise. Definitions of the independent variables can be found in the Table 4. Columns (I) and (II) present the results of the main specifications using as an alternative measure of Length of the relationship the *Number of Old and New Loans*. Columns (III) and (IV) present the results for a sample of firms that have had more than one loan with each of their relationship banks. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Dependent Variable	**Delinquency**			
Models	I	II	III	IV
Relationship Characteristics				
Number of old and new loans	-0.60***	-0.55***	-0.62***	-0.59***
	(0.05)	(0.05)	(0.09)	(0.09)
Previous Delinquencies Same Bank	10.02***	9.28***	13.41***	13.49***
	(2.11)	(2.10)	(3.57)	(3.56)
Previous Delinquencies Different Bank	-10.50***	-9.02***	-7.83***	-5.14**
	(1.51)	(1.51)	(2.56)	(2.59)
Share of Wallet	0.02	0.02	0.06*	0.05*
	(0.02)	(0.02)	(0.03)	(0.03)
Bank Characteristics				
Foreign Bank	1.94***		2.40	
	(0.72)		(1.58)	
State Owned Bank	5.76***		6.61*	
	(1.63)		(3.73)	
Bank Size	0.13		1.34***	
	(0.21)		(0.48)	
Loan Characteristics				
Collateral	10.92***	12.46***	13.62***	15.63***
	(0.50)	(0.55)	(0.97)	(1.04)
Ln Loan Amount	0.60***	0.54***	0.50*	0.46*
	(0.14)	(0.14)	(0.27)	(0.27)
Interest Rate	-0.18***	-0.02	-0.33***	-0.08
	(0.04)	(0.05)	(0.09)	(0.09)
Time to Maturity	0.07***	0.11***	0.11***	0.14***
	(0.01)	(0.01)	(0.02)	(0.02)
Constant	19.16***	57.97	-3.88	-20.42***
	(4.88)	(36.75)	(11.32)	(2.28)
Firm-Time Fixed Effects	YES	YES	YES	YES
Bank Fixed Effects	NO	YES	NO	YES
Firm-Bank-Time Fixed Effects	NO	NO	NO	NO
R-squared	0.15	0.18	0.16	0.19
Number of observations	49,983	49,983	15,591	15,591
Type of Robustness	Alternative measure of relationship.		More than one loan observed per relationship.	

APPENDIX TABLE A.2

Likelihood to Make a Payment Delinquency on a Loan. Various Robustness

The Table reports regression results from a linear probability model. The dependent variable is *Delinquency* that equals one when a loan is delinquent and zero otherwise. Definitions of the independent variables can be found in the Table 4. Columns (I) and (II) present the results of the main specifications including *Collateralization* instead of *Collateral*, Column (I) in addition includes an interaction term between *Foreign Bank* and *Greenfield Investment*. Columns (III) and (IV) includes the *Number of Previous Delinquencies Same Bank* instead of the binary variables for previous delinquencies. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Dependent Variable	**Delinquency**			
Models	I	II	III	V
Relationship Characteristics				
Length of Relationship	-0.26***	-0.23***	-0.18***	-0.12***
	(0.05)	(0.05)	(0.05)	(0.05)
Number of Previous Delinquencies Same Bank			4.86***	4.15***
			(0.56)	(0.53)
Previous Delinquencies Same Bank	9.84***	9.11***		
	(2.10)	(2.10)		
Previous Delinquencies Different Bank	-10.98***	-9.09***		
	(1.51)	(1.52)		
Number of Loans	-1.68**	-1.74**	-3.28***	-3.64***
	(0.72)	(0.73)	(0.73)	(0.74)
Share of Wallet	0.00	0.02	0.03	0.03*
	(0.00)	(0.02)	(0.02)	(0.02)
Bank Characteristics				
Foreign Bank	-1.75**		1.23*	
	(0.74)		(0.74)	
Foreign Bank * Greenfield Investment	14.21***			
	(2.48)			
State Owned Bank	4.98***		6.25***	
	(1.65)		(1.69)	
Bank Size	-0.41*		-0.13	
	(0.21)		(0.21)	
Loan Characteristics				
Collateralization	4.31***	4.49***		
	(0.29)	(0.32)		
Collateral			11.58***	12.93***
			(0.50)	(0.55)
Ln Loan Amount	0.95***	0.83***	0.41***	0.33**
	(0.14)	(0.14)	(0.14)	(0.14)
Interest Rate	-0.00***	-0.15***	-0.20***	-0.03
	(0.00)	(0.05)	(0.04)	(0.05)
Time to Maturity	0.09***	0.12***	0.08***	0.11***
	(0.01)	(0.01)	(0.01)	(0.01)
Constant	34.86***	66.93*	24.96***	60.56
	(4.86)	(39.04)	(4.80)	(36.97)
Firm-Time Fixed Effects	YES	YES	YES	YES
Bank Fixed Effects	NO	YES	NO	YES
Firm-Bank-Time Fixed Effects	NO	NO	NO	NO
R-squared	0.15	0.18	0.16	0.19
Number of observations	49,983	49,983	49,983	49,983

APPENDIX TABLE A.3
Likelihood to Make a Payment Delinquency on a Loan,
Making use of the Number of Days of Delinquency

The Table reports regression results from a linear probability model. The dependent variable is *Delinquency* that equals one when a loan is delinquent and zero otherwise. Importantly, the number of days of delinquency (instead of the change of rating) is used to determine whether a loan is delinquent. Column (I) report results of a model that includes relationship, bank and loan characteristics as independent variables, firm-time fixed effects are included. In Column (II) bank fixed effect are added. In Column (III) firm-bank-time fixed effects are included. Definitions of the variables can be found in the Table 4. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Dependent Variable	**Delinquency**		
Models	I	II	III
Relationship Characteristics			
Length of Relationship	-0.16***	-0.09*	
	(0.05)	(0.05)	
Previous Delinquencies Same Bank	7.46***	7.78***	
	(1.94)	(1.90)	
Previous Delinquencies Different Bank	-11.95***	-10.21***	
	(1.10)	(1.09)	
Number of Loans	-10.07***	-7.38***	
	(0.79)	(0.80)	
Share of Wallet	-0.03	-0.04*	
	(0.02)	(0.02)	
Bank Characteristics			
Foreign Bank	-2.27***		
	(0.87)		
State Owned Bank	-0.18		
	(2.02)		
Bank Size	-3.20***		
	(0.28)		
Loan Characteristics			
Dummy Collateral	5.35***	3.85***	9.73*
	(0.63)	(0.66)	(5.01)
Ln Loan Amount	0.53***	0.56***	6.76***
	(0.18)	(0.19)	(1.38)
Interest Rate	-0.24***	-0.30***	-0.89
	(0.05)	(0.06)	(0.55)
Time to Maturity	0.04***	0.02	0.32***
	(0.01)	(0.01)	(0.10)
Constant	112.57***	8.23***	31.01**
	(6.19)	(1.79)	(13.36)
Firm-Time Fixed Effects	YES	YES	NO
Bank Fixed Effects	NO	YES	NO
Firm-Bank-Time Fixed Effects	NO	NO	YES
R-squared	0.16	0.20	0.11
Number of observations	33,319	33,319	2,414

APPENDIX TABLE A.4

Choice Between Repayment, Renegotiation and Delinquency. Multinomial Logit Model.

The Table reports the marginal effects of a Multinomial Logit Model. The categorical dependent variable takes the value of 0 if the loan is repaid, 1 if the loan is renegotiated and 2 if the loan starts an arrear. The base outcome is set as the repayment of the loan. The columns present the marginal effects of each of the other outcomes with respect to the base outcome. The model includes relationship, bank, loan, firm and macroeconomic characteristics as independent variables. Definitions of the variables can be found in the Table 3 and the Table 4. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Methodology	**Multinomial Logit**	
Outcome	Renegotiation	Delinquency
Relationship Characteristics		
Length of Relationship	-0.13***	-0.09***
	(0.02)	(0.03)
Previous Delinquencies Same Bank	1.2*	6.12***
	(0.64)	(0.97)
Previous Delinquencies Different Bank	0.24	-10.9***
	(0.5)	(0.86)
Previous Renegotiations Same Bank	7.39***	-1.64***
	(0.23)	(0.52)
Number of Loans	-0.19	-5.67***
	(0.24)	(0.48)
Share of Wallet	-0.01	0.1***
	(0.01)	(0.01)
Bank Characteristics		
Foreign Bank	0.99***	1.14**
	(0.24)	(0.57)
State Owned Bank	-1.15*	4.47***
	(0.7)	(1.09)
Bank Size	0.56***	-0.1
	(0.08)	(0.14)
Loan Characteristics		
Collateral	-2.89***	9.41***
	(0.25)	(0.36)
Ln Loan Amount	0.55***	-0.07
	(0.06)	(0.09)
Interest Rate	0.1***	-0.09***
	(0.02)	(0.03)
Time to Maturity	-0.25***	0.1***
	(0.01)	(0.01)

TABLE A.4 (continued)
Choice Between Repayment, Renegotiation and Delinquency. Multinomial Logit Model.

	Renegotiation	Delinquency
Firm Characteristics		
Previous Delinquent Loans	-0.39	6.28***
	(0.49)	(0.73)
Number of Lenders	0.04	-2.51***
	(0.04)	(0.1)
Small Firm	0.36	0.75***
	(0.25)	(0.27)
Return on Equity (ROE)	0.56**	-2.56***
	(0.27)	(0.42)
Current Ratio (CR)	-0.08	0.04
	(0.08)	(0.07)
Debt to Equity Ratio	0.00	-0.05
	(0.03)	(0.04)
Macroeconomic Characteristics		
GDP Growth	-35.58***	20.83***
	(3.6)	(4.28)
Pseudo R2	0.11	
Marginal Percentage	5.38	23.26
Number of observations	49,967	

APPENDIX TABLE A.5

Likelihood to Make a Payment Delinquency on a Loan.

Includes *Previous Renegotiations Same Bank* as An Additional Relationship Characteristic

The Table reports regression results from a linear probability model. The dependent variable is *Delinquency* that equals one when a loan is delinquent and zero otherwise. Column (I) report results of a model that includes relationship, bank and loan characteristics as independent variables, firm-time fixed effects are included. Among the relationship characteristics *Previous Renegotiations Same Bank* is included. Column (II) includes *Number of Previous Renegotiations Same Bank*. In Column (III) bank fixed effect are added. Definitions of the variables can be found in the Table 4. Coefficients are listed in the first row, robust standard errors that are corrected for clustering at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. Note: *** Significant at 1%, ** significant at 5%, * significant at 10%.

Dependent Variable	**Delinquency**		
Models	I	II	III
Relationship Characteristics			
Length of Relationship	-0.17***	-0.16***	-0.12**
	(0.05)	(0.05)	(0.05)
Previous Delinquencies Same Bank	10.29***	10.37***	9.62***
	(2.12)	(2.12)	(2.11)
Previous Delinquencies Different Bank	-10.53***	-10.37***	-8.70***
	(1.54)	(1.54)	(1.53)
Previous Renegotiations Same Bank	-3.12***		
	(0.67)		
Number of Previous Renegotiations Same Bank		-1.15***	-0.77***
		(0.18)	(0.19)
Number of Loans	-3.11***	-3.13***	-3.54***
	(0.72)	(0.72)	(0.73)
Share of Wallet	0.00	0.00	0.03*
	(0.00)	(0.00)	(0.02)
Bank Characteristics			
Foreign Bank	1.72**	1.89**	
	(0.73)	(0.73)	
State Owned Bank	6.30***	6.31***	
	(1.64)	(1.64)	
Bank Size	-0.05	-0.08	
	(0.21)	(0.21)	
Loan Characteristics			
Collateral	11.19***	11.22***	12.82***
	(0.50)	(0.50)	(0.54)
Ln Loan Amount	0.46***	0.46***	0.36**
	(0.14)	(0.14)	(0.14)
Interest Rate	-0.00***	-0.00***	-0.02
	(0.00)	(0.00)	(0.05)
Time to Maturity	0.08***	0.08***	0.11***
	(0.01)	(0.01)	(0.01)
Constant	26.51***	26.76***	61.70*
	(4.76)	(4.76)	(36.47)
Firm-Time Fixed Effects	YES	YES	YES
Bank Fixed Effects	NO	NO	YES
Firm-Bank-Time Fixed Effects	NO	NO	NO
R-squared	0.15	0.15	0.18
Number of observations	49,967	49,967	49,967

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