Relationship lending through the cycle: what can we learn from three decades of research?

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Abstract

This survey on Relationship Lending (RL) reviews thirty years of literature in a new analysis framework that considers the alleged benefits of RL in all possible scenarios under which banks and firms could operate from a good time scenario to a scenario of generalized crisis affecting both firms and banks. The number of studies currently conducted on RL in a scenario of prolonged crisis is growing rapidly, confirming that RL remains a viable solution and that it helps both banks and their customers to weather the storm. We also add suggestions on additional dimensions of RL that could be investigated in empirical studies to capture the presence of RL in the credit policy of each bank more effectively and thus better measure its effects on both sides – firm and bank – of the relationship.

Keywords: relationship lending, financial crisis, soft information
JEL codes: G01; G21

1. Introduction

The financial crisis that struck the international financial system in 2007 has placed under scrutiny the validity of a bank model based on an exaggerated use of financial innovation and market mechanisms, better known as the "originate-to-distribute" (OTD) model. Among the anti-crisis solutions envisaged, many called for the re-focusing of the business toward traditional lending activities and a renewed interest in lender-borrower relationships – henceforth "Relationship Lending". We can therefore question whether Relationship Lending may be an effective model of credit intermediation and a viable solution to the problems faced both by banks and firms during a prolonged economic and financial crisis.

The concept of Relationship Lending (RL) was initially developed within the framework of the literature on asymmetric information and was initially used in the theory of banking intermediation to justify the existence of banks as alternative financing sources to arm's length financing. Such studies draw on the theoretical literature developed by Leland and Pyle (1977), Diamond (1984), Ramakrishan and Thakor (1984) and Fama (1985), theorizing the uniqueness of the bank, as opposed to other financial intermediaries, thanks to its capacity for curtailing information asymmetries between final debtors (firms) and depositors.

Since the early 1990s, the concept of relationship lending has no longer been exclusively considered an alternative to arm's length financing but rather one way banks can perform their activity of financial intermediation (Rajan 1992, Petersen and Rajan 1994) as an alternative to Transactions Lending (TL). Such developments add some clarifications regarding the concept of bank-customer relationships that are deemed to exist when a series of repeated interactions occur and allow the bank i) to accumulate non-public information and ii) to amortize costs incurred for collecting such information over the years or cover them through the sales of a range of customer

services. The availability of not-public information enables banks to identify the most suitable contract structure – exploiting the flexible nature of banking contracts – and to grant credit to customers that otherwise would not gain access to such a financing channel (Boot, 2000). In this sense, RL is the opposite of transaction-based lending, which is generally viewed as being focused on informationally transparent borrowers who are asked to deliver assets as collateral and whose creditworthiness is analyzed by means of hard information (primarily financial statement data) (Berger and Udell, 2006). Transaction-oriented banking focuses on a single transaction with a customer, or multiple identical transactions with various customers. For example, transaction lending is viewed as arms-length financing focusing on that particular transaction rather than being aimed at an information-intensive relationship with a customer (Boot and Thakor, 2000).

In the RL model, banks benefit from intense customer relationships because they can evaluate more precisely the riskiness of their corporate clients. Additionally, firms, particularly the more informationally opaque ones, can take advantage of these deeper relationships because they may achieve better lending conditions, in terms of amount, interest rate and request for collateral and, in case of distress, they may also benefit from stronger support by their bank.

In the past thirty years, the literature shows that a great deal of effort has been made to define relationship characteristics – the presence of which can actually qualify the activity of a bank as RL – and subsequently investigate the effects of bank-firm relationships on the cost/availability of credit and firm performance. In this long time span, the RL paradigm had manifested its beneficial effects particularly in situations of firms' difficulty, but it had never had to measure up in a context of generalized bank distress such as developed after 2008. Because of the international financial crisis, studies on RL have intensified; numerous empirical tests on RL that cover different geographic areas and that primarily refer to the first years (until 2010) of this prolonged crisis have

already made their appearance. It is easy to predict that other studies will be published shortly. Therefore, it may be useful to survey the evolution of the literature to highlight new perspectives for analysis.

Our paper reviews the vast literature on RL to answer to the following questions:

1. Why should a bank and a firm engage in a strong, intense and long lasting lending relationship? What are the main advantages of RL for both sides of the relationship?
2. When both firms and banks are in crisis, can RL be a viable solution to help banks and their customers to weather the storm?
3. Does room remain for better identifying the features that thoroughly describe RL and for utilizing new proxies in empirical studies?

Some prominent surveys on RL frequently referred to include Ongena and Smith (1998), Boot (2000), Elyasiani and Goldberg (2004) and Degryse et al. (2009). Recently, Kysucky and Norden (2015) conducted the first quantitative survey on the subject, relying on meta-analysis and spanning the period from 1970 to 2008. With respect to previous surveys on RL, our study adds a new framework of analysis that considers the alleged benefits of RL in all possible scenarios under which banks and firms could operate, from a good time scenario to a scenario of generalized crisis affecting both firms and banks. We also add some suggestions on additional dimensions of RL that could be investigated in empirical studies to capture better the presence and importance of RL in the credit policy of each bank.

To identify the relevant studies for our survey, we considered both references in the four literature surveys by Ongena and Smith (1998), Boot (2000), Elyasiani and Goldberg (2004) and Degryse et al. (2009) and a search strategy on the most prominent databases (ISI Web of Science, Scopus, JSTOR, ScienceDirect, EBSCOhost, and SSRN). We looked for the terms “relationship

lending" or "relationship banking" in the fields "title", "abstracts", "keywords" or their equivalents.

The rest of the paper is organized as follows. Section 2 highlights the main features that according to the literature should characterize long lasting bank-firm relationships. Section 3 highlights the alleged benefits that should emerge from a bank-customer relationship and designs a framework of analysis through which we categorize the above-mentioned benefits in different scenarios. By leveraging this framework, Section 4 surveys the empirical literature from its beginnings to more recent contributions on the theme. Finally, Section 5 presents the conclusions, highlighting the new dimensions of RL on which future empirical tests should concentrate to capture the phenomenon more effectively.

2. Definition and characteristics of bank-firm relationships

Relationship lending has been defined in many ways since the starting, in the eighties, of the vast literature devoted to the subject. We do not consider it necessary to contribute a new one; instead, we borrow the definition by Boot (2000, p.10) for its being the most comprehensive. Boot defines RL as "the provision of financial services by a financial intermediary that i) invests in obtaining customer-specific information, that is often proprietary in nature; [and] ii) evaluates the profitability of these investments through multiple interactions with the same customer over time and across products". Similar to the definition provided by Boot and worth mentioning are two others. One is by Berger and Udell (2002): "Under relationship lending, banks acquire information over time through contact with the firm, its owner, and its local community on a variety of dimensions and use this information in their decisions about the availability and terms of credit to the firm". The other is by Ongena and Smith (2000): "connection between a bank and a customer that goes beyond the execution of simple, anonymous, financial transactions".

Customer-specific information goes beyond publicly available information. Beginning with the groundbreaking works by Stein (2002) and Petersen (2004), it started to be called "soft information". Stein (p. 1892) explicitly declares reliance on a well-established distinction in accounting literature, defining soft information as "the information that cannot be directly verified by anyone other than the agent who produces it" and hard information as information verifiable based on objective data. Petersen focuses on the different characteristics of the two forms of information and how they are gathered and processed. According to this approach, hard information concerns quantitative variables and therefore is objectively measured and represented through numbers, for example, budget data, production data, data regarding the regularity of payments, and the performance of stocks. In contrast, soft information is represented by qualitative characteristics, for example, judgments, opinions, ideas, rumors and other evaluations regarding such aspects as management or owners' quality, and their ethical profile, the company's plans, and market conditions. These latter variables are usually expressed and communicated in words and can be transformed into numbers; nonetheless, they remain subjective records whose value may vary according to the agent who collects and processes them.

According to Berger and Udell (2002), soft information gathered over time "has significant value beyond the firm's financial statements, collateral, and credit score, helping the relationship lender address informational opacity problems better than potential transactions lenders". Given that small and medium enterprises are typically informationally opaque firms, such enterprises have been considered for a long time the obvious counterparty of a bank-customer relationship (Angelini *et al.* 1998, Berger at al., 2001; De Young *et al.* 2003, Scott 2004, Avery and Samolyk, 2004, 2004, Bongini et al 2007).

The evolution of the literature has gone hand in hand with the difficult task of choosing the correct means to capture the phenomenon correctly. Over time, RL studies have focused on the distinguishing features of RL, i.e., the elements in the presence of which one can actually qualify a bank as a relationship lender. These features can be summarized as follows.

- **Length of the relationship**. The importance of length as a qualifying element of the bank-customer relationship is initially acknowledged by theoretical models dealing with the issue of the choice of the financing circuit (Sharpe 1990, Diamond 1991, Slovin *et al.* 1993, Boot and Thakor 1994, Petersen and Rajan 1994, von Thadden 1995). According to these studies, the possibility of developing a series of repeated transactions, implicit in the bank-customer relationship, represents an approach to reducing the cost of searching for and processing the information needed to the screening activity which, if referring to a one-period contract, would be too onerous and would lead to the non-granting of the loan. The duration of the relationship therefore allows for the stratification of information and access to more precise knowledge about the borrower and his related risk.

- **Intensity of the relationship**. This element was initially measured by the number of lending banks (Petersen and Rajan, 1994; Cole, 1998; Ongena and Smith, 2000, de Bodt et al., 2005). The main assumption was that RL was operating in the presence of only one lending bank, or at least with very few banks. Multiple lending relationships were synonymous of transaction based lending. However, the most recent studies question the underlying hypothesis of this approach, namely, that all banks contribute the same amount of lending. In fact, even in a situation in which multiple lenders finance the same firm, a main bank, or hausbank, can be easily identified (Ongena et al.,2008). Therefore, the intensity of the relationship becomes the *depth* of the relationship, measured by the amount of bank lending granted by each bank compared with the

total used by a company (Harhoff and Koerting, 1998; Ferri and Messori, 2000; Machauer and Weber, 2000; Ongena and Smith, 2000; Berger *et al.*, 2001; Ongena *et al.* 2012).

We can therefore acknowledge that a durable relationship might not imply that it is sufficiently "intense" to fall within the definition of RL (Elsas, 2005). *RL* proves to be, therefore, a phenomenon that is not necessarily in contrast with the practice – widespread in many countries – of multiple bank lending, albeit accepting the fact that a sizeable part of the firm's financial transactions are performed with one bank (Ongena e Smith, 2000).

- **Extent of the relationship**. This element is measured by the number of services – other than lending services – acquired from a single bank (Cole, 1998; Degryse and van Cayseele, 2000, Santikian, 2014). The higher the number of services offered to the firm, the higher the supposed amount of information gathered by the bank and the higher the economies of scale in information costs.

- **Proximity** is meant as the physical closeness between the customer and the bank. It is considered a characteristic capable of influencing how the bank-customer relationship develops and, above all, of influencing the possibility for banks to acquire an information advantage. Thanks to the proximity to its customers, the bank may benefit from lower transfer costs for acquiring information, useful during the screening phase and the monitoring phase, and a higher availability and/or lower cost of information concerning the context in which the customer operates. A short distance between lender and borrower allows also the gathering of a greater amount of soft information, which is central to the screening and monitoring activity of a relationship bank (Petersen and Rajan 2002; Petersen 2004; Sussman and Zeira, 1995).

Advances in communication technology and information processing, on the one hand, have allowed for the transformation of soft information into numbers and, on the other hand, have

increased the possibilities of information transfer thanks to data transmission. All these factors have certainly contributed to reducing transfer and transmission costs, although it is not yet clear whether they have also reduced the significance of bank-customer proximity. On this question, Petersen and Rajan (1995) discovered that in the 1980's and 1990's the distance separating a large sample of small/medium U.S. companies and their credit intermediaries increased with the probability that contacts between firms and intermediaries were initiated impersonally. They also highlighted that if the analysis of financial intermediaries is limited exclusively to banks – and particularly those banks where firms have an account – results change significantly. The percentage of firms that communicate personally with the bank increases and the average distance between bank and customer decreases noticeably. The choice of a personal contact with the bank rises when the bank concerned is considered the main bank with which the enterprise operates. Overall, such evidence shows that, in the presence of RL, the bank-customer distance maintains a certain importance.

More recently, Alessandrini *et al*. (2009) – the first scholars to introduce the concept of "functional" distance – suggest that not only spatial elements should be considered but also organizational and decisional elements. It is not only the distance between customer and bank branch that becomes relevant – as in the initial studies on RL – but also the distance between the customer and the "brain" of the bank, i.e., the head office or the physical place where credit decisions are in fact made. Assuming equal distances between customer and bank branch, the situation differs considerably when the branch has the authority to grant loans rather than some head office structure distant from the branch (and from the customer). In the latter case, it is obvious that – although at a higher hierarchical level – many of the informational problems deriving from a higher distance between lender and borrower reappear. Therefore, the focus switches from an analysis of

the bank-customer relationship with reference to the spatial/geographical features (namely, a network of branches) of financial services to an approach centered on the organizational aspects and on the interrelations between these and RL.

- **Organizational features.** Stein (2002) postulated that the bank's capacity to use soft information decreases as the level of vertical hierarchical organization increases. In a similar vein, Berger and Udell (2002 and 2006) highlighted the importance of bank loan officers in producing soft information. In particular, a necessary condition, for a relationship bank, is to grant loan officer high decision-making power and to limit their turnover. High loan officer turnover, in fact, is associated to reduced credit availability (Scott, 2006) and to higher probability of credit rationing (Ferri and Murro, 2015). However, the loan officers power needs to be counterbalanced by a system of oversight and control devoted to minimizing agency problems that could arise between loan officer and top management and, subsequently, upstream between top management and owners, and between owners and supervisory authorities and creditors (for example, holders of subordinated loans). Therefore, we may conclude that the best organizational form for the development of RL is that of small-sized banks, in which there is a lower number of hierarchical levels and, consequently, fewer control problems and lesser dilution of soft information.

An important consequence is that large-sized and diversified banks, with a complex and centralized organization structure, are less efficient in managing relationships with "informationally" opaque customers, i.e., smaller enterprises (Berger and Udell, 2002; Berger et al, 2005; Uchida et al, 2012).

- **Lending Technologies.** The term lending technologies was first used by Berger and Udell (2002) to represent a unique combination among main sources of information (hard or soft), screening processes, contract structure, monitoring policies and procedures. Seven different

technologies were identified (Berger and Udell, 2002; 2006), among which six refer to transactions-based lending and one to RL.[i] All six technologies refer to loans whose valuation is based on hard information. In the RL case, the bank grants the loan essentially utilizing proprietary soft information whose value exceeds that of the information derived from financial statements, credit scoring and guarantees and that allows the relationship lender to address the issue of information opacity better than the transactions lender can. The authors also warned against the oversimplification of considering RL the only lending technology available to grant loans to opaque firms. In fact, they state that among the transactions-based lending technologies, only financial statement lending is addressed to transparent customers, whereas all the other techniques also can be used with informationally opaque customers.

In summary, banks contextually use both approaches, TL and RL, as part of the various lending technologies available (Uchida et al., 2006). Small banks enjoy a comparative advantage in RL techniques, although this advantage is stronger with large firms; conversely, large banks have a comparative advantage only in some TL technologies, and this advantage does not increase with the size of the firm (Berger and Black, 2011). Consequently, one can move beyond the opaque customer-Relationship Bank and transparent customer-Transaction Bank dichotomy.

3. What do I get?

The establishment of intense and long lasting relationships should imply advantages for both partners of the relationship. Indeed, it takes two to tango; both the firm and the bank must earn something from such a thorough relationship to convince them to enter into it. The next paragraphs are devoted to analyzing such advantages from the bank side first and then from the firm side. Finally, we review these benefits according to four different scenarios characterized by different

combinations of firm/bank good/adverse conditions. This Section concentrates on theoretical literature while Section 4 is devoted to analyze the results of the empirical literature.

3.1 The bank side

The establishment of a strong and lasting relationship between the bank and the customer is justified by the desire/interest of the creditor (the bank) to reduce the information asymmetries that afflict credit relationships. The bank that invests in RL acquires more informative and more in-depth data about the customer (Bhattacharya and Chiesa, 1985) but also sustains higher lending operational costs to screen potential borrowers. In the long term, the amortization of the initial screening costs occurs, as is well described by Boot, Greenbaum and Thakor (1983).

Moreover, RL allows for further distinct advantages: learning about borrowers' type over time (Diamond, 1984; Mayer, 1988; Terlizzese, 1988; Von Thadden, 1995; Diamond, 1991; Bolton et al. 2013) and access to incentive-compatible contracts (implicit contract clauses) capable of reducing agency problems from a multi-period perspective and in a repeated game context (Mayer, 1988; Hellwig, 1991). Such clauses allow the bank to monitor better the debtor through the threat of refusing credit renewal in the event the debtor does not comply with the terms of the contract, or through the promise of improved conditions (reduction of required guarantees, rate or quantity smoothing). In fact, this allows firms to access long-term sources of finance that otherwise would not have been available due to information asymmetries and high (prohibitive) costs of contract signing totally depending on future conditions (complete contracts).

Eventually, a better knowledge of the customer base could turn into a better pricing of loans granted, allowing the bank to earn a higher margin (Berlin and Mester, 1998; 1999).

Finally, the source of value in relationship lending may not be limited only to enhanced monitoring but could also consider optimal pricing strategies for firms that sell multiple products. Leveraging

a large literature on industrial organization, Santikian (2014) postulates that, for a given level of borrower credit quality, the strength of a banking relationship increases with the borrower's overall profitability to the bank.

3.2 The firm side

The advantages of RL on the side of the firm relates to improved contractual conditions of the bank debt (amount of credit, cost of credit, and request of collateral) on the one hand and to the effects on firm performance on the other hand.

Insofar as the bank shares with its customer the advantages connected to the relationship in the form of lower credit cost, higher availability of credit, lower demand for collateral, and willingness to supply an implicit "insurance" contract against fluctuations of lending rates (essentially, an implicit commitment toward rate smoothing), the customer relationship also has value for the single customer.

Considering the availability of credit, firms that have close relationships with banks are supposed to count on improved access to credit in terms of larger amounts granted, with respect to arm's length financing (Diamond, 1984) and to firms that are similar in terms of risk profiles but have no close bank relationships (Petersen and Rajan, 1995).

Guarantees play an important role in theoretical models studying bank behavior. Based on Stiglitz and Weiss' study of credit rationing (1981), Bester (1985), Besanko and Thakor (1987a 1987b), and Chan and Kanatas (1985) demonstrate that guarantees act as a signal and therefore are provided by the best customers. However, less-risky debtors will offer stronger guarantees to the bank to offset the risk of adverse selection by obtaining in return a lower credit cost. A second field of study, focusing on moral hazard risk following the stipulation of the contract, shows, in contrast, that the use of collateral is more frequent in the case of riskier debtors (Swary and Udell,

1988; Boot, Thakor and Udell, 1991; Boot and Thakor, 1994; Bester, 1994; Rajan and Winton, 1995). Considering a repeated credit market game and the possibility to reduce information asymmetries, in a RL context, the second hypothesis seems to fit better.

There are three different theoretical approaches pinpointing a relationship between loan pricing and RL.

According to the first approach, in which the bank acts as a delegated monitor (Diamond, 1984; Mayer, 1988; Terlizzese, 1988; Von Thadden, 1995; Diamond, 1991; Bolton et al. 2013), lending relationships allow the firm access to credit at less onerous terms thanks, among others reasons, to the fact that the bank can increase borrower knowledge over time.

In the second approach, a bank operating with a RL policy could stipulate a lending contract that includes, implicitly, insurance against fluctuations in lending rates, thus playing a significant role as shock absorber. According to this approach, based on Fried and Howitt's model (1980), the bank applies to such loans a rate that does not vary proportionally to possible changes in borrowing costs (such as rate shocks deriving from a tightening of monetary policy) or to possible changes in the debtor's credit rating (credit-risk shock) . In other words, the bank supplies a service of loan rate smoothing, offsetting lower margins when borrowing costs increase with higher margins earned when the rate of the loan does not completely embody improvements in borrowing costs or credit rating (Sharpe 1991; Hoshi *et al.* 1990).

A third perspective emphasizes the possibility of "capturing" a firm as a customer; difficulties or higher costs relating to gaining access to alternative, non-bank financing, in turn triggered by the scarcity of information regarding the borrower, determine hold-up phenomena by the bank. When the relationship turns into a more significant one, the bank can apply higher rates than those justified by the real risk profile of the borrower. In this regard, the theoretical literature, starting

with Sharpe (1990), Hellwig (1991) and Rajan (1992), highlights that banks with long-lasting customer relationships are in fact rent-seekers and do not share with firms/customers the advantages connected to the relationship itself. The hold-up theory warns against possible problems of capture of the company that has close ties with a bank; the bank, in fact, has an incentive to exploit the power of monopoly in implicit information advantage acquired and as such imposes higher interest rates.

Finally, on the basis on Fama's theoretical study (1985) stressing the uniqueness of bank lending, theory predicts that the recourse to bank lending is perceived positively and has a positive effect on the firm's value. In this context, RL could provide additional value that the market appreciates. Indeed, if the bank is willing to share the benefits derived from careful screening and monitoring activities by guaranteeing easier access to lending (i.e., increased credit availability and lower cost), then a strong customer relationship should enable firms to have better performance over firms that do not establish close relationships with a bank. The notion of performance is to be considered in a meaning that is not limited to a higher market value, but also implies higher accounting revenues or profits, higher firm propensity to innovation (Rajan and Zingales, 2001) or higher export propensity (Bartoli et al., 2014).

3.3 A new framework of analysis

Theoretical and empirical literature on RL has always considered situations in which both banks and firms operate in normal/good economic conditions or, otherwise, in which firms are the only agent in distress. In light of the recent systemic crisis that affected banking systems worldwide and triggered a prolonged economic downturn, we believe it useful to analyze also a scenario in which not only firms are in distress but also banks. We therefore designed a new framework of analysis

that considers four different scenarios in which the bank-firm relationship may develop (see figure 1).

The first scenario (that we call 'Good time') is favorable to both the bank and the firm; the second scenario ('Firm's distress') sees only the firm in distress, with a consequential increase in its credit risk. In the third scenario ('Bank's distress'), it is the lending bank in distress, whereas the firm continues to enjoy good economic conditions. Finally, the fourth scenario ('Generalized crisis') configures a situation of generalized financial and economic crisis in which both banks and firms encounter severe difficulties. The potential economic benefits that a bank and a firm could obtain from an intense bank-firm relationship are analyzed and inserted in our matrix according to whether a good time scenario or a bad time scenario occurs.

INSERT figure 1 here

Good time scenario

The 'Good time' scenario incorporates all the alleged benefits analyzed in Section 3. In summary, a better distribution of private information between the borrower and the lender could lead to higher overall bank profitability on the one hand and to better credit conditions[ii] on the other hand with potentially significant spillover effects on firm's performance.

Firm's distress scenario

In a scenario of 'Firm's distress', the relationship bank can support the firm through an array of actions: i) a greater supply of credit than what the (worsened) credit history otherwise would lead to; ii) lower/null request for additional collateral; iii) lending rates that may not entirely embody the increased credit risk. Indeed, thanks to the improved ability to assess the recovery prospects of the firm (positive effect of learning from a long lasting, intense liaison), the relationship bank is

deemed to offer an insurance service to its relationship borrowers via credit quantity or loan-rate smoothing (Allen and Gale, 1997; Petersen and Rajan 1995; Berlin and Mester, 1999).

However, when we move from a scenario in which a single firm faces distress to a scenario of recession, the hold-up problems that arise when a firm is informationally captured by its lending bank could be amplified and are the most likely outcome. First, competition among banks decreases during recessions as uncertainty regarding the quality of borrowers increases. Moreover, during a recession, the supply of credit decreases because of the procyclical behavior of banks. This in turn increases switching costs and the monopoly power of the relationship bank, which can price loans above the default risk premium. Second, because hold-up problems increase with borrower risk (Rajan, 1992), the likelihood that banks raise their spreads above the level that is justified by borrower risk alone is amplified in a period of economic contraction, in which the probability of default for all borrowers is increased.

Bank's distress scenario

The scenario of 'Bank's distress' is analyzed by the relevant literature that, among others, highlights the cost of information loss for the entire economic system due to a bank failure (Bernanke, 1983; Gray and Ongena, 1996; de Lange, 1992; Stiglitz, 1992; Gale,1993). When a bank fails, the capitalized value of bank-borrower relationships based on accumulated private information is lost; the reconstruction of such informational capital is costly and requires time, particularly for firms that do not have access to public debt markets (Diamond, 1991). Corporate managers must spend valuable time and resources to gather and credibly convey private information about the quality of the their firm to a new bank, in addition to absorbing the direct costs of searching for and initiating new lending relationships. Consequently, borrowers could face a temporary or long lasting situation of credit reduction that might require the termination of

productive investments[iii] and negatively affect their share prices. This might explain why exclusive bank-firm relationships are difficult to find.[iv] On the one hand, for the above reasons, borrowers cannot credibly commit to take loans from at most one lender; on the other hand, lenders cannot completely prevent borrowers from taking credit from others because contracts cannot be made fully contingent on loans from other lenders.

Theoretical literature, however, predicts a number of significant negative externalities stemming from the non-exclusivity of loan contracts. These include the following: i) additional loans could adversely affect a borrower's probability of repayment by exacerbating moral hazard and incentives for strategic default; and ii) the prospect of such loans will worsen the borrower's access and terms of credit. For a theoretical analysis of non-exclusivity in different game-theoretic settings, see Bizer and De Marzo (1992), Kahn and Mookherjee (1998), Parlour and Rajan (2001), Bisin and Guaitoli (2004), Bennardo et al. (2009) and Attar et al. (2010).

Generalized crisis

Finally, the scenario of 'Generalized crisis', in which both the bank and the customer could face distressful events, has not yet been explicitly considered by theoretical studies.

A distressed bank's ability to offer credit is curtailed by the need to abide by the limits imposed by regulations in terms of capital adequacy and liquidity and by difficulties in raising funds; hence, it must carefully allocate (scarce) resources and select from among its borrowers which ones are worth of receiving credit. Because corporate customers also face distress, the bank will choose those whose probability of recovery is higher and less risky. Given the higher and more valuable information gathered over time, all things equal, we could expect that relationship borrowers will be privileged over transaction borrowers; the former will rely on the support and the best conditions that the bank is able to guarantee. However, based on the extant literature, we cannot

predict a priori whether relationship-borrowers will attain concessional terms and what is the extent of the bank support; these depend on the degree of capitalization, liquidity and efficiency of the bank. A growing literature indeed confirms the link between bank-balance-sheet strength and the supply of loans in crisis times (Ivashina and Scharfstein, 2010; Santos, 2011).

4. Empirical results

The empirical literature focusing on RL and its implications is considerable and continues to grow. The empirical tests provide a twofold contribution to the understanding of RL. First, they note which variables are more relevant in describing the phenomenon. Second, they provide empirical evidence confirming or disputing the advantages of RL predicted by the theoretical literature and analyzed in Section 3.

With respect to the former contribution, the distinguishing element appears to be the depth of the bank-customer relationship. The lending intensity and the extent of the relationship are statistically significant in a majority of studies across countries and types of firm. The duration of the relationship represents a necessary but not sufficient condition to identify RL; a simple long duration relationship, without the above-mentioned conditions, does not seem to distinguish a customer relationship from a transactions-based relationship. Finally, the physical proximity between bank and customer no longer represents a RL feature because technology and new distribution modes allow for more efficacious interaction forms between bank and customer. In contrast, organizational aspects related to hierarchical layers involved in the lending process are more important; in this perspective, more promising are those studies focusing on hierarchical or functional distance, highlighting an inverse relationship between such a distance and the benefits of RL.

With respect to the existence of benefits deriving from intense and long-lasting customer

relationships between banks and firms, the relevant empirical literature is mostly concentrated on the advantages enjoyed by the borrower. In contrast, less attention is given to the existence and nature of the benefits of RL from the perspective of the lender. In other words, the empirical literature takes for granted that the bank derives from a strong lender-borrower relationship the information benefits predicted by the theoretical literature. One of the few exceptions is given by Barath et al. (2007), who provide positive evidence of direct benefits that a bank-borrower relationship generates for a lender. Based on the information derived from the syndicated loan market, the authors demonstrate that to invest in RL results in the bank having a greater probability of increasing not only its credit business with the customer in question but also the opportunity to be involved, becoming lead managers in operations of debt and equity underwriting and IPO.

In what follows, we survey the empirical literature according to our four-scenario framework.

Good time scenario

As stated previously, empirical evidence on the benefits of RL has largely focused on documenting the benefits to the borrower. Studies were initially focused on the US market, but subsequent insights have been produced from work on Japan and continental Europe (chiefly Germany) and more recently on emerging economies, particularly in Latin America.

In brief, studies prior to the recent financial crisis documented that a firm derives a series of significant advantages from a stable relationship with a bank, such as the following:

(i) higher valuation of its effective value by the market; it improves firm profitability (Ongena and Smith, 2000 for a thorough survey on this aspect) or it decreases underpricing in IPOs (Schenone, 2004);

(ii) larger amount of available credit (for the U.S.: Petersen e Rajan, 1994; Cole, 1998;

Bodenhorn, 2007; for Italy; Angelini et al. 1998; Tirri, 2007; for Germany: Elsas, 2005; Lehman and Neuberger, 2001; for Japan: Shikimi, 2005; Kano et al., 2006);

(iii) fewer additional guarantees requested by the bank or at least a more effective use of those given. Whereas the empirical literature applied to the USA provides full evidence (see, for example, Boot and Thakor (1994), Berger and Udell (1995) and Chakaborty and Hu (2006)), the empirical evidence of the European markets does not provide univocal information. Degryse and Van Cayseele (2000), Haroff and Korting (1998) confirm the evidence of the US studies. Elsas, Kranen (2000), Lehman and Neuberger (2001) show how the German Hausbank tends to ask for more guarantees and more frequently than do other banks. These additional guarantees, conversely, are sufficient to "assure" the customer of the bank's higher willingness to participate actively, when necessary, in the plans of corporate restructuring. Pozzolo (2004) arrives at the same conclusion with reference to the Italian situation.

These results are robust and have been verified in markedly different market contexts (market-based banking systems – USA – and bank-based banking systems – continental Europe and Japan). They primarily refer to a good time scenario for both the lender and the borrower.

However, there are no univocal results concerning credit costs; the expected lower cost of credit linked to stable and long-lasting customer relationships is not always verified within one country or cross-country analyses. Conversely, neither is there sufficient evidence to confirm the theory of the hold-up, i.e., the capture of the company, which maintains close relationships with a bank. There are various reasons for these inconclusive results. First, proxies used to confirm the existence of RL differ from study to study. If one focuses on the duration of the relationship

between the bank and the company, studies related to the US market tend to confirm the hypothesis of credit cost reduction (Petersen and Rajan, 2004; Berger and Udell, 1995; 2001; Brick and Palia, 2007) because of a lasting banking relationship. In contrast, in Europe (Angelini et al.,1998; D'Auria et al., 1999; Ongena and Von Cayseele, 2000), the evidence confirms the information capture of firms with long-lasting customer relationships. This result also explains why businesses mono-crediting tend to "unhook" themselves, as soon as possible, from the situation of dependency and open new lending relationships with other banks, preferring multiple banking relationships to the exclusivity of a one bank-relationship (Ongena and Smith, 2001; Farinha and Santos, 2002; Gopalan, Udell and Yerramilli, 2007; Ioannidou and Ongena, 2008). Conversely, the above-mentioned studies show that the variables that express the intensity of the relationship are associated with a lower cost of credit for the firm.

Second, not all contract forms are suitable to characterize RL. The indistinct use of all forms of bank lending or the focus on only a few technical forms can lead to very different results although the examined sample is the same (see for instance the evidence from Petersen and Rajan, 1994 versus that of Berger and Udell, 1995; 2001).

Finally the results depend on the different competitive conditions in which the bank operates, which could represent the true cause for the existence of the hold-up problem (Petersen and Rajan 1994; Santikian, 2014; Kysucky and Norden, 2015).

Scenario of firm distress

Theory predicts that a firm engaged in RL will obtain relevant support in the event of its economic distress or during a period of recession, as opposed to a firm with no close lender-borrower relationships. Relationship creditors can subsidize the firm when in distress and extract rents later

on, when the recovery is completed. Alternatively, recessions are the ideal time for relationship lenders to exploit their information-captured borrowers by setting interest rates above the level justified by the borrower risk.

Few studies analyzed the lender-borrower relationship with a specific focus on a context of firms' distress. The studies primarily concentrate on providing evidence on whether banks support their relationship customers by means of better credit conditions. One exception is a very recent study by Rosenfeld (2014), who specifically assesses the effects of banking relationships on the future of financially distressed firms. The study provides evidence that RL helps detect which firms are more likely to emerge from distress.

Concerning the cost of credit to distressed firms, on one side rest the studies that provide empirical support for loan rate smoothing by relationship banks. Berger and Udell (1992) provide evidence that banks smooth loan rates in response to interest rate shocks, whereas Petersen and Rajan (1995) and Berlin and Mester (1997) provide evidence that banks smooth loan rates in response to changes in a firm's credit risk. In a subsequent study, Berlin and Mester (1998) sought to quantify the effects of loan rate smoothing on banks profit and cost. In their study, the theoretical hypothesis – the efficient pricing hypothesis – which states that the bank that provides implicit insurance against the risk of fluctuations of loan rates is rewarded with higher levels of profit, is empirically verified. The negative empirical evidence, as far as credit shocks are concerned, is explained by the authors through the view of many practitioners that banks had historically engaged in inefficient pricing practices, charging excessively low risk premia to high-risk borrowers and excessively high risk premia to low-risk borrowers. Note that these results are based on a period before the development of quantitative models of credit risk measurement.

On an opposite side rest those studies finding empirical evidence for information rents in loan

spreads (Santos and Winton, 2008; Mattes et al., 2013). Market and micro conditions are also relevant in these studies. Competition from other financing sources matters; although loan spreads generally rise in recessions, firms with public debt market access pay lower spreads, and spreads rise significantly less in recessions (Santos and Winton, 2008). Mattes et al. (2013) find evidence that banks exploit their information monopolies only during recessions and not during expansion phases (when competition is higher); moreover, undercapitalized banks are more likely to charge higher spreads to borrowers with higher switching costs. Conversely, strongly capitalized banks seem to maintain their commitment with their clients to strengthen the relationship in expectation of higher future income. Consequently, the operational conditions of a bank are relevant to characterizing its propensity to support its borrowers during bad times, conditions that become crucial when the bad times also involve the bank.

Scenario of bank distress

Unassisted bank failure or bank liquidation represents costly industry exits, which are rarely adopted by regulatory authorities; when they occur, they typically are limited to very small, local banks. There are two alternative ways by which bank financial distress is usually resolved: voluntary or regulatory arranged acquisition of the problem bank by a qualified bank or the establishment of a bridge bank, which takes control of "good" bank operations, leaving distressed assets to a bad bank. The former solution has been considered by the empirical literature studying the effects of bank mergers on bank-firm relationships. Disposition of failed banks and voluntary bank mergers could cause temporary disruptions in banking services. Berger et al. (1995; 1998), Peek and Rosengren (1998) and Sapienza (2002) analyze the effect of bank consolidation on bank's credit policies and find that loan contracts to smaller firms becomes less attractive after a merger and that a contraction in the availability of bank credit is more likely for small,

informationally opaque businesses. Beretta and Del Prete (2013) find that in the case of mergers involving several banks that were financing the same firm before the deal, the share of credit jointly provided by the consolidated banks decreases relative to other lenders over three years. However, this does not necessarily imply a reduction of the overall credit granted to the firm, because after consolidations involving its lending banks, the probability of diversifying the mix of lenders increases. Indeed, if the company is geographically close to a branch of its financing bank, or if it belongs to an industrial district, more-exclusive credit relationships between the parties seem to mitigate or offset the diversification of credit relationships generated by M&As. By contrast, if a firm is in financial distress or located in a geographical area with greater negative context externalities, then diversification is significantly enhanced. Kandrac (2014) shows that bank failures have adverse effects on local economies and lead to lower income and compensation growth, higher poverty rates, and lower employment. Additionally, he finds that Resolutions that include loss-sharing agreements tend to be less deleterious to local economies, supporting the notion that the importance of a bank failure to local economies stems from banking and credit relationships.

Such evidence again explains why a one-creditor environment is difficult to find in reality.

However, Degryse et al. (2011) find empirical support to the theories on contractual negative externalities stemming from multiple bank relationships. Using internal information on a creditor's willingness to lend, they find that a creditor reduces its loan supply (internal limits to the firm) when a borrower initiates a loan at another creditor. The effect is more pronounced when the loan from the other creditor is larger, unless the initial bank's loans retain seniority over the other creditor's loans and are secured with assets whose value is high and stable over time.

In summary, we can state that a firm is faced with a dilemma; in good times or in case of its own distress, the firm is better off if it commits to a one-creditor relationship. In recession or in case its bank is in distress, the firm would sleep more soundly if it were to switch to multiple relationships.

Scenario of generalized crises

The systemic financial crisis started in 2007, and the ensuing economic downturn faced by advanced economies represents an opportunity to test the potential benefits of RL in the final scenario of generalized distress for both agents involved in the relationship.

The studies currently conducted on the subject are growing fast (Table 1); our search criteria detected twenty-one studies, consisting of fifteen papers published in peer-reviewed international journals and six working papers. These studies are based on data from Italy (15), Japan (1), Germany (1), the U.S. (1) and cross-country (3).

Their time span covers up until the year 2010, i.e., the first phase of the credit slowdown caused by the financial crisis. Only two papers out of twenty-one have some indications on credit trends during the worsening of the crisis and in the initial outbreak (2011) of tensions related to sovereign debt risk.

- TABLE 1 -

Evidence emerging from the studies suggests that even in situations of generalized crisis, the existence of an intense bank-customer relationship helps firms to weather the storm with better loan contract conditions. Once again, empirical studies are primarily concentrated on the firm side to confirm (or dispute) the importance of banking relationships on the loan contract's characteristics.

In summary, the majority of these new studies (sixteen) analyze the issue of credit availability, in a situation in which the credit crunch was widespread and biting, and find that RL allows firms to benefit from higher amounts of credit, often at lower costs, and reduces the probability of being credit rationed. Six studies concentrate on the effects of the systemic crisis on the cost of credit. Apart from the study by Calcagnini et al. (2012), they are all unanimous in showing that RL supports firms by means of a smoothing in loan interest rates. Finally, only one study considers all three aspects of a loan contract – quantity, cost and collateral – and finds that, although the availability of credit is not affected, the cost of credit and collateral requirements are reduced when a main bank relationship exists (Hainz and Wiegand, 2012). Only one study –Albertazzi and Marchetti (2010) for Italy in the aftermath of the Lehman collapse - finds that RL does not bring any benefit to firms.

These first indications therefore confirm the benefits in terms of credit/interest-rate-smoothing assumed by the theory, even in the presence of a systemic crisis.

The importance of the financial crisis has led researchers to insert profiles of analysis that consider the extent to which different intermediaries have been hit by the financial crisis. Therefore, half of the more recent studies here analyzed include variables capturing a set of bank characteristics: bank capitalization, bank reliance on interbank funding, bank's loan charge-offs, and bank liquidity ratios. As anticipated, the role RL can play in a crisis is limited by the amount of excess equity capital banks are able to hold in anticipation of a crisis (Bolton et a., 2013); banks with larger capital ratios are better able to protect the lending relationship with their clients. Moreover, banks are more likely to grant loans to firms with a longer previous relationship. and bank balance-sheet strength determine the success of loan applications and the granting of loans in crisis times (Jimenez et al., 2012). Such evidence is also confirmed in a more competitive market, for example,

the market for syndicated loans, which is handled by larger firms and involves very large and prestigious lenders (Dewally and Shao, 2014).

Finally, on the banks' side, it is worth mentioning the studies by Bolton et al. (2013), Cotugno et al. (2013b) and Fiordelisi et al. (2013), who find evidence of a benefit for the financing bank in terms of reduction in the probability of customer insolvency. In such a case, RL would help to improve (or maintain stable) the quality of the loan portfolio, even during a period of generalized crisis caused by factors external to the debtor.

5. Future perspectives on relationship lending

We surveyed the vast literature on relationship lending to highlight why a bank and a firm should engage in a strong, intense and long lasting lending relationship, particularly during a period of generalized crisis, when firms are in recession and banks find it hard to continue support the economy due to liquidity tensions and capital constraints.

To do so, we added a new framework of analysis that considers the alleged benefits of RL in all possible scenarios under which banks and firms could operate, from a good time scenario to a scenario of generalized crisis affecting both firms and banks.

The literature, which analyzes samples of bank-firm relationships before 2007, confirms that RL allows firms to borrow more with less collateral requirements; in contrast, the literature is not unanimous with respect to the cost of credit, which is primarily affected by the level of bank competition. The most recent empirical evidence indicates that RL `produced positive effects in the early years of the recent international financial crisis, both for the bank and for the firm, confirming that RL can contribute to overcoming the difficulties encountered by banks and firms during harsh times. With reference to the bank's advantages from RL, recent empirical studies, which remain, however, numerically limited, have confirmed a better quality and greater

profitability of the loan portfolio of relationship banks. With reference to firms, evidence confirms many of the positive effects of RL in terms of firm support in times of crisis. In summary, even in a prolonged period of economic and financial crisis, RL remains a viable solution and helps both banks and their customers to weather the storm.

Our survey also identifies what features are generally associated with a bank-firm relationship with these benefits and advantages. In the majority of studies, the depth and intensiveness of the relationship – measured by the percentage of bank lending granted by the main bank and the number of services purchased by the company – play a crucial role. However, the duration of the relationship and the physical proximity of the bank to the customer do not seem to distinguish a customer relationship from a transaction-based one.

Notwithstanding thirty years of empirical literature on RL, there remains room for new studies confirming the solidity of strong, intense bank-customer relationships even during the worst period of economic recession. What we believe is that there remains more room for better measuring the capability of a bank to be a relationship bank. In particular, it should be necessary to expand the range of proxies used to include specific elements that enable better assessment of the process of collection, transfer and evaluation of information, for example, with reference to the following:

- Collection of information: average number of customers assigned to the individual loan officer; turnover of loan officers; the presence of systematic collection and mandatory use of soft information to be included in the system of internal rating;
- Transfer of information: codification of soft information
- Assessment of information: importance of soft information to the overall internal rating system; frequency of review of the credit application

It could also be useful to know whether the single bank performs more in-depth analysis based more on soft information when it addresses relationship customers and whether override practices in the monitoring activity are of greater use for this type of customers.

Lack of the above-mentioned features in the process of collection, transfer and assessment of information, a short distance between lender and borrower, a higher duration and intensity of the lending relationship are not sufficient conditions to guarantee the bank and its customers extraction of the full benefits from an intense and long lasting bank-firm relationship.

A further issue worth investigating refers to the potential impact of recent regulatory reforms – for instance, Basle 3 and CRD4 - on a bank propensity in adopting operational models focused on borrower-lender relationships. The introduction of more stringent rules regarding both the screening process and the new classification of loans, between performing and non-performing, could reduce a bank's incentive in investing in RL. In the former case, less room is left for the use of soft information in the valuation of the creditworthiness of borrowers with evident effects on the bank's propensity to include this piece of information in its internal rating systems; in the latter case, the lower discretion left to banks in their credit classification criteria between performing and non-performing loans (and the consequent effects on capital absorption) could lead banks to early and aggressively dispose their NPL, undermining their reputation and model based on long standing relationships.

Further research on these topics is warranted.

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Figure 1

The figure represents our analysis framework, which considers 4 different scenarios and the benefits of Relationship Lending for both the firm and the bank in each scenario.

		BANK	
		GOOD TIMES	**BAD TIMES**
FIRM	**GOOD TIMES**	Reduction of asymmetric information More credit Cost of credit? Less collateral Higher bank revenues Higher firm performance	Loss of information Difficult for firm to obtain credit particularly for exclusive bank-firm relationship
	BAD TIMES	Greater possibility that the bank renegotiates contract terms	Lower difficulties for RL customers to obtain credit, conditional on Bank characteristics

Table 1 Survey of empirical literature addressing the issue of RL in a systemic crisis period

This table surveys the recent empirical literature on RL focusing on the financial crisis period (2008-onwards)

AUTHORS	SAMPLE	PERIOD	MEASURES of RL	AVAILABILITY OF CREDIT	COST OF CREDIT	COLLATERAL REQUIREMENT	FIRM PERFORMANCE	OTHER	BANK CONTROL VARIABLES
Albertazzi and Marchetti, 2012	19,000 bank-firm relationships (500 banks and 2,500 non-financial firms)	Sept.2008-March 2009	Intensity of relationship (main bank)	RL does not exert any positive effect on credit availability	n.a.	n.a	n.a	n.a	Bank capitalization and liquidity
Calcagnini, G., Farabullini, F. and Giombini, G., 2012	560,339 firms and 214 banks in Italy	2006-2009	Length of Relationship Number of banks	n.a.	RL increases the firm's cost of credit	Mixed results; both length of relationship and the higher number of banks reduce the demand for collateral	n.a.	n.a.	n.a.
Cotugno, Monferrà and Sampagnaro, 2013	5,331 Italian bank-firm relationships provided by 3 Italian banks	2007-2009	Length of relationship, number of banks, functional proximity	RL positively affects firm credit availability	n.a.	n.a	n.a.	n.a.	n.a.
Cotugno, Stefanelli and Torluccio, 2013	85% of Italian banking system	2005-2010	Bank size Functional distance (headquarters versus branches) Loans/employees Loans/total assets	n.a.	n.a.	n.a.	n.a.	RL ameliorates the quality of the loan portfolio	Cost to income ratio; capital ratio
Hainz and Wiegand, 2013	1,139 German firms	2007-2009	firm's number of main bank relationships (long duration, personal support, short distance, company knowledge, important creditor, difficult times)	not affected by RL	major reductions when ONE main bank; but also present with NO or TWO main bank relationships	one main bank relationship reduces the probability of higher collateral requirements	n.a.	one main bank relationship reduces the probability of higher informati	bank funding scheme

								on provision	
Bartoli, Ferri, Murro and Rotondi, 2013	Unicredit loan portfolio (82,000 Italian SMEs	2007-2009	Duration and Intensity (main bank) of relationship	The bank focuses its support on relationship customers	n.a.	n.a.	n.a.	n.a.	n.a.
Bolton, Freixas, Gambacorta and Mistrulli, 2013	184,895 bank firm loan types (Italy)	2007-2010	physical proximity	RL positively affects firm credit availability, particularly in bad times	RB provides loans at a higher rate in good times, and at a lower rate in bad times	n.a	RL reduces the probability of borrower's default	n.a.	regulatory capital-to-risk weighted assets ratio, size, liquidity ratio, funding gap ratio
Del Prete Pagnini Rossi and Vaccà, 2013	Sample of 400 Italian banks	End 2009	Lending technologies (credit scoring) and tenure of local branch managers (LBM)	TL dampens credit growth; RL has a positive effect on loan supply, although longer tenure of LBM is detrimental to credit growth	n.a.	n.a.	n.a.	n.a.	Bank portfolio riskiness, profitability and capital endowment
Albertazzi and Bottero, 2014	38,000 Italian borrowers /600 banks	2006-2010	Functional distance; Intensity of relationship (main bank)	RL positively affects firms' credit availability					local funding gap implies more credit restriction
Alexandre, Bouaiss, and Refait-Alexandre, 2014	Sample of syndicated loans North America & Europe	2003-2008	Intensity of relationship (lead bank) Stability of syndicate	RL does not protect the firm from a reduction in the size of its credit facilities	RL reduces spreads	n.a	n.a	RL increases maturity of loans	n.a.
Beck, Degryse, De Haas and Van Horen, 2013	14,000 firms across 21 countries in Eastern Europe and Caucasus interviews of 400 bank CEOs	2005 and 2008-2009	Bank self-reported use of 4 Lending technologies, one of which is RL	TL and RL are substitutes during good times; However, RL is a more adequate lending technique during cyclical downturns	n.a.	n.a	n.a.	Na.	n.a.
Brancati, 2014	25.000 Italian firms per wave	3 waves: 2008;2009 ; 2011	Physical distance Proxy of functional distance (size of lender)	RL reduces firms' financial constraints only for very small firms	n.a.	n.a.	n.a	RL overcomes financial barriers to innovation (product and	n.a

								process innovation)	
Dewally and Shao, 2014	104,237 U.S. corporate & industrial loans	2006-2010	repeated interactions with lender in the syndicated loans market	RL increases the likelihood of receiving new credit	n.a.	n.a.	positive relationship between RL and firm leverage and performance (ROA)	n.a.	dependence on wholesale funding market reduces bank lending supply
Ferri, Murro and Rotondi, 2014	EU Efige dataset 15,000 firms across Europe	2007-2009	Lending technologies index	TL worsens credit rationing	n.a.	n.a.	n.a.	n.a.	n.a.
Fiordelisi, Monferrà, and Sampagnaro, 2014	43,000 Italian firms	2008-2010	length of relationship, number of banks, physical proximity	n.a.	n.a.	n.a.	RL reduces the probability of borrower's default	n.a.	n.a.
Gambacorta and Mistrulli, 2014	194.000 loans between 200 banks and 80.000 firms in Italy	June 2008-March 2010	Functional distance Creditor concentration (number of banks; share of total credit) Length of relationship	n.a	Interest rate spreads increased by less for relationship borrowers	n.a	n.a	n.a	Size, liquidity, capitalization, business and institutional model
Gobbi and Sette, 2014	38,059 Italian firms	2008-2009	Concentration of borrowing: 1.number of bank relationships 2. Herfindhal index of credit		n.a	n.a	n.a	n.a	Firms and banks characteristics (ROE,
Malafronte, Monferrà, Porzio, and Sampagnaro, 2014	30,000 loans of a large Italian banking group	2008-2010	length of relationship, number of banks, functional proximity	RL positively affects firm credit availability	n.a.	n.a.	n.a.	n.a.	n.a.
Milani, 2014	103 Italian provinces	1997-2011	Physical and functional distance	n.a	n.a.	n.a	n.a	RL reduces loan default rates	n.a.
Ono, Hasumi, and Hirata, 2014	c.a 5000 Japanese firms	2008-2009	Intensity of relationship (main bank)	RBs reduced credit to customers which obtained credit from a TB	n.a.	n.a	n.a	n.a	n.a.
Sette and Gobbi, 2015	25,500 Italian firms	2008-2009	length of relationship, physical and functional proximity, share of total credit	RL positively affects firm credit availability	banks raise interest rate less to firms they have a closer relationship with	n.a.	n.a.	n.a.	bank-specific changes in the cost of funding and balance sheet conditions

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NOTES

[i] The following technologies belong to TL: i) financial statement lending (loans granted on the base of corporate financial statements that must be certified by an authoritative audit firm); ii) asset-based lending (loans on components of corporate assets, such as stock and commercial credit); iii) credit scoring (loans based on techniques of credit scoring that make use of information both gathered by the bank and obtained by credit bureaus); iv) factoring; v) leasing and vi) fixed-asset lending (loans granted on a guarantee represented by locked-up assets).
[ii] With only the exception of loan price, whose level – below or above the default risk premium – remains uncertain.
[iii] Hence the need to avoid the situation in which a bank distress resolves in a disruptive industry exit by means of prudential ex ante regulation (i.e., capital adequacy standards) and ex post safety net schemes (deposit insurance and lender of last resort)
[iv] A mono-credited firm is usually a micro, privately held firm.