Bank Quality, Judicial E ciency and Loan Repayment

total amount of loans given (18% including other troubled loans not written o). Unlike other recent banking problems, where losses were concentrated in real estate or sovereign debt exposure, close to 80% of these bad debts came from bank lending to non- nancial businesses (Bank of Italy, 2016[1]).

In this paper, we show that the combination of weak bank balance sheets and ine cient legal enforcement leads borrowers to delay debt repayment. Borrowers selectively delay payment to banks already weakened by past bad loans while continuing to pay healthier banks. We emphasize that ine ective legal enforcement exacerbates this problem, as the magnitude of our estimates increases in areas of Italy where it takes longer to resolve disputes

variation to test how legal enforcement a ects repayment behavior as rms will be more willing to delay loan repayment the harder it is for lenders to protect their interests through the courts.

As in other studies, we exploit the fact that many Italian rms borrow from multiple banks. This feature allows us to introduce rm-speci c, time-varying e ects to absorb fundamentals that may determine rm decisions to delay loan repayment. Our identi cation thus comes solely from variation in bank characteristics, characteristics of the bank- rm relationship, and, importantly, on the e ciency of the court system. In other words, we test how the same rm behaves with respect todi erent banks, depending upon the strength of the bank's balance sheet, the local judicial environment, and the nature of the past bank- rm relationship.

The results suggest that bank balance sheet strength - particularly past bad loans - a ects the probability of a delay in loan repayment. In our basic speci cation, the stock of past bad loans increases the probability of borrower delays. This e ect increases as legal e ciency decreases. Thus, on average banks with weaker balance sheets due to past (and non-collectible) bad loans experience more future defaults (in the form of temporary delays in repayment, many of which ultimately become permanently impaired). That is, we observe borrowers withholding payment to weak banks. To allay concern that our results re ect reverse causality (whereby bank balance sheet health is reduced by borrow payment delays) as well as omitted variables, we construct an instrument for bank weakness that depends only on each bank's 2007 lending portfolio shares (across di erent sectors and provinces), combined with losses based onaggregateloan outcomes at the sector and province level (excluding, for each rm, loans in the sector-province cell the rm belongs to). These results are qualitatively similar to our baseline models. In addition, we verify that late repayment harms lenders, as their pro ts decrease with past levels of payment delays.

Are distressed borrowers merely selecting which banks to pay by allocating a xed but limited cash- ow budget across lenders? Or, are borrowers paying less than they otherwise

would because lenders are weak? We nd that some of the payment delays motivated by weak enforcement are, in fact, truly strategic in that borrowers pay less than they otherwise would because one or more of their lenders is distressed. We r1e(pa)2eme-estimate lesuawisewwo

I. Literature Review

How does our contribution relate to the previous literature? Using a global games framework, Bond and Rai (2009) prove the existence of multiple equilibria in loan repayment behavior, with one equilibrium characterized by an unraveling of borrowers' incentives to pay.[5] The crucial tradeo weighs the present bene t of default against the expected loss of future access to credit conditional on default. The expected value of future access to credit depends upon the likelihood that other borrowers will repay their loans, as this a ects banks' lending ability. This externality can lead to outcomes in which a borrower defaults because she expects others to do so. Carrasco and Salgado (2014) model a similar outcome in the context of a costly state veri cation model.[6]

Consistent with models such as Bond and Rai (2009), Breza (2012) nds that repayment rates on micro- nance loans are sensitive to the defaults of peers, using defaults initiated by a local government o cial as a source of variation unrelated to borrower fundamentals. Our empirical work focuses on indicators of overall bank health, but of course the probability of loan repayment will depend critically on borrower fundamentals. To isolate the e ect of bank fundamentals, we study rms that borrow from more than one lender, and we control for rm speci c and time varying factors that a ect a rm's repayment capacity (either actual or expected).

Beyond bank health, theory emphasizes the importance of the institutional environment in which contracting takes place. In particular, the ability of creditors to recover the money lent will mitigate the incentive to delay repayment. Hence, we study the interaction between e ciency of the local courts and bank health. Since La Porta et al. (1997) and La Porta et al. (1998), nancial economists have emphasized the importance of legal contract enforcement in shaping nancial relationships. Many of the empirical studies emphasize how measures of enforcement a ect ex ante contract terms such as ownership of debt and equity, the use of collateral and covenants in debt contracts, and the availability and price of credit (see Roberts and Su (2009) for a survey of the empirical literature). Djankov et al. (2003) show that civil-law countries like Italy tend to have greater legal formalism and experience longer delays in resolving commercial disputes (collecting on bad checks or evicting non-paying tenants) compared to common law countries. Jappelli et al. (2005) study Italy, as we do, and show that credit is more available and, in some speci cations, at lower prices in regions with better enforcement in court.

A number of other studies use changes in bankruptcy laws, mechanisms, or regulations as exogenous shocks to enforcement costs to trace out the e ects on credit supply. For example, Scott and Smith (1986) nd that increased debtor protection following the 1978 bankruptcy reform in the US, and hence weaker enforcement, was followed by an increase in interest rates on loans to small borrowers. Fedaseyeu (2015) exploits changes in state regulation

of debt collectors - an important enforcement mechanism outside bankruptcy - and nds that credit supply to high-risk borrowers increases with less restrictive regulation of the debt collection business. Gropp et al. (1997) show that reductions in enforcement from state-level variation in the amount that individuals can shield in bankruptcy from their creditors via the homestead exemption both constrains credit supply and increases credit demand. Rodano, Serrano-Velarde, and Tarantino (2016) exploit Italian legal reform in 2005 - prior to the beginning of our sample - and nd improved credit conditions thereafter. Most recently, Ponticelli and Alencar (2016) nd that legal reform to Brazilian courts led to better access to secured credit and higher investment.

A number of recent studies have found that credit supply by distressed banks was constrained in Italy during both the 2007 to 2009 global nancial crisis as well as the more recent sovereign debt crisis (e.g., Albertazzi and Marchetti (2010), Bolton et al. (2016), and Bofondi et al. (2017)). In addition, bank distress stemming from exposure to risky sovereign debt reduced credit supply and helped propagate the sovereign debt crisis from distressed to non-distressed countries across the Euro system (e.g., Popov and Van Horen (2014), De Marco (2019)).[7] Our study helps in rationalizing this behavior, as we show that past losses raise the risk of future rms delaying their debt repayment (holding constant borrower fundamentals); hence, it makes sense that distressed banks would raise the price and restrict access to credit when extending new loans.

As far as we know there is no empirical evidence of borrower payment delays motivated by concern about bank loan losses or insolvency. Ivashina and Scharfstein (2010) do provide evidence that US rms drew more on their credit lines with banks that had a relationship with Lehman, but the mechanism they emphasize stems not from borrower unwillingness to re-pay their debt (our mechanism), but instead from borrower concern that liquidity would not be available in the future for the lending bank, leading to increased drawdowns on existing credit

[7] On the real consequences of credit supply shocks in Italy see Cingano et al. (2016) and Balduzzi et al. (2018).

lines. Similarly, Ippolito et al. (2016) show that Italian rms with multiple credit lines drew more from banks that had higher pre-crisis exposure to the interbank market and thereby were more liquidity constrained. Their paper emphasizes the traditional source of bank instability: liquidity risk. Trautmann and Vlahu (2013) provides experimental evidence that solvent borrowers may be more likely to default strategically when their bank's expected strength is low and when their own expected repayment capacity is low. Survey-based evidence of strategic behavior by US households in mortgage markets has been provided in Guiso et al. (2013). They nd that the propensity to default by households, even if solvent, is a ected by both pecuniary and non-pecuniary factors such as views of fairness and morality. It is also related to the exposure to other people who have strategically defaulted.

We share with Ippolito et al. (2016) the focus on Italian rms and the use of the Italian Credit Register. Our emphasis, however, is on debt repayment and that is motivated by concern about a bank's viability and ability to extend credit itself in the medium term, as

cases at the beginning of 2007, F_{t} are new cases led during 2007 and E_{t} are cases ending with a judicial decision or withdrawn by the parties during 2007. We multiply D_{t} by 365

lenders. Restructured loans are exposures in which lenders, as a result of the deterioration of the borrower's nancial situation, agree to change the original conditions, giving rise to a loss for the creditor. Finally, the bad loans category includes exposures to insolvent counterparties (even if not legally ascertained), regardless of any loss estimate made by the bank and irrespective of any possible collateral or guarantee.[12]

[Table I here]

Table Ia shows the relative importance of these four categories and how they have evolved over time. Loans were broadly performing well before the 2007 to 2009 nancial crisis: the share of performing loans exceeds 98% in 2006 to 2008. The quality of lending began to worsen in 2009 (96% performing), and then fell in each year through 2014; that is, after the 2007 to 2009 nancial crisis and especially after the sovereign debt crisis, which was accompanied by a worsening of the real performance of the Italian economy.[13]

In Table Ib we report the transition matrix (looking ahead one year) for all the borrowers in Italy based on data on loan quality published by the Bank of Italy.[14] These data indicatew

Table Ia and Figure 1 show the development of

balance sheet. We also control for lender size. As in most countries, most of the 695 banks employed in this study are small, with a median asset size of 430 million Euro, but the largest banks have over 200 billion Euro in total assets.

[Table III here]

Columns 4 and 5 of Table III show that only two characteristics di er substantially between areas with above v. below average legal e ciency: loan losses and asset liquidity are both higher in the areas with relatively ine cient law. Capital and exposure to losses on sovereign bonds ($govbshock$) also di er statistically, but the economic magnitudes of these di erences are small. The higher level of loan losses re ects the greater di culty to banks of recovering loans that have gone into default.

Table IV contains statistics on the borrowers based on rm-year level data for the years 2008 to 2013, and includes both rms that do and not selectively pay late and that borrow from multiple banks as well as from one bank. This sample contains about 30,000 rms per year.

[Table IV here]

The median rm has about 50 employees and 15 million Euros in assets. Leverage varies substantially, with a standard deviation of 19% around a mean of about 30%. Firm age averages about 25 years. Overall, our sample is dominated by privately held, small and medium-sized rms. That said, our main results discussed below absorb with a quarter- rm dummy the direct e ects of constant and time-varying rm characteristics to focus on bank e ects on repayment behavior. Comparing across areas by legal e ciency, we see that rms are slightly younger and riskier in areas with weak law, but these di erences are small (despite statistical signi cance).

The regression sample (see, for instance, Table V) is based on data at the rm-bank-quarter level and thus has about 2.6 million observations for the period 2008Q4 to 2013Q4. We include all rms except those with just one bank relationship. There are around 500,000 quarterly observations on distinct rms. The average number of banks per rm is about 5,

resulting in 2.6 million loan level observations.[15] The sample breaks down as follows: about 0.2% paid late on all of their bank loans; 92.8% were paying all of their banks on time; and about 7% were late on some loans but not others.

III. Econometric Methods and Results

We estimate a linear probability model that links borrower payment delays to a set of bank e ects, rm-time e ects and measures of bank characteristics, as follows:

$$y_{i;b;t} = \sum_{k=1}^{K} {}_{k} x_{k;b;t \ 1} + {}_{i;t} + {}_{b} + "_{i;b;t} \qquad (2)$$

where i denotes rm, b denotes bank and t

high levels of borrower default. We will allow the e ects of bad loans to vary according to the judicial e ciency of the local courts (measured by the log of the average length of property execution proceedingsi(ne aw)). That is, we interact bad loans (as well as other bank co-variates) with this variable. In addition, we report interactive models based on rm credit quality.

To absorb unobserved heterogeneity at the bank level, we control for bank xed e ects

(b

payment delays may be less willing to write down loans than healthier banks (to conceal their

badloans. This instrument gets all of the cross-sectional variation in loss rates from pre-crisis lending shares, and all of its time-series variation from overall loan losses across all banks. The instrument brings additional information even with the inclusion of a bank xed e ect, because it has both cross-bank and over-time variation. While the weights could re ect unobserved di erences across banks, this heterogeity does not vary with time and is controlled for by the bank xed e ect. To summarize, the instrument captures only variation in badloansdue to a bank's ex ante exposures to di erent loan segments (except the one a rm belongs to), but no variation from the evolution of each bank's lending practices over time.

Our study rests on the assumption that borrowers pay attention to the quality of their banks' balance sheets, as it might in uence lenders' ability to extend credit in the future and be a proxy for banks' internal enforcement capacity. This is a very plausible assumption because bank balance sheet information is easily available and widely disseminated. The problem of bad loans has been particularly well publicized, as the national and international press have been focusing on credit quality as the main factor determining bank fragility in Italy.

In addition, Italian banks can observe rm loan repayment behavior through access to the Credit Register. Hence, a rm engaged in selective delay likely expects other banks to understand and observe this behavior. Our model thus requires that rms have a greater incentive to delay repayment to weaker banks relative to stronger ones, either because they expect less future credit from the weaker ones or because weaker banks are less able to enforce existing loan contracts, even when all banks have access to the same information.

A. Baseline result: Accumulated bad loans encourage rms to delay repayment

Table V reports our baseline speci cation (with no interactive e ects). Our sample covers the period 2008Q4 to 2013Q4. These regressions focus strictly on the total e ect of bank variables on a rm's choice to delay loan repayment. We report OLS models with rm-time

and bank xed e ects in column (1), and the rst-stage and second-stage IV models in

this could bias the OLS coe cient down relative to the IV. The IV estimator purges this

have more to gain (at least in the short term) by withholding payments to banks to whom they owe more.

We find no evidence that bank size or other characteristics affect repayment behavior. We also find no evidence that bank liquidity stress - either from a low share of assets in liquid investments or heavy reliance on wholesale funds (low stable funds) - affects repayment. This last non-result contrasts sharply with that of Ippolito et al. (2016), who show that firm drawdowns on credit lines increase at banks facing funding pressures around the Lehman bankruptcy. The difference in results is likely to reflect the different periods investigated by the two papers. Specifically, we do not focus on the immediate aftermath of the Lehman bankruptcy, but consider a longer period which is characterized by massive injection of liquidity by the European Central Bank that strongly alleviated liquidity shortages and funding problems of European banks.

B. Judicial efficiency

Table VI reports the model augmented with interactions of the bank characteristics with

maintaining control over current cash against the long-run cost of reduced access to credit, we would expect a smaller impact of bank health (bad loans) on delay for higher-quality rms.

To test these ideas, we augment our core model with interaction terms based on borrower quality. In the rst two columns, we separate rms into three bins using the z-score, which summarizes credit quality.[25] Firms with z-scores less than or equal to three are de ned as 'safe', those with scores between four and six as 'vulnerable', and those with scores equal to and above seven as 'risky'. In the last two columns, we instead separate rms into three bins based on the interest coverage ratio (EBITDA / Interest Expenses); rms with interest coverage below one are the most constrained; rms with coverage between one and two are intermediate; and rms with coverage above two are not cash constrained, as they have more than enough cash to pay all of their lenders.

The results (Table VIII

in Figure 5, the marginal effect of bad loans on delay becomes positive and statistically significant for most of the distribution of legal inefficiency above its average. Results are very similar when we use the interest coverage ratio to classify firms.

[Table VIII and Figures 4 & 5 here]

This suggests that truly strategic behavior sometimes occurs. Payment delays are higher when lenders are weak (due to high bad loans) and legal enforcement is poor, even for the lowest risk borrowers. Low risk borrowers have the capacity to pay but sometimes choose not to pay, indicating the presence of strategic behavior that goes beyond the selection of which lender to pay, and indicating the possibility of less overall debt repayment due to bank weakness and poor enforcement. These results also help rule out the idea that the effects we observe reflect differences in bank enforcement practices, as the safe borrowers have sufficient cash flow to continue paying their loans regardless of bank enforcement.

Another way to asses the importance of strategic behavior is to ask: are payment delays higher at firms whose lender(s) are collectively weak? To answer, we aggregate up the earlier regressions to the firm-year level (from the firm-bank-quarter level) by constructing the average payment delays and the average bank losses, weighted by the size of the exposure to each bank. Thus we can not absorb firm fundamentals with firm-time fixed effects. So, we control for firm fixed effects and industry-time effects and include time-varying fundamentals such as firms' initial leverage, cash flow, sales growth, interest coverage ratio, z-score, size and age (only available yearly). We do this for firms with both multiple and single banking relationships (the latter ones were effectively taken out by the firm-time fixed effects in the previous analysis). In one specification we also add as a separate regressor the firm-time effects estimated from the model of repayment delays at the firm-bank-time level. The latter can help in capturing other unobserved time and firm specific determinants of repayment delays. In this case we, obviously, limit ourselves only to firms with multiple banking relationships.

As shown in Table IX and in Figure 6 (based on the results of column 3), overall payment

delays are higher at rms whose average bank has experienced higher losses, and this e ect is greater in areas with weak legal enforcement. Accounting for both the direct and interactive terms, an increase in past losses in areas between the rst quartile and the median level of legal ine ciency is not statistically di erent from zero. In contrast, were legal ine ciency is closer or above its median value (which is smaller than the mean: 1,331 versus 1,511), the estimated marginal e ect of bank losses becomes statistically di erent from zero. At the mean value of enforcement, a one standard deviation increase in bad loans leads to an increase in the share of late payments of approximately 0.37 percentage points [= 1:229 + 0:187 ln(1; 511)] 0:027), using the results in column (3). The e ect increases by about 50% when enforcement is one standard deviation poorer. This marginal e ect is very similar in magnitude to what we estimate in our more disaggregated models. Our results help explain why credit supply has been shown to respond so strongly to the strength of legal enforcement (Jappelli et al. (2005)).

[Table IX and Figure 6 here]

D.

the rm-quarter xed e ects. In some cases loan terms are not available, so the sample falls in these models.[26]

raises delay in areas with weak enforcement. If anything, these results are stronger than those reported in our main model, meaning that the e ect of bad loans on delay exhibits greater sensitivity to legal e ciency in this smaller sample.

D.4. Controlling for Possible Endogeneity of Borrower-Lender Matching

With the results of column (4), we rule out the possibility that endogenous matching between rms and banks could explain our results. For example, one concern might be that rms sometimes choose a lender located in an area with poor legal enforcement with the intention of withholding payment. We do this by simply incorporating a unique xed e ect for each bank- rm pair. These e ects will `control' non-parametrically for all aspects driving the rm's choice of its lender. The result has a somewhat atter interaction with legal e ciency, but with similar e ects in terms of sign and statistical signi cance. At the mean level of legal enforcement, the e ect of a one standard deviation increase in bad loans on repayment delays equals 0.2 percentage points (= 0:027(1:078 + 0:163 ln (1511))).

D.5. Law v. Culture

One may wonder whether the di erences in the importance of bank health across court jurisdictions proxy for more complex and subtle di erences in culture across Italy. For example, cultural di erences in trust and respect for others outside the family (social capital for short) may a ect rm's willingness to engage in selective payment delays. If legal e ciency is correlated with local variation in culture, our emphasis on legal ex post contract enforcement could be misplaced[28]. One simple measure of cultural di erences across Italy is mere geography, with the North having more social capital and better formal institutions in general than the South. As we have seen, we have meaningful variation within both macro

[28] Guiso et al. (2004) report signi cant correlations of various provincial measures of both social capital and nancial development with legal ine ciency. See also, Putnam et al. (1994) et al.1(i)]TJ 0 g 0 G [-4145(20013]TJ 0

regions, but judicial e ciency is generally higher (ine aw is lower) in the North. However, the inclusion of a North-South dummy is a coarse way to control for di erences in social norms. Therefore, we also consider two direct measures that plausibly relate to the local level of social capital: the amount of blood donations by province (blood) and the frequency of fake checks by province (fake).[29] These measure of socal capital are also correlated with legal ine ciency, as one would expect, but again less than perfectly (see Appendix B, Table BII).

To test whether these alternative sources of variation a ect our results, we incorporate additional regressors interacting the bank characteristics with each measure of social capital into our core model (i.e., the one with interactions with judicial e ciency). Our focus is on the interaction between bad loans with these measures. The model with the North-South dummy appears in column (5), while those for the ner measures of social capital appear in columns (6) and (7). As before, the direct e ects of these additional variables gets aborbed by the xed e ects. What matters for us is that none of these additional terms is signi cant, nor does their inclusion a ect the economic magnitude or signi cance of the coe cent of the interaction between bad loans and ine aw . So, we conclude that judicial ine ciency is the key factor determining the marginal e ect of accumulated bad loans on the decision to delay payments.

D.6. Does Governance Explain Payment Delays? Mutual v. Private Banks

Past bad loans may re ect a bank's poor ability to enforce repayment having nothing to do with borrower incentives to delay payment. Our empirical model rules out any explanation, such as poor governance, related to time-invariant bank characteristics by including bank xed e ects. But if the quality of governance a ects the way time-varying bank characteristics a ect repayment delays, the xed e ect will not be su cient. In our last test, we

[29] See the Appendix A for precise de nitions. We would like to thank Luigi Guiso for providing us with the social capital data.

therefore estimate our model after allowing the e ect of bad loans (and other bank balance sheet variables) to depend upon an observable (and plausible) measure of bank governance based on its ownership structure. Anecdotal evidence suggests that mutual (cooperative) banks in Italy are less contestable (because the number of votes does not correspond to the number of shares held) and may be more subject to local political pressure, both of which may inhibit their ability or incentive to enforce contracts. We therefore estimate our model after allowing all of the slope coe cients to vary between private and mutual banks (last column of Table X).[30] This analysis provides no evidence of di erential e ects, thereby suggesting that poor governance can not explain why bank distress generates repayment delays.

[Table X here]

IV. Conclusions

This paper is the rst to provide evidence that weak balance sheets combined with ine cient legal enforcement together erode borrower repayment incentives. As we show, borrowers choose to delay payment in response to their bank's past accumulation of bad loans. These results are strong, both statistically and economically, at those Italian banks operating in areas with weak legal enforcement. Most of the nance and economics literature, as well as the policy and regulatory apparatus, have viewed the roots of bank vulnerability as stemming from exposure to liquidity risk. Although exposure to credit risk is a well-

where enforcement is weak, the safest borrowers delay loan repayment to the less-healthy banks and that exposure to weaker banks increases total repayment delays aggregated up at the rm level. Our results help explain why the law and nance literature has found weak enforcement of creditor rights to be so detrimental to well functioning debt markets (La Porta et al., 1998).

References

Ugo Albertazzi and Domenico J. Marchetti. Credit Supply, Flight to Quality and Evergreening: an Analysis of Bank-Firm Relationships after Lehman. Temi di Discussione (Economic Working Papers) 756, Bank of Italy, Economic Research and International Relations Area, April 2010.

Edward I. Altman. Financial Ratios, Discriminant Analysis and the Prediction Of Corporate Bankruptcy. Journal of Finance, 23(4):589 609, September 1968.

Edward I Altman. A further empirical investigation of the bankruptcy cost question. The Journal of Finance, 39(4):1067 1089, 1984.

Edward I Altman, Maªgorzata Iwanicz-Drozdowska, Erkki K Laitinen, and Arto Suvas. Financial distress prediction in an international context: A review and empirical analysis of altman's z-score model. Journal of International Financial Management & Accounting, 28(2):131 171, 2017.

Pierluigi Balduzzi, Emanuele Brancati, and Fabio Schiantarelli. Financial markets, banks' cost of funding, and rms' decisions: Lessons from two crises. Journal of Financial Intermediation, 36:1 15, 2018.

Bank of Italy. Relazione Annuale, 2012. URL https://www.bancaditalia.it/pubblicazioni/relazione-annuale/2012/en_rel_2012.pdf?language_id=1 .

Bank of Italy. Governor's Concluding Remarks, 2015a. URL https://www.bancaditalia.it/pubblicazioni/interventi-governatore/integov2015/en_cf_2014.pdf?language_id=1.

Bank of Italy. Relazione Annuale, Appendice, 2015b. URL https://www.bancaditalia.it/pubblicazioni/relazione-annuale/2014/appendice_2014_completa.pdf

Bank of Italy. Financial Stability Report 1, 2016. URL https://www.bancaditalia.it/pubblicazioni/rapporto-stabilita/2016-1/en-FSR-1-2016.pdf?language_id=1 .

Timothy J Bartik. Who bene ts from state and local economic development policies? 1991.

Niccoló Battistini, Marco Pagano, and Saverio Simonelli. Systemic risk, sovereign yields and bank exposures in the euro crisis. Economic Policy, 29(78):203 251, 04 2014.

Marcello Bofondi, Luisa Carpinelli, and Enrico Sette. Credit supply during a sovereign debt crisis. Journal of the European Economic Association, 16(3):696 729, 2017.

Patrick Bolton, Xavier Freixas, Leonardo Gambacorta, and Paolo Emilio Mistrulli. Relationship and Transaction Lending in a Crisis. Review of Financial Studies, 29(10):2643 2676, 2016.

Emilia Bonaccorsi di Patti and Enrico Sette. Bank Balance Sheets and the Transmission of Financial Shocks to Borrowers: Evidence from the 2007-2008 Crisis. Temi di Discussione (Economic Working Papers) 848, Bank of Italy, Economic Research and International Relations Area, January 2012.

Philip Bond and Ashok S. Rai. Borrower Run. Journal of International Economics, 89: 185 191, 2009.

Margherita Bottero, Simone Lenzu, and Filippo Mezzanotti. Sovereign debt exposure and the bank lending channel: impact on credit supply and the real economy. Temi di Discussione (Economic Working Papers) 1032, Bank of Italy, Economic Research and International Relations Area, September 2015.

Emily Breza. Peer e ects and loan repayment: Evidence from the krishna default crisis. MIT memeo, 2012.

Amanda Carmignani and Silvia Giacomelli. Italian Civil Justice: Regional Disparities. Questioni di Economia e Finanza (Occasional Papers) 40, Bank of Italy, Economic Research and International Relations Area, February 2009.

Vinicius Carrasco and Pablo Salgado. Coordinated Strategic Defaults and Financial Fragility in a Costly State Veri cation Model. Journal of Financial Intermediation, 23:129 139, 2014.

Federico Cingano, Francesco Manaresi, and Enrico Sette. Does credit crunch investment down? new evidence on the real e ects of the bank-lending channel. The Review of Financial Studies, 29(10):2737 2773, 2016.

Marcia Millon Cornett, Jamie John McNutt, Philip E. Strahan, and Hassan Tehranian. Liquidity Risk Management and Credit Supply in the Financial Crisis. Journal of Financial Economics, 101(2):297 312, August 2011.

Filippo De Marco. Bank lending and the european sovereign debt crisis. Journal of Financial and Quantitative Analysis, 54(1):155 182, 2019.

D. W. Diamond and P. H. Dybvig. Bank Runs, Deposit Insurance, and Liquidity. Journal of Political Economy, 91:401 419, 1983.

Simeon Djankov, Rafael La Porta, Florencio Lopez de Silanes, and Andrei Shleifer. Courts. The Quarterly Journal of Economics, 118(2):453 517, 2003.

Lukasz A Drozd and Ricardo Serrano-Padial. Financial contracting with enforcement externalities. Journal of Economic Theory, 178:153 189, 2018.

Mara Faccio. Politically Connected Firms. American Economic Review, 96(1):369 386, March 2006.

Viktar Fedaseyeu. Debt Collection Agencies and the Supply of Consumer Credit. Working Papers 15-23, Federal Reserve Bank of Philadelphia, June 2015.

Luigi Guiso, Paola Sapienza, and Luigi Zingales. Long-term persistence. Journal of the European Economic Association, 14(6):1401 1436, 2016.

Ali Hortaçsu, Gregor Matvos, Chad Syverson, and Sriram Venkataraman. Indirect costs of nancial distress in durable goods industries: The case of auto manufacturers. The Review of Financial Studies, 26(5):1248 1290, 2013.

Filippo Ippolito, José-Luis Peydró, Andrea Polo, and Enrico Sette. Double bank runs and liquidity risk management. Journal of Financial Economics, 122(1):135 154, 2016.

Victoria Ivashina and David Scharfstein. Bank lending during the nancial crisis of 2008. Journal of Financial Economics, 97(3):319 338, 2010.

Tullio Jappelli, Marco Pagano, and Magda Bianco. Courts and Banks: E ects of Judicial Enforcement on Credit Markets. Journal of Money, Credit and Banking, 37:223 244, 2005.

Michael C Jensen and William H Meckling. Theory of the rm: Managerial behavior, agency costs and ownership structure. Journal of nancial economics, 3(4):305 360, 1976.

Asim Ijaz Khwaja and Atif Mian. Tracing the Impact of Bank Liquidity Shocks: Evidence from an Emerging Market. American Economic Review, 98(4):1413 42, September 2008.

Rafael La Porta, Florencio Lopez de Silanes, Andrei Shleifer, and Robert W. Vishny. Legal Determinants of External Finance. Journal of Finance, 52(3):1131 50, July 1997.

Rafael La Porta, Florencio Lopez de Silanes, Andrei Shleifer, and Robert W. Vishny. Law and Finance. Journal of Political Economy, 106(6):1113 1155, December 1998.

Giovanni Legorano. Loans Sour for Italy's Banks. The Wall Street Journal, November 2013. URL http://www.wsj.com/articles/SB10001424052702304243904579195930128307274.

Jonathan A. Scott and Terrence Smith. The E ect of the Banktruptcy Reform Act of 1978 on Small Business Loan Prices. Journal of Financial Economics, 16:119 140, 1986.

Andrei Shleifer. Will the Sovereign Debt Market Survive? American Economic Review, 93 (2):85 90, May 2003.

Philip E. Strahan. Too Big to Fail: Causes, Consequences and Policy Responses. Annual Review of Financial Economics, 5:43 61, 2013.

Robert M. Townsend. Optimal Contracts and Competitive Markets with Costly State Veri- cation. Journal of Economic Theory, 21(2):265 293, 1979.

Stefan T. Trautmann and Razvan Vlahu. Strategic Loan Defaults and Coordination: An Experimental Analysis. Journal of Banking and Finance, 37(3):747 760, 2013.

Giada Zempano. Renzi Takes Aim at Italy's Slow Courts. Wall Street Journal, 2014.

Appendix A: Variable De nition and Sources

Loan quality and lending relationship - Source: Credit Register, Bank of Italy

late pb-329(een-3TJ/Fd)]Ty

We apply the rst formula when we know that the sovereign bonds are discount bonds and an average of the two formulae when we have no such information.

E ciency of justice - Source: Authors' estimates from data disseminated by the Italian Ministry of Justice

ine aw : m,ourtv-lLn-levnds)tion.

Appendix B

Table BI: Comparing Results With and Without Bank Fixed E ects

The table presents regressions of late payment as a function of a set of bank characteristics. The model allows the e ect of bank variables to vary with (the natural log of) duration for property execution proceedings in 2007 (ine aw). In the IV models, the instrument for badloans is based on the weighted average system-wide loss rates, where the weights re ect each bank's loan portfolio in 2007. Late payment (0,1) is equal to 1 if the rm has a loan repayment delay with the bank in the quarter; 0 if loans granted by the bank to the rm are performing in the quarter. The sample covers the period 2008Q4 to 2013Q4. While not reported, bank controls (lntot , stable, liquidity , cap, govbshock) and rm controls (bkshare), as well as their interactions with ine aw are included. The description of variables and their sources are given in the Data Appendix. Standard errors (in parentheses) are clustered at the bank-level. Asterisks denote signi cance at the 1%(***), 5%(**), 10%(*) level, respectively.

	OLS		2nd-Stage IV	
	(1)	(2)	(3)	(4)
badloans	-1.303**	-0.354	-0.637	-0.963**
	(0.245)	(0.376)	(0.423)	(0.414)
badloans*ine aw	0.197***	0.062	0.124**	0.144**
	(0.035)	(0.054)	(0.054)	(0.056)
rm*time xed e ect	yes	yes	yes	yes
bank xed e ect	yes	no	yes	no
N	2,656,565	2,656,571	2,618,038	2,618,042

Table BII: Correlation Matrix Variables Representing Social Capital

This table reports the correlation between pronvince-level characteristics. South is an indicator equal to one for provinces in the southern half of Italy. Legal ine ciency is the duration of property execution proceedings in 2007. Bounced checks is the number of checks returned, per capita. And, Blood is the number of units of blood donated per capita.

	South	Judicial Ine ciency	Bounced Checks
	(1)	(2)	(3)
South			
Judicial Ine ciency	0.71		
Bounced Checks	0.53	0.47	
Blood	-0.56	-0.38	-0.35

Table I: Summary Statistics

The table shows statistics on loan quality for a sample of around 32,000 industrial rms based in Italy. The description of variables and their data sources are given in Appendix A.

(a) Loan Quality in Italy (Sampled Firms)

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Performing	0.986	0.987	0.982	0.956	0.936	0.922	0.909	0.880	0.853
Bad Loans	0.000	0.000	0.002	0.008	0.017	0.025	0.035	0.052	0.071
Restructured	0.002	0.002	0.002	0.007	0.014	0.017	0.018	0.016	0.019
Past Due/Overdrawn	0.009	0.008	0.010	0.013	0.012	0.015	0.011	0.011	0.008
Substandard	0.003	0.002	0.005	0.016	0.021	0.021	0.027	0.040	0.049
o.w.:objective substd.	0.001	0.001	0.001	0.008	0.011	0.012	0.016	0.024	0.029
Late Payments	0.010	0.009	0.011	0.021	0.023	0.028	0.028	0.038	0.041
Late payments, excl. Credit Lines	0.008	0.007	0.010	0.018	0.018	0.019	0.023	0.031	0.034

(b) Transition Matrix for the Universe of All Borrowers

		Performing	Past Due/Overdrawn	Substandard/Restructured	Bad Loans
			Loan State at 12/2010		
Loan State at 12/2009	Performing	94.62%	1.11%	3.04%	1.22%
	Past Due/Overdrawn	50.74%	10.45%	27.56%	11.25%
	Substandard/Restructured	10.84%	0.63%	66.15%	22.38%
	Bad Loans	0.23%	0.02%	0.66%	99.09%
			Loan State at 12/2011		
Loan State at 12/2010	Performing	94.85%	0.97%	3.15%	1.02%
	Past Due/Overdrawn	52.52%	13.12%	25.35%	9.01%
	Substandard/Restructured	8.55%	0.40%	68.68%	22.37%
	Bad Loans	0.29%	0.02%	0.34%	99.35%
			Loan State at 12/2012		
Loan State at 12/2011	Performing	92.71%	1.54%	4.34%	1.41%
	Past Due/Overdrawn	35.28%	12.08%	39.64%	13.00%
	Substandard/Restructured	6.17%	0.44%	70.30%	23.09%
	Bad Loans	0.11%	0.01%	0.38%	99.50%
			Loan State at 12/2013		
Loan State at 12/2012	Performing	91.77%	1.20%	5.60%	1.42%
	Past Due/Overdrawn	33.53%	13.01%	42.19%	11.27%
	Substandard/Restructured	4.17%	0.34%	64.69%	30.80%
	Bad Loans	0.10%	0.01%	0.29%	99.60%
			Loan State at time 12/2014		
Loan State at 12/2013	Performing	92.39%	1.04%	5.67%	0.90%
	Past Due/Overdrawn	27.49%	13.70%	46.91%	11.90%
	Substandard/Restructured	3.97%	0.22%	71.86%	23.94%
	Bad Loans	0.10%	0.01%	0.27%	99.62%

Table II: Judicial E ciency in Italy: Length of Property Execution Proceedings

The table presents descriptive statistics on duration of property execution proceedings in 2007 (days, court-level data).

	mean	sd	p5	p25	p50	p75	p95
# of days	1,511	887	526	795	1,331	2,012	3,336

Table III: Bank Characteristics

The table shows statistics on bank characteristics used in our analysis for the full sample and for the subsample of banks located in areas with judicial ine ciency below or above the mean (equal to a duration of collateral recovery of 1331 days). The main sample covers the period 2008Q4 to 2013Q4. The description of variables and their sources are given in Appendix A. Asterisks denote signi cance in the di erence in means, at the 1%(***), 5%(**), 10%(*) level, respectively.

	Full sample			Duration <1331	Duration >1331	
Bank variable	Mean	S.dev	Median	Mean	Mean	Mean di erence t-stats
assets						

Table V: Late Payments and Bank Bad Loans

The table presents regressions of late payment as a function of a set of bank characteristics. In the IV models, the instrument for badloans is based on the weighted (by sector and province) average system-wide loss rates, where the weights re ect each bank's loan portfolio in 2007. Late payment

Table VI: Late Payments and Judicial E ciency

The table presents regressions of late payment as a function of a set of bank characteristics. The model allows the e ect of bank variables to vary with (the natural log of) duration for property execution proceedings in 2007 (ine aw). In the IV models, the instrument for badloans is based on the weighted (by sector and province) average system-wide loss rates, where the weights re ect each bank's loan portfolio in 2007. Late payment (0,1) is equal to 1 if the rm has a loan repayment delay with the

Table VII: Bank Pro ts and Late Payments

The table presents bank-time regressions of pro ts (return on equity) on lagged bank characteristics. The sample covers semi-

Table VIII: Late Payments, Bank Quality and Judicial E ciency, by Firm Riskiness

he table presents regressions of late payment as a function of a set of bank characteristics. The model allows the e ect of bank variables to vary with (the natural log of) duration for property execution proceedings (ine aw) and by borrower riskiness. Borrowers are sorted in risk bins (safe, vulnerable, risky) based on their z-score or their interest coverage ratio. The Late payment (0,1) is equal to 1 if the rm has a loan repayment delay with the bank in the quarter; 0 if loans granted by the bank to the rm are performing in the quarter. The sample covers the period 2008Q4 to 2013Q4. The description of variables and their sources are given in Appendix A. Standard errors are clustered at the bank-level. Asterisks denote signi cance at the 1%(***), 5%(**), 10%(*) level, respectively.

Table IX: Share of Late Payments at the Firm Level

The table presents regressions of late payment as a function of a set of bank characteristics. The variable late payment is equal to the amount of late payments as a share of total loans, computed as averages of quarterly data and excluding bad loans. The variables expbad and explegal correspond to the rm's exposure to bank bad loans and to bank legal ine ciency, respectively; exposure is calculated as the weighted average across banks associated with each rm, where the weights are the share of loans from each bank. Firm controls (log of total assets, sales growth, cash ow, z-score, debt-to-assets ratio, coverage, age), available at an yearly frequency, are included in the regressions. The rm*time e ects from loan-level regressions are obtained from Column (1) of Table VI. All covariates, except for age and the rm-year e ects from the loan-level regressions, are lagged one period.The sample covers the period 2008 to 2013. The description of variables and their sources are given in Appendix A. Standard errors are clustered at the rm level. Asterisks denote signi cance at the 1%(***), 5%(**), 10%(*) level, respectively.

	(1)	(2)	(3)
expbad	-1.347*	-1.39**	-1.229***
	(0.708)	(0.644)	(0.419)
explegal	-0.007**	-0.008**	-0.006***
	(0.003)	(0.003)	(0.002)
expbad*explegal	0.207**	0.212**	0.187***
	(0.104)	(0.094)	(0.061)
rm*time e ect from loan-level regressions			0.720***
			(0.012)
rm controls	no	yes	yes
rm xed e ects	yes	yes	yes
year*industry xed e ects	yes	yes	yes
N	112,506	96,346	91,905

Table X: Robustness Tests

The table presents regressions of late payment as a function of a set of bank characteristics. The model allows the e ect of bank variables to vary with (the natural log of) duration for property execution proceedings in 2007 (ine aw). Late payment (0,1) is equal to 1 if the rm has a loan repayment delay with the bank in the quarter; 0 if loans granted by the bank to the rm are performing in the quarter. The sample covers the period 2008Q4 to 2013Q4. While not reported, bank controls (lntot , stable, liquidity , cap, gov shock) and rm controls (bkshare), as well as their interactions with ine aw are included. The description of variables and their sources are given in Appendix A. Standard errors (in parentheses) are clustered at the bank level. Asterisks denote signi cance at the 1%(***), 5%(**), 10%(*) level, respectively. We do four robustness tests reported in Columns (1)-(8). Column (1): include only the rst quarter in which a loan becomes late (or overdrawn); column (2): control for four dimensions of loan terms (loan interest rate, share of loans with maturity less than one year, average ratio of collateral in accounts receivable to loan size, and average ratio of real-estate collateral to loan size); column (3): include only observations in which the bank and the lender are located in the same court jurisdiction; column (4): include rm-time and bank- rm xed e ects; column (5) allows the e ects of badloans to vary by region (south); column (6) allows the e ects of badloans to vary by blood donation (blood); column (7) allows the e ects of badloans to vary by fake checks (fake) and column (8) allows the e ects of badloans to vary by mutual/non-mutual (mutual).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
badloans	-0.670***	-1.669***	-3.789**	-1.078***	-1.324***	-1.299***	-1.387***	-1.296***
	(0.100)	(0.258)	(1.889)	(0.253)	(0.253)	(0.251)	(0.244)	(0.273)
badloans*ine aw	0.102***	0.253***	0.585**	0.163***	0.199***	0.204***	0.202***	0.196***
	(0.014)	(0.037)	(0.281)	(0.036)	(0.036)	(0.036)	(0.036)	(0.038)
Average interest rate		0.001***						
		(0)						
Share of short-term loans		0.003*						
		(0.001)						
Share of loans backed by real collateral		0.003						
		(0.002)						
Share of loans backed bt acc. reciev.		-0.018***						
		(0.001)						
badloans*south					0.013			
					(0.052)			
badloans*blood						-0.018		
						(0.016)		
badloans*fake							-0.030	
							(0.023)	
badloans*mutual								0.013
								(0.056)
rm*time xed e ect	yes	yes	yes	yes	yes	yes	yes	yes
bank xed e ect	yes	yes	yes	no	yes	yes	yes	yes
bank* rm xed e ect	no	no	no	yes	no	no	no	no
other bank controls with interactions	yes	yes	yes	yes	yes	yes	yes	yes
N	2,622,440	1,861,912	275,639	2,644,991	2,595,609	2,518,001	2,576,418	2,567,789

Figure 1: Late payments and other problematic loans in Italy

The gure presents statistics on problematic loans for a sample of around 32,000 industrial rms based in Italy. The description of variables and their data sources are given in the Data Appendix.

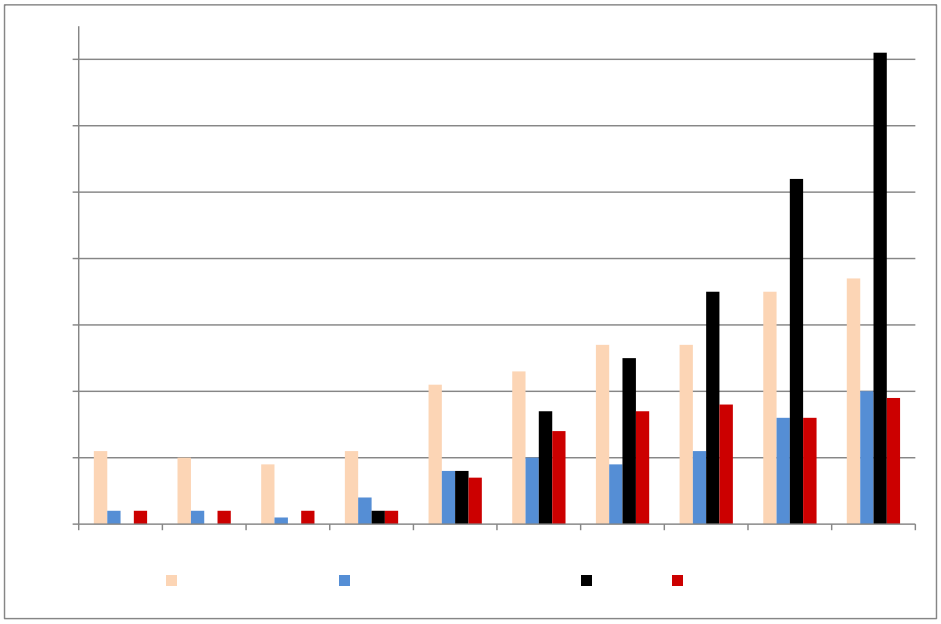

Figure 2: Judicial E ciency in Italy: Length of Property Prosecution Proceedings across Italian Courts (2007, # of days)

Figure 3: Marginal impacts of banks' bad loans on the likelihood of late payment

The gure plots the marginal e ect of banks' bad loans on the likelihood of late payment (vertical axis), as a function of the duration for the property execution proceedings (horizontal axis, number of days) estimated by the IV (red line) and the OLS (black line) models as well as the 95% con dence intervals around the IV estimates.

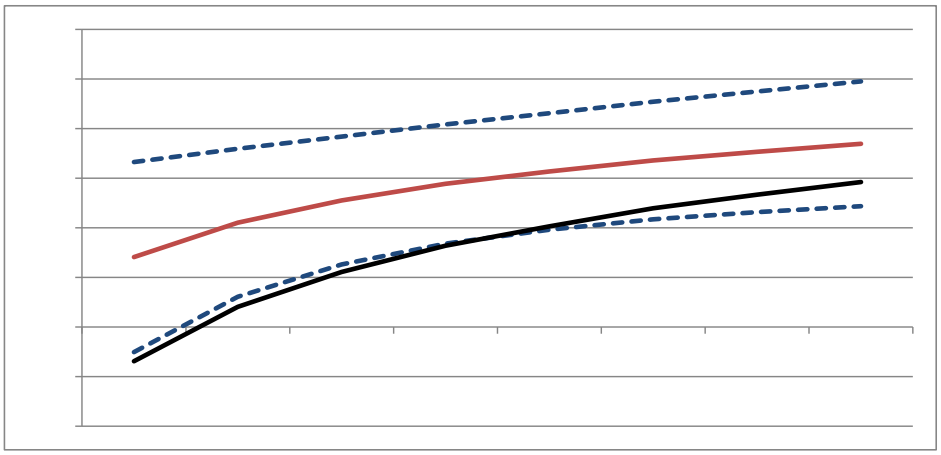

Figure 4: Marginal impacts of banks' bad loans on the likelihood of late payment, by borrower risk type

The gure plots the marginal e ect of banks' bad loans on the likelihood of late payment (vertical axis), as a function of the

Figure 5: Marginal impacts of banks' bad loans on the likelihood of late payment, safe borrowers