Financial distress and private information sharing: Evidence from the Italian Credit Register

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Abstract

Credit risk exposure evaluation is affected by the quality of the information available on the debtors and customers with multiple lending exposure could be evaluated differently by different lenders. The existence of an information asymmetry among lenders can be mitigated using private information sharing instruments like the credit registers. The paper analyses the effect of information disclosure through credit registers and evaluates the impact on revising the amount of credit offered to customers served also by other lenders. Results show that the information available for each lender is different and after the disclosure of past due or a default status declared by a financial intermediary, all the other lenders react to the new information available.

1. Introduction

Restructuring of distressed firms by banks can determine the relaxing or the tightening of the financial conditions or a combination of the two actions (Asquith, Gertner and Scharfstein, 1994). The success of a restructuring strategy for distressed firms is affected by the debt structure: asymmetric distribution of information can determine inefficient negotiations in the case of multiple creditors (Bolton and Scharfstein, 1996) with the same time horizons in financing the firm (Bergloef and Von Thadden, 1994). A creditor will have less incentive to continue financing the debtor if it believes that other creditors will liquidate their credit exposure even if information shows that the project is viable and private signals are precise, causing a creditor run (Morrison and Shin, 2004).

An increased information transparency among creditors reduce the probability that a bank evaluate differently customers that have multiple lending exposures (Anctil et al., 2004). Among banks actively involved in relaxing the financial conditions for distressed firms, coordination problems arising from decentralized decisions can be addressed through the formation of explicit bank pools that coordinate the interests of the creditors (Brunner and Krahnen, 2008). Without the creation of explicit bank pools, transparency can be addressed using credit register information but due to the lack of incentives in bank lending policy coordination, the effectiveness of the coordination mechanism could be affected.

The paper analyses the role of information sharing in the evaluating credit risk exposure for customers that have multiple lending exposure at the time of default. Using as a proprietary database provided by the Bank of Italy, we empirically test the role of information sharing on the amount of lending, the role of guarantees and the lag between the customer default classification among different lenders. Results show that the misallingment among debtors' risk exposure evaluation is a standard condition for the market but nearer to the default the degree of coordination increases. The amount of lending offered is affected partially by the disclosure of the default status and the effect is less significant, as expected, for guaranteed exposures. The existence of a lag by regulation for the information disclosure about customers' past due or defaut has an impact on the market but the reaction of the main players is prevalently based on default and they do not take care too much about past due.

The paper is organized as follows: section 2 highlights the main contributions related to the credit registers and information disclosure effects while section 3 presents the empirical analysis on the Italian credit register data. The last section summarize the main results and the implications for the industry.

2. Literature Review

Credit registers collect and ensure the exchange of positive and negative information on the reported lending relationship (Miller, 2003).By taking part to mandatory credit registers, banks share their private information (Pagano and Jappelli, 1993) that, together with public information, drives credit risk evaluation in relationship banking (Berger and Udell, 1995) and it determines which loan applicants should be extended credit, as well the amount of credit (Shaw and Gentry, 1988). Under a typical line of credit contract, a borrower is permitted to take down any amount of credit up to a maximum amount known as commitment (Melkin and Plaut, 1986). The commitment represents the output of the credit risk evaluation process conditioned on the borrower specific variables, that for reporting entities reflects both standardised and soft information (Karapetyan and Stacescu, 2014), and the issuing bank can deny credit if the borrower's financial conditions has changed in a material way (Shockley and Thakor, 1997).

Few empirical studies have analysed the role of the coordination incentive and financial distress and they mainly focused the attention on the impact on cost and advantages of coordination.

Hubert and Schaefer (2002) show that each bank as an incentive to promote preemptive actions before other creditors in order to minimize the risk of losses starting the recovery process or reducing the exposure before the default becomes public. Brunner and Krahnen (2008) identified the requirements for a successful explicit coordination among creditors on the basis of the credit exposure types and the debtors' characteristics. More generally other studies point out the linkage between the opportunities related to information sharing and the value of the customer relationship underlying the degree of coordination could be different in light of the relevance of borrowers' mobility (Brown and Zehnder, 2010) and loyalty (Bennardo et al., 2014) and the frequency of roll over in lenders' credit exposure (He and Xiong, 2012).

Hertzberg et al. (2011) presents the first paper that analyses directly the impact of information sharing rules on the credit supply considering as case study the Argentinian Public Credit Register. Considering different periods of the Argentinian banking market results highlight that regulation that imply an higher level of information sharing exacerbate lender coordination and increases the incidence of financial distress.

Literature highlights that the value of the information related to a past due or a default is affected by the concentration of the debt exposure (Bonfim et al., 2012) and a distress with respect to the main lender is normally a signal of probable default of the debtor (Bris and Welch, 2005). The assumption of a different market reaction to bad news provided by the main lender is expected to be not so relevant in an information sharing context but this issue is still not empirically tested on real data.

3. Empirical Analysis

3.1 Sample

Our sample is a proprietary database provided by the Bank of Italy that collects for each month of the year all exposures that were classified as past due at least once before 2010 for customers who did not have banking facilities offered by more than one bank. The data provider, Centrale dei Rischi, is one of the most complete public databases on business loans worldwide (Jappelli and Pagano, 2003) because it collects credit exposures accounting for more than 30,000 euros for all Italian banks and financial intermediaries (Banca d'Italia, 2010). The information reported by individual financial intermediaries are aggregated for each debtor and disclosed to the banking system two months later with respect to the reporting date (Banca d'Italia, 2015).The dataset for the analysis contains information for the time interval 2006–2010 on the monthly utilization of self-liquidating debt and callable loans by firms featuring multiple credit relationships that entered default status in 2010.

For each counterparty, we collect all the information related to exposure with respect to the Italian banking system since 2006 on a monthly basis and we classify these exposures on the basis of the reporting bank, type of credit, and guarantee (Table 1).

Table 1. Sample description

	Counterparties	Number of contracts	Number of banks for each customer			% Guarantee		% Type	
			Min	Mean	Max	With	Without	Self-liquidating	Callable
2006	77,745	406,789	1	2.92	47	4.54%	95.46%	43.47%	56.53%
2007	86,086	447,427	1	2.94	46	4.57%	95.43%	43.11%	56.89%
2008	91,187	455,008	1	2.88	47	4.87%	95.13%	42.77%	57.23%
2009	107,575	522,242	1	2.95	44	4.77%	95.33%	39.39%	60.61%
2010	96,872	430,099	1	2.76	44	4.86%	95.14%	38.02%	61.98%

Source: Bank of Italy data processed by the authors

For each year the sample includes more than 75,000 counterparties for a number of contracts established to be always higher than 400,000. The average number of banks offering service to each customer is greater than two but varies significantly among firms. In fact, it is always possible each year to find a firm with exposure related to only one bank at least for one month and borrowers that collect money from more than 40 lenders in the same month.

The types of exposures considered are frequently not guaranteed because, in the sample, personal and real guarantees are offered only for less than 5% of the sample.

All the contracts considered can be classified as either self-liquidating exposures or callable loans and, on the basis of the amount of exposure related to each type of contract, the relevance is comparable even if callable solutions are always more relevant (10–20%) than self-liquidating ones. For each contract we have the monthly status of the exposure (in bonis vs default[1]) assigned by the each lenders and the comparison of the risk evaluation made by all the lenders of the same customers demonstrate that exists a misalignment between them and the role of these differences changes near to the default of the firm (Table 2).

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[1] The default status used for the table 2 includes both the past dues (90 or 180 days) and the restructured credits

Table 2. Risk evaluation misalignment on the basis of the number of lenders

N° lenders	Risk evaluation	Years to default									
		5 years		4 years		3 years		2 years		1 year	
		N	%	N	%	N	%	N	%	n	%
Two	Alligned	18163	95.61%	20723	95.14%	21946	92.80%	28722	81.55%	22955	76.10%
	Not Alligned	833	4.39%	1058	4.86%	1702	7.20%	6500	18.45%	7209	23.90%
Three	Alligned	10957	95.69%	12183	95.42%	12827	92.98%	16090	82.17%	12536	78.47%
	Not Alligned	494	4.31%	585	4.58%	969	7.02%	3491	17.83%	3439	21.53%
Four	Alligned	6620	96.39%	7352	96.08%	7613	93.64%	7016	79.51%	7026	80.28%
	Not Alligned	248	3.61%	300	3.92%	517	6.36%	1808	20.49%	1726	19.72%
Five	Alligned	4254	96.16%	4375	96.26%	4733	94.25%	5191	83.73%	4015	81.82%
	Not Alligned	170	3.84%	170	3.74%	289	5.75%	1009	16.27%	892	18.18%
More	Alligned	8989	97.09%	10119	97.03%	9853	95.10%	9347	85.73%	7428	82.53%
	Not Alligned	269	2.91%	310	2.97%	508	4.90%	1556	14.27%	1572	17.47%

Source: Bank of Italy data processed by the authors

The degree of misalignment among the lenders' judgment increases near to the default of the customer and the evidence is clearer for customers that have only 2-3 reference banks while debtors that are using a diversified set of lenders are less frequently evaluated differently by the banks. Results showed are consistent with the hypothesis that in a relationship lending scenario (few or one reference lender) some of the lenders can have an information advantage with respect to others while in a transaction oriented scenario the set of information available for all lenders is almost the same and evaluation differences are less frequent.

3.2 Methodology

The analysis of the information sharing starts from the model proposed by Hertzberg et al. (2011) that evaluates the impact of private information disclosure on the amount of lending. The approach is summarized in the following formula:

$$\ln(Debt_{it}) = \alpha_i + \vartheta_{it} + \gamma_{DP}Threat_{it}DP_{it} + \gamma_{DD}Threat_{it}DD_{it} + \varepsilon \tag{1}$$

where the dependent variable is the log of debt of the firm i in the month t. The right hand variables includes both a time and a fixed firm effects (ϑ_{it}). The dummy $Treat_{it}$ is equal to one if firm i is classified as defaulted by at least one lender. The specification includes the interactions between this variable and 1) a dummy equal to one when the default occurs and is still not disclosed to other banks through the credit register (DP or default period) and 2) a dummy equal to one after two months from the default (DD or disclosing period). The coefficient on the first interaction, γ_{DP}, is the DD estimate of the effect of a default, holding available firm information constant. The coefficient on the second interaction, γDD, represents the DD estimate of the average effect of the default disclosure after two months from the default due the Credit Register regulation.

In order to consider the different risk that characterizes banks that experienced past-due or defaults with respect to the banking systems, new lenders may require an higher amount of covenants or guarantees (Rajan and Winton, 1996). If the firm is able to provide the guarantees requested, the amount of credit offered can be not influenced by the bad credit history of the debtor. In order to the test this assumption we replicate the analysis proposed in the equation (1) using only the not guaranteed debt. In formulas:

$$\ln(NGDebt_{it}) = \alpha_i + \vartheta_{it} + \gamma_{DP}Threat_{it}DP_{it} + \gamma_{DD}Threat_{it}DD_{it} + \varepsilon \tag{2}$$

where the dependent variable is the amount of credit non guaranteed offered by any lender to the i-customer at time t.

The last analysis considers the different level of risk that characterize the exposure and due to the Italian prudential regulation the three levels of risk are the 90 days past due, the 180 days past due and the restructured / defaulted debt. The analysis of the role of information sharing on the probability of default is released considering the following models:

$$DD_{it}^k = \alpha_i + \vartheta_{it} + \gamma_{DP}Threat_{it}OtherDP_{it}^{90gg} + \gamma_{DD}Threat_{it}OtherDD_{it}^{90GG} + \varepsilon_{it} \tag{3}$$

$$DD_{it}^k = \alpha_i + \vartheta_{it} + \gamma_{DP}Threat_{it}OtherDP_{it}^{180gg} + \gamma_{DD}Threat_{it}OtherDD_{it}^{180GG} + \varepsilon_{it} \tag{4}$$

The left-hand-side variable is a dummy equal to zero as long as firm i's debt is not restructured

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for the bank k; it turns to one if default happens in month t, and drops out of the sample afterwards. The specification includes the interactions between the threat variable and 1) a dummy equal to one when the default occurs for other banks and a dummy equal to one after two months from its disclosure (default defined as 90 days in equation 3, 180 in equation 4).

3.3 Results

The analysis of the probability of assigning a default status on the basis of the past dues identified by other lenders show some interesting results (Table 3).

Table 3. Credit exposure and information sharing

$\ln(Debt_{it})$					
	Five YTD	Four YTD	Three YTD	Two YTD	Default Year
$Threat_{it}OtherDP$	-0.90**	-1.00*	-1.12*	-1.14	-1.15
$Threat_{it}Other\,DD$	-0.65*	-0.85**	-0.92**	-1.01*	-1.05**
Constant	-2.76**	-2.56**	-2.34**	-2.14**	-2.13**
Time Dummies	Yes	Yes	Yes	Yes	Yes
Firm Dummies	Yes	Yes	Yes	Yes	Yes
Observations	113296	113296	113296	113296	113296
R^2	0.41	0.40	0.43	0.44	0.46
$\ln(NGDebt_{it}) =$					
	Five YTD	Four YTD	Three YTD	Two YTD	Default Year
$Threat_{it}OtherDP$	-0.90*	-1.00	-1.12	-1.10	-1.04
$Threat_{it}Other\,DD$	-0.75*	-0.95**	-0.96**	-1.05*	-1.11**
Constant	-2.16**	-1.32**	-1.14**	-1.54**	-2.13**
Time Dummies	Yes	Yes	Yes	Yes	Yes
Firm Dummies	Yes	Yes	Yes	Yes	Yes
Observations	113296	113296	113296	113296	113296
R^2	0.39	0.40	0.42	0.45	0.46

Source: Bank of Italy data processed by the authors

The analysis of the amount of credit offered by the system to debtors experiencing past due or default status demonstrate that default disclosure affects negatively and significantly the amount of credit available. Results related only to the not guaranteed credits show the same results and, as expected, the reaction is stronger with respect to the overall credit (guaranteed and not guaranteed).

Considering the different risk classification that can be used it is possible to identify the role of past due information in forecasting default or restructured debt (Table 4).

Table 5. Default hazard rate and credit registers information disclosure

	Time Horizon									
	Five YTD		Four YTD		Three YTD		Two YTD		Default Year	
	(6)	(7)	(6)	(7)	(6)	(7)	(6)	(7)	(6)	(7)
$Threat_{it}OtherDP_{it}^{180gg}$		-0.76**		-0.52**		-0.41**		-0.28**		-0.40**
$Threat_{it}OtherDP_{it}^{90gg}$	0.90**		0.83**		0.04		0.48**		0.05	
$Threat_{it}OtherDD_{it}^{180GG}$		2.18**		2.11**		2.00**		1.73**		1.64**
$Threat_{it}OtherDD_{it}^{90GG}$	0.65*		-0.13		0.80**		-0.04		0.23**	
Constant	-2.76**	-3.09**		-3.03**	-3.01**	-2.86**	-2.35**	-2.41**	-2.14**	-2.35**
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	113296	113296	113296	113296	113296	113296	113296	113296	113296	113296
Chi²	473.89**	209.35**	27.26**	253.37**	54.25**	316.74**	37.45	649.20**	11.61**	760.00**

Source: Bank of Italy data processed by the authors

Data show that the past due status declared by another lender affects significantly the default status declared by a lender especially nearer to the default status and for long term past due. The analysis of 90 days past due does not provide the same results especially demonstrating that the debtors' risk profile for the banking system is not affected by such short term liquidity problems. The analysis of the 180 days past due demonstrates that objective risk assumed by the lenders is not perceived in the same way by all the lenders (the probability of default assignment is negative affected) while the default disclosure speeds up the default declaration by other lenders.

4. Conclusion

Credit registers are created for supporting the access to credit in the market to foster proper allocation of scarce resources available for lenders. During the financial crisis banks' failures ascribed to improper risk evaluation of debtors demonstrate the usefulness of any instrument available for supporting the information sharing and the proper evaluation of counterparty risks.

Empirical evidence shows that information asymmetry can affect significantly the lending policy adopted by financial intermediaries that frequently assign a different level of risk for the same debtor that has multiple exposures with respect to the system. The disclosure of past due related to existing financial exposure affects significantly both the size of the exposure and the counterparty risk evaluation demonstrating that the existence of a credit register allows reducing the risk assumed by the lenders even if market players normally react only to extreme events of default and do not consider short past dues.

A more detailed analysis of the characteristics of the lender that is able to identify in advance the risk of the debtors may allow evaluating if the reputation or the features of the lender can affect the information propagation and the usefulness of the information sharing service. Moreover an analysis of the type of contracts established with defaulted counterparties may allow evaluating if near to the default debtors are able or not to take advantage from the information asymmetry context in order to raise money only from lenders that have the lower quality set of information available.

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