

Credit Crunch Post Financial Crisis: Who is guilty?

Abstract

The present paper aims at investigating the effect of banks' and firms' balance sheet information on credit crunch, post 2007-2011 financial crisis. Besides, differently from previous studies, it also considers the effect of some aspects of firm-bank relationship on supply of credit to corporate sector. We apply OLS regression models on a sample of 123 co-operative credit banks and more than 11,000 firms operating in Italy between 2013 and 2014. Our main findings suggest that the effects at bank-level and firm-level are different for long-term and short-term credit crunch. In the first case, credit rationing is mainly affected by banks' capitalization, firms' leverage and multiple bank. In the second one, credit crunch is connected to the amount of bank's impaired loans and to firms' roe and leverage. In both cases, small-sized firms are affected by banks' rationing decisions more than the large ones.

Key words

Credit crunch; bank capitalization; firm's balance sheet; multiple bank; firm-bank relationship

Introduction

2007-2011 financial crisis has been unprecedented in its global scale and severity. It has generated, over the years, an economic havoc, hindering credit access to businesses, households and banks, and choking economic activity. In those years, Italy has had to cope with the instability of the sovereign debt market and two deep recessions. It saw GDP fall by 7 percentage points and the number of employed by 600,000 (Panetta, 2013). Firms that, in the years preceding the crisis, had increased the bank debt on average at a rate of more than 8 percent a year, thanks to favorable bank interest rates and lower rationing by banks, found themselves with a degree of much higher debt than in the past

(Rossi, 2013). The dependence on the banking system was greater for smaller firms, for which the coverage of the investments with internal sources dropped by half. Always reluctant to raise venture capital, cause their family nature, because recourse to the capital market implies a high and permanent transparency in costs and for the tax advantages, after several years in which they had enjoyed relative easy to access to bank credit, these companies found themselves burdened with financial statements by a high debt both by historical standards and relative to other countries (Bugamelli et al., 2009). In addition, a sharp fall in income flows and a sharp lengthening of customer payment terms (Accetturo et al., 2011), which led many companies to postpone, in turn, payments to suppliers, interest payments and the repayment of bank loans. This vicious circle has been one of the main channels of transmission of liquidity tensions within the production system (Albareto and Finaldi Russo, 2012). The banks, for their part, could not avoid the indirect effects of the crisis: the recession has impacted on the quality of jobs; the deterioration of sovereign credit has dried up the sources of funding and raised the cost of collection; profitability has declined drastically (Aisen and Franken, 2010). These developments had an impact on the supply of credit, from the years of the crisis and in the following, has taken a restrictive tone, encouraging the phenomenon of “credit crunch”. The term credit crunch refers to “*a significant leftward shift in the supply curve for bank loans, holding constant both the safe real interest rate and the quality of potential borrowers*” (Bernanke and Lown, 1991). It may occur at a time in which governments may tighten scale policy to combat the sovereign tensions, triggering or amplifying a contraction in economic activity (Bofondi et al., 2013). Broadly speaking, credit crunch occurs when, at a given level of the interest rate, the demand for loans exceeds the supply and lenders do not provide additional credit even if the borrowers are willing to pay higher rates (Burlon et al., 2016). Therefore, the main channel through which a banking crisis may affect the real economy relates to the ability of the private sector to access the credit needed to fund investment and consumption. A drop in liquidity for some banks may have a direct transmission effect on the supply of credit for firms if firms are unable to substitute with other sources of finance (Iyer et al., 2013). This is the case of Italian firms, for whom the financial structure is highly dependent on banks,

without bond and equity markets developed, in fact unable to provide credit to the productive system to alternative resources (Panetta, 2013).

With this work, we try to understand which the causes of the “credit crunch” phenomenon are. Previous empirical research emphasizes the role of banks’ capital constraints in determining quantitative restrictions in lending. According to those studies, banks’ balance sheet conditions play a relevant role. Indeed, well-capitalized banks are less likely to generate strong procyclical changes in credit supply conditions through rationing (Schreft and Owens, 1991). Otherwise, the role of borrowers’ risk profile is neglecting in literature, though borrowers’ creditworthiness influences banks’ availability to provide loans. Firm’s financial decisions are actually determining factors in driving firms’ ability to operate successfully. A weak financial structure, characterized by a high level of indebtedness and a limited supply of capital, with a higher incidence of interest expenses, is a determinant of future default events (Modina and Pietrovito, 2014). Banks consider these aspects when they have to express a judgement about firm’s financial reliability. Therefore, we believe useful to consider in our study not only the effect of banks’ balance sheet information on credit crunch, but also firms’ balance sheet.

Finally, another aspect has never been considered in previous studies: the effect of firm-bank relationship on credit crunch. The present paper aims at filling this gap, by considering also firms’ relationship with banks and their choice about multiple bank. We suppose that building a solid relationship with one bank rewards the firms, overall in crisis or post-crisis period. We apply OLS regression models on a unique Italian dataset about bank-firm relationship, based on a sample of 123 co-operative credit banks and more than 11,000 firms operating in Italy between 2013 and 2014. Dataset was provided by the Crif, a credit rating agency issuing ratings on Italian firms, instrumental in banks’ and other financial institutions’ evaluation of their portfolios. More detailed data about banks’ balance sheet was also collected on Bureau Van Dijk Database Bankscope and merged with the main dataset. Our main findings suggest that the effects at bank-level and firm-level are different for long-term and short-term credit crunch. In the first case, credit rationing is mainly affected by

banks' capitalization, firms' leverage and multiple bank. In the second one, credit crunch is connected to the amount of bank's impaired loans and to firms' roe and leverage. In both cases, small-sized firms are affected by banks' rationing decisions more than the large ones. Our work seeks to provide useful implications for theory and practice. First, it focuses its attention not only on banks' balance sheet, but also firms' one. Moreover, it also considers the effect of firm-bank relationship on credit crunch. In so doing, it offers a useful implication for practitioners. As known, firms must give attention on their debt levels, besides they have to adequately plan their relationship with banks, because choosing multiple bank can reveal unprofitable.

The remainder of this paper presents a brief literature review on the issue, delineates sample and data, describes the methodology applied and discusses the main findings.

What determines credit crunch? A brief literature review

Previous empirical research has emphasized the role of banks' capital constraints in determining quantitative restrictions in lending. Some of them (e.g., Paravisini 2008; Khwaja and Mian 2008; Schnabl, 2012) have suggested that bank liquidity shocks are transmitted to their customers through a change in lending. Maintaining a satisfactory degree of risk coverage allows banks to maintain investor confidence and attract external financing at low cost. It is essential to continue to ensure an adequate flow of credit to households and businesses. Moving from these considerations, in the years following the crisis, the Bank of Italy has conducted checks on the adequacy of value adjustments made by a large number of banking groups. Where necessary, it required corrective actions. Specifically, it asked banks to increase internally generated resources through cost containment, the sale of non-strategic activities, the adoption of a dividend policy consistent with the income and asset situation of each intermediary (Panetta, 2013). Well-capitalized banks are less likely to generate strong procyclical changes in credit supply conditions through rationing (Schreft and Owens, 1991).

Therefore, we expect that banks' capitalization have a positive effect on supply of long and short credit to corporate sector and formulate the following hypotheses:

Hypothesis 1a: Banks' capitalization positively influence long term credit crunch

Hypothesis 1b: Banks' capitalization positively influence short term credit crunch

At a time of great uncertainty about the economic outlook and substantial weakness of both firms' and banks' balance sheets, banks could decide to cut credit lines to their clients indistinctly, or they might select the worst borrowers through a careful evaluation process. In this last case, it would be interesting to try understanding which firms suffer more difficulties in accessing credit. Numerous studies (e.g. Angelini et al., 1998; Guiso, 1998; 2006) have shown that the difficulties in obtaining credit are related to different business characteristics, such as size, sector of economic activity, fiscal conditions. Banks look mainly for businesses budget balances, using financial statement information. The advantage is twofold. First, balance sheets are publicly available and their content is verified by a third part. Second, these data provide a bunch of quantitative information, that help to predict possible default events influencing, in turn, banks' decisions about credit rationing. Rationing credit to firms with high growth prospects might affect the ability to make investments or undertake development paths. Instead, for businesses characterized by less solid financial condition of the difficulty of access to credit can undermine a balanced budget to determine the failure. Therefore, a careful selection in credit rationing is essential. Obviously, the presence of fragile financial condition is associated with a much higher probability of rationing average (Albareto and Finaldi Russo, 2012). A weak financial structure, characterized by a high level of indebtedness and a limited supply of capital, with a higher incidence of interest expenses, is a determinant of future default events (Modina and Pietrovito, 2014). Banks consider these aspects when they have to express a judgement about firm's financial reliability. Therefore, we believe useful to consider in our study not only the effect

of bank capitalization on credit crunch, but also firms' balance sheet. Specifically, we formulate the following hypotheses:

Hypothesis 2a: Firms' leverage positively influence long term credit crunch

Hypothesis 2b: Firms' leverage positively influence short term credit crunch

Finally, another aspect has never been considered in previous studies: the effect of firm-bank relationship on credit crunch. Bank-firm relationship is a central theme of the economic and financial literature. It has been enhanced with new profiles of observation and ideas of analysis for the unfolding of the effects induced by the crisis: among the most significant events, the deterioration of the economy of credit conditions, the slowdown in growth of bank loans, the difficulties of enterprises in the management of payments from customers and in dealing with the sharp fall in demand (Birindelli and Modina, 2010). Specifically, with respect to bank-firm relationship, the present paper aims at considering firms' choices about multiple bank. The use of multiple bank is explained by the modest information transparency of SMEs. The less information transparency tends to elevate the costs incurred in the screening and firm's performance monitoring phases. Theoretically, those who finance could increase the price of the loan; in doing so it raises, however, the chances of seeing not repaid the loan, because it attracts the most risky borrowers (adverse selection) and/or encourages the borrower to take on riskier behavior (moral hazard). These two phenomena have an impact on the overall profitability of the loan, then the lender may decide not to raise beyond a certain threshold the rate of interest and act on credit rationing (Stiglitz and Weiss, 1981).

A possible solution to the problem of asymmetric information could be found in the long-run relationship between bank and company (relationship banking). The banks have the facilities, knowledge and skills that would enable them to compensate for the higher information asymmetry than companies, especially the smallest. But the ability of the banks "read" the growth potential of a company, even picking up weak signals of the so-called soft information, seems to have weakened

during the crisis. Albareto and Finaldi Russo (2012) suggest that the difficulties to access to credit for vulnerable firms would also be extended to some companies from good potential. The problem is provided for the high fragmentation of banking relationships, which do not favor a solid relationship between banks and enterprises (De Mitri et al., 2010). Reduce fragmentation would benefit, in particular, innovative businesses, whose evaluation by external financiers is typically much more difficult. There is empirical evidence that a long-term relationship with a bank increases the probability that an undertaking innovative activities (Herrera and Minetti, 2007; Micucci and Rossi, 2012). Narrower banking relationships facilitate access to credit, particularly for companies characterized by better growth prospects; This result is consistent with the hypothesis that the more banks involved in the financing of companies to be in better information and have greater incentives to use them. Empirical evidence, finally, confirmed by recent results on the importance of relations with customers in preserving the hardening companies offer credit (cfr. De Mitri et al., 2010). A high concentration of loans held by the major banks is associated with a lower likelihood of rationing. In addition, the presence of more "close relations" has influenced the selection made by the banks: the growth potential of businesses were most relevant in facilitating access to credit. This finding may reflect the breadth of information available to more intermediaries involved in financing companies and the increased incentives to use them in the selection of customers.

By providing linked financial services, banks can have access to additional information, available in real time, concerning firm-bank relationship. This means that banks can observe this information long before receiving financial statements of a firm, which may later confirm that the borrower is in financial problems (Norden and Weber, 2010).

In the light of these arguments, we suppose that building a solid relationship with one bank rewards the firms, overall in crisis or post-crisis period and thus formulate the following hypotheses:

Hypothesis 3a: Multiple bank positively influence long term credit crunch

Hypothesis 3b: Multiple bank positively influence short term credit crunch

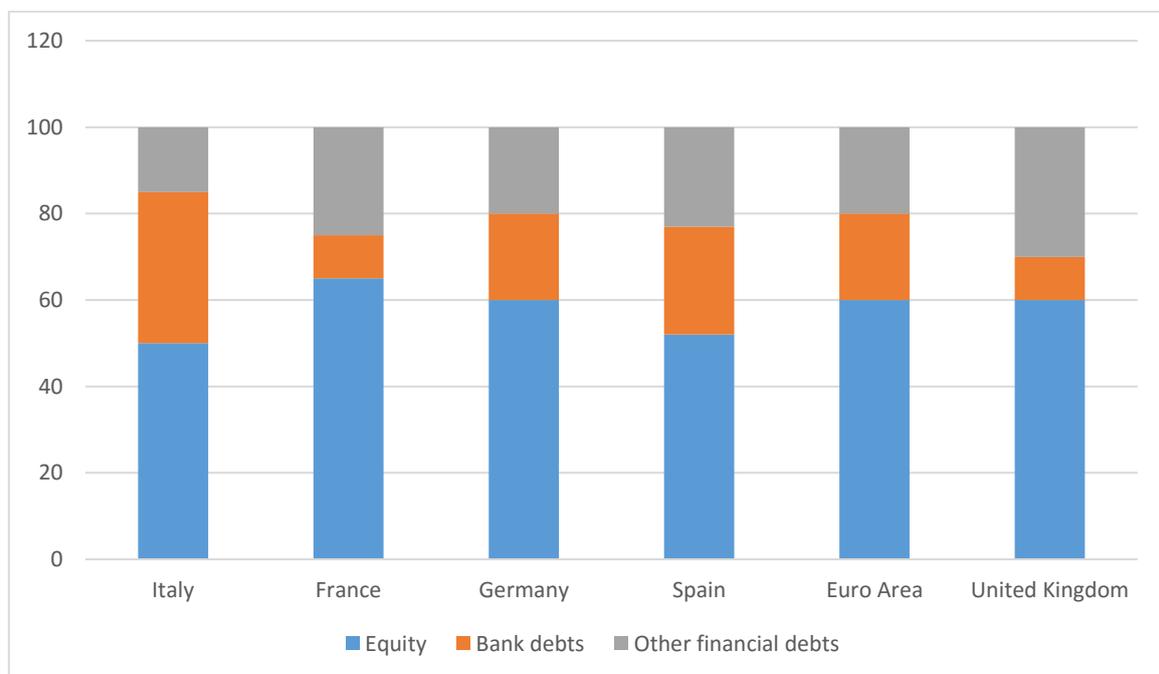
Data and Methodology

In this section, we present sample and data and illustrate the methodology applied to test our hypotheses and our models.

Sample, Data and Variables

In this article, we consider balance sheet information at firm-level and firm-bank relationship data, provided us by Crif, a credit rating agency issuing ratings on Italian firms, instrumental in banks' and other financial institutions' evaluation of their portfolios. In addition, we sought out balance sheet information at bank-level on Bureau Van Dijk Database Bankscope. Banks and firms in our sample are Italian. Nonetheless the restricted field of investigation, Italy is particular instructive, since firms are highly dependent on banks as relationship lenders and banking industry has been deeply affected by the global financial crisis (Rossi, 2013). As showed in figure 1, with respect to other European Countries, Italian firms have less equity and more bank debts.

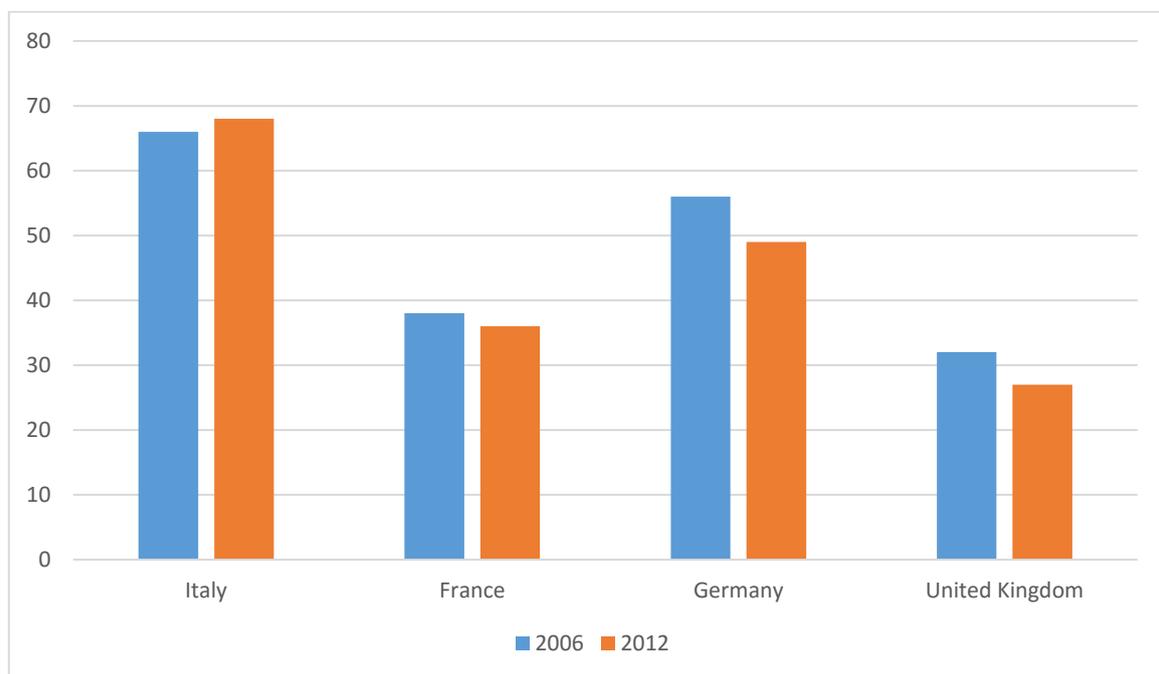
Figure 1 – Composition of European firms' financial liabilities



Source: Bank of Italy

Despite Italian bank industry has reduced dimensions for the real economy, because their activities are 2,7 times the GDP, significantly lower than other Countries, banks in our Country play an important role in financing firms. Bank debts represent more than 60% of firms' financial debts; in France, they are approximately 30% and in Germany are about 50% (Fig. 2). The capital market has a limited weight and the use of bonds does not reach the 8% of firms' financial debts (Panetta, 2013).

Figure 2 – Bank debts/financial debts ratio of European firms



Source: Bank of Italy

The initial dataset of 226,000 observations included data from 124 co-operative credit banks operating across Italy. These banks lend more than 81,000 firms located in 103 Italian provinces and operating in 80 different industries. In particular, firms in our sample belong to the following six macro-industries: agriculture, commerce, transports and hotels, manufacturing, building and services. Firms are segmented according the two main criteria: synthetic code of economic activity (SAE) and legal form. The majority (95%) are productive firms, including limited companies, cooperative companies producing goods and non-financial services, and consortiums. Other included segments are holdings of non-financial groups and operating private holdings, managing and controlling a

group of companies whose main activity is goods and services production. More than 80% of firms are limited liabilities companies and 5% of them are limited companies.

From the initial sample provided by Crif, after checking for outliers, duplicates and missing values, and excluding financial services and the public administration sectors, the resulting sample consist of 11,083 firms and 123 co-operative banks. For each bank, we collected balance sheet data on Bureau Van Dijk Database Bankscope and then merged them with the main Crif database using the unique bank identification number. Banks' equity in our sample is from 5,500 to 322,000; their assets are from 44,200 to 8,467,900.

In order to distinguish firms according to their size, we adopted the average turnover criteria. We considered small firms showing a turnover lower than 10 millions of euros; medium firms those with a turnover between are 10 and 50 millions of euros and large firms those above 50 millions of euros. The 86% are small and a lower percentage is medium and large firms (13% and 1% respectively). Firms are mainly located in the Centre-North of Italy (72%) and only 28% of them is operating in the South.

Firm-bank relationship data and, for each firm and bank, balance sheet information are referred to 2014, while credit crunch is measured as the difference between the level of bank debts in 2014 and 2013 (Bofondi et al., 2013). Specifically, we calculated credit crunch for both short (*Short Term Credit Crunch*) and long time (*Long Term Credit Crunch*) bank debts.

In order to measure banks' capitalization, we consider the *CET1* (Common Equity Tier 1), calculated as TIER1/Assets ratio. We also had available other banks' balance sheet information. In order to identify which of them insert in the regression analysis, we followed a process made in two steps. First, we applied the variance inflation factor model (VIF) for each potential independent variable, selecting the variables not affected by multicollinearity problems (Chatterjee and Hadi, 2012); then, we applied the stepwise procedure (backward selection method) to identify the best combination of significant explanatory variables (Shin and Lee, 2002; Shin et al., 2005). At the end of the process, we decided to consider as variables linked to banks' balance sheet *equity* and impaired loans/gross

loans ratio (*impaired/gross*). Also with respect to the financial indicators, we had a set of possible variables constructed by Crif. We proceeded in the same way as above-mentioned and, moving from a long list of about 60 indicators concerning several areas of firms' profile (i.e., leverage, profitability, and so on), we selected the following firms' balance sheet indicators: the return on asset (*roa*); the return on debt (*rod*); the return on equity (*roe*); the return on sales (*ros*); *leverage*; total debts/liabilities ratio (*debts/liabilities*); short term indebtedness (*short term debts*). In addition, we also considered the number of relationship with banks for each firm, in order to catch the *multiple banking* phenomenon. Finally, we inserted firm size, constructing the dummy variable *small size* showing value 1 in the case of average turnover lower than 10 million, and value 0 for medium and large firms.

Correlation matrix and main descriptive statistics for each variable are reported in Table 1 and in Table 2.

Table 1 – Correlation matrix for Long Term Credit Crunch

	<i>Mean</i>	<i>s.d.</i>	<i>1.</i>	<i>2.</i>	<i>3.</i>	<i>4.</i>	<i>5.</i>	<i>6.</i>	<i>7.</i>	<i>8.</i>	<i>9.</i>	<i>10.</i>	<i>11.</i>	<i>12.</i>	<i>13.</i>
<i>1.LTCC</i>	-8033,58	1,51	1												
<i>2.Cet1</i>	16,79	5,12	-.002	1											
<i>3.Equity</i>	75743,58	52707,76	-.004	-.007	1										
<i>4.Impaired/Gross</i>	17,39	6,12	-.025	-.086	-.392	1									
<i>5.Roa</i>	,56	13,06	.010	.011	.013	-.015	1								
<i>6.Rod</i>	20,74	1,34	.001	-.011	-.013	.001	-.010	1							
<i>7.Roe</i>	17,44	2,21	-.004	.003	-.001	.005	-.166	-.003	1						
<i>8.Ros</i>	12,35	3,41	.013	.032	.053	-.065	-.165	.015	.147	1					
<i>9.Leverage2014</i>	71,13	2,34	-.026	-.008	-.012	.019	-.142	-.004	.605	.120	1				
<i>10.Debts/Liabilities</i>	73,44	33,43	-.003	.002	-.045	.027	-.071	-.014	.301	.085	.382	1			
<i>11.Short Term Debts</i>	35,31	29,39	.004	.040	.023	-.068	.124	-.011	.152	.155	.196	.575	1		
<i>12.Long Term Debts</i>	56,16	1,34	.013	.000	-.002	.006	.020	.000	.001	.013	.001	.001	.000	1	
<i>13.Multiple banking</i>	1,14	,437	.028	.010	-.001	.022	-.008	-.004	-.017	-.028	.003	.016	.008	-.004	1
<i>14.Small size</i>	-	-	.004	.159	.219	-.077	-.006	.003	.002	.009	-.005	-.002	-.015	.003	.012

Table 2 – Correlation matrix for Short Term Credit Crunch

	<i>Mean</i>	<i>s.d.</i>	<i>1.</i>	<i>2.</i>	<i>3.</i>	<i>4.</i>	<i>5.</i>	<i>6.</i>	<i>7.</i>	<i>8.</i>	<i>9.</i>	<i>10.</i>	<i>11.</i>	<i>12.</i>	<i>13.</i>
<i>1.STCC</i>	-5831,25	1,70	1												
<i>2.Cet1</i>	16,79	5,12	.003	1											
<i>3.Equity</i>	75743,58	52707,76	.008	-.007	1										
<i>4.Impaired/Gross</i>	17,39	6,12	-.013	-.086	-.392	1									
<i>5.Roa</i>	,56	13,06	-.001	.011	.013	-.015	1								
<i>6.Rod</i>	20,74	1,34	.000	-.011	-.013	.001	-.010	1							
<i>7.Roe</i>	17,44	2,21	.002	.003	-.001	.005	-.166	-.003	1						
<i>8.Ros</i>	12,35	3,41	.006	.032	.053	-.065	-.165	.015	.147	1					
<i>9.Leverage2014</i>	71,13	2,34	.008	-.008	-.012	.019	-.142	-.004	.605	.120	1				
<i>10.Debts/Liabilities</i>	73,44	33,43	.004	.002	-.045	.027	-.071	-.014	.301	.085	.382	1			
<i>11.Short Term Debts</i>	35,31	29,39	.029	.040	.023	-.068	.124	-.011	.152	.155	.196	.575	1		
<i>12.Long Term Debts</i>	56,16	1,34	-.001	.000	-.002	.006	.020	.000	.001	.013	.001	.001	.000	1	
<i>13.Multiple banking</i>	1,14	,437	.001	.010	-.001	.022	-.008	-.004	-.017	-.028	.003	.016	-.004	.008	1
<i>14.Small size</i>	-	-	.022	.159	.219	-.077	-.006	.003	.002	.009	-.005	-.002	.003	-.015	.012

Models

In order to test our hypotheses, we apply stepwise forward OLS regression models. Specifically, we test four different models for each dependent variable. In the first one, we inserted the main independent variables at bank levels. In the Model 2, we added firms' balance sheet information; then we also considered the number of relationship with banks for each firm in Model 3 and, finally, in Model 4 tested the effect of firm size. The main models we estimate are as follows:

$$LTCC = \beta_0 + \beta_1(CET1) + \beta_2(equity) + \beta_3 (impaired/gross) + \beta_4(roa) + \beta_5 (rod) + \beta_6 (roe) + \beta_7(ros) + \beta_8 (leverage) + \beta_9 (debts/liabilities) + \beta_{10} (short term debts) + \beta_{11} (long term debts) + \beta_{12} (multiple banking) + \beta_{13} (small size) + \varepsilon$$

$$STCC = \beta_0 + \beta_1(CET1) + \beta_2(equity) + \beta_3 (impaired/gross) + \beta_4(roa) + \beta_5 (rod) + \beta_6 (roe) + \beta_7(ros) + \beta_8 (leverage) + \beta_9 (debts/liabilities) + \beta_{10} (short term debts) + \beta_{11} (long term debts) + \beta_{12} (multiple banking) + \beta_{13} (small size) + \varepsilon$$

Before to test our models, we control for possible problems of collinearity, heteroskedasticity and serial correlation. We test possible collinearity among the variables trough correlation matrix and by estimating variance inflation factors (VIF test), which have passed the recommended standards (Hair, 2010). VIF values range from 1 to 2, thus indicate that multicollinearity is not a problem for this study (Neter et al., 1996). For both regression models, we also estimate the condition index to ensure that collinearity is not a problem.

We carry out the control of heteroskedasticity and serial correlation by calculating the robust standard errors using the Huber White Sandwich estimator for clustered data (Rogers, 1993; Wooldridge, 2002).

Results

In this section, we present the results of the analysis, performed with STATA13. In Table 3, we can see that long-term credit crunch is affected by banks' balance sheet information. Specifically, bank capitalization positively influences credit rationing for long-term debts, supporting hypothesis 1a. This means that bank less capitalized are more forced to cut the loans to their clients. Moreover, another aspect that motivates the long-term credit crunch is the presence of an increasing percentage of impaired loans. In the Model 2, we can observe the effect of firms' balance sheet information on long-term credit crunch. Our analysis suggests that firms with a better roe (return on equity) suffer less banks' credit rationing. Instead, the leverage has a positive effect on long term credit crunch. Therefore, firms that are more indebted endure most the reduction of loans. This finding supports hypothesis 2a. In the Model 3, we tested the effect of multiple bank relationships on long-term credit crunch, finding out that having relationships with a larger number of banks implies a more consistent credit rationing. Therefore, also hypothesis 3a is supported. Finally, in Model 4, we seek to understand whether small and large firms suffer in the same way the reduction in loan supply. As results show, we find that the effect is statistically significant, highlighting that firms with average turnover lower than 10 millions undergo long-term credit crunch more than large firms.

Table 3 – Results of Regression Models

<i>Variables</i>	<i>Long-Term Credit Crunch</i>				<i>Short-Term Credit Crunch</i>			
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
<i>Cet1</i>	-.005**	-.004**	-.006**	-.007	-.006	-.013	.001	-.003
<i>Equity</i>	-.014***	-.025***	-.017*	-.019*	-.003	-.013	.003	-.002
<i>Impaired/Gross</i>	-.021***	-.063***	-.031***	-.031***	-.025***	-.042***	-.008***	-.009***
<i>Roa</i>		.001	.010	.010		.011	-.008	-.008
<i>Rod</i>		.001	.000	.000		.000	.000	.000
<i>Roe</i>		.019*	.018*	.018*		.028***	.005***	.005***
<i>Ros</i>		-.006	.016	.016		.014	-.001	-.001
<i>Leverage</i>		-.054***	-.040***	-.040***		-.039***	-.011***	-.011***
<i>Debts/Liabilities</i>		-.002	.006	.006		-.004*	-.022*	-.023*
<i>Short Term Debts</i>		.002	.000	.000		-.028***	-.041***	-.042***
<i>Long Term Debts</i>		.009	.013	.013		-.001	.000	.000
<i>Multiple banking</i>			-.029***	-.029***			.001	.001
<i>Small size</i>				-.026**				-.023**
<i>N</i>	11.083	11.083	11.083	11.083	11.083	11.083	11.083	11.083
<i>Adjusted R²</i>	.10	.30	.32	.32	.10	.40	.41	.42
<i>F</i>	8.671***	7.669***	2.880***	2.687***	10.174***	5.086***	1.226***	1.548***

In the second half of Table 3, we report the results related to short-term credit crunch. Model 1 shows that just one variable at bank-level affects short-term credit crunch: impaired loans/gross loans ratio. This finding highlights that when banks decide about providing short-term loans, the decision is conditioned by the amount of impaired loans, but not by the level of bank capitalization. Therefore, the hypothesis 1b is not supported. In Model 2, we observe the effect of firms' balance sheet information on short-term credit crunch. Results point out that also in this case banks look at roe, before to provide credit. Firms with a better level of roe suffer less credit rationing. As for long-term credit crunch, instead, a high level of leverage determinates a strong short-term credit contraction by banks. This last finding supports hypothesis 2b. Moreover, it is interesting to note that also the effect of short-term debts is significant on credit crunch. Model 3 shows that hypothesis 3b is not supported, because the effect of multiple bank relationships is not significantly. Finally, also with respect to short-term credit crunch, small-sized firms more suffers banks rationing.

Discussion and Conclusion

The present paper sought to identify the motivations for credit crunch post 2007-2011 financial crisis. Moving from previous studies, it considered the effect of banks' balance sheet information on the supply of credit to corporate sector. In line with previous results, our analysis suggests that banks more capitalized provide more long-term loans to their clients. Otherwise, bank less capitalized have suffered market crisis and find difficult supporting firms borrowing credits. Differently, this aspect seems not influence short-term credit granted, that is just affected by the presence of impaired loans. Besides, with this work, we not only embrace the offering perspective (bank) but also the demanding perspectives (firm). With this aim, we consider both firms' financial structure. With regard to this point, our findings suggest that firms' leverage positively influence both long-term and short-term credit crunch. Therefore, more indebted firms risk cut lending. Instead, we found a negative relationship between roe and credit crunch. This means that firms with a better roe less suffer credit

rationing. Finally, with respect to short-term credit crunch another influencing aspect is the level of short-term debts. Firms with a higher amount of short-term debts more suffer credit crunch. Therefore, the highest probability of default of these firms induces caution when granting loans, it is associated with requests for more guarantees, with higher interest rates. These results tend to exclude the existence of the phenomenon of "evergreening". Banks do not seem to be interested to renew their financial support to weaker companies, just because any difficulties in access to credit by those firms may have significant effects on the financial stability of the same lending banks (Albertazzi and Marchetti, 2010).

Moreover, by considering firm-bank relationship, our results show that multiple bank is not an opportune choice for the firms, if they are willing to receive a long-term funding. Indeed, firms with a higher number of bank relationship more suffer credit crunch. Differently, this aspect does not influence short-term credit rationing. A possible explanation could be that bank prefers to avoid high screening and monitoring costs with respect to short-term rationing and limits its evaluating analysis to the presence of impaired loans and to the level of firm's leverage and short-term debts. This could lead firms to use with more intensity the short-term debt, which seems to require less transparency; this form of financing, in fact, is converted into a source of long-term, with the continuous renewal of custody granted lines (Birindelli and Modena, 2010).

Finally, firms dimension is the last variable that seems affect credit crunch. As our results suggest, the credit supply reduction is stronger for firms that are smaller, with weaker banking relationships. The rating systems currently more oriented to value the historical elements, rather than forward-looking, lead to increased difficulty of access to credit for SMEs in times of adverse economic situation (Birindelli and Modena, 2010).

The just mentioned results give us the opportunity to offer some useful implications for practitioners. On one side, firms are required to pay attention to their capital structure and in particular to the composition of financial sources. The excessive firm debt and the high financial charges indeed generate a significant increase in the financial risk. Companies with greater debt exposure are more

vulnerable to the intensification of the general market conditions and, for this reason, should adopt more virtuous financial behavior in which the target levels of debt are more consistent with the objective of long-term sustainability of their economic and financial performance. On the other side, they should give more attention to the planning of banks relationship. Multiple bank could appear as an opportunity; instead, our results reveal that it represents a liability in rationing time. It is an aspect considered by banks in order to provide long-term, credit. Hence, a faithful relationship with one bank could be the right way to survival to a credit crunch, due to the personal link that may be created between bank and firm.

Despite of these interesting preliminary findings, this work needs to be further developed. For example, it could be interesting investigating if the more capitalized banks adopt internal rating mechanisms, which in turn allow them to free resources to provide credit to borrowers. Moreover, it could be useful, reply the same analysis, by considering different indexes able to give information about firm's "health state". In this way, the research could provide further useful practical implications for firms and banks.

Besides, our study does not investigate the effect of credit crunch on firms' decisions about their financial structure. Small firms, for example, could compensate the credit crunch with other sources of debt. This means that they should become more transparent. The current economic climate, the benefits arising from the possibility of access to otherwise unavailable resources should overpower the "disclosure" costs. The benefits of diversification of sources of funding, from greater bargaining power in credit relations and reputational gain that may result from access to markets could also be an incentive to openness and transparency. Finally, it would be interesting to understand if the choice to link the firm to a single bank, affordable choice in terms of lower credit rationing, may prove equally suitable than for example the interest rate which the company is subject. Sometimes, for example, it can happen that, by virtue of a binding long-term, the bank can smooth out the effects of monetary tightening on the customer base with which weaves broader relations. In exchange for what the customers of this type correspond to the bank permanently higher interest rates that incorporate a

sort of insurance premium. It creates a sort of implicit contract between bank and enterprise that requires a profit and risk sharing (Ferri and Pittaluga, 1997). According to this implicit contract the bank is committed to stabilize the availability and the cost of borrowing for the enterprise; the company undertakes not to abandon the bank in times of abundant credit and cheap.

Finally, our work measuring the credit crunch as the difference in the granting of credit by banks in a year and the previous one, but it does not take into account the amount of actually ask the credit business, whose requests have not been answered. Not even take into account the purposes for which the request is put forward credit which could also affect your chances of getting new loans, the financing will be used for debt restructuring or to fill the increased need for working capital, or to finance investments long term? This would be a further aspect to be investigated and which banks can take into account only if there is a long-term relationship with the company, willing to provide information in accordance with the principle of transparency.

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