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THE IMPACT OF BANK RATING CHANGES ON LENDING IN MAJOR EUROPEAN BANKS

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This study examines the impact of change in bank ratings on the lending behavior of large European banks by comparing a crisis and post-crisis sample. Our findings suggest that, at the outbreak of the crisis, downgraded banks or those with near a plus (+) or minus (-) notch rating granted fewer loans. This behavior is consistent with the financial pressure due to regulatory requirements, such as requests for additional capital that may increase the role of the credit rating agencies in lending decision-making.

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1. INTRODUCTION

Credit rating agencies play an important governance role in most modern capital markets. They have a direct effect on capital structure as well as on firms' managerial decisions and strategy. Some managers therefore prefer to modify their current strategy in order to forestall a hypothetical credit rating downgrade. Graham & Harvey (2001) showed that credit ratings were one of the major concerns for the Chief Financial Officers when they have to decide on the debt structure of their companies. According to the study, 57.1% of the interviewed CFOs in the sample defined credit ratings as either "important" or "very important".

The latest scandals involving banks have highlighted the excessive bank lending to weak borrowers. The aim of Basel enforced prior to the 2008 financial crisis is to cover the risks deriving from banks. Basel II[1] – and Basel III[2] after it- explicitly considers that CRA play an important role in the economic market. In order to mitigate the risk while rating banks, Basel II, the second step of the banking regulation, focuses on the credit ratings and market discipline in its third pillar. After Basel III, the Liquidity Coverage Ratio (LCR) might influence the granting of loans, since banks would increase their capital and the market would not be able to invest to this extent. The aim of Basel III is to reinforce the ability of banks to absorb shocks through the level of capital requirements (Allen, Beck & Carletti, 2013).

The literature has put a lot of focus on the relationship between CRA and firms, but not really on the relationship with banks. Rating a bank is more opaque and complex than basic firms, due to the existence of conflicts of interest (Morgan, 2002; Hau, Langfield & Marques-Ibanez, 2013). Since the core activity of banks is providing loans, this study will investigate the impact of a rating change on the loans provided by a banking institution. Decamps, Rochet and Roger (2003) consider that in a dynamic framework, we could observe a causality between the capital of the bank and the loans granted. Changes in rating may have an impact on the loans emitted by banks by influencing the capital. In fact, depending on their rating level, banks may adapt the amount of loans they provide and align their capital structure.

The purpose of this article is to examine the impact of credit rating changes on the activity of banks. This is even more the case in the European Union where most of the firms are financed through loans. Therefore, the effect of bank rating on the granting of loans should be easier to perceive.

This paper will particularly try to identify whether ratings have a significant impact on the loans granted by the institution. To our knowledge, there is no relevant study regarding the relationship between European banks and ratings provided by credit rating agencies. Firms in the European Union are more dependent on credit loans than in the USA. The consequences of ratings should therefore be better observed in Europe than in other areas.

The remainder of the paper is organized as follows: the next section presents a literature review. Section 3 describes data and econometric methodology, section 4 presents the main results and section 5 provides a conclusion.

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[1] Bank for International Settlements. (2005). Basel II: International convergence of capital measurement and capital standards: A revised framework. BIS Working Paper, Basel committee on Banking Supervision. Retrieved from http://www.bis.org/publ/bcbs118b.pdf

[2] Bank for International Settlements. (2010). Basel III: A global regulatory framework for more resilient banks and banking systems. Retrieved from http://www.bis.org/publ/bcbs189_dec2010.htm

2. LITERATURE REVIEW

2.1 The bank-rating agencies relationship

Apergis, Payne & Tsoumas (2012) consider banks as really unique institutions in the economy. They occupy a peculiar position in the market. The special place occupied by banks in the market can be shown by the fact that they are the biggest source of external finance for corporations. Firms prefer obtaining their money directly from banks rather than raising it through debt or equity issuance (Ferreira & Matos, 2012). This is even more the case in the European Union where most of the firms are financed through loans. Their opaque nature, as well as the evolution of banking activities, could explain how hard it is for a bank to obtain a good rating. Morgan (2002) provides evidence that a bank rating is harder to compute than any other rating, since the risk taken into account is almost impossible to observe from the outside, and credit rating agencies therefore disagree a lot when rating banks. A true rating for banks that is hard to obtain does not mean that the ratings are not considered seriously by banks. Gonzalez et al. (2004) argue that conserving or obtaining a special rating is a target that is commonly part of the financing strategy. Yung-Ho, Chun-Mei & Ming-Yuan (2010) consider that ratings are important for banks. They show how important credit ratings are for banks by considering them as part of a bank's goodwill, which can be improved through numerous decisions like a decrease in risky capital it possess, or a review of long-term plans. Apergis, Payne & Tsoumas (2012) also highlight the importance role played by credit ratings in the extent that they have real economic decision-making consequences for banks.

Hau, Langfield & Marques-Ibanez (2013) highlight the existence of conflicts of interest between banks and credit rating agencies, explaining that true ratings are hard to obtain in the special case of banks. Indeed, they show evidence that rating agencies will have an incentive to provide better rankings for banks if the banking institutions have many Asset-Backed Securities (ABS) ratings.

However, the idea shared by Holthausen & Letfwich (1992) that a downgrade has a bigger impact on the rated company than does an upgrade is also shown empirically in the special case of banks by Apergis, Payne & Tsoumas (2012). They also add that, over a long horizon, despite all that could happen to them or cases such as the famous fall of Lehman Brothers, banks' appetite for risk does not change, even in the event of a downgrade.

2.2 The impact of macroeconomic conditions and financial uncertainty on bank lending

In recent history, the 2007-2008 financial crisis led to a decrease in the granting of loans. The decrease in loan activity was 6% lower in the case of bank-firm governance links (Ferreira and Matos, 2012). Granting loans therefore appears to be directly affected by the relationship between a bank and a firm. De Mitri et al. (2010) show proof that corporations with longer relationships had better access to loans during the credit crunch, and this led to a better performance of these companies at this time. Bolton et al. (2013) argue that in a crisis situation, a good bank-firm relationship will enable the borrower to have access to higher levels of credit. Saurina & Trucharte (2004) also highlight an interesting fact. The credit crunch should be more significant since the Basel II Capital Accord focuses on reducing risks. The need for loans to SMEs is therefore really high since they do not have easy access to the capital markets (Berger and Udell, 2001). Iyer et al. (2013) point out the negative impact of bank illiquidity correlated with any macroeconomic change, and provide evidence that banks did not really start new lending relationships with firms during the crisis, especially with small firms.

A change in macroeconomic conditions, through Basel II (and Basel III after it), will have an impact on the banks' lending, even in the case of a bank with enough capital to meet the binding

requirements. On the other hand, Heid (2007) explains that capital requirements are higher for banks after Basel II, and Saurina & Trucharte (2004) find evidence that, since Basel II, fewer loans have been granted. This could also be explained by the financial crisis context.
Hence, some interesting questions remain. Do CRA really influence the granting of loans or not? Have the Basel Accords deeply modified the economic market and changed the role of CRA?

3. DATA DESCRIPTION AND ECONOMETRIC METHODOLOGY

The data comes from Standard & Poor's ratings for 27 large listed European banks from 14 countries[3] between 2007 and 2016. The sample period is divided into two sub-samples: crisis period from 2007-2010 and aftermath of the crisis period from 2011-2016.
Table 1 describes the 21 categories of bank ratings and their assigned numerical scale. The banks selected for this study are the main banking institutions in Europe (see appendix). We decided to select only banks whose shares are issued on the stock exchange and that belong to their national benchmark index for the year 2010, in the middle of the period studied. The investment funds and holdings have not been selected for the sample because they do not have the same constraints as banks and are therefore not comparable.

[3] The list of European countries includes: Belgium, Denmark, France, Germany, Greece, Ireland, Italy, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, The United Kingdom.

Table 1: Scale of bank rating grades

	Moody's Rating	Rating Grades
Investment grade ratings		
Highest quality	AAA	21
	AA^+	20
High quality	AA	19
	AA^-	18
	A^+	17
Upper-medium grade, strong payment capacity	A	16
	A^-	15
	BBB^+	14
Medium-grade. adequate payment capacity	BBB	13
	BBB^-	12
Speculative-grade ratings		
	BB^+	11
Likely to fulfill obligations, ongoing uncertainty	BB	10
	BB^-	9
	B^+	8
High credit risk	B	7
	B^-	6
	CCC^+	5
Very high credit risk	CCC	4
	CCC^-	3
Non default with some prospect of recovery	CC/C	2
Default	SD/D	1

Source: Scale based on data from Standard & Poor's Ratings. Notes: In the third column, the credit ratings categories are converted into a 21-point numerical scale, with the value of 21 corresponding to the highest rating and 1 to the lowest. The last column represents the distribution of bank ratings in our sample of 27 European banks over the period 2004-2016.

We used a panel data regression to conduct our empirical studies. Our initial empirical tests examine whether loans granted are affected by credit ratings. The explanatory variables are dummy variables for a bank upgrade or downgrade. In addition, we included a set of determinants of bank lending as controls. We intend to clarify how the relevance of the studied explained variables may be altered by the crisis context. We estimated the equation (1):

$$Loans_{it} = \beta_0 + \beta_1 Downgrade_{i,t} + \beta_2 Upgrade_{i,t} + \beta_3 SOL_{i,t} + \beta_4 ROA_{i,t} + \beta_5 ROE_{i,t} + \beta_5 Size_{i,t} + \beta_5 GDP_{i,t} + \beta_7 Inflation_{i,t} + \varepsilon_i \quad (1)$$

where i and t represent the bank and the year; Loans: loans granted; Downgrade and Upgrade are dummy variables equal to 1 if the bank was downgraded or upgraded, respectively; $SOL_{i,t}$: solvency ratio; $ROA_{i,t}$: return on Assets (Net Income/ Total Assets); $ROE_{i,t}$: Return on equity (Net income/ Equity); Size: Total assets; GDP (annual real GDP); Inflation; $\varepsilon it = \upsilon it + uit$, is the residual that shows the impact of other factors on the loans granted. Details of control variables are listed in table 2.

To further investigate the extent to which bank ratings directly affect loans granted, we used the method developed by Kisgen (2006) who carried out the first empirical examination of the effects of changes in credit ratings on firm debt. Kisgen (2006) defines 'Broad ratings' as a ratings level and considers firms to be near a rating change if they have either a plus (+) or minus (-) notch within a broad rating, and not near a broad rating change if they have a zero (0) notch within a broad rating. Our explanatory variables are two notch rating CR_{PLUS} that takes on the value of 1 for firms with a rating followed by "+" and CR_{MINUS} that takes on the value of 1 for firms followed by "-". In addition, we included a set of determinants of bank lending as controls.
We test whether firms that are near a change in rating provide less loans.

$$Loans_{it} = \beta_0 + \beta_1 CR_{PLUS\ i,t} + \beta_2 CR_{MINUS\ i,t} + \beta_3 SOL_{\ i,t} + \beta_4 ROA_{\ i,t} + \beta_5 ROE_{\ i,t} + \beta_5 Size_{\ i,t} + \beta_5 GDP_{\ i,t} + \beta_7 Inflation_{\ i,t} + \varepsilon_i \quad (2)$$

Table 2: Data Description

Variable Name	Description	Data Sources
Loans	(Total loans and leases, gross –Allowance plus excess allowance for loan and lease losses + Customers' liabilities on outstanding acceptances) / Total assets	Bloomberg
Downgrade	Dummy if the firm was downgraded	Standard & Poor's
Upgrade	Dummy if the firm was upgraded	Standard & Poor's
CR_{PLUS}	Dummy for firms with a rating followed by "+"	Standard & Poor's
CR_{MINUS}	Dummy for firms with a rating followed by "-"	Standard & Poor's
Solvency	Z-score	Bloomberg
Return on Assets	Net Income / Total Assets	Bloomberg
Return on Equity	Net income / Equity	Bloomberg
Total assets	Total assets	Bloomberg
GDP	Log GDP	WB (WDI)
Inflation	Annual consumer price inflation rate	IMF (IFS)

Notes: WB - World Bank; WDI - World Development Indicators; WGI - Worldwide Governance Indicators; IDS - International Debt Statistics; IMF - International Monetary Fund; IFS - International Financial Statistics; WEO - World Economic Outlook.

In order to estimate equations, we have run a Hausman specification test which compares the fixed versus random effects under the null hypothesis that the individual effects are uncorrelated with the other regressors in the model. Fixed effect model is applied after statistical test since it is more adequate than random effect model on the ground of Hausman test.

4. EMPIRICAL RESULTS

4.1 Loans during the crisis

The results presented in table 3a show that, during the crisis period (2007-2010), the downgrade coefficient is positive and significant which indicates that banks subsequently increased their loans granted following the downgrade by 3 %. Moreover, the results in model 2 show that plus or minus notch ratings have positive and significant effects on loans at the 5 % level. These results prove that banks close to a credit rating upgrade or downgrade tend to grant loans to borrowers. Indeed, after the beginning of the 2007 financial crisis, we observe an increase in loans and a decrease in rating at the same time. This crisis was sudden and unexpected, so there was a need to provide money in the markets and the banks had no information in order to prepare themselves. Our results show that the banks that being downgraded during the financial crisis (2007-2010) provide more loans. We can explain our findings by the impact of bank firm relationship on the loans during the crisis. In fact, Bolton et al. (2013) argue that in a crisis situation, a good bank-firm relationship will enable the borrower to have access to higher levels of credit. De Mitri et al. (2010) show proof that firms with longer relationships had a better access to loans during the credit crunch. Thus, loans granting appears to be directly affected by the relation between the bank and the firm.
Among the control variables, the size GDP and inflation have a significant effect on the loans at the 1-10 % level respectively, consistent with Cotarelli et al. (2005) and Hoffman (2001).

4.2 Loans in the aftermath of the crisis

Results of the regressions for the sub-period 2011 to 2016 are shown below in table 3a/3b. The coefficient for downgrade is negative and statistically significant at 5 % level. Upgrades have insignificant impact on the loans. Downgraded banks modified their strategy and the amount of loans they granted in the aftermath of the outbreak of the crisis. These results are consistent with Apergis, Payne & Tsoumas (2012) who argue that a downgrade has a severe impact in the special case of US banks. Table 3b also shows the negative and significant effect of CR_{PLUS} on bank lending volume. These results prove that banks close to a credit rating upgrade or downgrade tend to decrease the number of loans granted.
On the other hand, after the implementation of the Basel III regulation, we observed an important decrease in the loans granted by the banks in the sample. The Basel III regulation was discussed for a long time before being implemented, and came into effect in 2010. Banks had to prepare themselves to meet the requirements of the agreement before it was enforced. They therefore decreased the amount of loans they granted. This simple observation of facts enables us to see the direct impact of ratings of banks on the loans granted in the aftermath of the crisis.
Among the control variables, the loans granted by banks appear to be influenced by the Size, GDP and inflation. SOL and ROA variables have a positive but insignificant effect on the loan ratio.

Table 3a: Regression analysis (1)

	1st sub-period 2007-2010		2nd sub-period 2011-2016	
No. of observations	*108*		*162*	
No. of banks	*27*		*27*	
R^2	*0.2075*		*0.2305*	
Variables	**Coeff**	**t-stat**	**Coeff**	**t-stat**
Constant	*-0.8314*	*-1.6*	*-1.0035*	*-1.32 **
Downgrade	*0.0387*	*2.14****	*-0.3307*	*-103.74****
Upgrade	*-0.0107*	*-0.92*	*0.0054*	*0.92*
Size	*-0.0033*	*-1.41**	*0.0005*	*1.65**
SOL	*0.0052*	*1.10*	*0.0017*	*0.61*
ROA	*0.0005*	*0.01*	*0.0019*	*0.08*
ROE	*-0.0077*	*-0.6*	*-0.0007*	*-0.10*
GDP	*0.1293*	*2.63****	*0.1385*	*1.96****
Inflation	*-0.0039*	*-1.31**	*0.0054*	*1.38**

Note: This table presents the static panel model estimates. *, **, * indicate significance at the 1%, 5% and 10% levels, respectively.**

Table 3b: Regression analysis (2)

	1st sub-period 2007-2010		2nd sub-period 2011-2016	
No. of observations	*108*		*162*	
No. of banks	*27*		*27*	
R^2	*0.1402*		*0.1314*	
Variables	**Coeff**	**t-stat**	**Coeff**	**t-stat**
Constant	*0.0636*	*0.09*	*-1.6760*	*-1.89**
CRPLUS	*0.0366*	*2.62****	*0.0157*	*1.28**
CRMINUS	*0.0458*	*3.11****	*-0.0053*	*-0.51*
Size	*-0.0031*	*-2.30****	*0.0006*	*1.64**
SOL	*0.0102*	*1.47**	*0.0004*	*0.20*
ROA	*-0.0422*	*-1.12*	*0.0031*	*0.15*
ROE	*.0029*	*0.26*	*-0.0004*	*-0.06*
GDP	*.0414*	*0.64*	*0.2011*	*2.44****
Inflation	*0.0031*	*0.01*	*0.0076*	*1.49**

Note: This table presents the static panel model estimates. *, **, * indicate significance at the 1%, 5% and 10% levels, respectively.**

5. CONCLUSION

The aim of this study is to examine the impact of changes in bank ratings on the loans granted. The sample is constructed using 27 large European banks between 2007 and 2014. This period is relevant in as much as many events happened, such as the introduction of Basel II and Basel III regulations and the 2007-2008 financial crisis. The sample period is divided into two sub-samples: a crisis period from 2007-2010 and the aftermath of the global crisis from 2011-2016. In order to explore rating changes, we analyzed their effects following downgrade or upgrade, as well as next to broad rating changes as defined by Kisgen (2006).

Our findings suggest that when the crisis broke out in 2007, rating changes did not appear to have any significant effect on the loans granted by banks. The global crisis was sudden and unexpected. There was therefore a need to provide money, regardless of the rating level. In addition, a good relationship between the bank and the firm may play an important role in granting loans.

In the aftermath of the crisis, the direction of the impact of the analyzed variables reversed: downgraded banks or those with near a plus (+) or minus (-) notch rating granted fewer loans. The increase in capital requirements by the Basel Committee had an impact on banks' lending, even in the case of a bank with enough capital to meet the binding requirements. Heid (2007) considers that the Basel Accord made granting loans difficult since it made banks deplete their equity capital.

This paper shows the important aspect of bank ratings as a determinant of lending behavior, particularly after a tightening of capital requirement regulation. Our findings offer useful guidance to understand the evolution of the interaction between the rating agencies and financial regulators. Policymakers in Europe are invited to pay attention when dealing with the opinion of credit rating agencies towards banks.

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APPENDIX

Table A1. Our sample of banks per country

Country	Company
Belgium	KBC
Denmark	Danske Bank
France	BNP Paribas; Crédit Agricole; Natixis; Société Générale
Germany	Commerzbank; Deutsche Bank; Deutsche Postbank
Greece	National Bank of Greece
Ireland	Bank of Ireland
Italy	Populare di Milano; Unicredit
The Netherlands	ING
Norway	DNB NOR ASA
Portugal	Banco BPI; Banco Espirito Santo
Spain	Banco Popular; Banco Santander; BBVA
Sweden	Nordea; Swedbank
Switzerland	UBS
The United Kingdom	Barclays; HSBC; Lloyds; Royal Bank of Scotland