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HOW BANK BUSINESS MODELS RELATE WITH RISK?
THE CASE OF PORTUGAL IN TIMES OF FINANCIAL CRISIS

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Abstract

Using as explanatory variables the main characteristics of the four major Portuguese banks business models' and also three additional macroeconomic variables and considering the period preceding the financial crisis that hit the financial markets of the whole economy (from the first quarter of 2001 to the third quarter of 2007) I studied the consequent relation with the distress of banks during the crisis period (from the fourth quarter of 2007 to the fourth quarter of 2009). According to the results of the model, the higher risk exposure associated with higher distress of banks depends mainly on external factors such as the changes in GDP and changes in returns of non financial corporations.

Keywords: major Portuguese banks; bank business models; financial crisis; systematic risk

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Introduction

The evidence and reality have proven over the years that, “One of the main reasons for the existence of banks is that they are better at evaluating and managing risks than other institutions.”(Altunbas, Manganelli and Marques-Ibanez, 2012).

So banks have an important, significant and powerful role in the economy. Recently, we noted that importance through the bankruptcy of Lehman Brothers in 2008. After this occurrence, the injection of large amounts of capital into the banking system with the aim of avoiding its collapse proved the vital importance of equilibrium in this sector for the world economy. However, that capital injection was not able to prevent the systemic risk from spreading throughout the banking system, resulting in the collapse and bailouts of innumerable banks and financial institutions. In the period 2007- 2009, known as Great Recession, in addition to the bailouts of banks and firms there were also significant declines in stock values and continued high unemployment rates especially in the United States and Europe. Although these negative consequences were widespread they affected banks in different manners. This could suggest that these differences were a consequence of an adoption of different business models before the crisis since there is the possibility that different business models *ex ante* reflected different risk manifestation *ex post*. Therefore, my study focusing on the Portuguese case and on the recent financial crisis aims to illustrate and quantify the relationship between the bank choice of a business model and its respective risk profile, its risk manifestation during the recent crisis, and bank distress. We can therefore get a notion of the most efficient business model and of the characteristics that should be avoided. There is no doubt that mistakes were made in the past regarding

risk management and the choice of business models by banks that committed and continue to commit their credibility jeopardizing the stability of the financial system and of the economy as a whole. Banks possibly bear some responsibility in the origin of the recent crisis. Today and in the future it is essential that banks restore their investors' confidence in order to be profitable again. Banks have to choose business models which appropriately reflect a good balance between return, risk and safety in order to attract investors (EBA Report on Risks and Vulnerabilities of the European Banking System, 2012).

To develop my model I considered a representative sample of listed banks operating in Portugal, namely Millennium BCP, Banco Espírito Santo (BES), Banco Português de Investimento (BPI) and Santander. In the first section I will study the existent literature in what concerns bank business models and risk. The second section provides the details of the model equation and the description of each variable. The third section provides the results of the model finalizing with some conclusions.

Bank Business Models Overview

Banks' main function is the provision of liquidity to the entire economic system but they also act as maturity transformers, financial innovators and risk managers. So, banks have an extremely important role in the economy. This role can be related to the origin or absorption of financial crisis, which depends mostly on their performance; see (Ayadi, Arbak, De Groen, Forthcoming). In recent decades, we have witnessed the transformation of the financial system. With more deregulation in financial markets, new financial instruments and forms of management and decision processes emerged in banks and

financial institutions leading to structural changes in business models of banks. One of the most important results of those developments was the increase in the proportion and importance of off-balance activities in the overall activities of banks that commits the utility of banks balance sheets as a measure of banks activities and financial situation. The traditional model of bank lending channel that we used to know based on risk management and an equilibrium balance between deposits and loans has been replaced by a new model that allows higher returns but has also more risk associated. These transformations contributed also to enhance the transfer of credit risk between financial institutions. However, this transfer has associated to a 'dark side', which is the possible creation of a 'dangerous' cycle. This happens because from credit risk banks go to liquidity risk then to funding risk ending the cycle with solvency risk (which is what happened to Lehman Brothers). Since the risk is greatest, it is necessary to incorporate it in the law so that it can be reduced to the utmost. In this sense we also assist to new international capital adequacy frameworks with the proposal of Basel III, scheduled to be introduced from 2013 until 2018. This new regulation intends to combine strengthening regulatory supervision whilst also preserving a financial system and a banking industry capable of supporting robust and sustainable recovery. It is important to note however, that the impact of banking regulations along with a more competitive environment also contributed to a reduction in diversity leading to higher systemic risk and lower market power. Desperate to profit in this competitive market, banks start to invest in more volatile non-interest sources of income and to increase exponentially the volume of loans concerning mainly with short term strategies. All these factors are in the origin of the 2007-2009 financial crises. Even after this troubled period the doubts and concerns about the future of the financial system persist.

The intention/objective is to find a longstanding and sustainable equilibrium that primarily consists of finding a way of lowering the systemic risk that affects all the interlinked financial system; see 2nd Mckinsey Annual Review on the banking industry (2012) and Lewis (2012).

Literature Review

This section offers a brief literature review on bank business models and bank risk. To facilitate the understanding I decided to organize the information by separating it into additional controls, the four main characteristics of business models and their respective relation with risk.

(1) Capital Structure

It is indisputable that capital generates a lot of controversy in what concerns the effects of capital requirements and capital structure on bank risk. However, overall the tendency is to hold the theory that more capital is associated with a decrease in risk. On the one hand, by absorbing losses capital can reduce insolvency and systemic risk factors. On the other hand, high levels of capital are associated with risk-taking strategies with the intention of generating returns for shareholders (Perotti, Ratnovski and Vlahu, 2011). Then the choice of the optimal capital structure will depend on the risk aversion profile and optimal strategy of each bank. Sometimes banks are obliged by the international banking regulation to increase capital ratios when risk increases. In a period of recession, for example, this may oblige banks to lend less (in order to diminish total risky weighted assets) which in turn

worsens even more the overall economic situation, increasing at the same time their own risk, since the probability of a bank run increases; see Ghosh (2008). So, there is evidence supporting the theory that in times of economy downturns and binding capital requirements the capitalization ratio is not a significant indicator that explains bank failure, and that increases in this ratio do not necessarily translate into lower failure probabilities. However, there is also literature supporting the opposite, arguing that the capitalization ratio is the most significant indicator that explains bank failure and that increases in this ratio will translate into a decrease in the probability of failure for banks. In undercapitalized banks, an increase in equity capital is associated with a decline in risk, but with highly capitalized banks the opposite occurs (Camara, Lepetit and Tarazi, 2010). Moreover, high capitalized banks (especially larger banks) obtained higher stock returns during the 2007-2009 financial crises (Demirgüç-Kunt, Detragiache, and Merrouche, 2010).

(2) Asset and Liability Structure

The empirical literature has also given some importance to the relationship between liquidity and risk taking. In Jagannathan and VV (1988) there is evidence for the theory that the creation of liquidity increases the bank risk by increasing the probability of bank runs which can result in financial crisis. Also, Acharya and Naqvi (20012) argue that banks' creation of liquidity is associated with risk-taking behavior of bank managers, which can led to asset price bubbles. Concerning banks' liabilities, Diamond and Rajan's (2000) theoretical evidence relates higher deposit volumes to higher probabilities of a bank run. Altunbas, Gambacorta, Marquez-Ibanez (2012) find a positive relationship between capitalization and liquidity with solvency levels during the recent financial crisis.

(3) Funding Structure

The short-term funding in the interbank and wholesale markets has been gaining importance in recent decades leaving behind retail deposits. This is a consequence of financial innovation and deregulation and the banks' constant pursuit for diversification. Concerning retail deposits, what we assisted especially after the 2007-2009 crises was lack of discipline and regulation that resulted in drastic decreases of credit quality. With respect to wholesale financing, the evidence points to advantages relative to retail deposits. It allows institutions to adjust their leverage quickly and gives ability to refinance sudden retail withdrawals. Besides, it also allows for not being constrained to local deposit supply. However, the literature provides divergent views on the impact of the increased use of these short-term funding alternatives on banks risk. On the one hand, we have the argument suggesting that relying more on market funding may enhance market discipline arising from the better ability of holders of subordinated debt to monitor and thus prevent systemic crisis than the dispersed depositor's holders. However, on the other hand, there is a problem of moral hazard concerning the expectation of government intervention in the 'too-big-to fail' banks which result in misleading monitoring leading to higher exposure to liquidity problems (Ayadi, Arbak, and De Groen, Forthcoming). Related work by Huang and Ratnovski, (2009), says that "wholesale financiers have lower incentives to conduct costly monitoring, and instead may withdraw based on negative public signals, triggering inefficient liquidations."

(4) Income Structure

Foos, Norden and Weber (2009) find a negative relation between loan growth, relative interest income and capital ratios. Moreover, analyses reveal that loan growth also has a negative impact on risk-adjusted interest income. In the literature, special importance was also given to the relationship between investments in non-interest-based income activities and investments with more volatile earnings. Here literature is contradictory. On the one hand, there is the theory that suggests a positive relation between banks investing in non-interest-based income activities and market valuation. On the other hand, Stiroh (2004) presents evidence which indicates that long-term interest and non-interest income became correlated in recent years. Another positive point arising from investments in long term interest income is the volatility that allows for diversification and decreasing risk. Concerning securitization, it allows banks to transfer their credit risk portfolio to investors, gaining at the same time access to diversified sources of financing. However, there are also some disadvantages associated. One is the complexity and high cost of the procedure that in general is higher than the other sources of bank financing. Another and most important is the increase in leverage and systemic risk. These are the reasons why securitization still is so controversial and polemical, especially after the recent crisis.

(5) Additional Controls: Macroeconomic Variables

Another important factor affecting the likelihood of bank failure is the country-specific macroeconomic conditions. Vazquez and Federico (2012) refer to bank failures during the recent financial crisis as a consequence of the higher incapacity of banks to adjust quickly

and effectively to risks that appear unexpectedly during economic cycles. These risks are related to creditworthiness of borrowers (like the value of collateral).

In this paper, I add to this literature by developing an innovative empirical study based on the Portuguese case and exclusively on systematic risk. I will gather all these components of banks business models and some macroeconomic variables and I will study the relation/impact of the choice of a particular business model before the recent crisis to the materialization of risk during the crisis.

Model and Data

$$risk_{x,b/t} = \beta_0 + \underbrace{\beta_1 caps_{x,b/t} + \beta_2 uncaps_{x,b/t} * k_{x,b}}_{\text{Capital Structure}} + \underbrace{\beta_3 size_{x,b/t} + \beta_4 loanta_{x,b/t}}_{\text{Asset Structure}} +$$

$$+ \underbrace{\beta_5 stmktf_{x,b/t} + \beta_6 depf_{x,b/t}}_{\text{Funding Structure}} + \underbrace{\beta_7 excloang_{x,b/t}}_{\text{Income Structure}} + \underbrace{\beta_8 gdpgrowth_{k,b/t} + \beta_9 housep_{k,b/t} + \beta_{10} sm_{k,b/t}}_{\text{Controls}} + \varepsilon_x$$

(1) Equation I

To carry out my analysis, I start by formulating the equation above. The dependent variable ($risk_{x,b/t}$) measures the distress of bank x during the pre-crisis period b (from the first quarter of 2001 to the third quarter of 2007). The explanatory variables represent the banks characteristics and controls for each bank x in the same period b . Since the purpose of my analysis is to prove the existence/inexistence of any relation between the choice of a certain

business model ex ante the crisis with the emergence of distress during the crisis, I then, regress again the same equation (1) but instead of period b I considered the period of the crisis t (from the fourth quarter of 2007 to the fourth quarter of 2009) in order to link the results of the equation (1) in time b with the results of the same equation in time t . In this way, it is possible to get a notion of what are the variables that are related with risk in the run up to the crisis (results of equation (1) during time period b) and that consequently can be seen or not as a source of financial crisis in the future and what are the variables that are related to higher risk exposure, independently of the time they occur (results of equation (1) both in period b and t) but which affect the distress of each bank exactly in the same period as they occurred.

The dataset considered includes a sample of listed banks operating in Portugal: Millennium BCP, Banco Espírito Santo (BES), Banco Português de Investimento (BPI) and Santander. This is representative of the Portuguese banking system, as these banks represent the major total aggregate balance sheet of banks operating in Portugal. The variables and controls used and an explanation of its computation and its sources are presented in the next section.

Risk Variable: Systematic Risk (risk)

I started by computing the systematic risk, the risk variable that I think better captures the risk materialization and give a better measure of how the crisis impacted the Portuguese banks, their exposure during the crisis. To compute the systematic risk, I used the CAPM (Capital Asset Pricing) model, based on the equation:

$$R_{x,b/t} = r_{m,b/t} * \beta_{x,d} + \varepsilon_{x,b/t}$$

(2) Equation II

where $R_{x,b/t}$ is the logarithm of the excess stock return for each bank x , during the time period b or t , referred above; $r_{m,b/t}$ is the logarithm of excess stock market return from the broad stock market index m at time b or t and $\varepsilon_{x,b/t}$ is a bank-specific residual. In order to estimate $\beta_{x,d}$, which in the equation measures the volatility or the systematic risk of a bank's stock with the market as a whole, I export daily data for every quarter q during the period d (from the first quarter of 2001 to the fourth quarter of 2009) for each bank and for the market and then I compute individual regressions to get the average beta for each bank. I used the PSI20 returns as *proxy* for the market return. For the risk free rate I considered the 10-year German Government Bonds also during the time period d . With the regression in (2) I can measure the impact that the crisis had on the stock return of each individual bank and I can have a quantification of the relation between banks and the market at that time.

Bank Business Models

The next step was thus to create the business models variables. My intent is to discover a particular relation between a certain business model operating *ex ante* the recent financial crisis (between the first quarter of 2001 and the third quarter of 2007) to the emergence of higher risk during the financial crisis (between the fourth quarter of 2007 and the fourth quarter of 2009). As with the literature review, I decided to separate the business models into four main characteristics and the additional controls. These characteristics will be the regressors of the equation. They are (1) the capital structure, (2) the asset structure, (3) the

funding structure and (4) the income structure. The section below provides a summary of the variables, its sources and a brief description of how the variables have been constructed.

(1) Capital structure

I decide to use the Tier 1 capital to total asset (*caps*) to capture the bank capital, since Tier 1 represents a core measure of a bank's financial strength from a regulator's point of view (the ability to absorb losses without the bank being required to close operations). It includes banks' core capital, like equity capital and disclosed reserves. In this way it offers support to the ensuring of banks transparency, viability and security. However, as described above the literature points to some contradictions in what respects capital and risk. To calculate the Tier 1 capital for each bank I have summed up the Share Capital & APIC and Retained Earnings & Other Equity. I decide not to include the component Total Preferred Equity which is sometimes included in Tier 1 capital because judging by its subordination, permanency and free of mandatory fixed charges I think it is more appropriate not to include it. I also introduce a dummy indicator (*uncap*) for capital ratios below 6% (low capital) accounting in this way for non linear effects that could exist between bank capital and bank risk. I extract all the data needed for the computations from Bloomberg.

(2) Asset structure

The asset structure is composed by three variables which concisely summarize it. The first variable is size (*size*). I compute this variable by taking the logarithm of total assets (€ millions) during the pre-crisis period. With this variable it is possible to incorporate the problems of “too big to fail” and economies of scope for larger banks. The second variable of asset structure is the ratio of loans to total assets (*loanta*) representing the risky weighted

assets (credit risk) of each bank in percentage of total assets. All data used to compute these two variables was extracted from Bloomberg. I also had the intention of inserting a variable which accounts for the level of securitization of each bank that, in general, presents contradiction in existing literature in what concerns its relation with bank risk but I could not find publicly available data.

(3) Funding structure

In the funding structure of banks I considered first the short term market funding (*stmktf*), *i.e.* the short term investments made by banks when they are seeking sources of monetary funds for a period of time of less than two years. It represents in this way the reliance on short-term wholesale funding which can impose a risk of funding liquidity. These investments are made only with the intent of funding and not with the intent of improving the business. The variable is represented by the ratio of the short term marketable securities to total assets multiplied by 100. The second variable that I considered in the funding structure is the deposit funding (*depf*), which in commercial banks is one of the principal funding sources. In principle I expect this to be a secure source of funding with a lower risk associated. The variable is represented by the ratio of customer loans to total assets multiplied by 100. All data used was extracted from Bloomberg.

(4) Income structure

In the income structure I considered the excessive loan growth (*excloang*). I extracted data from Bloomberg and then computed the variable by taking the individual bank lending growth and subtracting it by the average loan growth of all banks over each quarter of the time period b or t . This variable represents the concentration of risk (by loosening credit

standards). I also had the intend of inserting a variable with values for the non interest income (*niinc*) and in this way account for other sources of income *i.e.*, account for diversification of each bank but I could not find publicly available data.

(5) Additional controls: Macroeconomic Variables

To make my empirical study more complete and accurate I also considered a number of macroeconomic control variables, related with the situation of the economy of Portugal. The first one is changes in GDP growth (*gdpgrowth*). To compute it, I extract real GDP data from Banco de Portugal/INE and then I computed its quarterly changes. The second one is changes in real house prices (*housep*) extracted from Financial Times data. The last one is quarterly changes in Stock Market from Non Financial Corporation's (*sm*) extracted from Bloomberg.

Results

Tables I and II provide the results from the least-squares estimation of regression (1) in time period *b* (before crisis) and time period *t* (during crisis), respectively. Considering time period *b*, there are only two variables that are statistically significant, the GDP growth (*gdpgrowth*) and the quarterly changes for non-financial corporation's (*sm*) both at a 1% significance level. In the time period *t* in addition to the variable (*sm*) that is statistically significant at a 1% level there are also three new variables that are statistically significant, namely the size (*size*), the loans to total assets (*loanta*) and the deposit funding (*depf*), all of them at a 10% significance level. At a first glance, looking at the results of equation (1) in times of crisis (*t* period), it seems that, the *size*, the *loanta* and the *depf* may enhance the

importance of a well designed risk adjusted strategy and asset structure in banks in order to prevent losses during crisis deriving from the excessive exposure to systematic risk. Nevertheless, it is important to note that looking at the adjusted R-squared of equation (1) in the time period b and t , which are approximately 0,7 and 0,3 , respectively we are able to note that only equation (1) in b can be used as a reasonable predictor of the relation between the independent variables and the banks' risk. The result in b is interesting and from my point of view quite unexpected since it highlights the importance of the impact of the exogenous factors on the higher/lower banks' risk exposure and the resulting level of distress in the run up to the crisis. According to the results of my model, in the period ex ante crisis, only exogenous factors such as GDP growth and quarterly changes for non financial corporations can be directly associated with higher/lower levels of distress. Regarding sm , the result is independently of whether it occurs in a period of crisis or in the run up to the crisis. Moreover, it is important to refer to the incapacity to establish a direct relation between the choice of a business model or the control variables ex ante crisis with the bank distress ex post because of the results of equation (1) in t . However, it is possible to make an indirect relation. There is the possibility that changes in the values of $gdpgrowth$ and sm in periods preceding financial crisis that have an impact in the risk exposure and resulting level of distress of each bank at the time maybe associated with the "bursting" of a financial crisis in a near future because of the impact on distress on major part of the banking system. This was what happened in the fourth quarter of 2007. Below, I will explain in detail the intuition behind the static significance of each variable.

Size (*size*), Loans to total assets (*loanta*) and Deposit Funding (*depf*)

In regression (1) in time period t , the variables *size* and *loanta* have both negative and significant coefficients. The results imply that banks with higher size and higher levels of loans in percentage of total assets (keeping all the other variables in the model constant) will have as a consequence of their profile a lower risk exposure because of the lower correlation with the market and consequently lower level of distress during financial crisis. The literature offers contradictory views in what concerns this matter giving support to what I said above with regard to the weak prediction capacity of the model in t ; see Diamond and Rajan's (2000) Foos, Norden and Weber (2009) Diamond and Rajan's (2000) Altunbas, Gambacorta, Marquez-Ibanez (2012) and Vazquez and Federico (2012).

The variable *depf* presents a positive and significant coefficient implying that (keeping all the other variables in the model constant) a high dependence on deposit funding in percentage of total assets during crisis periods is associated with an also higher risk exposure and consequential distress because of the higher correlation with the market during financial crisis. The result is in accordance with the literature which shows evidence that higher leveraged banks are also thus that had worst results in the recent financial crisis. However due to the low capacity of the model to predict bank distress I cannot consider this possibility.

Quarterly changes in real GDP (*gdpgrowth*)

Concerning the quarterly changes in real GDP, it proves to be a significant variable at a 1% significance level and a negative coefficient implying that increases in real changes in GDP ex ante crisis (with all other variables in equation (1) unchanged (during time period b) are

related with a decrease in bank risk and consequently bank distress. This result is in accordance with the literature which blames the inefficient monetary policies on persistently low levels of real GDP that led to higher risk and leverage for banks that were the origin of the recent financial crisis (De Nicolo, Dell'Ariccia, Laeven, and Valencia, 2010). Also, Vazquez and Federico (2012) explain bank failures during the recent financial crisis as a consequence of the higher incapacity of banks to adjust quickly and effectively to risks that appear unexpectedly during economic cycles. It is mainly associated with more or less investment activity and consequently financial activity as well as the impact on consumer behavior and house pricing market.

Quarterly changes in the broad stock market indices (*sm*)

The variable quarterly changes in the broad stock market indices for non-financial corporations' is also significant at the 1% significance level and has a positive coefficient both in *b* and *t* periods. This implies that increases in quarterly changes, with all other variables of the model unchanged, will result in higher risk exposure. The literature is most of the times in accordance with these results. The choice of leverage by a non financial corporation depends on various factors but tax policy plays an important role. Many companies with intend to be more profitable choose a high level of leverage because of the tax benefit associated. Some argue that the increased leverage by corporations leads to a higher level of income and productive capacity resulting in lower risk of distress and higher ability of the company to comply with debt resulting in lower levels of bank distress (Asness, Frazzini, and Pedersen, 2012). However, the literature on this point is controversial. There is the theory that high levels of leverage allow for higher income but

may also imply higher levels of risk. This non financial corporations' choice is sometimes seen as a source of bank distress because of the high probability of incapacity to repay debt. Most of the times, high leveraged corporations find serious difficulties to repay debt as a consequence of unexpected factors that may affect their results resulting in bankruptcies and bank distress (George and Hwang, 2010).

Conclusions

The losses that have plagued the international banking system in the days and years that followed the bankruptcy of Lehman Brothers led inevitably to the emergence of diverse and often conflicting theories about the reasons behind the origin of that disastrous crisis in order to prevent that similar situations occur in the future. The demand for a reason and a possible sustainable solution becomes imperative in order to avoid repeated events.

There is a fact for which there is no doubt, ex ante the crisis with the fast development in the banking system and financial institutions, banks increase their risk exposure and they actions have compromised their credibility.

With focus on the Portuguese case, where the crisis seems not be overcome yet and using four Portuguese banks that represent the major part of the balance sheet of banks operating in Portugal (Millennium BCP, Banco Espírito Santo (BES), Portuguese Investment Bank (BPI) and Santander), I created a model using as dependent variable the systematic risk and as independent variables the characteristics of the various business models of banks and also some key macroeconomic variables that also account for structural problems in the Portuguese economy and its impact on banks' distress.

The results were surprising because contrary to the expected predictions and most of the literature, all variables concerning the bank business models were not significant in the period run up to the financial crisis. According to my model, the higher exposure to risk that may result in higher distress in Portuguese banks are caused only by external exogenous factors such as quarterly changes in GDP and the stock returns of non financial corporations'. For changes in stock returns for non financial corporations this impact is independent if these changes occur during crisis periods or not. They will affect the distress of each bank (positively or negatively) in the same period when they occur.

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Tables and Figures

Table I

This table shows the impact of bank business models and other control variables on bank risk. The results (*risk*) are derived from the LS regression imposed by equation (1) during time period *b* (from the first quarter of 2001 to the third quarter of 2007). *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Variables	Coefficients	Std. Error	t- Statistic
Date	2,13E-05	1,87E-05	1,135355
C	(15,55111)	13,28839	(1,170278)
Capital Structure			
<i>Caps</i>	(1,525886)	1,022888	(1,491743)
<i>Uncaps</i>	(0,024076)	0,029945	(0,803994)
Asset structure and securitization			
<i>Size</i>	(0,027122)	0,130899	(0,207197)
<i>Loanta</i>	0,156057	0,221361	0,704988
Funding Structure			
<i>Stmktf</i>	(0,046956)	0,181508	(0,258697)
<i>Depf</i>	0,296505	0,246472	1,202995
Loan growth and income			
<i>Excloang</i>	0,125589	0,098465	1,275471
Control variables			
<i>Gdpgrowth</i>	(4,156107)***	0,843713	(4,925976)
<i>Housep</i>	0,126913	0,401917	0,315770
<i>Sm</i>	0,816367***	0,067393	12,11357
Effects Specification			
Cross-section fixed (dummy variables)			
Weighted Statistics			
R-squared	0,706148	Mean dependent var	0,011967
Adjusted R-squared	0,661912	S.D.depedent var	0,103351
S.E. of regression	0,060111	Sum squared resid	0,336038
F-statistic	15,96329	Durbin- Watson stat	2,310722
Prob(F-statistic)	0,00000		
Unweighted Statistics			
R-squared	0,702858	Mean dependent var	0,011859
Sum squared resid	0,347999	Durbin- Watson stat	2,302017

Table II

This table shows the impact of bank business models and other control variables on bank risk. The results (*risk*) are derived from the LS regression imposed by equation (1) during time period t (from the fourth quarter of 2007 to the fourth quarter of 2009). *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Variables	Coefficients	Std. Error	t-Statistic
Date	5,51E-05	0,000212	0,259561
C	(26,80053)	153,9578	(0,174077)
Capital Structure			
<i>Caps</i>	0,051545	0,062798	0,820800
<i>Uncaps</i>	0,125247	0,111554	1,122746
Asset structure and securitization			
<i>Size</i>	(2,396271)*	1,144938	(2,092927)
<i>Loanta</i>	(0,042264)*	0,016009	(2,640022)
Funding Structure			
<i>Stmktf</i>	0,002559	0,019273	0,132790
<i>Depf</i>	0,024852*	0,010875	2,285201
Loan growth and income			
<i>Excloang</i>	0,008075	0,024328	0,331935
Control variables			
<i>Gdpgrowth</i>	4,483682	2,710897	1,653947
<i>Housep</i>	4,198098	4,006674	1,047776
<i>Sm</i>	0,728469***	0,254027	2,867687
Effects Specification			
Cross-section fixed (dummy variables)			
Weighted Statistics			
R-squared	0,572622	Mean dependent var	(0,014041)
Adjusted R-squared	0,287703	S.D. depedent var	0,156317
S.E. of regression	0,131926	Sum squared resid	0,365496
F-statistic	2,009772	Durbin- Watson stat	2,245998
Prob(F-statistic)	0,071919		
Unweighted Statistics			
R-squared	0,478619	Mean dependent var	(0,013251)
Sum squared resid	0,401543	Durbin- Watson stat	2,241523