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OFF-BALANCE SHEET ITEMS IN EUROPEAN BANKING: A PANEL DATA ECONOMETRIC MODEL ON RISK AND LIQUIDITY

por

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"A pessimist sees the difficulty in every opportunity. An optimist sees the opportunity in every difficulty." - Winston Churchill

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Abstract

This paper studies the determinants of off-balance sheet items issuing across European banks over the period 2001-2011, giving particular relevance to risk management and liquidity seeking.

Against expectations set for American banks, our results show that in European banks not only the detention of off-balance sheet items do not appear to be related to a risk management strategy, as the liquidity does not necessarily increase with the issuing of these structures.

This leads us to consider, as suggested by Schuetz (2011), that strategies related to performance improvement and compliance with regulatory capital requirements are the main motivations for European banks entering these structured finance activities.

Our findings also suggest that either the size/specialization of considered banks or the financial crisis period did not affect the results described above.

Keywords Off-balance sheet items, Securitization, Structured Finance, Bank

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1. Introduction

Several studies regarding off-balance sheet financing, particularly securitization in US, had been published in the last years, trying to investigate the role of these bank structures in financial crisis that started in of 2007.

However, little or none evidence has been taken about off-balance sheet financing taken as a hole for the European countries and banks.

With the inevitability of bank regulatory reforms, it is therefore a critical contemporary issue in financial and regulatory institutions and markets to understand the effects of these structures in risk and liquidity and consequently, on performance and regulation.

In the last decades, markets came up more and more complex, innovative and competitive. Off-balance sheet items, especially securitization came to be seen by a technique to manage risk, but also to gather liquidity for other investments, by converting the illiquid loans into marketable securities. But what if the liquidity created was used to invest in riskier assets? And what if the primary objective of the banks was not managing risk or increase liquidity, but to increase their performance and/or meet regulatory capital requirements?

Most of related previous empirical studies regarding off-balance sheet items focused on securitization in US, and its relationship with the financial crisis of 2007-2010. In general, these articles suggested a positive relationship between these structures either with bank risk, either with bank liquidity.

The empirical discussion started soon, appointing that securitization provides a means of reducing bank risk (Pavel and Phillis, 1987; Carey, 1998; Schipper and Yohn, 2007; Krainer and Laderman, 2009). But since the new millennium, a positive association between securitization and bank credit risk started to be pointed out (Dionne and Harchaoui, 2003; Franke and Krahnen, 2005; Haensel and Krahnen, 2007; Niu and Richardson, 2006; Purnanandam, 2009).

Regarding liquidity, from the theoretical point of view, banks with a shortfall in liquidity should have a higher probability to securitize (Martin-Oliver and Saurina, 2007; Agostino and Mazzuca, 2008; Cardone-Riportella et al., 2009).

Mixed evidences about this risk-liquidity relationship also pointed out in the way that since securitization provides banks with an additional source of loan financing and liquidity, it might motivate them to shift their portfolios toward higher risk/return assets (Cebenoyan and Strahan, 2004; Flannery et al., 2004; Affinito and Tagliaferri, 2010).

Finnaly, concerning performance and regulation, banks might be prompted to shift to more risky assets by inefficiencies in regulatory capital requirements, or to increase performance (Kim and Santomero, 1988; Huang et al., 2005).

However, only a few of the evidences above applied for European Banks. Actually, the majority of the studies founded were tested only to specific periods and types of banks in US.

Off-balance sheet items are an asset or debt that does not appear on a company's balance sheet and are generally ones in which the company does not have legal claim or responsibility for. But nevertheless they are off-balance sheet, there is always some exposition of the issuing bank to the credit risk associated with the transferred items.

Regarding the definition of off-balance sheet items, we started from what is commonly said: that a greater credit risk exposure arising from the pool, should make banks more risk-averse and encourage them to shift their portfolios towards items of lower credit risk (e.g. reduce risk) (Casu et al., 2011).

This study aims to contribute to the existing literature by assessing the impact of the presence of off-balance sheet items on the credit risk and liquidity-taking behavior and on the performance-taking and fulfillment of regulatory capital requirements of European Banks. We first examine whether the effect in fact reduces credit risk taking and/or increase liquidity. Second, from the results provided from the previous exam, we put forward the hypothesis that in European Banks, regulatory capital requirements and performance-taking should had more importance than the previous.

Our results show that either risk management or liquidity improvement were not the main motivation for the issuing of off-balance sheet items by European banks. Actually, the results (that are statistically significant are the opposite). This means, and according to Schuetz (2011) balance sheet analysis, that risk transfer and liquidity enhancement

could not be marked as important OBS activity, what consequently indicates that regulatory capital arbitrage and performance improvement proved to be more important motives.

Furthermore, more than risk-liquidity strategies in European Banking, we re-introduce on the wide banking regulation discussion the importance of: a precise definition of ratios that should be comparable between banks and economies; the disclosure and detail of essential information and the inevitable regulatory reform and the Basel Standards dealings, that can be relevant to most of regulatory, political and banking institutions.

The remainder of this paper is organized as follows: Section 2 provides a brief review of relevant literature; Section 3 describes data and provides brief descriptive statistics of the sample; the empirical specification is presented in Section 4; Section 5 reports results of the analysis; and finally, Section 6 discusses the findings and concludes the paper.

2. Literature review

Off-balance-sheet items include assets that the bank does not control, but where it may have some exposure to losses — for which it is most likely being paid a fee or is remunerated in some other way. However, they can result in future losses for the company who held them and by this, determinate the financial health of a company.

In companies these items typically embody in operating leases[1]. For banks and financial institutions (relevant to our study), these items often materialize in securitizations, liquidity lines, guarantees, acceptances[2], committed credit lines[3] and total other potential liabilities, to the extent that these are disclosed.

Furthermore, because of the accounting treatment established, these items are harder to track, and can become hidden liabilities or so called "Incognito Leverage"[4], due to risk exposure that they normally pose as seen in Enron accounting fraud[5]. To understand the extent of the usage of these items, for example in 2010, Citibank had USD $960 billion in off-balance sheet assets, which amounts to 6% of the GDP of the United States[6].

So in theory, the purpose of OBS items is to generate some kind of income and transfers the risk as the company/bank doesn't control the item. But in practice, and too often however, off–balance sheet entities are used to artificially inflate profits and make firms look more financially secure than they actually are. A complex and confusing array of investment vehicles, including but not limited to collateralized debt obligations, subprime-mortgage securities and credit default swaps are used to remove debts from corporate balance sheets.

For example, considering loans made by a bank. When issued, the loans are typically kept on the bank's books as an asset. If those loans are securitized and sold off as investments, however, the securitized debt (for which the bank is liable) is not kept on the bank's books. This accounting maneuver helps the issuing firm's stock price and

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[1] http://www.investopedia.com/terms/o/off-balance-sheet-obs.asp
[2] Total amounts the bank "accepts" to pay, usually under international trade finance arrangements.
[3] Total committed and undrawn lines of credit extended by the bank.
[4] Wikipedia: https://en.wikipedia.org/wiki/Off-balance-sheet
[5] https://en.wikipedia.org/wiki/Off-balance-sheet
[6] http://www.foxbusiness.com/markets/2010/07/15/pandit-speaks/

artificially inflates profits, enabling CEOs to claim credit for a solid balance sheet and reap huge bonuses as a result.[7]

As stated above, since late 80's several researchers appointed that OBS items like provides a mean of reducing bank risk: Pavel and Phillis (1987) stated that regulation plays an important role in explaining which banks sell loans, but is not the sole driving force, nor is it the strongest. In fact loans sales should improve the safety of the banking system as a whole; Later among others, Carey (1998) and Krainer and Laderman (2009), evidenced that the default rates on the loans kept by the issuer are lower than the default rates on the loans sold to investors (suggesting that banks tend to sell their worst loans and by this, transferring risk).

However other researches investigating OBS items from several bank perspectives (risk, performance, liquidity, size and regulation) has reached different conclusions: Dionne and Harchaoui (2003), evidenced that in Canada, not only securitization has negative effects on both Tier 1 and Total risk-based capital ratios, but also find a positive association between securitization and bank credit risk, suggesting that banks might be induced to shift to more risky assets under the current capital requirements for credit risk, as proposed before by Kim and Santomero (1988).

Similarly, Franke and Krahnen (2005), Niu and Richardson (2006) and Haensel and Krahnen (2007), find evidence that the issue of collateralized debt obligations or SPV debt securities increases the systematic risk of the issuing bank. Later, Purnanandam (2009), affirmed that banks use the proceeds (liquidity generated) from securitizations to issue new loans with higher-than-average default risk.

The second issue addressed by literature relates to the liquidity commonly provided by OBS activities. Martin-Oliver and Saurina (2007) and Agostino and Mazzuca (2008) declared that the only motivation found to be a determining factor in securitization is the generation of another funding channel and later Cardone-Riportella et al. (2009) affirmed that from the theoretical point of view, banks with a shortfall in liquidity should have a higher probability to securitize. This lack of liquidity would motivate the banks to seek new sources of financing in the securitization market.

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[7] http://www.investopedia.com/articles/analyst/022002.asp

However, a few authors have found mixed evidences about these structures: Cebenoyan and Strahan (2004) and Purnanandam (2009) stated that since securitization provides banks with an additional source of loan financing and liquidity, it might motivate them to shift their portfolios toward higher risk/return assets. Contradictory evidence is found by Affinito and Tagliaferri (2010) which defend that once securitized, banks tend to decrease the weight of bad loans to operate with lower capital or to invest the capital into new safer businesses.

Finally, regarding regulation and performance, a large body of prior research has examined the relationship between levels and changes in banks' regulatory capital, risk and performance, with inconsistent results, suggesting that the ultimate amount of risk, liquidity, regulation and performance transference achieved through these arrangements depends on the specific structure of the transaction.

Also Schipper and Yohn (2007) stated that assessing the true extent of risk transfer is a critical issue in the securitization context and a significant focus of both academic research and standard-setters by identifying some research questions regarding securitizations and discuss how these questions have been addressed by the literature. In fact, addresses issuers' diverse motivations for securitizations. Following most of the researchers mentioned above, he found that issuers tend to:

1. have high risk or leverage and/or want to mitigate or diversify risks;
2. have low liquidity;
3. try to lower their cost of capital by securitizing their low-risk assets and isolating those assets from their bankruptcy;
4. focus on the efficient generation of fee income and gains on sale;
5. manage accounting numbers through the volume and timing of securitizations, the type of assets securitized, and the misevaluation of retained interests;
6. manage regulatory capital requirements down, although high capital firms are more active securitizers, primarily because they retain higher risk assets.

More, Shuetz (2010 and 2011) identifies the main balance sheet characteristics of structured finance originators and evidences that the tradeoff between liquidity, risk,

regulation performance and bank size in USA, Europe and Germany in particular is especially diverse.

To summarize, there are mixed evidences about the relationship between off-balance sheet items and risk, liquidity, performance and regulation. This study attempts to bring these strands together and to investigate the main objectives that lead European Banks to have off-balance sheet items "off their balance sheets": in the first plan more empirical, we consider risk management or liquidity purposes; on a second plan more theoretical we focus on the prosecution of regulatory capital requirements and the goal to increase performance.

3. Data and Methodology

3.1. Data and sample selection

We construct a panel dataset using yearly balance sheet data from the Bankscope database (Bureau van Dijk) between 2001 and 2011 for all European Union banks (EU-27), plus Switzerland because of its importance as financial market. For each country/year, we retrieve the annual GDP real growth rate from PORDATA website.

The study period is defined by this because the years prior to 2001 actually decreased the amount of data available for the panel data, and 2011 is the last year available in the database when we did our research. We try to use at least a decade of available data to obtain consistent results and to use all types of banks presented in the database, although some will benefit from more specific analysis.
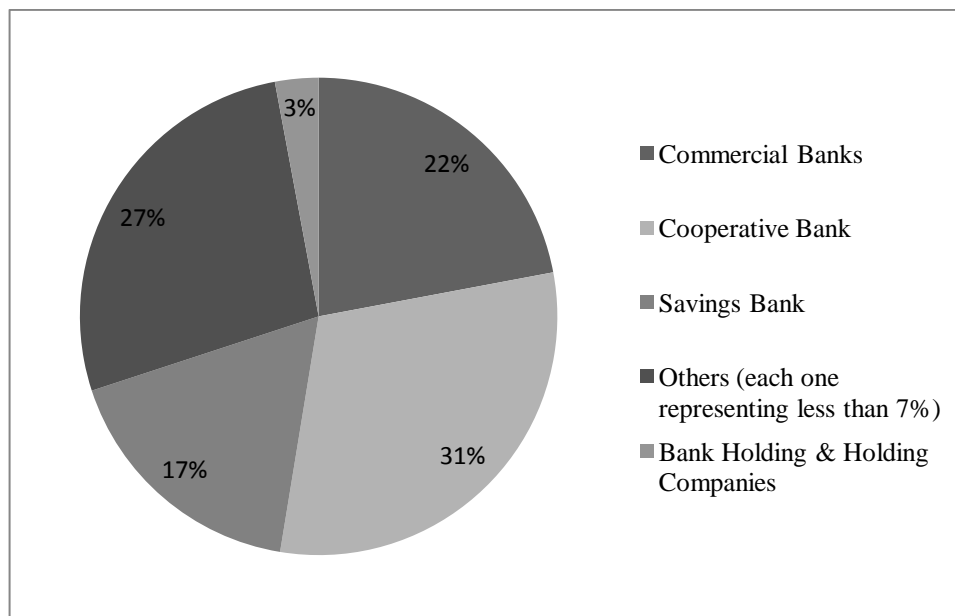
Figure 1. Types of banks considered in the panel data.

From the 5.743 banks considered in the dataset, 31% are cooperative, 22% are commercial and 17% are savings banks, which represents about 70% of the dataset. At least for these we made a controlled empirical treatment. We remove central banks from the dataset because of the substantial difference on their core business, and multiple abnormal size and ratios (as made by Schuetz, 2011). We ended the dataset with 5.715 banks (we remove each central bank from each country).

Also, as in figure 2, the most represented countries in the dataset are Germany (1796 banks considered), Italy (706 banks), the UK (526), France (486) and Austria (352). Germany represents more than 30% from the dataset (which leads to the need for more specific analysis like proposed by Schuetz (2010 and 2011)). The 5 countries together embody also almost 70% of the panel data.

Table 1: Number of banks by country considered in the dataset[8]

AT	BE	BG	CH	CY	CZ	**DE**	DK	EE	ES	FI	**FR**	**GB**	GR
351	96	30	502	36	46	**1795**	133	11	213	19	**485**	**525**	23

HU	IE	**IT**	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK
49	67	**705**	12	123	23	19	102	67	59	38	127	26	23

When constructing the panel data, we also control for banks with missing or meaningless information on critical variables to our study like total assets, total loans, capital and off-balance sheet items data. Even though the final panel data contains a set of 5.715 banks (62.865 observations), in regressions this number tends to decrease as the variables used have or not the available data.

3.2 Descriptive statistics

Since we have several types of banks in the dataset, we try to compare them along some of the dimensions considered in the study (risk, liquidity, performance and capital). These results are presented in Table 2 and detailed in the next paragraphs.

Considering all banks, the average amount of total assets is 11.6 billion. Although cooperative and savings banks are well represented in the database (more than 50% of it), they contribute only a little for that number (with an average amount of total assets of 2.5 and 3.1 billion, respectively).

Are bank holding companies (BHCs) with 166,8 billion of assets on average, that rise the average amount of assets of all banks considered, although being only a few of them in the study.

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[8] For the country reading see annex

When relating the average amount of total assets with the amount of off-balance sheet items we find that, consistent with most of all previous researches, larger banks are more likely to hold this kind of items.

In the case of cooperative and savings banks which tend to have a lower amount of assets in their balance structure (when comparing with the others), they have also a low amount of off-balance sheet items (representing less than 7% of the average amount of their assets).

When we look to commercial banks, bank holding companies and other specialized bank structures, this amount is much more higher. This has has been published thorough years of literature, could relate to the easiest access not only to enter in these structures but also to maintain them in terms of fixed costs (Schuetz, 2011).

Further, in terms of liquidity, commercial, BHCs and other banks appear to hold more liquid assets (liquidity ratios percentages above 40% and 50% of deposits versus the average of all banks between 24% - 28%). Suggested by (Casu et al., 2011), securitizers (off-balance sheet issuers) tend to hold less liquid assets, which is consistent with having a better access to external funding and thus needing a smaller liquidity buffer, but this seems not consistent with our descriptive statistics. This should relate to the bank size effect: having high liquidity ratios, deposits and short-term funding in total assets (the immediate form of liquidity), should relate to the fact that only for being big and more complex, banks tend to attract more assets (and more than proportionally to their size), including liquid assets. Also, the difference in Casu et al. study was about 2% between issuers and not issuers so this is a matter that should be worthy of a more detailed econometric study ahead.

Regarding loan ratios itself, seems not having significant different between the types of banks considered (also verified by Casu et Al., 2011). The capitalization of the considered banks tends to be higher on commercial, BHCs and other banks (about 11% versus 8% and 6% for cooperative and savings banks).

Finally, when comparing the performance measure ROAA provided by Bankscope, we find that commercial, BHCs and other banks have a much better performance (38% and 23% versus 56%, 84% and 73%).

Table 2: Summary statistics for all sample banks

	All banks		Coperative Banks		Savings Banks		Commercial Banks		Bank Holding & Holding Companies		Other banks	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Absolute Variables												
Total Assets (th)	11.569.776	89.516.513	2.523.929	38.340.456	3.165.756	15.389.573	28.220.290	149.432.849	166.815.797	404.475.384	14.930.314	46.981.961
Off-balance sheet items (th)	2.164.266	24.387.362	423.293	8.428.576	439.193	3.030.005	8.862.670	54.571.382	35.851.785	100.038.514	2.121.262	18.439.335
Off-balance sheet items / Total Assets	0,119	0,526	0,067	0,161	0,065	0,140	0,214	0,824	0,154	0,299	0,240	0,974
Liquidity Ratios												
Liquid Assets / Dep & ST Funding (%)	0,282	0,446	0,186	0,127	0,152	0,196	0,456	0,583	0,551	0,563	0,546	0,829
Liquid Assets / Tot Dep & Bor (%)	0,244	0,561	0,166	0,106	0,139	0,973	0,413	0,532	0,416	0,396	0,419	0,598
Liquid Assets / Total Assets	0,192	0,179	0,149	0,094	0,126	0,087	0,301	0,239	0,284	0,198	0,285	0,271
Dep & ST Funding (%) / Total Assets	0,790	0,170	0,814	0,149	0,850	0,092	0,750	0,171	0,601	0,202	0,677	0,242
Loan Ratios												
Net Loans / Dep & ST Funding (%)	0,817	0,215	0,804	0,347	0,806	0,281	0,764	0,592	0,841	0,894	0,958	0,112
Net Loans / Tot Dep & Bor (%)	0,681	0,145	0,680	0,158	0,739	0,212	0,652	0,421	0,552	0,312	0,631	0,475
Total Loans / Total Assets	0,597	0,218	0,614	0,138	0,670	0,168	0,537	0,275	0,428	0,236	0,513	0,325
Operating Performance												
Return on Average Assets (%)	0,434	0,170	0,384	0,467	0,233	0,435	0,564	2,201	0,848	3,019	0,740	0,260
Capital												
Equity / Total Assets	0,085	0,078	0,078	0,035	0,057	0,036	0,114	0,111	0,110	0,126	0,118	0,127
Observations	33015		13726		8135		6455		456		4243	

4. Econometric models

4.1. Risk and Liquidity Measures

We now turn to the empirical analysis to test weather if the off-balance sheet items presented in the (off) balance structure of the European Banks have as main purpose the risk management, the seeking for liquidity or, if none of them, the capital regulatory requirements or the performance purpose.

Our empirical models include a number of control variables for bank characteristics and activities, which may influence bank risk-taking propensity and liquidity seeking. The similar model to ours was proposed by Casu et al. (2011) but these models structures had being used through literature, either in these omnibus works (e.g. Dionne and Harchaoui 2003), either in more specific or country-level papers (e.g. Ezeoha 2011). In addition to bank-specific characteristics, we include GDP real growth to control for macroeconomic effects.

The basic regressions are:

$$RISK_{i,t} = \alpha_i + \beta_1 OBS_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LOANS_{i,t} + \beta_4 CAP_{i,t} + \beta_5 ROA_{i,t} + \gamma' GDPg_t + \varepsilon_{i,t}$$

(1)

and,

$$LIQ_{i,t} = \alpha_i + \beta_1 OBS_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 REG_{i,t} + \beta_4 LOLOSSPROV_{i,t} + \beta_5 CHOFFS_{i,t} + \beta_6 DEP_{i,t} + \gamma' GDPg_t + \varepsilon_{i,t}$$

(2)

where β and γ reflect the extent to which the relative factor of the model contributes to the change in the dependent variable, and $\varepsilon_{i,t}$ represents the error term for bank i in year t.

4.1.1. Risk

To investigate the impact on risk of off-balance sheet financing, we construct a regression framework based on several studies regarding the topic (detailed above). The regression analysis considers two proxies for the bank credit risk as the dependent variable.

Table 3: Definition of model variables

Variable	Definition	Construction	Expected Sign
RISK	Credit risk taking perspective	Risk-weighted assets/ Total Assets *(A)* *and* Log (Loan loss reserves) *(B)*	Dependent variable
OBS	OBS items ratio	OBS Items /Total Assets	Negative
SIZE	Bank dimension	Log (total assets)	Positive
LOANS	Loan ratio	Loans/Total Assets	Negative
CAP	Capital Ratio	Equity/Total Assets	Positive/Negative
ROA	Return on Assets	ROA = Net Income / Total Assets	Negative
GDP	GDP growth	GDP growth rate	

The dependent variable RISK $_{i,t}$, is the change in the risk of bank i's portfolio in period t. The detailed construction of the model variables and their expected signs are presented in table 3. We define dependent variable (RISK) as risk-weighted assets in total assets (A) as in Casu et al. (2011), with risk-weighted assets calculated according Basel II framework[9]. Although some constant debate[10] about its trustworthiness and reliability, this is an important variable as it's a bank's assets or off-balance sheet exposures, weighted according to risk.

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[9] The first Basel Accord, known as Basel I, was issued in 1988 and focuses on the capital adequacy of financial institutions. The capital adequacy risk, (the risk that a financial institution will be hurt by an unexpected loss), categorizes the assets of financial institution into five risk categories (0%, 10%, 20%, 50%, 100%). Banks that operate internationally are required to have a risk weight of 8% or less.
The second Basel Accord, is to be fully implemented by 2015. It focuses on three main areas, including minimum capital requirements, supervisory review and market discipline, which are known as the three pillars. The first pillar deals with maintenance of regulatory capital calculated for three major components of risk that a bank faces: credit risk, operational risk, and market risk. Other risks are not considered fully quantifiable at this stage. The second pillar is a regulatory response to the first pillar, giving regulators better 'tools' over those previously available. It also provides a framework for dealing with systemic risk, pension risk, concentration risk, strategic risk, reputational risk, liquidity risk and legal risk, which the accord combines under the title of residual risk. Banks can review their risk management system. The third pillar aims to complement the minimum capital requirements and supervisory review process by developing a set of disclosure requirements which will allow the market participants to gauge the capital adequacy of an institution. The focus of this accord is to strengthen international banking requirements as well as to supervise and enforce these requirements. In late 2009 the Basel Committee on Banking Supervision published the first version of Basel III, giving banks approximately three years to satisfy all requirements. Largely in response to the credit crisis, banks are required to maintain proper leverage ratios and meet certain capital requirements. (Investopedia)
[10] Several authors continue to defend that the changes in terms of regulatory reform, including with Basel III, will not hit the banks as hard as expected. Further, it became more difficult to verify regulatory capital arbitrage as the main motivation, but it should not be neglected because this goal is achievable (Schuetz, 2011).

Risk-weighted assets are the total of all assets held by the bank weighted by credit risk according to a formula determined by the regulator (usually the country's Central Bank)[11], and the denominator of several capital and regulatory ratios wide-used in banking finance. Thus, it appears as a recent and dynamic variable when regarding the comparison between banks.

Then, and relatively new as dependent variable, we use loan loss reserves data to measure the risk of a bank's portfolio (B). Similarly loan loss measures were used by Schuetz (2011) as a proxy of credit risk, on the seeking the determinants of determinants of structured finance issuance.

Loan loss reserves indicate a bank's sense of how stable its lending base is on a short-term basis (Investopedia). However, loan loss reserves are not always the result of bad lending decisions or risky lending decisions. Changes in macroeconomic factors, for example, can hit responsible borrowers harder than other. Also, banks vary when it comes to deciding how much of a loan to write off and when, which makes comparisons among banks tricky sometimes. That's why it's a complimentary usage of the variable.

We believe that with these variables we get an impression of the risk profile of the comprised financial entities as several asset quality measures like these have been used by numerous authors regarding this topic and even in a country-specific level (Ezeoha 2011) or more general analysis (Casu et al 2011; Shuetz 2011).

Off-balance sheet items (OBS), is introduced as a bank's outstanding balance of off-balance sheet items scaled by total assets. Some hypothesized that if the credit risk exposure arising from these items makes banks more risk–averse, this should motivates them to shift their portfolios towards assets of lower risk, providing a negative relationship (Casu, et Al. 2011; Dionne and Harchaoui 2003; Purnanandam 2009). We depart from this relationship provided by literature, although expecting that this relationship can occur, but also that can be the opposite (the liquidity provided by entering in these structures actually makes banks more risk-seekers by new and riskier investments), as proposed by other authors (Cebenoyan and Strahan, 2004; Affinito and Tagliaferri, 2010). Further, if none of these relationships occur, the off-balance sheet

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[11] Most central banks follow the Basel Committee on Banking Supervision (BCBS) guidelines in setting formulae for asset risk weights.

structures should have as purpose the performance seeking (Agostino and Mazzuca, 2008), or the regulatory capital framework (Ambrose et al. 2005).

Bank dimension (SIZE), measured as the natural logarithm of total assets, is included to capture its possible impact on bank risk throughout a number of channels, including funding and risk management opportunities. On one hand off-balance structures could have some costs (Agostino and Mazzuca, 2008), on the other hand they demand accessing to more a complex market and financial instruments. Also, bigger banks are much likely to face more risk than smaller banks (Shuetz, 2011). Therefore, given better access to external funds and the credit risk transfer market for large banks, one could expect a positive relation between bank size and its propensity to engage in high risk/return activities.

Additional balance sheet and income statement characteristics of each bank are introduced into the model to control for their possible impact on bank risk taking. From the balance sheet, we include the loan ratio and the capital ratio.

The loan ratio (LOAN) is measured as loans over total assets and reflects the size of a bank's loan portfolio. According to several studies, we can consider loans as a bank's higher and riskier assets, suggesting that a bank with a larger loan portfolio is expected to be more risk-averse (Casu et al. 2011; Ezeoha 2011).

Bank capital (CAP) is measured as the ratio of equity capital to total assets. This ratio measures the protection of the total assets against losses. Capital however provides different opinions among authors: on one side, diversified owners which do not have a significant fraction of their wealth placed in the bank might tend to promote more risk taking after collecting funds from depositors (Laeven and Levine 2009). On the other hand, managers with bank-specific human capital and private benefits of control[12] might be expected to be more risk-averse (Demsetz et al. 1996). So we include the independent variable for its importance, although it's relationship with our dependent variable may not be truthfully reached to the extent our paper goes.

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[12] The so-called managerial ownership: the percentage of equity owned by insiders and block holders, where insiders are defined as the officers and directors of a firm (Holderness's 2003). An increase of managerial ownership helps to connect the interests of insiders and shareholders, and leads to better decision-making and higher firm value. However, when the equity owned by management reaches a certain level, further increase of managerial ownership may provide managers with sufficient shares to pursue their own benefit without concern for decreasing firm value. Therefore, it is hypothesized that managerial ownership and firm value have a nonlinear relationship (Ruan, Tian & Ma 2011).

From the income statement, we include ROA to account for the possible impact of the present performance of a bank on its incentive to take on new risks. This ratio shows how efficiently the total assets generate profits. According to Schuetz (2010), performance depends on the quality of the underlying assets and it is possible to improve performance with off-balance sheet items (Agostino and Mazzuca, 2008). Particularly, one could argue that poor-performing banks (i.e. ones with a low return on their assets) might pursue risky activities to re-establish profitability. Following this argument, we expect a negative relation between bank profitability and risk.

GDP real growth (GDP) is introduced to control for macroeconomic effects.

4.1.2. Liquidity

To investigate the impact on liquidity of off-balance sheet financing, we construct a regression framework based on several studies regarding the topic. The regression analysis considers five different liquidity ratios provided by Bankscope as the dependent variable, already used in literature as measures of bank asset liquidity (Bunda & Desquilbet 2008; Schuetz 2011).

Table 4: Definition of model variables

Variable	Definition	Construction	Expected Sign
LIQ	Liquidity ratios	Liquid assets/Total Assets *(A)* Net loans/Total assets *(B)* (*) Liquid assets/ Deposits & Short Term Funding *(C)* Liquid Assets/ Total Deposits & Borrowings *(D)* Interbank Ratio *(E)*	Dependent variable
OBS	OBS items ratio	OBS Items /Total Assets	Positive
SIZE	Bank size	Log (total assets)	Positive
CAP	Capital ratio	Equity / Total assets	Positive
LOLOSS PROV	Loan losses provisions ratio	Loan loss provisions / Total loans	Positive
CHOFFS	Charge-offs ratio	Charge-offs / Total loans	Positive
DEP	Deposits ratio	Total Customer Deposits / Total assets	Positive
GDP	GDP growth	GDP growth rate	Positive

The dependent variable $LIQ_{i,t}$, is the change in the liquidity of bank i's portfolio in period t. The detailed construction of the model variables and their expected signs are presented in table 3.

For measuring liquidity, the following variables are considered as proxies:

- Liquid Assets/Total Assets (A): assets that can be converted into cash quickly and with minimal impact to the price received. The higher the ratio, the more liquid is the bank (used by Bunda & Desquilbet, 2008; and Cornett et al., 2010 and Berrospide, 2013);

- Net loans/Total assets (B) : indicates what percentage of the assets of the bank are tied up in loans. The higher this ratio the less liquid the bank will be (used by Bunda &, 2008) – that's why we expect contrary signs on the coefficients for this dependent variable (*).

- Liquid Assets/Deposits and Short-Term Funding (C): This is a deposit run off ratio and shows what percentage of customer and short term funds could be met if they were withdrawn suddenly. The higher this percentage, the more liquid the bank and the less vulnerable to a classic run (used by Bunda & Desquilbet, 2008; Schuetz, 2011);

- Liquid Assets/Total Deposits & Borrowings (D): This ratio is similar to the previous one, but indicates the amount of liquid assets available to borrower as well as depositors (used by Bunda & Desquilbet, 2008);

- Interbank Ratio (E): This is the ratio of lent to borrowed money between banks. If money lent to other banks divided by money borrowed from other banks is greater than 100%, then it indicates the bank is net placer rather than a borrower of funds in the market place, and therefore more liquid - the higher the ratio, the more liquid is the bank (used by Bunda & Desquilbet, 2008; Schuetz, 2011).

According to Bunda & Desquilbet (2008), the first and second ratios assess some kind of "absolute" asset liquidity, since they consider liquid (or illiquid) assets relative to total assets. The third and forth ratios are more "relative", since they relate liquid assets to liquid liabilities. The fifth ratio measures liquidity in the interbank market. From the theoretical point of view, banks with a shortfall in liquidity should have a higher probability engage in OBS activities. As noted in Cardone-Riportella et al.

(2009) the lack of liquidity would motivate the banks to seek new sources of financing (including in the securitization market).

Regarding off-balance sheet items (OBS), Cornett et al. (2010), find the measure of off-balance sheet liquidity risk[13], a key determinant of bank liquidy management. The expected relationship between OBS items and liquidity is, according to literature, positive as they are used as a funding tool (Martin-Oliver and Saurina 2007; Agostino and Mazzuca 2008; Cardone-Riportella et al. 2009). Agostino and Mazzuca (2008) even argued about securitization that the only motivation found to be a determining is the generation of another funding channel and that that goal could be mainly achieved via true sale transactions that transfer the credit risk and remove the assets from the banks' balance sheet. Also Shuetz (2011) and Cabiles (2011) argued that off-balance sheet items like securitization are a result of a refinancing optimization.

Bank size (SIZE), defined as the natural logarithm of total assets, is here included to capture its possible impact on bank liquidity. Berger and Bouwman (2009) present evidence that liquidity creation varies by bank size. Again, given better access to external funds and the credit risk transfer market for large banks, one could expect a positive relationship.

(CAP), defined as equity to total assets, pretends to capture the impact that capital have on bank liquidity. Berger and Bouwman (2009), found capital to be a determinant key for liquidity creation so we expect a positive relationship. Also Berrospide (2013), evidenced that capital (and deposits) are key determinants of the holding of liquid assets.

Again, loan proxies are introduced to control for the quality of the assets hold (LOLOSSPROV) and (CHOFFS), and the variation on the amount of total loans (LOAN GRW).

As said before, loan loss reserves are useful information for analysts and investors because they indicate a bank's sense of how stable it's lending base is. Loan loss reserves are revised regularly. An increase in the balance is called a loan loss provision. A decrease in the balance is called a charge-off. In our study, loan loss provisions (LOLOSSPROV) control for the possibility that further deterioration in credit quality

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[13] For commercial banks, such as the fraction of unused loan commitments to their lending capacity.

forces banks to relocate their assets from risky loans to more safe and liquid assets (securities). This is, banks have a motivation to hoard cash in anticipation of losses. Therefore, for a precautionary motive, higher loan loss provision ratio should reflect an increase in banking liquidity. (Berrospide, 2013). Charge-offs ratio (CHOFFS), by representing an improvement in asset quality and a release of funds that were locked in reserves, should represent (at least in a short-term basis) an increase in liquidity, so we expect a positive relationship.

Deposits ratio (DEP), are included as a proxy for the role of stable sources of funding. Since they are mainly represented by customer deposits that have to be permanently liquid and available, we should expect a positive relationship. Also, as more liquid the bank more attractive it is for its depositors (Berrospide, 2013).

Again, GDP real growth (GDP) is introduced to control for macroeconomic effects. It measures the total economic activity in the economy. Thus, it is expected to be positively related to bank liquidity. According to the literature of financial sector development and economic growth, growth in GDP is positively associated with bank performance and growth in credit (Al-Khouri 2012).

5. Empirical Results and discussion

5.1. Empirical results

Each OLS regression has been estimated with bank & year fixed effects that proved to provide consistent estimators by Haussman test.

5.1.1. Risk

We report our results in table 5. The regression analysis is based on the sample of banks which contains:

- 5.988 observations for 1.232 banks for the regression with risk-weighted assets (to total assets) as dependent variable (1A). This "small" sample comparing to all dataset is due to the lack of availability of the dependent variable;
- 13.853 observations for 2.607 banks for the regression with (log of) loan loss reserves as dependent variable (1B). Due to logarithmic construction of the variable we had to force the sample for positive amounts. However, the negative amount of the variable represents less than 0,003%, suggesting that the results were not compromised.

Table 5: Determinants of bank credit risk taking

	Regression (1A)	*Regression (1B)*
OBS	0,013 (0,007)*	0,001 (0,016)
SIZE	0,934 (0,013)***	0,793 (0,022)***
LOANS	0,958 (0,04)***	1,711 (0,083)***
CAP	0,512 (0,116)***	-0,054 (0,005)***
ROA	-0,010 (0,002)***	-0,001 (0,000)***
GDP	-0,002 (0,002)***	-0,077 (0,004)***
Constant	-4,845 (0,195)***	-2,864 (0,309)***
Observations	5.988	13.853
Number of banks	1.232	2.607
R^2	0,99	0,95

*** Significance at 1% level   ** Significance at 5% level   * Significance at 10% level
(See Table 3 for definitions of variables and the expected signs)

The parameter estimate of most relevance in terms of this study is that on OBS. Against expectation (created by literature), the coefficient on OBS is found to be positive and

significant at the 10% level in regression (1A). In regression (1B) the variable is even not significant. This suggests that not only the issuing of OBS does not show a transfer of risk (decrease) as the contrary it increases. This evidence is in agreement with the idea that in Europe, banks tend to engage in OBS activities more due to other purposes rather than risk management, (for example regulatory and performance as stated by Shuetz (2011)). Also Acharya et al. (2010), stated that securitization (an OBS activity) does not imply risk transfer.

Most of the other control variables included in the models are statistically significant. Beginning with bank size (SIZE), the evidence suggests that larger banks tend to pursue higher risk activities. This evidence is consistent with the majority of authors commented on bank size, including (Chen, Liu, Ryan, 2008).

Against expectation, loan ratio (LOANS) manifests a positive relationship with bank credit risk. Assuming as before, that a bank may decide to hoard liquid assets, generally in response to the lack of lending opportunities or financial distress, and that raising the level of liquidity drives down the quality of bank assets (and consequently increases the risk), we should in fact expect a negative relationship. However, some recent authors argued that increased lending might provide some solutions to banking credit risk problem (especially loan risk problems: non-performing or overdue), by ensuring that credit risk portfolios are effectively diversified and that prospective borrowers are well scrutinized before requests are granted (Ezeoha 2011). However, this could only be achieved by a further research on the topic.

Capital (CAP) evidenced, as expected, mixed interaction with bank credit risk. On one side, the increase in bank's capitalization has the tendency of building wrong confidence in bank management and reducing their sensitivity to portfolio risk (for positive relationship); on the other side recent regulation measures like the risk-adjusted deposit insurance premium[14] have been controlling the moral hazard[15], providing a negative coefficient on the capital ratio variable.

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[14] "Deposit insurance with premiums that reflect how prudently banks behave when investing their customers' deposits. The idea is that flat-rate deposit insurance shelters banks from their true level of risk-taking and encourages poor decision-making and moral hazard. Although not all bank failures are the result of moral hazard, risk-based deposit insurance is thought to prevent bank failures. Banks that have a higher risk exposure pay higher insurance premiums" (Investopedia).

The study does not find issues for GDP real growth (GDP) or operating performance (ROA), as it has the expected relationship.

5.1.2. Liquidity

We report our results in table 6. The regression analysis is based on the sample of banks which contains:

- about 4.000 observations for 1.122 banks for the regressions with dependent variables as (Liquid assets/Total Assets) - (2A); (Net loans/Total assets) – (2B); (Liquid assets/Deposits & Short Term Funding) – (2C);
- 3.818 observations for 1.049 banks for the regression with "Liquid Assets to Total Deposits & Borrowings" as dependent variable (2D).
- 3.075 observations for 975 banks for the regression with "Interbank ratio" as dependent variable (2E).

On OBS, against expectation, all the parameters estimate indicate that issuing off-balance sheet items actually decreases the liquidity ratios. Again, this is in agreement with the fact that in Europe, banks tend to engage in OBS activities more due to regulatory and performance purposes rather than liquidity improvement or seeking, as stated by Shuetz (2011). This does not mean that these activities are not an important funding instrument, but maybe other objectives are more important.

Bank size (SIZE), is not statistically significant in 4 of the 5 regressions and in one that it is the relationship seems negative. This is in line with Berrospide (2013), who also against his expectation presented results that indicate that liquidity varies across all banking institutions regardless of their size and could also slightly decrease with bank size. This is because both large and small banks were highly exposed to a sudden drawdown in unused commitments, securities losses and expected loan losses, had the desire to control their cash reserves in anticipation of future write-downs, specially on the major part of the timeline of the dataset considered (2005 to 2011, where reflection of the crises start to occur). This result has also been achieved by Bunda & Desquilbet (2008) who use the same 5 regressions.

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[15] "The risk that a party to a transaction has not entered into the contract in good faith, has provided misleading information about its assets, liabilities or credit capacity, or has an incentive to take unusual risks in a desperate attempt to earn a profit before the contract settles" (Investopedia).

Table 6: Determinants of bank liquidity

	Regression (2A)	*Regression (2B)*	*Regression (2C)*	*Regression (2D)*	*Regression (2E):*
OBS	-0,071 (0,014)***	0,094 (0,013)***	-17,618 (3,495)***	-11,726 (1,881)***	-106,903 (36,071)***
SIZE	0,006 (0,008)	-0,015 (0,007)**	-2,128 (1,851)	0,312 (1,051)	-26,154 (20,511)
CAP	-0,134 (0,063)**	0,182 (0,057)***	48,005 (15,398)***	84,083 (8,848)***	557,038 (176,117)***
LOLOSSPROV	0,183 (0,096)*	-0,426 (0,086)***	39,495 (23,374)*	23,588 (12,933)*	272,422 (248,771)
CHOFFS	0,441 (0,083)***	-0,517 (0,075)***	13,448 (20,359)	64,049 (12,296)***	85,899 (219,103)
DEP	0,043 (0,021)**	0,069 (0,019)***	-10,738 (50,576)**	-0,147 (2,765)	617,559 (58,242)***
GDP	0,004 (0,001)***	-0,003 (0,001)***	0,804 (0,199)	0,458 (0,111)***	3,271 (2,191)
Constant	0,076 (0,114)	0,813 (0,102)***	59,944 (27,903)**	7,366 (15,923)	217,961 (318,072)
Observations	4073	4074	4069	3818	3075
Number of banks	1122	1122	1122	1049	975
R^2	0,87	0,93	0,88	0,87	0,64

*** Significance at 1% level   ** Significance at 5% level   * Significance at 10% level

Dependent variables of regressions:

(2A) - Liquid assets/Total Assets; (2B) - Net loans/Total assets; (2C) - Liquid assets/ Deposits & Short Term Funding; (2D) - Liquid Assets/ Total Deposits & Borrowings; (2E) - Interbank Ratio

(See Table 3 for definitions of variables and the expected signs)

Results are somewhat different in the regressions of the "interbank ratio", which measures relative liquidity in the interbank market, rather than asset liquidity.

Capital (CAP) association with bank liquidity is not coincident with all regressions and the results seem to be mixed. This was also observed by Bunda & Desquilbet (2008) who suggested that in one side the higher the equity ratio, the smaller the amount of liquid assets required for sound banking practice, in order to keep liquid liabilities and liquid assets in balance (and comply with minimum capital adequacy requirements). On the other side, information asymmetries in the credit market may bring about credit rationing phenomena, reflecting the fact that banks do not necessarily increase profitability by lending more. Thus, a higher ratio of equity to assets may be compatible with higher asset liquidity.

Deposits (DEP) have mixed results when linking with bank liquidity. This could relate to the fact that the variable correspond only to customer deposits, which could not be a so stable source of funding to banks and the "core deposits" mentioned by Berrospide (2013). Moreover, the majority of the timeline of the study was plagued by the crisis and consequent disruption in short-term funding markets that caused some deposits flew out between markets and institutions and can somehow explain these mixed results.

Loan proxies (LOLOSSPROV) and (CHOFFS), and the growth in real GDP (GDP) had the expected association with bank liquidity in all regressions.

5.2. Robustness tests

To verify the evidence presented above we perform a number of robustness tests that examine subsamples of the data.

5.2.1. Bank Size & Specialization

We aggregate these two categories because as we saw in descriptive statistics, the type of bank very well relates to their size. Thus, we re-estimate our more generic regressions (1A) and (2A) for the most unique type of banks: bank holding & holding companies (for their size) and commercial banks (for their size and percentage of OBS items). The results are reported in tables 7 and 8.

Table 7: Robustness tests for the determinants of bank credit risk taking: regression (1A) – types of banks

	All banks (1A)	*Bank Holding & Holding Companies*	*Commercial Banks*
OBS	0,013 (0,007)*	0,695 (0,359)*	0,000 (0,009)
SIZE	0,934 (0,013)***	0,748 (0,057)***	0,898 (0,025)***
LOANS	0,958 (0,04)***	1,776 (0,224)***	0,893 (0,071)***
CAP	0,512 (0,116)***	-0,325 (0,653)	0,944 (0,199)***
ROA	-0,010 (0,002)***	-0,002 (0,019)	-0,013 (0,003)***
GDP	-0,002 (0,002)***	-0,033 (0,013)**	-0,003 (0,003)
Constant	-4,845 (0,195)***	-1,819 (1,017)*	-4,217 (0,402)***
Observations	5.988	202	1744
Number of banks	1.232	41	384
R^2	0,99	0,99	0,99

*** Significance at 1% level   ** Significance at 5% level   * Significance at 10% level

Table 8: Robustness tests for the determinants of bank liquidity (2A) – types of banks

	All banks (2A)	*Bank Holding & Holding Companies*	*Commercial Banks*
OBS	-0,071 (0,014)***	-0,807 (0,16)***	-0,266 (0,039)***
SIZE	0,006 (0,008)	-0,120 (0,036)***	-0,024 (0,013)*
CAP	-0,134 (0,063)**	-0,912 (0,295)***	-0,158 (0,11)
LOLOSSPROV	0,183 (0,096)*	-0,85 (0,861)***	0,117 (0,151)
CHOFFS	0,441 (0,083)***	1,792 (1,049)*	0,454 (0,132)***
DEP	0,043 (0,021)**	0,034 (0,124)	0,087 (0,039)**
GDP	0,004 (0,001)***	0,010 (0,007)	0,004 (0,001)***
Constant	0,076 (0,114)	2,570 (0,653)***	0,586 (0,216)***
Observations	4073	130	1320
Number of banks	1122	35	379
R^2	0,87	0,88	0,83

*** Significance at 1% level   ** Significance at 5% level   * Significance at 10% level

Regarding credit risk taking, all coefficients have the expected sign. Exceptions are the ones that were significant in the entire sample and it ceased to be. Therefore, we conclude satisfactorily.

About liquidity, we also find non-significant variables than when taken together are significant, but also new interactions with bank size (SIZE) and loan loss provisions (LOLOSSPROV). The behavior of bank size is supported by Berrospide (2013) that argues that bank liquidity can slightly decrease with bank size (see commentaries on regression 2 results). About loan loss provisions on Bank Holding & Holding Companies, we can argue that the size, complexity and nature of business of this type of banks should not imply that a loan loss provision boost lead BSC banks to hoard liquidity and be more risk-averse.

5.2.2. Financial Crisis

As propagated through literature, the financial crises affected the markets worldwide and specially banks. Thus, we re-estimate our regressions (1A) and (2A) dropping the 2007 and 2008-year observations[16]. As we saw in table 9 and 10, the results remain qualitatively unchanged.

Table 9: Robustness tests for the determinants of bank credit risk taking (1A) – financial crisis

	2001 – 2011 (1A)	*2001 – 2006 & 2009 – 2011* (1A)
OBS	0,013 (0,007)*	0,012 (0,008)
SIZE	0,934 (0,013)***	0,971 (0,015)***
LOANS	0,958 (0,04)***	1,011 (0,048)***
CAP	0,512 (0,116)***	0,601 (0,138)***
ROA	-0,010 (0,002)***	-0,018 (0,003)***
GDP	-0,002 (0,002)***	0,000 (0,002)
Constant	-4,845 (0,195)***	-5,42 (0,226)***
Observations	5.988	4.230
Number of banks	1.232	1.193
R^2	0,99	0,99

*** Significance at 1% level   ** Significance at 5% level   * Significance at 10% level

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[16] The financial Crisis started in 2007 when interbank markets froze and the market for bank specific structured transactions collapsed (Berrospide 2013). The effects of this extended according to some authors to nowadays. However our objective is to capture the immediate effect of the financial crisis so we remove 2007 and 2008 year observations to re-estimate the regressions.

Table 10: Robustness tests for the determinants of bank liquidity (2A) – financial crisis

	2001 – 2011 (2A)	*2001 – 2006 & 2009 – 2011* (2A)
OBS	-0,071 (0,014)***	-0,076 (0,017)***
SIZE	0,006 (0,008)	0,005 (0,009)
CAP	-0,134 (0,063)**	-0,206 (0,077)***
LOLOSSPROV	0,183 (0,096)*	0,138 (0,119)
CHOFFS	0,441 (0,083)***	0,32 (0,105)***
DEP	0,043 (0,021)**	0,035 (0,027)
GDP	0,004 (0,001)***	0,004 (0,001)***
Constant	0,076 (0,114)	0,103 (0,14)
Observations	4073	2.890
Number of banks	1122	1.080
R^2	0,87	0,89

*** Significance at 1% level   ** Significance at 5% level   * Significance at 10% level

Regarding credit risk taking (1A), the off-balance sheet variable (OBS) loses significance in this context, but in general the results are extremely similar to the previous ones with a slight increase in the coefficients for almost all variables. Acharya et al. (2010) argued that also during financial crises banks used structured finance instruments like securitization to concentrate, rather than disperse, financial risks.

Bank liquidity (2A), also have similar results to the previous regression. The liquidity hoarding effect of financial crises for buying assets at a fire-sale price because bank-failures (Acharya et al. 2010) or anticipate bank losses (Berrospide 2013) does not seem to change overall results.

6. Conclusion

This paper investigated the impact of off-balance sheet items (OBS) on the credit risk taking and liquidity seeking behavior of European banks during the period 2001-2011.

The empirical results indicate contrary results from expected, suggesting that risk transfer and liquidity seeking could not be marked as core OBS issuing motives. More, the relationship with OBS items is statistically insignificant or has de opposite effect.

This is in agreement with Shuetz (2011) balance-sheet analysis, were regulatory capital arbitrage and performance improvement proved to be important motives for OBS activity specially securitization, rather that risk and liquidity management. In US however, the securitizing banks present on average credit risk transfer and performance improvement as the main motivations to issue structured finance instruments.

About regulation: the recent financial crisis exposed significant failures in the framework that supports banks in the management of liquidity risk. The Basel III liquidity framework incorporates several important measures that will enhance the resilience of banks to short-term liquidity shocks, better align their funding models with their risk preferences and incorporate liquidity risk into product pricing. In response to these standards, banks will be required to improve their practices for liquidity-risk management. Although the new liquidity rules will result in higher costs, they will undoubtedly produce a net benefit to society by reducing the probability and impact of devastating financial crises. Thus, they complement other aspects of the global regulatory reform agenda to make the financial system more resilient.

But if a bank has a good and responsible risk management, the danger of huge losses due to structured finance instruments or other investment activities is adjusted on the balance sheet structure. And if some regulations are more politically motivated will we find empirical relevance? This can be a subject of study in the future.

Limitations of our study or perspectives for future research could include: introducing proxies for performance and regulation when relating to OBS items; further studying of the capital ratios behavior (mixed effects) and introducing new topics as the accounting standards (as banks are not obligated to reveal real and complete information of OBS items and all information could be marginal to what banks really did in terms of OBS activities).

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Further reading

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Netgraphy

http://www.investopedia.com/   Concept definitions

http://www.pordata.pt/   GDP anual growth rates

ANNEX:

Country specification:

AT	Austria
BE	Belgium
BG	Bulgaria
CH	Switzerland
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
ES	Spain
FI	Finland
FR	France
GB	Great Britain (UK)
GR	Greece
HU	Hungary
IE	Ireland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia