

WHY DO BANKS SECURITIZE? THE CASE OF ITALY

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Abstract

This paper explores the motivations underlying the securitization activities of Italian banks from 1999 to 2006. The hypotheses under investigation are those of funding, specialization and regulatory capital arbitrage. To test which of the incentives suggested by these hypotheses are statistically significant securitization's determinants, we estimate a probit model, in which the probability of carrying out securitizations is linked to a set of balance sheet indicators and a vector of further control variables.

Consistently with the funding hypothesis, the main conclusion of the research is that Italian banks seem to securitize in order to diversify/optimize the available funding channels. Besides, the status of the bank on the stock exchange positively affects the decision of securitizing, presumably because of the "market knowledge effect". By contrast, the motivations related to the other two hypotheses do not appear to be relevant. Finally, also bank's size tends to increase the propensity to securitize, supporting the argument that bigger banks are better able to bear the high structuring costs associated to securitization.

1. Introduction

Securitization involves the legal or economic transfer of assets or obligations by an originating institution to a third party, typically referred to as a “special purpose vehicle” (SPV); the SPV then issues asset-backed securities (ABS), or other structured finance securities (MBS, CMBS, RMBS, CDO, WBS and so on), representing claims against specific pools of assets (Basel Committee on Banking Supervision, 2001).

This paper investigates the determinants of securitization activities in the Italian banking sector in the period from 1999 to 2006. More precisely, we test three hypotheses. According to the first one (that we call “funding”), banks tend to securitize so as to gain alternative funding channels, complete their funding sources, and better match liabilities and assets. The second hypothesis (named “specialization”) assumes that banks use securitization as a mean to shift (outside) pools of assets (typically loans) for restructuring purposes. By selling part of their loans’ portfolio, banks decompose the traditional lending process into more elemental activities – origination, servicing, guaranteeing and funding – and can specialize in those basic ones in which they enjoy a comparative advantage while transferring the remaining activities to others (Greenbaum, 1986). Finally, according to the third hypothesis (“regulatory capital arbitrage”), banks securitize to achieve arbitrages which should, at last, reduce the equity capital without also contracting the actual economic risk.

Each of the aforementioned hypotheses is likely to have different implications. If the main driver of the securitization activity is “funding”, then the diversification of funding modes could signal that banks are becoming more sophisticated because they are able not only to maximize financing sources (in terms of their maturity and cost), but also to

adequately exploit the private information they enjoy on the value of the assets present in their portfolio. The only critical issue arising from this process is related to the monetary policy. Indeed an increase in the securitization funding mode can cause a reduction in deposits and, as consequence, the payments' services (traditionally provided by deposit-taking intermediaries) could migrate from banks to other intermediaries (perhaps mutual funds or credit card operators). If this occurred, it would entail some problems in terms of control, regulation, safety, and so on (Greenbaum, Thakor, 1987).

If the main incentive for securitization is "specialization" a decomposition of the lending activity could occur: a disintermediation process in which in an extreme case banks could become pure originators. This phenomenon could have relevant implications i) for financial system's stability because risky loans could be systematically shifted from controlled to non-controlled sectors; ii) for banking models, since a definitive affirmation of the transaction lending model (rather than the relationship model) would be likely to occur, with a potentially negative effect for the real economy; iii) for value creation and distribution process among the various stakeholders interested in the bank's activity.

Finally, if the main determinant of securitization is "regulatory capital arbitrage", it is plausible to foresee a drastic reduction in the use of this technique in the near future due to the new rules introduced by Basel II aiming avoiding arbitrages.

To verify which of the just discussed incentives is a statistically significant determinant of securitization, we adopt a probit model, in which the probability to carry out securitizations is linked to a set of balance sheet indicators and a vector of further control variables.

The remainder of the paper is organized as follows. Section 2 reviews the major literature on securitization, both theoretical and empirical. Section 3 concerns the empirical analysis and is further divided into more sub-sections subparagraphs: data and sample, methodology, results.

Finally, section 4 summarize and concludes. In the last section we summarize and conclude.

2. Securitization and banks: theory and empirical evidence

The most important theoretical studies on securitization ascribe its existence, rapid growth and diffusion all around the world to the presence of information asymmetries (hence, of information costs). Since information asymmetries represent a major obstacle to the direct investment of depositors/savers, they are usually considered as the main rationale for financial intermediation. The banks collect financial resources from the private sector, pool them and then invest in several projects, so as to diversify, hence reducing the portfolio's risk. Thanks to the intermediaries' activity depositors can benefit from their investment without having to monitor directly the projects/activities, as this function is delegated to the banks¹. The just described mechanism works efficiently if the intermediary is able to achieve a sufficient portfolio diversification. However, since small or local banks are less likely to achieve an adequate level of diversification, it is reasonable to expect a reduction in their ability to attract depositors,

which could in turn create scope for securitizing. It is in this sense that securitization may be regarded as a mean of gaining alternative funding sources².

Another issue that may generate an incentive to securitize is related to the fact that information asymmetries and information costs may determine credit rationing phenomena. Since some markets may be credit-rationed while others may not, banks can resort to securitization in order to bypass this difficulty. Indeed securitization allows lenders in unrated markets to fund projects in rated markets: the bank pools and monitors the loans of local borrowers, funding them by issuing claims to other markets. Moreover, diversification by this intermediary allows the ultimate investors (lenders in the unrated market), to delegate the monitoring to the intermediary in the market where the loans have been originated. The very reason for devolving the monitoring function lies in the large intermarkets monitoring costs, which do not make profitable for lenders to directly fund projects in other markets³ (Carlstrom, Samolyk, 1993).

Both the mentioned theories present some drawbacks and cannot fully explain the rationale for securitization. More in detail, the main problems are i) the first theory relies on a locally segmented market (where banks have a regionally limited operativeness), a hypothesis that is becoming unrealistic following the intense consolidation activity in the banking industry and the increasing in the non-bank intermediation; ii) none of the mentioned theories can explain the existence and relevance of the credit enhancement activity – which, implicitly or explicitly, contributes to improve the quality of collateral, and hence represents an important part of the securitization process⁴.

Greenbaum and Thakor (1987)⁵ examine a bank's choice of whether to fund the loans it originates by deposits or sell the loans to investors; they may choose between an off-

balance sheet channel, the securitization, and a more traditional channel, the deposits. Greenbaum and Thakor (1987) justify the bank's choice of funding via securitization by its cost advantage in screening borrowers, which enables the bank to originate loans more efficiently than others. The authors show that the bank's decision on funding modes is affected by the following factors: firstly, in absence of information asymmetries and with a *laissez faire* banking model the choice should be irrelevant; secondly, with asymmetric information and without public subsidies, the bank tends to securitize the best quality assets and finance the riskier assets through deposits; finally, government intervention (deposit insurance and regulatory subsidies/taxes) may bias banks towards funding via deposits. Greenbaum and Thakor discuss what the essence of a bank is because the funding choice may determine two very different ways of carrying out the intermediation activity⁶. According to the first and more traditional view, the bank carries out different activities during the life-cycle of a loan (origination, funding, guaranteeing, servicing). By contrast, the second view argues that by specializing and outsourcing some functions, banks focus on the basic activities in which they enjoy a comparative advantage (origination in this case) and transfer to external agents the other functions.

DeMarzo (2005) discusses and investigates the advantages deriving from "pooling and tranching", which are activities typically involved in securitization's structuring. According to the author, when the issuer enjoys an informative advantage on the value of his assets, selling them separately, rather than as a pool (i.e. through securitization) is better because of the information destruction effect that pooling entails of pooling. However, when the issuer can generate a derivative security collateralized by the assets, the "pooling and tranching" may become an optimal solution. If the residual risk of each

asset is not highly correlated, tranching allows the issuer to exploit the risk diversification effect of pooling to create a low-risk and highly liquid security. In contrast, pooling is always preferable for an uninformed seller. These results imply a dynamic model of financial intermediation in which originators sell pools of assets, some of which are purchased by informed intermediaries who then further tranche them. Pooling and tranching allow intermediaries to increase the returns to their private information and leverage their capital in a more efficient way.

The hypotheses formulated by the theoretical studies on securitization so far discussed have been empirically investigated by several contributions. Broadly speaking, the empirical research may be divided into two streams, the first one analyzes securitization's determinants, while the second focuses on its effects. As far as the determinants are concerned, the extant studies identify regulatory capital arbitrage as the main driver for securitization⁷. Regulatory capital arbitrage brings about opportunities for banks to reduce substantially their regulatory measures of risk, with little or no corresponding reduction in their overall economic risk (Jones, 2000). The hypothesis underlying regulatory arbitrage is that, by providing implicit recourse, the originator banks do not transfer risk and, at the same time, do reduce their capital. In general terms the reason driving the decision to offer the implicit recourse is that, without this support, in future it would be difficult to access to asset-backed securities market. Although the implicit recourse can be implemented through several actions, selling assets at a discount (from the price specified in the securitization documents, normally par value), purchasing assets (from a trust or other SPE) at an amount greater than fair value, exchanging performing assets for non-performing assets and providing credit enhancement beyond contractual requirements are all considered to be signals of

implicit recourse (Calomiris, Mason, 2004). The above discussion, along with the fact that in many deals the originators do maintain/subscribe the junior tranches, suggests that the implicit recourse does exist and it is its presence that justifies regulatory capital arbitrage.

Potentially regulatory capital arbitrage may occur when the banks tend to securitize (hence shifting to others) the less risky assets, and keep in their portfolio the riskier loans⁸ – it is worth recalling that under the Old Basel capital rules loans had fixed risk-weights regardless of the specific risk of each asset. The issue is also related to the possibility for banks to resolve the informational asymmetry problem and it may be approached as follow i) whether the banks find incentives to securitize to overtake informational asymmetries ii) or they are motivated by the possibility to exploit the potential regulatory capital arbitrage. In both cases banks will tend to securitize best quality less risky loans and to hold (on balance sheet) the worst quality ones. This hypothesis (Greenbaum and Thakor, 1987) is empirically confirmed by Ambrose et al. (2005), who show that, *ceteris paribus*, securitized mortgage loans have experienced lower ex-post defaults than those retained in portfolio. Still referring to mortgages market, Calem and LaCour (2003) argue that the incentives to securitize less risky loans derive from the existence of too high capital standards. Also Passmore et al. (2001) demonstrate that the incentives to securitize decrease when minimum capital requirements increase

Another issue that has to taken into account is whether the implicit recourse and the regulatory capital arbitrage are socially beneficial. With regards to credit cards securitization, Calomiris and Mason (2004) argue that, under certain conditions, the phenomenon under study should be considered as socially desirable, because it allows a

more efficient allocation of both risk and capital. In their view, securitization can be approached from two different perspectives. In the first one (safety net abuse), the goal of the originators is to increase risk relative to capital to maximize the value of the safety net subsidy (for instance the deposit insurance). From the second viewpoint (efficient contracting), banks use securitization with recourse to better adapt capital, relative to risk, by considering market capital requirements rather than regulatory ones and also to overcome asymmetric information problems.

The problems related to securitization and regulatory capital arbitrage are challenging for academics and represent source of concerns for regulators. Yet, the latter issue appears to have been mostly overcome because the new Basel Capital Accord set a specific framework for asset securitization and designed new flexible risk-weights able to capture and measure the specific risk of each asset⁹.

The stream of literature examining the effects of securitization is considerable. This line of study investigates whether and to what extent the securitization activity determines changes for both the originator banks and the overall financial system. Several studies, mainly carried out by central banks or international organizations¹⁰, emphasize the potential (negative) effects for the stability of the financial system.

From a microeconomic perspective several other works investigate the effects of securitization on capital and risk of the originator banks. Focusing on European CDO, in a recent study Hansel e Krahn (2007) find that credit risk transfer activity enhances the risk appetite of issuing bank. Dionne and Harchaoui (2003) analyze the relationship among bank's capital, securitization and risk in the Canadian financial sector for the period 1988-1998. Their main finding is that securitization has a negative effect on capital ratios, while there is a positive link between bank's risk and securitization¹¹.

In a more recent study Altunbas et al. (2007) investigate the effects of securitization on bank loan supply and monetary policy. By analysing a sample of European banks, they focus on the changing role of banks from “originate and hold” to “originate, repackage and sell”. Their main conclusions are twofold: securitization reduces the effectiveness of the bank lending channel of monetary policy; securitizing banks are able to grant more loans (this effect is stronger when the economy is in “good shape”).

While several other studies focus on specific types of securitization (mainly those related to mortgage loans)¹², a further strand of research analyzes the effects of securitization for originator banks in more general terms, for instance by looking at how this activity influences their performance (see, for instance, Lockwood et al. (1996), Higgins e Mason (2004), Thomas (1999 and 2001)). Despite different authors reach different conclusions, the thesis pointing out to positive wealth effects of securitization for issuing banks has gained more consensus.

Nearly all previous cited studies concern the United States market. With regard to the Italian case, we are not aware of any previous empirical work on securitization’s drivers in the banking sector; yet, in more general terms, only very few studies consider the issues related to securitization using an empirical approach. Indeed, the Italian literature focuses on i) the technical aspects of securitization by investigating its critical profiles (especially those related to the potential limitations of our legal and fiscal framework); ii) the securitization of non performing loans and the problems related to risk and regulation. Moreover, only a few studies have analyzed the so-called economic value of securitization¹³. Beccacece and Tasca (2002) investigate the determinants of the ABS spread in order to identify the potential structural changes that would permanently reduce the cost of funding for the ABS issuers. This paper intends to enrich the

literature on securitization in the Italian market by focusing on the determinants of banks' securitization. Thus, the present research is framed in the stream of literature (developed in the international context) exploring the incentives for securitizing.

3. Empirical analysis

As previously introduced, this work contributes to the research investigating through econometric methods, the determinants of securitization. More in detail, the interest is in verifying which motivations have led the Italian banks to carry out this kind of deals in the period from 1999 to 2006, bearing in mind that the Italian securitization law (Legge n. 130) is dated April 1999.

3.1 Data and sample

To test which factors influence the probability of securitizing, we first need to distinguish banks that have carried out at least one (cash) securitization deal, during the period considered, from banks that did not. To this end, we employ the database Talete Creative Finance¹⁴ providing information on all the cash securitizations (in this work we do not study synthetic deals) carried out from 1999 onwards. It is from this database that we draw a list of deals originated only from banks (Table 1).

[Table 1 here]

As far as the explanatory variables (or determinants of securitization's probability) are concerned, we mostly employ micro-data drawn from banks' accounts (balance sheets and income statements). For banking groups, we consider the unconsolidated accounts.

Besides, we employ some not accounting information such as the status of the bank on the official listing and the measure of capital for regulatory purposes. All these data are drawn from the Bankscope-Bureau van Dijk database.

Our sample includes all commercial banks with headquarters (including the registered office) in Italy, for which the data needed to estimate the econometric model (presented in the next section) were available. More precisely, our sample banks are all intermediaries from the supervisory register and Bank of Italy's list (following article 106 of TUB, the Italian Banking Law), classified as commercial banks (*banche S.p.A.*) or popular banks (*banche popolari*). The sample does not include the following categories of intermediaries:

- 1) cooperative banks (BCCs);
- 2) other financial intermediaries whose core business can not be strictly qualified as banking. These intermediaries are registered in a special list provided for by the article 107 of the TUB. Their activity is narrower than that of a bank and does not include saving collection through deposits.

Excluding BCCs is based on a twofold motivation i) these banks do not carry out securitization deals *uti singuli* – rather they usually participate to multioriginator deals or to deals carried out by ICCREA, BCCs holding and federative organism¹⁵; ii) BCCs are special banks both in terms of activity and in terms of size, so that a comparative analysis between them and other banks would incur the risk of providing biased results. The decision not to consider financial intermediaries different from banks – financial, leasing, and factoring companies – derives from the necessity to rationalize our research and analyze a uniform and coherent sample. Finally, the present work is not concerned with multioriginator securitizations, regardless of the nature of the sponsors.

3.2 Methodology

In light of the analysis carried out so far, banks securitize to attain one of the following targets: increase liquidity and funding “off balance sheet”; reduce the cost of funding; gain a simplified access to financial markets; enhance some balance sheet indicators (such as ROE) and, in general, improve their performance (for instance, through specialization strategies); accomplish capital relief/regulatory capital arbitrage¹⁶. Each of these goals may be traced back to one of the three main categories of incentives for securitization, which we have mentioned in the introduction: funding, specialization, and regulatory capital arbitrage. Thus, for instance, liquidity growth and funding “off balance sheet” may belong to the first category (funding). We refer the reader to Table 2 for a complete classification of the other objectives within the just recalled categories.

[Table 2 here]

To test whether these aims have a statistically significant impact on the phenomenon under study, we adopt a probit model, in which the probability of securitizing is linked to a set of explanatory variables as follows:

$$P(\delta_{it} = 1 | X) = \Phi(\beta_0 + \beta_1 x_{1i(t-1)} + \beta_2 x_{2i(t-1)} + \beta_3 x_{3i(t-1)} + \gamma ctrl_{it}) \quad (1)$$

where the dummy variable δ_{it} is coded 1 if bank i securitizes (at least once) at time t , and zero otherwise, and Φ is the cumulative distribution function of the standard normal distribution. In this model, the probability of securitizing is function of three groups of balance sheet indicators (from x_1 to x_3) – lagged one year – and some control variables $ctrl_{it}$.¹⁷

Explanatory variables

As just mentioned, the model includes four sets of regressors (Table 2). The first group is composed by financial position indicators. A weaker financial position should increase the probability of securitizing. Indeed, the immediate effect of the securitization process is the provision of funding. A greater liquidity may be exploited by banks with financial problems (for instance, the more levered intermediaries or those with a too low level of liquidity) to restore the balance. On the other hand, stronger intermediaries – those who might securitize for other reasons – may profit from investing this liquidity, for example they might originate new loans.

The financial position indexes that we employ are: liquidity ratios, historical cost, leverage, market instruments funding ratio and listing position. The expected relationship between the liquidity indexes and the probability of securitizing is, in general, negative: the greater bank's liquidity the lower the incentive to gain funding via securitization¹⁸. The historical cost provides information on the cost of debt¹⁹. It consists of a direct measure of the phenomenon under scrutiny, but sometimes it does not coincide with the actual cost of debt because it does not take into account all the possible components that contribute to the cost we refer to²⁰. For this reason, we also consider the leverage as an indirect measure of the cost of debt. As a matter of fact, if the level of debt rises and free cash flows (which can be devoted to the debt service) decrease, a bank will encounter greater difficulties to access financial markets, both in terms of placing its own bonds and granting higher spreads on them. Thus, the leverage variable may be also considered as an indicator of the ease of access to financial markets. A higher cost of funding should increase the probability of securitizing because– due to the “pooling and tranching effect” – banks are able to originate via

securitization less risky securities (with lower spreads)²¹. The market instruments funding ratio and the status of the bank in terms of listing are indicators of the ease of access to financial markets. A relatively high value of the market instruments funding ratio may signal that the direct access to financial markets is not difficult for the bank, thus this variable is expected to be negatively correlated with the probability of securitizing. As far as the quotation is concerned, a listed bank can more easily access the mentioned markets directly. Indeed, since it has to fulfil stricter disclosure requirements in comparison to not-listed institutions, it provides investors with a greater deal of information. This access easiness could lower the probability of using the securitization channel. On the other hand, greater markets' knowledge could imply a greater propensity to use it. As a consequence, the sign of the impact of both market instruments funding ratio and the status of the bank on the stock exchange represent an open empirical question²².

The second regressors' set includes profitability and economic efficiency indicators. The first index is the return on equity (ROE), which measures the return of the capital directly invested in the bank. A relatively higher ROE should contribute to lower the probability of securitizing. The second variable is the return on assets (ROA). The expected correlation between this index and the probability of securitizing is again negative. The third indicator measures the relevance of net fees and commissions on operating income. A higher level of this ratio signals that is reasonable to expect a further improvement in the bank's activity by diversifying its business, and/or by increasing its core business volume (loans supply), so as to enhance the origination fees. On the other hand, a higher level of fees and commissions may be the symptom of a higher level of specialization in some areas, such as loans origination. Thus, the sign of

the correlation between this variable and the probability of securitizing is an issue that has to be empirically addressed. The last variable we consider measures the return on interest bearing assets. A relatively high value indicates that the bank is able to generate returns from its portfolio and, more generally, it signals a good performance of the banking activity. Therefore, this variable should result negatively correlated with the probability of securitizing.

The third set of indexes is meant to capture the relationship between securitization and the so called regulatory capital arbitrage. We consider the tier 1 ratio and the total capital ratio. Higher values of these indexes signal that the bank is well capitalized. It is likely that a bank maintaining high capital ratios is not under the pressure created by prudential capital requirements, and thus it could have less incentives to pursue regulatory capital arbitrage. Therefore, the expected relationship between these indexes and the probability of securitizing is negative²³.

The last group of regressors is comprised of control variables that refer to size – the hypothesis is that larger banks may better bear the high fixed costs of securitization – and to the number of securitizations carried out in the previous years – the hypothesis is that the acquired know-how may represent an incentive to use the securitization channel once again. Finally, we control for time fixed-effects, by including a dummy variable for each year considered in the analysis.

3.3 Results

Table 3 summarizes some relevant statistic information. It is worth specifying that, to prevent extreme values from biasing the results of our study, we have “winsorized” all variables at 1%.

[Table 3 here]

Table 4 reports the results obtained when we estimate model (1) by a probit, in which the observations are clustered at the bank level. In fact, since in our sample the same bank may be present in different years, it seems appropriate to allow the standard error to be correlated for the same intermediary over time. Moreover, by doing so, we obtain standard errors robust to heteroschedasticity. The variables with the expected sign, and statistically significant are: the ratio between liquid assets and short-term funding, and the size variable. Moreover, the coefficient of the variable measuring the share of net fees and commissions on operating income is positive and significant, supporting the hypothesis that a greater specialization in some areas, primarily that of loans’ origination, may imply a higher propensity to securitize. Finally, since also the variable indicating the listed status is positive and significant, in our sample, the access to financial markets appears to increase the propensity to securitize presumably because of what we may call “knowledge effect” of these markets.

[Table 4 here]

So far, we have simply emphasized the sign of the coefficients that are statistically significant. This provides important information on the direction of the impact of each determinant on the probability of securitizing. However, each probit estimated coefficient does not represent the direct impact of each explanatory variable on the probability that the event of interest occurs. Indeed, to obtain such impact, which

depends on the value taken by all the other regressors included in the equation, one has to compute the marginal effect of each explanatory variable by assuming a given (representative) value for all other variables²⁴. In the present work, for the computation of each partial effect we consider all other variables at their sample mean. Moreover, we standardize the regressors to eliminate the differences in measurement units. Out of the four statistically significant variables, afore enumerated, the ratio between liquid assets and short-term funding displays the greater impact, in absolute terms, on the probability of securitizing. Figures on the marginal effects are not reported to economize on space but are available on request.

Robustness checks

To verify the robustness of the results so far commented, we first change the variable used to test the regulatory capital arbitrage hypothesis: we substitute the tier 1 ratio with the capital ratio coefficient. As anticipated in the previous section, our results remain substantially unaltered, thus we do not present these estimates, making them available on request²⁵. As a second sensitivity check, we add to our model a variable accounting for loans' portfolio quality, namely the ratio of impaired loans to gross loans. From a theoretical perspective, there might exist incentives to securitize either best quality or worst quality assets. Following the regulatory capital arbitrage hypothesis, banks could securitize better quality assets. On the other hand, in accordance to the specialization hypothesis, if banks want to specialize in origination activities - and transfer to external agents other functions such as servicing - they could try to further originate new loans so as to securitize them. If this happens, banks could reduce their screening activity to increase the volume of originated loans. As a consequence, a negative relationship between portfolio quality and securitization activities could be expected. However, our

data show that the number of securitizations collateralized by non-performing loans is scant and tends to zero across time. Besides, consistently with this observation, when we estimate our model, the impaired loans ratio coefficient is negative, but not statistically significant. This result is also available on request.

We proceed then with a battery of other robustness checks concerning the model specification, the estimation method and the treatment of the outliers. We start by selecting the most parsimonious specification of our model through a “general-to-simple” search: we drop the most insignificant regressor and re-estimate the model until we are left only with explanatory variables that are statistically significant at least at 10% level. In comparison with the general equation (1), the simple model (Table 5) confirms the significance of liquid assets, size, listing status, incidence of fees and commissions. Besides, the leverage variable gains significance and exhibits a positive sign. Finally, as in the more general model, according to untabulated figures, liquid assets is the variable that displays the greatest impact among the other significant variables.

[Table 5 here]

To further verify these results, we can exploit the panel structure of our data and employ a more sophisticated estimator. Indeed, as the same bank is observed at different points in time, there might be bank specific effects that are constant over time, which are relevant in explaining the securitization phenomenon. By adopting a random-effects probit model (Table 6) we account for such an “unobserved heterogeneity” of the sample intermediaries. Table 6 shows that, compared to the “pooled” estimates the only regressor losing significance is the one measuring the incidence of fees and commissions. Also in this case, according to untabulated computations, the liquid assets variable exhibits the most relevant impact in absolute terms.²⁶

[Table 6 here]

Finally, we modify the outliers' treatment: we replicate our estimations by dropping the observations lying in the first and last centile of the distribution of each variable. Clearly, by trimming the distributions, the available sample is reduced but the new results tend to confirm the pattern emerged so far. For this reason – and to economize on space – we do not report the estimates commented in what follows; however we make them available upon request. Summarizing, the parsimonious specification confirms the significance of the variables identified as such: liquid assets, quotation and size. Moreover, it also confirms the leverage relevance. Finally, a “cost of funding” indicator - with unexpected negative sign – and the market instruments funding ratio gain significance. This holds true for both the pooled and panel estimations, the only difference being that the market instruments funding ratio variable is only marginally significant when we adopt the random effects estimator.

Overall considered, the empirical evidence obtained suggests that the main driver of Italian banks' securitization is the opportunity to diversify financing sources (hypothesis of funding).²⁷ Indeed, the liquid assets variable appears to be statistically significant across all the checks performed. Further, the leverage variable gains significance in the most parsimonious model, with and without random effects. Quotation is also a relevant factor: listed banks seem more inclined to securitize, presumably because they may exploit “learning economies” already developed in financial markets. Finally, the size control variable is always positive and statistically significant, supporting the hypothesis that larger intermediaries are better equipped to bear the high fixed costs of securitization.

4. Conclusions

This work has empirically investigated the motivations underlying Italian banks' decision of carrying out securitizations. The securitization drivers tested were i) funding; ii) specialization; iii) regulatory capital arbitrage. The first hypothesis links the decision of securitizing to the possibility of diversifying (and optimizing) the available sources of funding. The specialization hypothesis justifies securitization for the opportunity it provides to specialize in those business activities where banks are able to develop a competitive advantage (loans' origination *in primis*). The regulatory capital arbitrage hypothesis regards the pursuit of a capital relief – without a parallel reduction in risk – as the main driver of the securitization decision.

The prevalence of one motivation, rather than another, is likely to have different, and possibly relevant, implications not only at the micro level (bank), but also at the macro level (markets and financial system), as well as the real economy. If the incentive to securitize is traceable back to the funding hypothesis, there could be implications both for the banks and the relationship between them and the financial markets. If the incentive to securitize derives from the possibility of specialization, there could be serious implications for financial system's stability, and the bank-customer relationship (thus for the real economy), as well as for the creation and distribution of value among a bank's different stakeholders. Finally, if the incentive is the regulatory capital arbitrage, since this has lost relevance following the adoption of Basel 2 rules, the implication could be a significant reduction of the securitization activity in the near future.

By estimating a probit model, where the probability of securitizing is linked to three sets of determinants, each of which traceable back to one (or more) of the three aforementioned hypotheses, we conclude that the funding hypothesis is the most consistent with our data. In other words, in our sample, there is evidence that Italian banks carry out securitization deals with the aim of diversifying/optimizing their available financing channels. Besides, being a listed bank positively affects the probability of securitizing, presumably because banks may exploit the so-called markets' knowledge effect. By contrast, the determinants classified as belonging to the other two hypotheses (regulatory capital arbitrage and specialization) appear mostly not relevant. Finally, a larger bank size tends to increase the propensity to securitize, supporting the view that bigger banks may be more capable to bear the high fixed costs of the securitization process.

The conclusions we draw from the present contribution may represent a first step for further research. We believe that two interesting lines of investigation could be developed. The first one, focusing again on the determinants of securitization, could extend the sample to European banks in order to identify possible differences with respect to the Italian banks. The second line of research could focus on the effects of securitization for the originator banks. In this context, the present study would represent a valuable tool to account for potential "non random selection bias" effects. In other words, since banks that securitize could be systematically different from those that do not, an analysis of the securitization impact on some performance indexes cannot neglect the modelling of the securitization's probability determinants.

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¹ On the issues of financial intermediation and delegated monitoring see Diamond (1984).

² For further discussion see Carlstrom, Samolyk (1993).

³ On credit rationing see Stiglitz (1981) and, closer to securitization, to Williamson (1986). As concerns the efficient allocation of capital see Boyd, Smith (1989).

⁴ For a critical analysis of the theories concerning the incentives to securitize see Carlstrom and Samolyk (1993).

⁵ Another theoretical contribution is that of Wolfe (2000). His main conclusion is that via securitization banks are able to enhance the return on capital (ROC) thanks to the possibility of increasing the business volume of loans without having to increase deposits and/or capital.

⁶ For different banking models see also Gande, Saunders (2005).

⁷ For a critical and exhaustive discussion on the most common regulatory capital arbitrage techniques see Jones (2000).

⁸ Also reputation is considered an incentive for securitization; in other words, the banks might want to keep in their portfolio the more risky loans not only to realize the capital arbitrage, but also to avoid signalling to the market the high risk of their assets (Ambrose et al., 2005).

⁹ In this work we account for the regulatory capital arbitrage incentive for two reasons: a) our analysis considers a period of time (from 1999 to 2006) in which there was the opportunity to realize regulatory capital arbitrage; b) given the large body of the literature on this topic, we want to verify if the theories developed in other institutional contexts apply also to the Italian case.

¹⁰ See, for instance, Bank for International Settlement (2003), European Central Bank (2004), International Monetary Fund (2006).

¹¹ These results confirm the regulatory capital arbitrage hypothesis under the Old Basel Accord. For a critical analysis of capital regulation see Kim e Santomero (1988).

¹² Passmore et al. (2001 and 2004), Heuson et al. (2001), Todd (2000) analyze the securitization effects on mortgages rates; their findings are controversial and, in general, they do not confirm the hypothesized negative relationship between securitization and mortgages rates.

¹³ See Damilano (2000) Zen (1999), Giannotti (2005), Marchetti (1999), Ferro Luzzi (2001), Broccardo (2007), Porzio (2001). On the issue related to CDO, see Drago (2007) and Mazzuca (2007).

¹⁴ Talete Creative Finance is an independent advisor for analysis and structuring of securitizations. This company is also the editor of the “Securisation.it” website, where it is possible to obtain the data used in this paper.

¹⁵ Among the deals originated from BCCs pools and carried out more recently we recall Credico Finance 7 (December 2006) and BCC Mortgage PLC (June 2006). As concerns ICCREA, the only two deals directly carried out as originator are Credico Funding 2 (2004) and Credico Funding 3 (2007). For further details on BCCs’ securitizations we refer the reader to www.iccrea.it.

¹⁶ Another potential driver for securitization is the possibility to dynamically manage risk (credit risk, mostly). This factor is not considered in the present work since: a) the analysis of dynamic risk management strategies would have been more difficult because usually the possible signals (for instance, the use of derivative instruments) are not present in banks’ balance sheets; b) an agent mainly interested in risk management tends to use synthetic structures rather than cash ones.

¹⁷ This probit may be also interpreted as a latent variable model, in which there exists a latent propensity to securitize, indicated by f_i^* , generated by the following process: $f_i^* = \beta' X_i + u_i$, where the error term is distributed as a normal, with zero mean and variance σ_u^2 . The vector X includes the potential determinants of the securitization activity. When $f_i^* > 0$ one observes the securitization phenomenon. If δ is an indicator function such that: $\delta = 1$ if $f_i^* > 0$ and $\delta = 0$ if $f_i^* \leq 0$, the probability of securitize is: $P(\delta_i = 1 | X_i) = P(f_i^* > 0) = P(u_i > -\beta' X_i) = \Phi(\beta' X_i)$, where Φ is the cumulative distribution function of the standardized normal variable u_i . By expliciting the variables included in the vector X , one obtains the model reported in expression (1).

¹⁸ It is worth acknowledging that the expected relationship between the ratio of medium- and long-term loans on total assets (one of the three liquidity indexes we considered) and the probability of securitizing could assume a positive sign if, as this ratio increase, the collateral, which may potentially generate securitization deals, increases.

¹⁹ If we had considered only listed banks, we could have employed also their rating. Since the latter expresses the overall risk of the bank, its increasing or decreasing (upgrading/downgrading) should have direct consequences on the risk premium that is required by debt subscribers.

²⁰ “The average historical cost is the simplest index to compute and represents the method commonly used by management to value the past performance of the bank, both to make comparisons with banks’ direct competitors and to express future strategies.... However, it is affected by many limitations. First, as other methods, it does not account for other potential costs related to the saving collection (reserve requirements or deposit insurance); secondly, it does not account for the amount and cost of equity. Finally, when interest rates present sudden variations, this method does not represent a useful reference point to plan future strategies” (our translation from Di Battista, 2004).

²¹ As far as the cost of equity is concerned, an explicit consideration is possible only for listed banks, which are valued by the market. Again, if we had considered only listed banks, we would have employed the most commonly used ratios, namely price/earning and price/book value.

²² Also, the Interbank market position may be considered as an indicator of the ease of access to markets. A higher value of this index may signal a better credit standing and the absence of financial difficulty in the short- and very short-run. In light of these considerations, a bank with a better interbank market position should be characterized by a lower probability of securitize.

²³ Incidentally, it is worth mentioning that, given the high correlation between these two variables, we have initially considered the tier 1 ratio, and then we have replicated our estimations with the total capital ratio. We may already anticipate that using an index rather than the other does not substantially alter the main results of the analysis.

²⁴ Given the non-linearity of the probit model, the results presented are specific to the assumed values of the explanatory variables. In other words, the computed impact are based on the assumption that, when each determinant varies, the remaining ones are at their mean value. As Pampel (2000) highlights: “the use of a single partial derivative cannot fully summarize a complex non-linear and non-additive relationship”.

²⁵ The only noticeable difference, with respect to the results so far commented, is the marginal significance of the leverage (at 10%, level), but this does not alter the significance and sign of the other

four variables. Moreover, the liquid funds variable is always the one that influences most the probability of securitize.

²⁶ It is worth mentioning that the parsimonious specification (selected by using the original sample) may be estimated also for a larger sample. As a matter of fact, some variables, excluded through the general to simple procedure, present a number of observations smaller than the parsimonious specification variables. When the larger sample has been employed, once again liquid assets, quotations and size were significant, with both the pooled and panel estimator.

²⁷ As mentioned above, sometimes few variables belonging to the other two categories (specialization and capital arbitrage) gain significance, but the latter is not robust across all the checks we have carried out. For instance, the fees and commissions ratio is significant both in the general and parsimonious model when we adopt the pooled estimator, but it loses significance when we use the panel estimator. Moreover, it is no longer significant when we modify the outliers' treatment.

Table 1 SECURITIZATION DEALS (1999-2006)

	ORIGINATOR BANK	DATE
1	Meliiorbanca Spa - Systema	2006-12-18
2	Banca Apulia Spa	2006-12-07
3	Banca Popolare dell'Alto Adige	2006-12-07
4	UniCredit Banca per la Casa Spa	2006-11-09
5	Banca delle Marche Spa	2006-10-13
6	Banca Nazionale del Lavoro Spa	2006-09-26
7	Veneto Banca Scrl	2006-07-28
8	Unicredit Banca Spa	2006-06-30
9	Banca Popolare di Milano Scarl	2006-06-21
10	Unipol Banca Spa	2006-05-19
11	Banca Nazionale del Lavoro Spa	2006-02-10
12	Banca Italease Spa	2005-12-22
13	Cassa di Risparmio di Asti SpA	2005-12-15
14	Meliiorbanca Spa	2005-12-12
15	Dexia Crediop Spa	2005-11-21
16	Banca Nazionale del Lavoro Spa	2005-10-27
17	Banca Sella Spa	2005-10-13
18	Veneto Banca Scrl - Banca di Bergamo Spa	2005-07-06
19	Unicredito Italiano Spa	2005-04-22
20	Unipol Banca Spa	2005-04-11
21	FinecoBank Spa	2005-03-18
22	Banca Italease Spa	2005-03-18
23	Banca Popolare di Puglia e Basilicata Scarl	2005-01-25
24	Unicredit Banca d'Impresa Spa	2004-12-06
25	Meliiorbanca Spa	2004-12-01
26	Banca Apulia Spa	2004-10-20
27	Banca CARIGE	2004-07-19
28	ICCREA Banca Spa	2004-07-15
29	Istituto Bancario del Lavoro Spa	2004-06-16
30	Banca Italease Spa	2004-06-11
31	Dexia Crediop Spa	2004-05-25
32	Banca Popolare di Spoleto Spa	2004-04-07
33	Unicredit Banca d'Impresa Spa	2004-04-07
34	Banca Nazionale del Lavoro Spa	2004-04-07
35	Meliiorbanca Spa	2003-12-23
36	Findomestic Banca Spa	2003-12-09
37	Fin-Eco Banca ICQ Spa	2003-11-25
38	Banca Apulia Spa	2003-07-31
39	Banca di Bologna	2003-06-30
40	Fin-Eco Banca ICQ Spa	2003-06-10
41	Banca Nazionale del Lavoro Spa	2003-04-24
42	Banca Popolare di Lodi Scrl	2003-04-23
43	Unipol Banca Spa	2003-04-17
44	Banca delle Marche Spa	2003-03-26
45	Banca Popolare dell'Emilia Romagna Scarl	2003-03-13
46	Banca Agricola Mantovana Spa	2003-03-11
47	Banca Intesa Spa	2003-02-24
48	Banca Antoniana Popolare Veneta Scarl	2003-02-21
49	Banca Popolare di Vicenza Scarl	2003-02-10
50	Banca Popolare di Intra Scrl	2002-12-20
51	Hypo Alpe Adria Bank Spa	2002-12-19
52	Cassa di Risparmio di Firenze Spa	2002-11-26

53	Fin-Eco Banca ICQ Spa	2002-10-28
54	Veneto Banca Scrl	2002-07-25
55	Meliorbanca Spa	2002-06-24
56	Banca Italease Spa	2002-04-17
57	Banca Antoniana Popolare Veneta Scarl	2002-04-15
58	Banca Popolare dell'Etruria e del Lazio	2002-03-22
59	Unipol Banca Spa	2002-03-22
60	Fin-Eco Banca ICQ Spa	2002-03-20
61	ICCREA Banca Spa	2002-03-19
62	Banco di Sicilia Spa	2002-03-15
63	Banca CARIGE	2002-03-15
64	Banca Popolare di Vicenza Scarl	2002-02-18
65	Banca Popolare di Spoleto Spa	2001-12-21
66	Banca Italease Spa	2001-12-14
67	Banca Antoniana Popolare Veneta Scarl	2001-12-14
68	Banco di Brescia San Paolo Cab Spa	2001-12-13
69	Banca Agricola Mantovana Spa	2001-12-10
70	Banca Nazionale del Lavoro Spa	2001-12-01
71	Banca 121 Spa	2001-11-19
72	Fin-Eco Banca ICQ Spa	2001-10-31
73	Credito Fondiario e Industriale Spa (Fonspa)	2001-10-30
74	Banca Toscana Spa	2001-10-19
75	Banca Monte dei Paschi di Siena Spa	2001-10-19
76	Banca Popolare di Spoleto Spa	2001-10-16
77	Banca Antoniana Popolare Veneta Scarl	2001-10-10
78	Banca Nazionale del Lavoro Spa	2001-08-27
79	Banca Monte dei Paschi di Siena Spa	2001-08-08
80	Credito Fondiario e Industriale Spa (Fonspa)	2001-08-08
81	BCC di Manzano	2001-08-01
82	Banca Popolare di Milano Scarl	2001-07-20
83	Banca Intesa Spa	2001-06-18
84	Banca Apulia Spa	2001-05-24
85	Banca Monte dei Paschi di Siena Spa	2001-05-21
86	Banca Monte dei Paschi di Siena Spa	2001-05-04
87	Banca Sella Spa	2001-04-19
88	Fin-Eco Banca ICQ Spa	2001-04-12
89	Credito Emiliano Spa	2001-03-29
90	Banca CARIGE	2001-03-27
91	Banca Popolare di Vicenza Scarl	2001-03-20
92	Banca Italease Spa	2001-03-10
93	Banca delle Marche Spa	2001-03-08
94	Banca Popolare di Bergamo - Credito Varesino Scrl	2001-01-31
95	Banca Popolare di Puglia e Basilicata Scarl	2001-01-19
96	Banca Popolare dell'Etruria e del Lazio	2000-12-22
97	Banca Monte dei Paschi di Siena Spa	2000-12-19
98	Banca 121 Spa	2000-12-15
99	Banca Antoniana Popolare Veneta Scarl	2000-12-11
100	Banca Italease Spa	2000-08-09
101	Banca Popolare di Bari Scrl	2000-07-31
102	Cariplo	2000-07-28
103	Hypo Alpe Adria Bank Spa	2000-07-13
104	Banca Popolare di Bergamo - Credito Varesino Scrl	2000-06-20
105	Banca di Roma Spa	2000-05-26
106	Banca di Roma Spa	2000-04-20
107	Banco di Sicilia Spa	2000-03-30
108	Cassa di Risparmio di Chieti Spa	2000-03-22
109	Banca del Salento Spa	2000-03-20
110	Cassa di Risparmio di Firenze Spa	1999-11-30
111	Banca di Roma Spa	1999-11-01
112	Banca di Roma Spa	1999-07-07

Table 2 Variables' description

	VARIABLE	BANKSCOPE	VARIABLE NAME (USED FOR THE ANALYSIS)	EXPECTED SIGN
FUNDING HYPOTHESIS	Financial position indexes (liquidity, cost of funding, ease to market access)			-
	Liquidity ratios	Net loans m.-l. term /total assets Interbank ratio Liquid assets/deposits&short term funding	Inc_loans_ml Interb_rat Liqu_fund_s	-
	Historical cost	Interest expense/(total deposits+total money market funding+other funding)	Hist_cost	+
	Leverage	Total assets/total equity	Leverage	+
	Market instruments funding ratio	(Money market funding+other funding)/total liabilities	Inc_mkt_fdg	-
	Listing		Dum_list	+/-
	SPECIALIZATION HYPOTHESIS	Profitability and economic efficiency indicators		
Return on (average) equity		ROAE	Roe	-
Return on (average) assets		ROAA	Roa	-
Net fees and commissions ratio		Commission income/total operating income	Inc_comm	+/-
Interest bearing assets ratio		Net interest revenue/(total loans + total other earning assets)	Int_bear_ass	-
REGULATORY CAPITAL ARBITRAGE HYPOTHESIS	Capital ratios			-
	Tier 1 ratio	Tier 1 ratio	Tier1rat	-
	Total capital ratio	Total capital ratio	Totcaprat	-

Table 3: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
dum_sec	3095	0.029079	0.168056	0	1
inc_loans_ml	1361	32.97327	106.3221	0	1462.188
interb_rat	1666	173.9071	212.6725	0.06	957.8
liqu_fund_s	1905	35.59867	35.28551	0	268.18
hist_cost	1802	2.656489	1.932161	0.490641	20.1595
leverage	2146	12.0233	6.951642	1.178273	53.76344
inc_mkt_fdg	1808	28.43242	14.83399	0	87.16256
dum_list	3095	0.078514	0.269022	0	1
roa	2145	0.639268	1.894638	-11.28	13.27
roe	2144	6.609571	11.59927	-71.75	56.77
inc_comm	2126	34.49547	31.68428	0	248.8636
int_bear_ass	2144	2.918415	1.344502	-0.61046	10.18537
tier1rat	1963	18.42557	29.42069	0	287
totcaprat	1963	19.97529	29.46635	0	291
totass	2146	7071557	1.83E+07	13600	1.44E+08
num_sec	3095	0.034572	0.215211	0	4

Table 4: Probit estimates, dependent variable: dummy coded 1 if a bank carries out at least one securitization in a year, zero otherwise

inc_loans_ml	0.004 [0.004]
interb_rat	0.001 [0.001]
liqu_fund_s	-0.018** [0.009]
hist_cost	-0.004 [0.035]
leverage	0.036 [0.027]
inc_mkt_fdg	0.002 [0.009]
dum_list	0.857*** [0.254]
roe	0.019 [0.016]
roa	-0.155 [0.201]
inc_comm	0.010** [0.005]
int_bear_ass	-0.06 [0.153]
tier1rat	-0.004 [0.021]
Intotass	0.177** [0.080]
num_sec	0.228 [0.259]
Constant	-5.357*** [1.528]
Observations	880
Log Likelihood	-120.028
Wald chi2	153.03***
Number of banks	223

Notes: a) Robust standard errors in brackets; b) * significant at 10%, ** significant at 5%, *** significant at 1%; c) all variables are lagged one year, except the listing dummy

Parsimonious specification, dependent variable: dummy coded 1 if a bank carries out at least one securitization in a year, zero otherwise

Table 5: Probit estimates

liqu_fund_s	-0.016**
	[0.007]
leverage	0.049**
	[0.020]
dum_list	0.826***
	[0.244]
inc_comm	0.009**
	[0.005]
Intotass	0.192***
	[0.072]
constant	-5.544***
	[0.999]
Observations	880
Log Likelihood	-123.067
Wald chi2	80.84***
Number of banks	223

Notes: a) Robust standard errors in brackets; b) * significant at 10%, ** significant at 5%, *** significant at 1%; c) all variables are lagged one year, except the listing dummy

Table 6: Random Effects Probit estimates

liqu_fund_s	-0.018**
	[0.008]
leverage	0.057***
	[0.022]
dum_list	0.972***
	[0.308]
inc_comm	0.013
	[0.008]
Intotass	0.271***
	[0.095]
constant	-7.307***
	[1.455]
Observations	880
Log Likelihood	-118.037
Wald chi2	45.83***
Number of banks	223

Notes: a) Standard errors in brackets; b) * significant at 10%, ** significant at 5%, *** significant at 1%; c) all variables are lagged one year, except the listing dummy