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SECURITIZATION OF (BAD) LOANS TO ITALIAN SMES: THE ROLE OF THE PUBLIC GUARANTEE

Abstract

This study investigates the main factors driving the evolution of the securitization of loans to Italian small and medium-sized enterprises (SMEs). The value of securitization increased in last two years, even though it has not been used as collateral for central banks. The disposal of non-performing loans (NPLs) may have been rather triggered by increasing attention of the international institutions to such an issue, within the general purpose of financial stability. The purpose of this paper is to interpret such a phenomenon focusing on Italian banks and restricting the analysis to the case of securitizations backed with loans to small and medium-sized enterprises (SMEs). The interesting result that emerges, supported by econometrically tested empirical evidence, is that given the orientation of international financial institutions, such as the ECB and the EBA, and reacting to incentives coming from the fiscal policy authorities for the public guarantee of loans, banks have been using securitization to reduce the burden on their bad balance sheets due to (NPLs). It was found that the public guarantee had a positive impact on SME securitization, whereas securitization in other sectors has not been affected significantly. Such evidence suggests that, in the absence of a public guarantee, the financial stability target would have been at risk, and the effectiveness of collateral-based policies in the recent past must be improved to enhance access to credit for SMEs.

Keywords	central-bank liquidity, Italian banks, asset-backed securities, non-performing loans, public guarantee
JEL Classification	E52, G21, H39

INTRODUCTION

The structural changes to the monetary policy regime of the last decade, aimed at facilitating access to liquidity during the economic crisis, have significantly affected the behavior of financial intermediaries. In particular, the expansion of the spectrum of securities pledgeable as collateral at the central banks for funding, may have induced banks to increase the volume of securitized loans in 2018 and 2019 (both retail and corporate). However, the incentives provided by the monetary policy authorities do not explain the substantial increase in the issuance of securitized assets in 2018 and 2019, since in the same period the nature and extent of these incentives did not change significantly. In fact, in 2018 and 2019, ABS issues increased abnormally despite no structural change occurred at an ECB-policy level. In particular, the trend of issues in 2018 and 2019 is abnormal if compared to all previous years, and the trend of securitization of loans to SMEs does not seem to have stimulated a larger supply of credit to small and medium-sized enterprises as supposed by policy adopted by the European Central Bank. In the same period, the Italian banking sector registered the biggest decrease in NPL volumes (EUR 145 billion) between June 2015 and June 2019 (EBA, 2019). Therefore, the 2018–2019 increase is not justified on the ground of collateral-pledgeability to ECB.

Instead, it could be a consequence of the NPL fiscal policies. Indeed, taking into account the orientation of international financial institutions, such as the ECB and the EBA, and reacting to incentives coming from the fiscal policy authorities for the public guarantee of loans, banks have been using securitizations to reduce the burden on their bad balance sheets due to non-performing loans (NPL).

The purpose of this paper is to provide an interpretation the dynamics of ABS issues focusing on Italian banks and restricting the analysis to the case of securitizations backed with loans to small and medium-sized enterprises (SMEs), since NPLs are essentially related to loans to SMEs, whose capability to repay the debt is much more sensitive to economic downturns than larger firms.

In the analysis, data on Italian ABS market were used due to its potential link with banks' actions related to NPLs. In fact, this paper examines the link between securitization and NPLs, finding evidence that securitizations based on SME loans are somehow special with respect to securitizations in other sectors, and such specialness is related to banks' need to dispose of NPLs. Due to this peculiarity, policy aimed at fostering credit to SMEs and to improve banks' soundness should take into account that disposal of NPLs may take place at very high costs, that could be unsustainable for some banks. Thus, a trade-off between profitability and soundness can be exacerbated.

1. LITERATURE REVIEW

One strand of research on banks securitization investigates the link between the latter and credit offer from a macroeconomic perspective. Ben Salah (2014) shows that, for the US banks, a greater use of securitization corresponds to an increase in lending capacity, confirming that the effectiveness of monetary actions is confirmed when securitization is used as a risk management tool and not when it is considered as substitute for liquid assets, whereas Micucci and Rossi (2017) provide evidence that banks follow different strategies when they decide whether to take part in the debt restructuring process. Similarly, Aysun (2011) shows that the balance sheet channel is stronger for banks that securitize some of their assets suggesting that securitization may increase the effectiveness of monetary policy. According to Altunbas (2009), securitization – on the basis of the economic cycle and the risk of the bank – strengthens the lending capacity of the banks, and also Loutskina (2011), through the construction of a portfolio liquidity index, demonstrates that banks that liquidate their assets tend to increase their lending capacity. An interesting study that examines the securitization market for the SME sector has been conducted by Kraemer-Eis and Passaris (2015), which analyze how securitization can have a positive effect on loans to small and medium-sized European companies, highlighting the necessity to relaunch the securitization market of SMEs. As regards secu-

ritization of SMEs loans, it is worth mentioning the study of Ayar et al. (2015) who show numerous reasons to improve the market of securitization of SMEs; similarly, Kaya and Masetti (2018) show that for the Euro-zone, the increase in securitization reduces the probability of small and medium-sized enterprises to encounter limits on access to credit. Bonner et al. (2016) highlight how the correlation between securitization and lending for the European banks is positive for 2007–2008 but not for the following years. On the financial intermediaries' side, numerous scholars have investigated the causes of the securitization. Some of them highlight that securitization is usually used not only to produce poorly structured products but especially to obtain capital advantages within the Basel regulatory framework (Minton et al., 2004; Calomiris et al., 2004; Hansel et al., 2008). Mazzuca (2008) believes that the main reason that induces banks to securitize their assets is the possibility of diversifying and finding new sources of financing. Some studies have also investigated the types of banks that are more likely to carry out securitization transactions, showing that there is a preference for large banks, probably due to the greater ability to bear overhead costs (Mazzuca, 2008; Uzun & Webb, 2007; Almazan et al., 2015). Other studies investigate the impact of securitization on banks' behavior intended as risk assumption and indirectly the impact on the stability of the system (Casu et al., 2011; Ben Salah & Fedhila, 2012; Battaglia & Gallo, 2013). A further stream of

studies investigates the phenomenon of securitization by assessing the impact on the performance of credit institutions (Casu et al., 2013; Uhde et al., 2010). In addition, the phenomenon of securitization is also often associated with the phenomenon of non-performing loans (NPLs). According to Liu (2006), securitization is adopted by banks to manage their non-performing loans in the most efficient way possible, while Anastasiou (2016) identifies securitization as one of the possible efficient strategies to treat impaired loans, specifying that it is the necessary support of the State in increasing the securitization process and the creation of specific SPVs. The analysis of Affinito and Tagliaferri (2010), on a sample of Italian banks during the period of 2000–2006, shows that the banks that are most likely to carry out a securitization transaction are the banks with higher percentage of non-performing loans.

2. DATA AND METHODOLOGY

Bank-level data consist of balance sheet ratios and items that are collected from the AIDA – Bureau Van Djik (BVD) dataset. Raw data on securitizations are collected from European Data Warehouse (EDW). Data are available at an annual frequency from 2010 to 2019[1] for 12 Italian banks that have been considered systemically relevant in the same period. These years are selected considering a period of financial stability between the events of the ABS-related global financial crisis and the COVID-19 pandemic recession, which could have modified the ECB's policies and markets' stability. In 2020, the ECB modified some criteria for asset eligibility to ease access to central bank funding. For this reason, the available data from 2020 have been excluded from the sample. In fact, the change in the structural relationship between banks' balance sheet items and securitization could not be plausibly controlled for.

As can be observed in Figure A1 (Appendix), except for the peak of 2012 (which can be strictly related to the sovereign debt crisis), the trend of issues in 2018 and 2019 is abnormal compared to all previous years. The nominal value of securitized SME loans in 2018 is more than twice the annual average for the 2013–2017 period; the value of 2019 is even four times the value of the same average. In the years prior to 2018, a certain degree of interdependence can be assumed between the collateral determination policies pledgeable for transactions with the Central Bank and the securitization activity. In particular, for years 2014 and 2015, it is plausible that the increase in the volumes of securitization was driven by the need to have eligible assets in accordance with the regulation introduced between 2013 and 2014, in particular, the loan-level initiative, implemented gradually from 2013. [2] Therefore, the absence of structural changes in the regime of pledgeability of the asset backed securities (ABS) to get central bank liquidity makes it difficult to explain such an evidence.

This view is supported by data depicted in Figure A2 (Appendix) referring to the Euro Area. The growth of securitization in 2015 was followed by a larger amount of ABS pledged to the ECB as collateral, in terms of the aggregate level of the Euro Area: In particular, from 2016 onwards, the value of the ABS pledged was constantly above the amount pledged in 2013 (310 billion euros[3]). It is also worth to remark that the implementation of a public guarantee for securitization of non-performing loans in 2016 did not affect the performance of the securitization of loans to SMEs, unless after 2017. This is probably due to the necessary time to build up the securitization once the incentive has been put in place.

After 2015, the pledge of ABS and non-marketable loans does not seem to have been significantly affected by regulatory developments and the macroeconomic context. After an adjustment phase in 2015 and 2016 following the financial crisis, starting from 2017 the volume of ABS and non-marketable loans pledged by banks for central bank use slightly varied (as well as their relative size). Likewise, the volume of new ABS issues decreases again until 2017, as shown in Figure A1 (Appendix).

1   Observations related to the first quarter of 2020 have been dropped in order to limit the impact of the COVID-19 pandemic on the structural relationship that is estimated.

2   The Loan-level Initiative defined the new requirements for assets (loans) to be included in an ABS pool in terms, for instance, of homogeneity; furthermore, the underlying assets must necessarily individually satisfy the conditions for eligibility. See Bank of England and European Central Bank (2014).

3   Values after haircut.

At the same time, the trend of securitization of loans to SMEs does not seem to have stimulated a larger supply of credit to small and medium-sized enterprises. As can be observed in Table A1 (Appendix), until 2018 (the last year for which data from this historical series is available), credit to medium and small businesses has decreased steadily despite the massive disposals of non-performing loans and the possibility of pledging ABS and, to a greater extent than in previous years, loans as collateral eligible for liquidity from the Central Bank.

Furthermore, as can be observed in Table A1 (Appendix), the decrease in credit to SMEs in Italy seems to be systematically greater than that of the overall credit granted to businesses.

The ECB guidelines on eligible assets necessarily define expectations and strategies of the entire banking industry; in fact, one of the main reasons for the existence of ABS in Europe, as well as in Italy, is precisely the lower cost associated with the use of ABS as collateral than the individual underlying loans.

As highlighted in Table A2 (Appendix), the use of ABS as an eligible collateral increases after 2015, likely due to new securitizations based on the transparency standards imposed by the loan level initiative. In the same years, between 2015 and 2017, the use for central-bank purposes of non-marketable assets grew structurally, because of the provisional regime adopted by the Central Banks for the acceptance of additional activities (Additional Collateral Claim – ACC). In Italy, under such a regime[4], the pledge of non-marketable loans increased by around 70% compared to 2014[5]; at the aggregate level of the Euro Area, the increase in the allocation of non-marketable loans, albeit remarkable, was more limited (about 6%)[6].

The interdependence between the guarantees required within the ECB risk-management framework and securitization activity proved to be quite a stable relationship along the past years, in which less stringent requirements were offset by greater market transparency. In this sense, the ECB Loan-level Initiative, accompanied by the possibility of implementing temporary frameworks of asset eligibility at national level, has contributed substantially to the development of homogeneous, comparable and, therefore, more easily assessable structured products. At the same time, it has discouraged the intense activity of creating and issuing more complex structured products that are difficult to evaluate in terms of risk-return combination, such as synthetic or double-layer ABS (i.e. ABS that have other ABS as underlying).

The purpose of such a regime for assets eligibility is clearly to improve the transmission mechanism of monetary policy based on bank credit, especially to small and medium-sized enterprises, whose access to financial markets is particularly difficult, if not impossible. Moreover, targeting credit to SMEs as an explicit objective of TLTRO, which implements a reward mechanism in terms of interest rate, based on the amount of credit granted by banks in a given reference period[7]. In particular, as far as the TLTRO-III is concerned, banks whose net eligible loans in the reference period were at least equal to their respective reference levels, were charged a rate equal to the average rate on deposits with the central bank for the entire duration of the respective operation.[8]

The purpose of the European Central Bank in terms of eligible assets policy, seems twofold. On the one hand, it aims to ease access to bank credit for those who rely more on the banking sector by reducing collateral costs. On the other hand, it aims to reduce information asymmetries in a market that is essentially over-the-counter, with products that can potentially be very opaque and, as a result, whose risks may not be easily assessable.

Within such a framework, the incentive to issue ABS is driven by the possibility of transforming

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4   The temporary framework regime has also been adopted by central banks of Austria, Cyprus, France, Greece, Ireland, Portugal, Spain and Slovenia.

5   With respect to 2016–2019 average and all the pledgeable loans.

6   Observations in year 2020 have been excluded because the temporary framework in March 2020 reduced the haircuts for non-marketable assets, thus making impossible a direct comparison with figures from previous years.

7   Between March 1st, 2020 and March 31st, 2021.

8   Excluding the special interest rate period, when the interest rate is lowered by 50 basis points.

assets that are pledgeable at a relatively high cost, i.e. loans to firms, into more standardized assets, whose haircut is smaller than the individual loans. It is precisely from this incentive that the link between the eligibility regime and the dynamics of new issues arises.

In 2015–2019, the Italian banking system maintained a substantially stable behavior regarding the collateral used at the central banks. The proportion in which ABS and total loans are used is also stable until 2020.[9]

Table A2 also shows the percentage of ABS and loans out of the total assets pledged as collateral by the Italian banking system to the ECB. Through a comparison between the information in Table A2 and that in Table A1, it is possible to observe that in 2018 and 2019, non-marketable assets (eligible because of the implementation of temporary framework) did not significantly affect the total volume of provided collateral.

As shown in Table A2, the ABS usage by Italian banks to obtain central-bank liquidity increased between 13% and 16%. The use of non-marketable guarantees has increased significantly since 2015 from 15% to 23% in 2020.

No apparent deviation from the average in 2015 and 2016 occurred in transactions with central banks: In particular, the proportion between the two different types of collateral based on the loans granted does not seem to follow the securitization trend shown in Figure A1. Therefore, the high volume of securitizations that took place in 2018 and 2019 (Figure A1) may not be directly related to banks' liquidity needs.

Table A3 shows data on the non-performing loans of the Italian banks (namely the NPL ratio, or impaired loans on total credit) provided by the European Banking Authority in the 2019 Report for NPLs. It can be observed that the dynamics of the NPL ratio is steadily decreasing. The NPL ratio experiences the largest decrease are 2017 and 2018.

As it can observed in Table A3, the credit trend is rather stable, while the decrease in impaired loans undergoes strong accelerations in 2017 and 2018. It follows that the increase in securitizations starting from 2018 could be rationalized as the need to bring the dynamics of the NPLs under control.

In fact, NPLs values experiences the largest reductions in 2017 and 2018 the banking system occur, while the total bank credit follows an oscillatory dynamic that is probably majorly related to macroeconomic factors. The impaired loans shown in Table A2 refer to all types of credit, not only to loans to Italian SMEs. However, assuming that the proportion of impaired loans for each type is constant over time, one can conjecture the existence of a link between the reduction of impaired loans and the anomalous value of ABS issues on loans to SMEs. In particular, the abnormal data on emissions in 2018 and 2019 could be linked to dismissions of impaired loans accounted for in the years 2017 and 2018 and, as a result, be the cause of their rapid decrease.

It is worth to remark that figures on ABS issues are focused on loans to small and medium-sized Italian firms, while the figure on impaired loans encompasses all types of credit. However, the correlation between the trends of the two variables suggests that a connection may exist, since, as discussed above and differently from previous years, the dynamics of securitization issues do not seem to affect the dynamics of the guarantees provided.

Furthermore, for the sake of completeness, it should be noted that while the NPL ratio is steadily decreasing, the liquidity provided by central banks through the provisional regime may have contributed to reducing the impact on profits of the dismission of impaired loans.

Table A4 shows the proportions of the tranches issued in the securitizations by seniority, by grouping data in a class A tranches (high seniority) and the aggregate remainder of the tranches. It can be observed that in 2015 (i.e. the year with the highest volume of new issues during the implementation of

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9   The changes that occurred at the beginning of 2020 are attributable to the consequences of the COVID-19 pandemic and to the further monetary impulse, partly based on a further easing of the eligibility criteria for activities in credit operations with the Central Bank. According to the same source, among the assets pledged as collateral, those with the sharpest increase have been government bonds. The proportion of ABS and loans has been eroded, but in absolute value the use of these instruments has grown.

the loan-level initiative), the share of class A tranches on the total is below 50%; from 2016 onwards, the proportion grows every year to roughly 66% in 2018 and 2019. It is interesting to note that the senior component of the issues in 2018 and 2019 is historically high compared to the previous years, when ABS were issued mainly for liquidity needs. This is probably due to the presence of the public guarantee program, implemented in 2016 and designed to encourage the issue of senior instruments.

Table A4 shows the average relative margin of ABS issued on loans of Italian SMEs, weighted by their relative size with respect to the total in the year. This variable is representative of the spread with respect to the nominal reference interest rate: in general, an increase in the average relative margin represents an increase in the average cost of securitizations incurred by the issuer. The values of 2018 and 2019, which are associated with historically high volumes of new issues, are particularly representative: The average margin in these two years is historically high and comparable only to the average margin recorded in 2014.[10] However, the volume of securitized loans in 2018 and in 2019 is higher than in the previous five years, including 2014: It follows that the figure for 2018–2019 is very relevant from an economic standpoint.

It therefore emerges that the significant volume of issues in the two-year period 2018–2019 occurred at historically high costs, although it did not have a clear impact on the guarantees set aside in transactions with the Central Bank. In the same years, in fact, non-marketable loans barely changed from 77.1 to 77 billion euros, and the ABS pledged as collateral decreased by 5.6%, from 49.7 billion euros to 46.0 billion euros in a single year. Such a decrease occurred although the volume of securitizations of loans to SMEs increased by 83% in 2019 compared to 2018. The author's interpretation of this evidence is that the 2018 and 2019 issues, which occurred at relatively high average costs, reflect a strong need for institutions in terms of dismission of non-performing loans.

A generalized stimulus for a relatively rapid disposal of impaired loans could have come from

the European Banking Authority and the ECB,[11] which started a consideration on the most efficient policy design aimed at reducing the potential negative impacts of high levels of non-performing loans, following a broad scientific debate and on the basis of the report emerging between non-performing loans and financial stability.

According to the 2019 EBA Report on non-performing loans, in the Italian banking system the NPL is an issue more than any other country considered in the report. In fact, in 2014 and 2015, the NPL ratio was structurally higher in Italian banks. The Italian aggregate figure for 2014, also reported in Table A3 amounted to 278 billion euros, whereas the country with the highest NPL level other than Italy in that year was Spain with only 175 billion euros.

The missing correlation between ABS issues on Italian SMEs and their pledge as collateral seems to be offset by the need to reduce NPL, which is obtainable through securitizations accounted for in 2017 and 2018. As reported by the EBA Report of 2019, between June 2015 and June 2019 in Italy there was the greatest reduction in the volumes of non-performing loans in the EU.

For this reason, this paper examines the link between the phenomenon of securitization and the evolution of the credit offer, bringing to light both monetary policy and banking managerial aspects. The aim of the econometric analysis in this section is to understand whether SME securitizations are somehow special with respect to securitizations in other sectors, such that effective policy design should take into account their peculiarities. This study therefore tries to assess the relationship between a set of regressors selected to represent essential characteristics of individual banks and the presence of a securitization. In particular, the significance and the sign of an exogenously determined set of accounting ratios on the probability for a securitization to occur are assessed. On top of that, the significance of an indicator variable accounting for a public guarantee on securitization is tested. Such a guarantee is in place since 2016 and affected issues from 2018 on, therefore, the indicator variable is equal to one for years 2018 and 2019.

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10   It is possible to observe how the year in which the average relative margin is higher is 2013: In that year, however, the lowest value among those available was recorded with reference to the volume of emissions and therefore it is not particularly significant for the analysis.

11   See EBA (2016a; 2016b) for an analysis of NPL across the EU and ECB (2016; 2017; and 2018) for guidelines on NPLs in the Euro Area.

3. EMPIRICAL ANALYSIS

The economic relationships presented above can be used to test the statistical significance of selected variables through an econometric model, whose regressors have been chosen to represent efficiency (interest-rate net margin) and the capital adequacy (total capital ratio), as well as a scale factor (total assets). Moreover, since securitization may be related, under exceptional circumstances, to large scale dismission of non-performing loans, the regressors included the relative size of non-performing loans on equity, which might capture a bank's urgency to dismiss part of the originated loans. The selection procedure has been both judgmental (as for the areas that must be covered) and stepwise based (as for the most effective regressor that helped to explain the behavior of the dependent variable). The low number of observations forced the selection procedure not to exceed the number of four regressors (plus the public-guarantee dummy) to keep the regressors/observation ratio at a reasonably low level and to limit the consumption of the available degrees of freedom.

The variables have been selected among others, as the result of a stepwise procedure that privileged the explanatory power into the model. It is worth to remark, in fact, that the purpose of the present analysis is to find whether SME securitizations are determined differently than securitizations in other sectors, rather than finding a model that fully describes the determinants of securitizations. In fact, its aim is strictly limited to underpin the special nature of SME securitizations, which is conjectured in the previous sections. Moreover, a very restricted set of variables makes it possible to keep low the number of parameters to be estimated. The variables are connected to the narrow scope of the paper, i.e. support the relationship between the securitization and NPLs. In particular, the NPL ratio is used as a natural explanator, the total capital ratio as a measure of bank soundness, the net interest rate margin as a measure of profitability on loans, and total assets to control for bank size. As a methodological reference this study followed Guerello et al. (2017).

The dynamics of the regressors are depicted in Figure A3. It can be observed that there is apparent heterogeneity across banks in terms of all the regressors, which makes a point in using an estimation based on individual effect of banks.

Since there is interest in understanding whether a bank may be willing or not to issue a security whose underlying is based on loans, by controlling for selected balance sheet ratios and items, the dependent variable is the simple occurrence of a securitization, i.e. it assumes a non-zero value if any securitization occurred related to an individual bank. Therefore, the number of securitizations is not considered, since it would go beyond the scope of the present analysis.

As far as the dependent variable is concerned, Figure A4 and Figure A5 depict the evolution over the selected years of the number of banks involved in securitizations. Figure A4 shows, for each year, the number of sectors in which a bank is involved with a securitization. In each year, every observation represents a bank. Therefore, it might occur that an observed bank has zero securitizations in on year, whereas the same bank is involved in a positive number of securitizations in another year. Figure A5 shows the total number of banks, in each year, whose loans are securitized.

A comparison between Figure A4 and Figure A5 highlights that in years 2012 and 2013, a higher number of securitizations has been issued. Since the number of sectors involved is relatively high, the generalized increase is likely related to ECB's Loan Level Initiative, requiring, among other things, securities to be standardized and with details disclosed through European Data Warehouse. After 2017, most of the securitization concerns only one type of loans. The number of banks involved decreases as well. As shown in the previous sections, the value of securitizations of SME loans issued in those years, instead, increased, which is at odds with the loosening of collateral requirements occurred in the meanwhile.

The approach is based on a comparison of a model's estimations fitting across different dependent variables to understand how specific variables affect the probability of a securitization to be issued. A non-linear binomial panel data model is fitted by a random-effect logit estimator. Data at a bank level with annual frequency were collected. The dependent variable of the model is an indicator variable assum-

ing a unitary value if the ith bank issued (by means of a SPV) securities backed by loans whose originator is the ith bank itself, and zero otherwise. Moreover, an indicator variable for years when a public guarantee for securitizations of non-performing loans was in place was added to the regressor.

Table A5 shows that between-group variation is higher than within the group as for all the regressors. Since the fixed-effect estimation is mainly dependent on the within-group variation, a random effect estimator was adopted because a higher efficiency in estimation was expected.

To understand whether the presence of the public guarantee on securitization has had an impact on securitization issues, the available panel data was fitted with the following model:

$$securitization_{i,t} = \alpha_i + \beta x_{i,t} + \gamma gcs_t + \varepsilon_{i,t}, \quad (1)$$

where α_i stands for the unobserved time invariant effect, and $x_{i,t}$ are the bank-level explanatory variables, the gcs_t variable accounts for the presence of public guarantees on securitizations of non-performing loans.[12]

Let $y_{i,t} = 0$ if $securitization_{i,t} = 0$ and $y_{i,t} = 1$ if $securitization_{i,t} > 0$. The probability of a penalty to be inflicted, conditional to the realization of the explanatory variables, is

$$\Pr\left[y_{i,t} = 1 \mid x_{i,t}, gcs_t, \alpha_i, \beta, \gamma \right] = \\ = \Lambda\left(\alpha_i + \beta x_{i,t} + \gamma gcs_t\right), \quad (2)$$

where

$$\Lambda\left(\alpha_i + \beta x_{i,t} + \gamma gcs_t\right) = \\ = e^{\alpha_i + \beta x_{i,t} + \gamma gcs_t} / \left(1 + e^{\alpha_i + \beta x_{i,t} + \gamma gcs_t}\right). \quad (3)$$

The model in equation (1) is estimated across three different dependent variables, namely the occurrence of SME securitizations, residential mortgage-backed securities (RMBS), and for the occurrence of any securitization issued in any of the automotive, leasing, consumption credit, residential, SME sector. Given the very focused purpose of the

present analysis, sector-specific estimations are provided for SME, RMBS and any sector, for ease of comparability and to stress the implications for the two most relevant sectors for Italian securitizations, in addition to a general perspective. The model assumes that all the regressors affect the dependent variable with a lag of one year, with the exception of the NPL/equity ratio (NPLR), which is assumed to affect the dependent variable with a two-year lag. The lag assumptions are based on the time it takes to build up a securitization once the decision is taken, possibly based on selected regressors. A two-years lag, in particular, is assumed for the NPL/equity ratio, since NPLs can themselves be securitized, therefore it is assumed that an additional year is required for the bank to eventually opt for a securitization.

4. RESULTS

In this section, the results of the econometric analysis will be discussed. Table A6 reports marginal effects based on estimations in the three sectors. For each model, marginal effects for the alternative specification were also provided without the public guarantee dummy (GCS).

Table A6 shows that the chosen specification in terms of regressors and lags seems to adequately fit the SME indicator variable. All the marginal effects are significant at least at a 10% confidence level but the total assets, which is a scale variable controlling for the potential size effect at a bank level. As soon as other regressors are controlled, a change in a bank's size does not affect the probability for a SME securitization to occur at a confidence level smaller than 15%. The total assets (TA) regressor, instead, seems to have a significant impact on the probability of securitization in RMBS and, generally, in the "any sector" version of the model, where the occurrence of a securitization in any sector is considered.

The NPL ratio (NPLR) is significant in all the versions of the model with a confidence level of at least 10% (but in higher in most cases). It positively affects the probability of an SME securitization, implying that a higher NPLR makes an SME securitization more likely. On the other hand, it affects negative-

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12 The variable is named after the Italian name for the policy measure "Garanzia Cartolarizzazione Sofferenze."

ly the probability of securitizations in RMBS as well as the overall probability, when any sector is considered. This may suggest a congestion effect between securitizations in different sectors, implying that by increasing the probability in an SME securitization as a result of an increasing NPLR, the probability of other securitizations decreases.

Interestingly, a higher total capital ratio (TCR) reduces the probability of the securitization in the SME and RMBS sectors, while in the Any-sector model its effect, although negative, is not highly statistically significant. This may suggest that banks tend to securitize SME loans and RMBS in order to lower their capital requirements.

The interest-rate net margin also negatively affects probability of the securitization in all the estimated models. This may suggest that, in general, banks with higher margins on interest rate (i.e. more competitive banks) tend not to securitize their loans. Total assets (TA) tend to have a statistically significant marginal effect in the more general version of the model (Any-sector), whereas as for RMBS securitization, the marginal effect tends to be smaller both in magnitude and in significance.

The marginal effect of a change in the public guarantee for NPL securitizations, captured by the GCS indicator variable, as expected, is positive as far as SME securitizations are concerned. In fact, loans to SMEs tend to bear a higher risk related to macroeconomic conditions, and the emergence of NPLs is therefore more likely among SME loans. An interesting result is that the GCS dummy is statistically significant for the probability of an SME securitization, while it is not significant for determining the probability of securitizations in RMBS and in Any-sector. The SME model also performs better in terms of out-of-sample prediction. In fact, the Akaike information criterion reported in Table A6, gives the SME model a lower loss of information than "SME no GCS", implying that the former is preferable to the latter. RMBS and Any-sector, instead, perform better without the GCS dummy, indicating that it has no predictive power.[13] Therefore, the increase in securitizations in 2018 and in 2019 that is not justified on the ground of collateral-pledgeability to ECB, may instead be the result of fiscal policies related to NPLs.

5. DISCUSSION

As a result of the estimation, the public guarantee on NPL securitizations had a positive and significant impact on the probability for a securitization to occur. Therefore, the SME securitization process is somehow special with respect to securitizations in other sectors. In particular, it is found that it is more heavily affected by the dynamics of the NPL ratio and it is not significantly affected by a bank's size. Moreover, differently from other sectors for securitization, SME securitizations have been affected by a public guarantee aimed at fostering the dismission of NPLs, while other were not.

Despite the general reduction of securitizations, as emphasized in the previous sections, the economic relevance of SME securitization increased in the last two years. The econometric analysis suggests that an exogenous intervention deploying its effect in 2018 and 2019 had a positive impact on the probability (not on value) for a bank to securitize its SME loans. Therefore, the deploying effects of the public guarantee, likely acted as a structural break within the SME model, on top of an accommodating monetary policy which, instead, was in place since earlier. It is found that the impulse to SME securitization was plausibly originated by the public guarantee rather than by an accommodating monetary policy, thus underpinning the view that a monetary policy aimed at fostering credit to SME through admitting derivative securities as a collateral, may require an improved design. In particular, in some cases, addressing the cost of the securitization rather than the possibility to generate liquidity may lead to a larger value of SME securitization, implying larger credit to SMEs and higher efficiency of the transmission mechanism. This could be the case if banks securitize their loans essentially to pledge additional collateral and reduce the capital requirements. Such a scheme does not necessarily induce banks to give more credit just because part of the originated loans may be pledged as collateral, and actually seems to apply to already originated loans, thus implying that, in order to grant more loans, bank should also be assured that the costs related to the securitization can be sustainable.

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13   Results obtained in the pooled version of the model, reported in Table A7 in the Appendix, substantially support the result obtained in the present analysis.

CONCLUSION

The empirical evidence on securitization of loans to SMEs in Italy suggests that in the last two years (2018–2019) they have played a different role from that of the previous three years (2015–2017). In fact, from 2015 to 2017, the securitized loans were mainly a tool to obtain ECB liquidity, whereas in the last two years they have been used essentially to reduce the weight of non-performing loans.

Such a different role responds to a series of needs highlighted by the ECB and the EBA, but it is also the result of incentives provided in the form of public guarantees for senior tranches implemented by the Italian Government.

The impulses of the monetary policy authorities have likely been effective in coordinating the banking sector's strategy. However, it is useful to stress that, should the public guarantee be not implemented, the costs of the disposal of non-performing loans would have necessarily been higher and potentially unsustainable. In fact, the average cost of the operations was relatively high on average compared to previous years.

It has been found that SME-related securitizations are special with respect to other sectors. In fact, it has been also found that the 2018–2019 securitizations were plausibly originated by a public guarantee rather than accommodating monetary policy.

Therefore, it seems a paradox that the pursuit of microeconomic stability through the dismission of non-performing loans has been made economically sustainable by a fiscal intervention. Moreover, despite the public guarantee, the objective of improving allocative efficiency through a greater inflow of credit to businesses, and in particular to medium and small enterprises, can hardly be considered achieved. Because of high costs related to NPL disposal through securitization, any policy aiming at improving banks' soundness should take into account that the trade-off between profitability and soundness can be exacerbated and the target may be achieved only through a cost-reduction policy, as in the GCS policy case.

In fact, the reduction of non-performing loans through securitization does not seem to have stimulated loans to small and medium-sized enterprises. In the last two years the credit to SMEs has decreased steadily, also relatively to the total value of loans, despite massive disposals of impaired loans.

This implies that in order to guarantee the absolute credibility of the objectives of the supervision, there is a need to clearly state the objectives and to establish guidelines that are sustainable even in the absence of interventions by other public entities. This is necessary to preserve the central bank autonomy and ensure a level playing field in the Euro Area, regardless of the ability of the national government to intervene in support of the banking sector. The results discussed above arise as structural relationships in times of financial stability. The introduction of 2020 would inevitably lead to significant changes that may not be permanent. Analysis of the impact of COVID-19 policies on banks' decisions is left for further study as more observations will become available after the 2020 shock.

AUTHOR CONTRIBUTIONS

Conceptualization: Lucilla Bittucci, Stefano Marzioni, Pina Muré, Marco Spallone.
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Validation: Lucilla Bittucci, Stefano Marzioni, Pina Muré, Marco Spallone.
Writing – original draft: Lucilla Bittucci, Stefano Marzioni, Pina Muré, Marco Spallone.
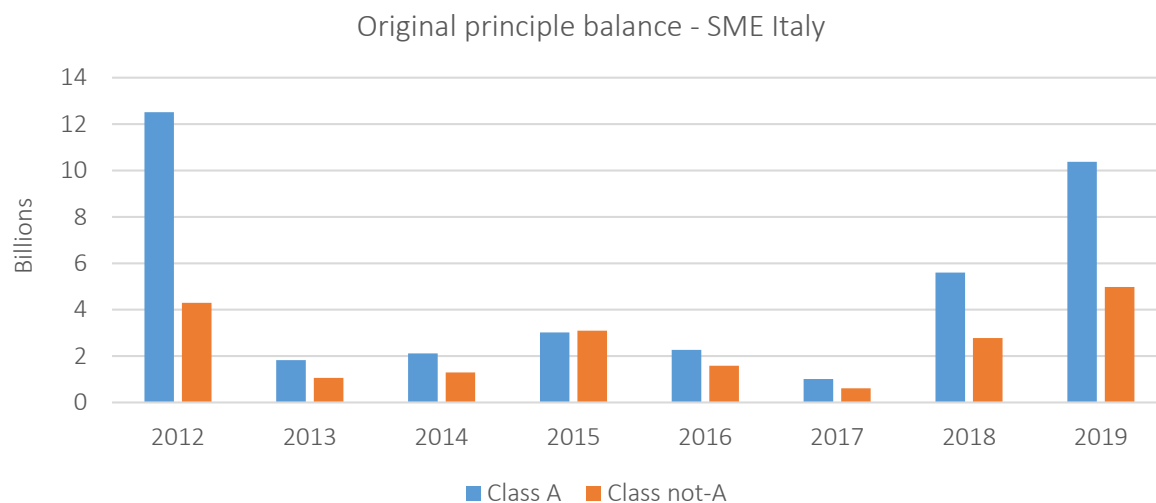
REFERENCES

1. Affinito, M., & Tagliaferri, E. (2010). Why do (or did?) banks securitize their loans? Evidence from Italy. *Journal of Financial Stability, 6*(4), 189-202. Retrieved from https://ideas.repec.org/a/eee/finsta/v6y-2010i4p189-202.html

2. Almazan, A., Oliver-Martin, A., & Saurina, J. (2015). Securitization and Banks' Capital Structure. *The Review of Corporate Finance Studies, 4*(2), 206-238. https://doi.org/10.1093/rcfs/cfv002

3. Altunbas, Y., Gambacorta, L., & Marques-Ibanez, D. (2009). Securitization and the bank lending channel. *European Economic Review, 53*(8), 996-1009. https://doi.org/10.1016/j.euroecorev.2009.03.004

4. Anastasiou, D. (2016). *Management and Resolution Methods of Non-performing Loans: A Review of the Literature* (MPRA Paper No. 77581). University Library of Munich, Germany. Retrieved from https://mpra.ub.uni-muenchen.de/77581/1/MPRA_paper_77581.pdf

5. Ayar, S., Al-Eyd, A., Barkbu, B., & Jobst, A. A. (2015). *Revitalizing Securitization for Small and Medium-Sized Enterprises in Europe* (IMF Staff Discussion Note No. SDN/15/07). Retrieved from https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2016/12/31/Revitalizing-Securitization-for-Small-and-Medium-Sized-Enterprises-in-Europe-42859

6. Aysun, U., & Hepp, R. (2011). Securitization and the balance sheet channel of monetary transmission. *Journal of Banking & Finance, 35*(8), 2111-2122. https://doi.org/10.1016/j.jbankfin.2011.01.011

7. Bank of England & European Central Bank. (2014). *The case for a better functioning securitization market in the European Union* (Discussion paper). Retrieved from https://www.ecb.europa.eu/pub/pdf/other/ecb-boe_case_better_functioning_securitisation_marketen.pdf

8. Bank of Italy. (2020). *Financial stability report 2020*. Retrieved from https://www.bancaditalia.it/pubblicazioni/rapporto-stabilita/index.html

9. Battaglia, F., & Gallo, A. (2013). Securitization and systemic risk: An empirical investigation on Italian banks over the financial crisis. *International Review of Financial Analysis, 30,* 274-286. https://doi.org/10.1016/j.irfa.2013.03.002

10. Ben Salah, N., & Fedhila, H. (2012). Effects of Securitization on Credit Risk and Banking Stability: Empirical Evidence from American Commercial Banks. *International Journal of Economics and Finance, 4*(5), 194-207. https://doi.org/10.5539/ijef.v4n5p194

11. Ben Salah, N., & Fedhila, H. (2014). The effect of securitization on US bank lending and monetary policy transmission. *Studies in Economics and Finance, 31*(2), 168-185. https://doi.org/10.1108/SEF-12-2012-0140

12. Bolognesi, E., Stucchi, P., & Miani, S. (2019). Are NPL-backed securities an investment opportunity? *Quarterly Review of Economics and Finance, 77,* 327-339. https://doi.org/10.1016/j.qref.2019.10.007

13. Bonner, C., Streitz, D., & Wedow, V. (2016). *On the Differential Impact of Securitization on Bank Lending During the Financial Crisis* (DNB Working Paper No. 501). De Nederlandsche Bank. Retrieved from https://www.dnb.nl/media/g2hh2lyc/working-paper-501.pdf

14. Calomiris, C., & Mason, J. (2004). Credit card securitization and regulatory arbitrage. *Journal of Financial Services Research, 26*(1), 5-27. https://doi.org/10.1023/B:FINA.0000029655.42748.d1

15. Casu, B., Clare, A., Sarkisyan, A., & Thomas, S. (2013). Securitization and Bank Performance. *Journal of Money, Credit and Banking, 45*(8), 1617-1658. https://doi.org/10.1111/jmcb.12064

16. Casu, B., Clare, A., Sarkisyan, A., & Thomas, S., (2011). Does securitization reduce credit risk taking? Empirical evidence from US bank holding companies. *The European Journal of Finance, 17*(9-10), 769-788. https://doi.org/10.1080/1351847X.2010.538526

17. European Banking Authority (EBA). (2016a). *Risk assessment of the European Banking System*. Retrieved from https://www.eba.europa.eu/sites/default/documents/files/documents/10180/1315397/46d91b9a-f393-4b54-96eb-df06ca01bec5/EBA%20Risk%20Assessment%20Report.pdf

18. European Banking Authority (EBA). (2016b). *EBA report on the dynamics and drivers of non-performing exposures in the EU banking sector*. Retrieved from https://www.eba.europa.eu/sites/default/documents/files/documents/10180/1360107/c6ad9c6f-e85d-4a1e-a20a-45911fcc2ff9/EBA%20Report%20on%20NPLs.pdf

19. European Banking Authority (EBA). (2019). *EBA Report on NPLs. Progress made and challenges ahead*. Retrieved from https://www.eba.europa.eu/sites/default/documents/files/document_library/Risk%20Analysis%20and%20Data/Risk%20Assessment%20Reports/2019//Final%20EBA%20Report%20on%20NPLs-for%20publication_final.pdf

20. European Central Bank (ECB). (2013). *Reactivating The European Abs Market: Challenges and Possible Remedies*. Retrieved from https://www.ecb.europa.eu/pub/pdf/other/mb201309_focus06.en.pdf

21. European Central Bank (ECB). (2016). *Draft guidance to banks on non-performing loans*. Retrieved from https://www.bankingsupervision.europa.eu/legalframework/publiccons/pdf/npl/npl_guidance.en.pdf

22. European Central Bank (ECB). (2017). *Guidance to banks on non-performing loans*. Retrieved from https://www.bankingsupervision.europa.eu/ecb/pub/pdf/guidance_on_npl.en.pdf

23. European Central Bank (ECB). (2018). *Addendum to the ECB Guidance to banks on non-performing loans: supervisory expectations for prudential provisioning of non-performing exposures*. Retrieved from https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.npl_addendum_201803.en.pdf

24. Guerello, C., Muré, P., Rovo, N., & Spallone, M. (2019). On the informative content of sanctions. *The North American Journal of Economics and Finance, 48,* 591-612. https://doi.org/10.1016/j.najef.2018.07.013

25. Hansel, D. N., & Bannier, C. E. (2008). *Determinants of European banks' engagement in loan securitization* (Discussion Paper Series 2: Banking and Financial Studies No. 10/2008). Deutsche Bundesbank. Retrieved from https://www.bundesbank.de/resource/blob/704276/d7a4b54529f5b-c57bf07df0aa74689d0/mL/2008-06-02-dkp-10-data.pdf

26. Kaya, O., & Masetti, O. (2019). Small and medium sized enterprises financing and securitization: firm-level evidence from the Euro-area. *Economic Inquiry, 57*(1), 391-409. https://doi.org/10.1111/ecin.12691

27. Kraemer-Eis, H., & Passaris, G. (2015). SME securitization in Europe. *The Journal of Structured Finance, 20*(4), 97-106. https://doi.org/10.3905/jsf.2015.20.4.097

28. Liu, B. (2006). Asset Securitization: Rational Choice of Disposing of Non-performing Loans Efficiently. *Journal of Hunan Institute of Engineering, 1,* 5-8. Retrieved from http://caod.oriprobe.com/order.htm?id=10199171&ftext=base

29. Loutskina, E. (2011). The role of securitization in bank liquidity and funding management. *Journal of Financial Economics, 100*(3), 663-684. https://doi.org/10.1016/j.jfineco.2011.02.005

30. Mazzuca, M. (2008), Why do banks securitize? The case of Italy. *21st Australasian Finance and Banking Conference 2008 Paper*. Retrieved from http://www.fin.ntu.edu.tw/~conference/conference2008/proceedings/proceeding/3/3-4(A15).pdf

31. Micucci, G., & Rossi, P. (2017). Debt Restructuring and the Role of Banks' Organizational Structure and Lending Technologies. *Journal of Financial Services Literature, 51*(3), 339-361. https://doi.org/10.1007/s10693-016-0250-5

32. Minton, B., Sanders, A., & Strahan, P. (2004). *Securitization by Banks and Finance Companies: Efficient Financial Contracting or Regulatory Arbitrage?* (Working Paper Series 2004-25). Ohio State University. Retrieved from https://ideas.repec.org/p/ecl/ohidic/2004-25.html

33. Uhde, A., & Michalak, T. C. (2010). Securitization and systematic risk in European banking: Empirical evidence. *Journal of Banking & Finance, 34*(12), 3061-3077. https://doi.org/10.1016/j.jbankfin.2010.07.012

34. Uzun, H., & Webb, E. (2007). Securitization and risk: empirical evidence on US banks. *Journal of Risk Finance, 8*(1), 11-23. https://doi.org/10.1108/15265940710721046
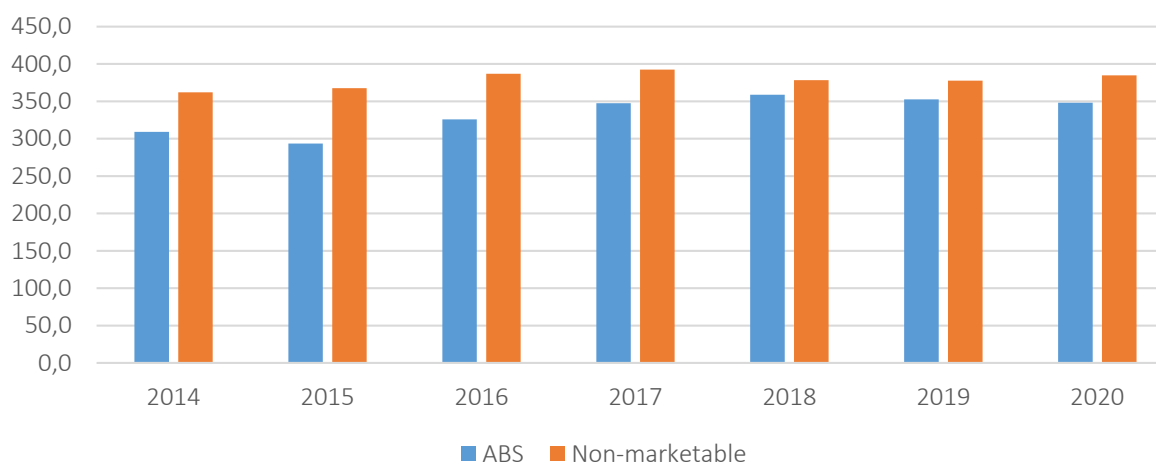
APPENDIX A

Original principle balance - SME Italy

Figure A1. Original balance of securitized loans to Italian SMEs (Euros)

Figure A2. Assets pledged in the Euro Area (Billions of euros, end-month average)

Table A1. Loans to Italian SMEs and firms

Loans	2013	2014	2015	2016	2017	2018
Outstanding loans from commercial banks o/w Italian SMEs (IMF)	49,512	46,398	42,451	39,012	35,600	33,852
Outstanding loans from commercial banks o/w Italian SMEs (IMF), % change	−9.4%	−6.3%	−8.5%	−8.1%	−8.7%	−4.9%
Credit to non-financial corporations (ECB)	866,019	851,147	834,087	822,749	804,504	795,467
Credit to non-financial corporations (ECB), % change	−4.5%	−1.7%	−2.0%	−1.4%	−2.2%	−1.1%

Table A2. Assets pledged as collateral from Italian banks to the Eurosystem

Pledged assets	2014	2015	2016	2017	2018	2019	2020
Total	283.5	253.7	297.3	321.2	310.5	303	344.6
Asset-backed securities (billions of euros)	40.0	35.5	44.0	49.9	49.7	46.9	45.2
Non-marketable assets (loans – billions of euros)	44.3	62.4	77.1	74.3	77.1	77.0	80.5
Asset-backed securities over total pledged assets (%)	14%	16%	14%	14%	15%	16%	13%
Non-marketable assets (loans) over total pledged assets (%)	15%	20%	26%	22%	24%	26%	23%

Table A3. Non-performing loans owned by Italian banks (billions of euros)

Variable	2014	2015	2016	2017	2018	2019
NPL	278	281	254	187	135	137
Loans	1637	1671	1661	1678	1630	1737
NPL/Total loans	17%	16.8%	15.3%	11.1%	8.3%	7.9%
NPL (var. %)	–	1.1%	−9.6%	−26.4%	−27.8%	1.5%
Total loans (var %)	–	2.1%	−0.6%	1.0%	−2.9%	6.6%

Table A4. Average relative margin of ABS issued on loans of Italian SMEs, weighted by their relative size with respect to the total in the year and proportion of Class A assets on total

Variable	2012	2013	2014	2015	2016	2017	2018	2019
Class A/Total	25.6%	36.8%	37.9%	50.7%	41.1%	37.8%	33.2%	32.4%
Relevant margin	0.29	1.47	0.67	0.44	0.54	0.20	0.69	0.64

Table A5. Total number of banks, in each year, whose loans are securitized

Variable	Variation type	Mean	Std. dev.	Min	Max	Obs.
NPL on equity	Overall	158.1026	134.4906	17.75324	747.2622	$N = 96$
	Between	–	106.7733	22.8268	432.0131	$n = 12$
	Within	–	82.2022	−129.5918	473.3516	$T = 8$
Total capital ratio	Overall	13.88143	2.401112	8.037669	18.91397	$N = 95$
	Between	–	1.810433	10.52154	16.17879	$n = 12$
	Within	–	1.712873	9.763676	17.73562	$T = 7.91667$
Interest rate net margin	Overall	1.473829	0.3495073	0.743923	2.336596	$N = 97$
	Between	–	0.2811532	0.8683011	2.044688	$n = 12$
	Within	–	0.217251	0.9573474	2.02293	$T = 8.08333$
Total assets	Overall	2.09E+11	2.84E+11	2.21E+10	9.27E+11	$N = 97$
	Between	–	2.82E+11	3.48E+10	8.65E+11	$n = 12$
	Within	–	2.72E+10	1.26E+11	3.16E+11	$T = 8.08333$
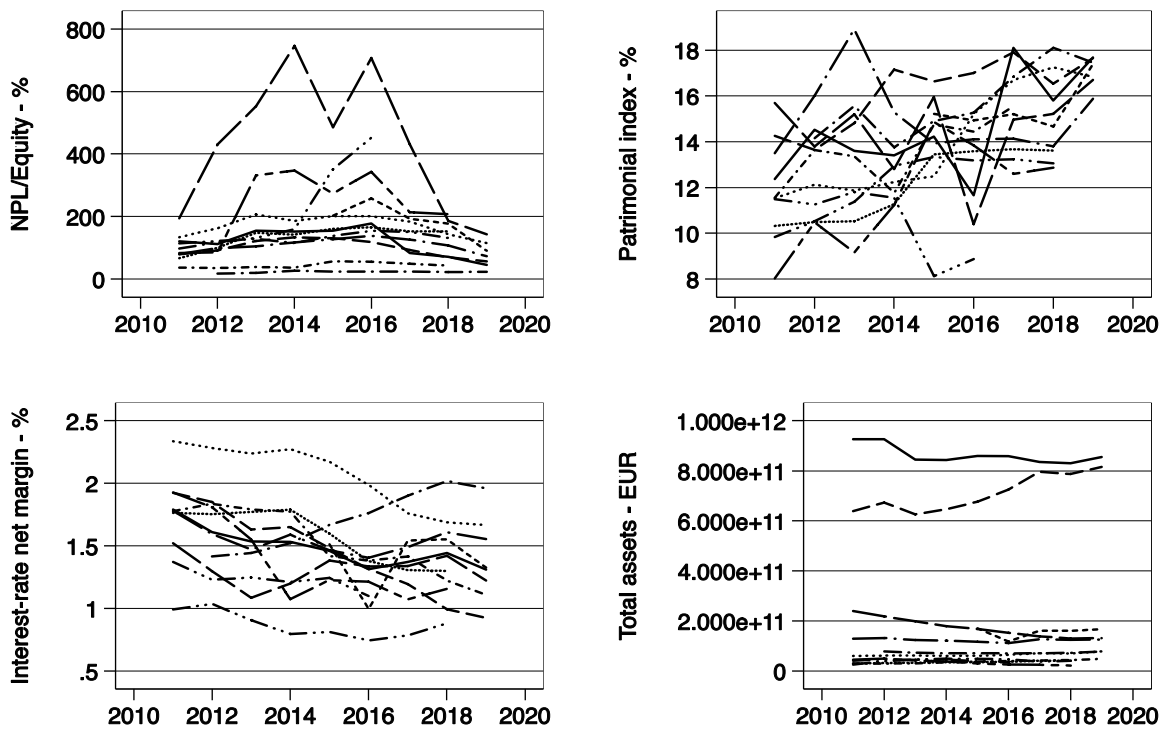
Figure A3. Dynamics of regressors
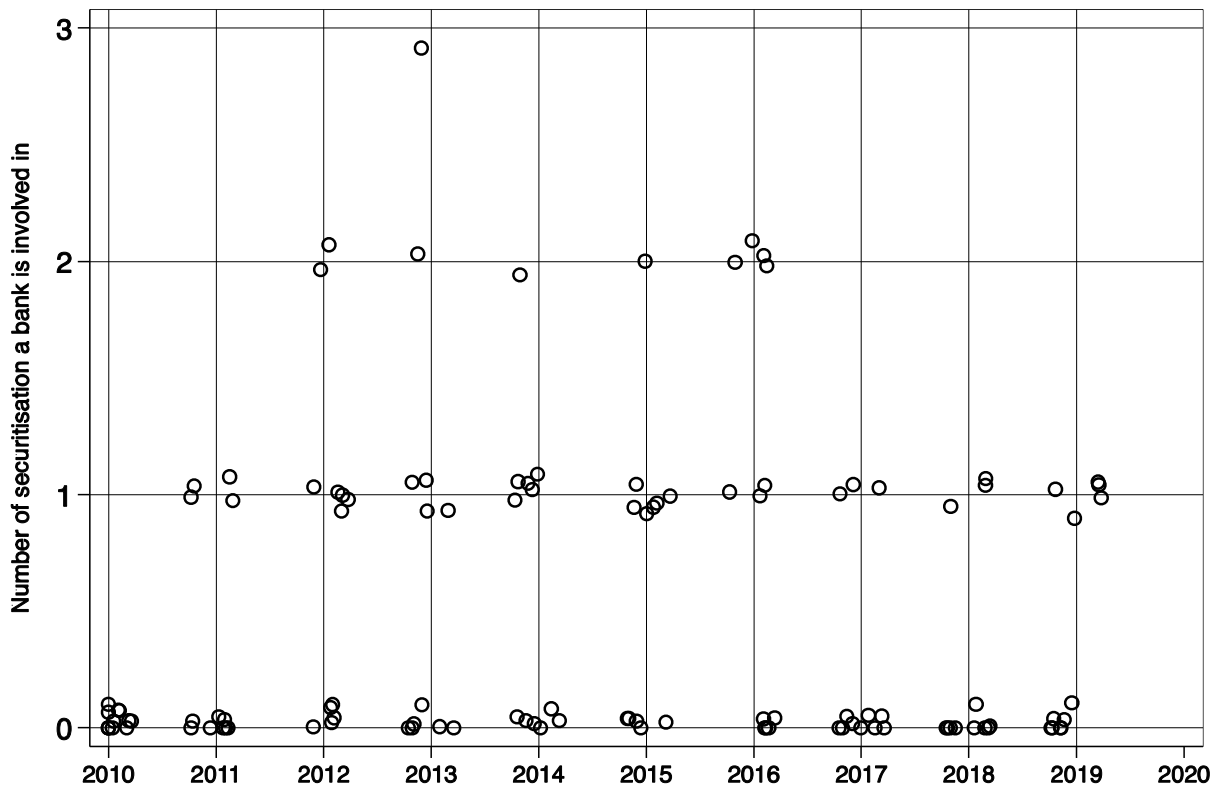
Figure A4. Securitization dynamics in Italy (number of securitizations in which a bank was involved)
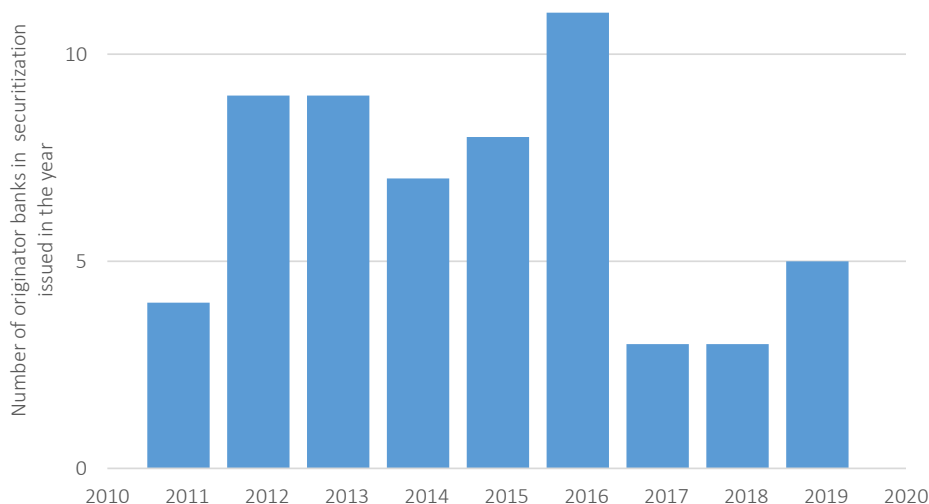
Figure A5. Securitization dynamics in Italy (number of originator banks issuing ABS)

Table A6. Logit estimation for SME, RMBS and Any-sector securitizations (t-statistics in parentheses)

Coefficient	SME	SME No gcs	RMBS	RMBS No gcs	Any sector	Any sector No gcs
NPLR(t–2)	0.103**	0.110***	−0.139**	−0.148**	−0.166**	−0.169***
	(1.82)	(1.96)	(−1.82)	(−1.92)	(−1.96)	(−2.03)
TCR(t–1)	−0.546***	−0.344*	−0.763***	−0.870***	−0.380	−0.421
	(−2.07)	(−1.46)	(−2.59)	(−3.17)	(−0.94)	(−1.15)
NIRM(t–1)	−0.384***	−0.390***	−0.433***	−0.411***	−0.606***	−0.605***
	(−2.42)	(−2.50)	(−2.30)	(−2.18)	(−2.49)	(−2.48)
TA(t–1)	0.0521	0.0374	0.0732*	0.0768*	0.117**	0.120**
	(1.30)	(0.94)	(1.50)	(1.58)	(1.80)	(1.89)
GCS	0.144**	–	−0.0984	–	−0.0296	–
	(1.69)	–	(−0.81)	–	(−0.24)	–
Observations	76	76	76	76	76	76
Akaike information criterion	62.87	63.57	64.54	63.25	102.16	100.21

Note: Marginal effects; *t* statistics in parentheses; * $p < 0.15$, ** $p < 0.10$, and *** $p < 0.05$.

Table A7. Pooled logit estimation (t-statistics in parentheses)

Coefficient	SME	SME No gcs	RMBS	RMBS No gcs	Any sector	Any sector No gcs
NPLR (t-2)	0.103**	0.110***	−0.121**	−0.131***	−0.183***	−0.187***
	(1.83)	(1.97)	(−1.91)	(−2.07)	(−2.76)	(−2.89)
TCR(t-1)	−0.546***	−0.344*	−0.804***	−0.907***	−0.491	−0.528*
	(−2.08)	(−1.47)	(−3.04)	(−3.78)	(−1.30)	(−1.56)
NIRM(t-1)	−0.384***	−0.390***	−0.382***	−0.369***	−0.616***	−0.614***
	(−2.44)	(−2.52)	(−2.53)	(−2.45)	(−2.99)	(−2.97)
TA(t-1)	0.0521	0.0374	0.0701**	0.0746**	0.135***	0.137***
	(1.30)	(0.94)	(1.76)	(1.92)	(2.78)	(2.94)
GCS	0.144**	–	−0.0982	–	−0.0285	–
	(1.70)	–	(−0.75)	–	(−0.22)	–
Observations	76	76	76	76	76	76

Note: Marginal effects; *t* statistics in parentheses; * $p < 0.15$, ** $p < 0.10$, and *** $p < 0.05$.