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The spillover effect of enforcement actions on bank risk-taking

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Abstract

This paper analyzes the causes and consequences of the enforcement actions (sanctions) imposed by supervisory authorities for banks. Focusing on a sample of Italian banks between 2005 and 2012, we found 302 sanctions regarding 3,588 persons (i.e. Board of directors, Top Managers, and Chief Executive Officers) were sanctioned in banks. We have three main results. First, enforcement actions are given to banks having high credit risk and poor Return on Assets (both one and two years in before the sanction). Second, sanctioned banks are unable to change their conduct in the first year following the enforcement sanction and the stability levels do not improve. Rather, it takes at least two years after an enforcement action so that banks are able to improve their stability. We also provide evidence that socio-eco-demographic differences in Italy have a substantial impact on the banks reaction after enforcement actions.

JEL classification: G20; G21; G32
Keywords: Enforcement actions, Supervisory, Credit Risk

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"He who spares the rod hates his son.
But he who loves him urgently instructs him"
(Proverbs, 13.24)

1. Introduction

Banking is one of the most heavily regulated industries worldwide and in each country there is an authority (usually, Central Banks) with the task of supervising bank activities and intermediaries. From the late 1980s onwards, a great effort of harmonizing worldwide banking regulation has been made with the Basel Committee on Banking Supervision reforms. The banking and financial crisis from 2007 onwards has clearly showed the new establishing framework of regulation and supervisions did not work well: regulators, academics and practitioners have been working together and debating to identify factors beyond the crisis.

Causes of the financial crisis can be traced in one of the following two cases:" bad regulation" and "bad supervision". Bad regulation cases may fall for one of the following theoretical events. First, there may have been a lack of regulation at the time of the crisis in some parts of financial systems, as intermediaries (e.g. investment banks), sectors (e.g. shadow banking), products (e.g. some securitized securities), supervision activities (e.g. resolution procedures, systemic risks) and countries (e.g. in the US, the Basel 2 reform was not yet applied, while it was in other banking systems). The second possible case is that the regulation existing at the time of the crisis was inaccurate (e.g. generating unintended effects, as procyclicality). From 2007, there is a vast number of academic papers (Saktinil Roy Kemme, 2012; Klomp, de Haan, 2012) and reports (Liikannen et al. 2012) that analyzed the causes of the crisis, identify the lack of regulation and proposed new solutions

On the other side, financial crisis may also be due to a bad supervision and there may be various theoretical cases. First, different Governments and supervisory authorities may have applied the same regulation framework in a different manner in their countries (as shown, e.g. by the differences security instruments recognized as Tier I and Tier II capital instruments across Europe).

Second, supervisory authorities in some countries may have been not careful in controlling banks (as suggested by the advocates of the Banking Union). In final, supervisory authorities may have ineffective type of sanctions to punish illegal and banks behaviors.

From the crisis eruption, a huge effort has been devoted in identifying and solves "bad regulation cases". There have been a great discussion on how improve the regulation framework (e.g. the Basel 2.5 and Basel 3 reforms), but surprisingly there is a minor attention toward the bad supervision cases, e.g. assessing the behavior of supervisory authorities and the types of sanction available. Regulatory sanctions play a critical role in promoting the objectives pursued by the rules of prudential supervision and regulatory information. In the same light, the Basel 2 Pillar II emphasizes the role of on-site inspections highlighting how they are able to: identify any weaknesses or inefficiencies in banking managerial processes, administration and internal control, verify the effectiveness and the quality of internal controls, ensure that communications provided by the intermediaries for the purpose of supervision is accurate and reliable (Basel Committee on Banking supervision, 2006). Therefore, the on-site inspections and enforcement actions (sanctions) are essential tools used by supervisory authorities to ensure the stability of the financial system (Quintyn and Taylor, 2002). A handful of papers have assessed the effectiveness of regulation. Some papers focus on the structure of supervision: specifically, La Porta et al. (2006) consider the degree of independence and authority of supervisors in the exercise of its control over intermediaries; and Noy (2004) focus on the degree of corruption and political freedom of the government authorities. Other papers assess the effectiveness of supervisions by looking at various banking market indicators, as Barth et al., 2008 that has collected data by surveys. Surprisingly, there are few papers (Delis and Staikouras, 2010; and Delis et al., 2013) assessing the causes and the effects of sanctions on banks. Delis and Staikouras (2010) assess the role of enforcement outputs (on-site audits and sanctions) in controlling bank risk by focusing on 16 countries and using data at the country level. The authors show an inverted U-shaped relationship between on-site audits and bank risk, while the relationship between sanctions and risk appears to be linear and negative. In a more recent paper, Delis et al., (2013) use data at individual bank level to assess the impact of enforcement actions on bank capital, risk, and performance focusing on the US. The authors collected all formal enforcement actions enacted by the FDIC, OCC, and FRB between 2000 and 2010 and show that different sanctions produce different effects. For instance, sanctions targeting internal control and risk management weaknesses are well timed and restrain increases in the risk-weighted assets ratio without impairing bank fundamentals; sanctions against institution-affiliated parties do not seem to affect bank behavior.

The limited empirical evidence on the effects of legal enforcement leads us to address the following two research questions: why do supervisory authorities sanction banks? And is the sanction effecting in changing the bank sanctioned banking behaviors. We find that banks with a higher level of risk are more likely to be sanctioned. With a probit model we calculated the probability for a bank to be sanctioned on the basis of credit risk, market and liquidity risk. Regarding the effects of the sanctions, we show that time plays a key role: sanctioned banks are unable to change their conduct in the first year following the enforcement sanction and their stability does not improve. Rather, it takes at least two years after an enforcement action so that banks are able to improve their stability. Specifically, we show that these results are also consistent when we use a different measure focusing on credit risk, i.e. doubtful loan ratios. We also show that it is important to consider socio-eco-demographic difference in Italy since these have an impact on the banks reaction after enforcement actions.

Our paper focuses on the Italian banking system. The Italian banking system is one of the most important in Europe: in 2012, Italy is the fourth largest banking market for total loans with 2.47 Euro trillions (after Germany, France and UK, respectively), for total assets with 4.22 Euro trillions (after UK, Germany and France, respectively) and for number of employees (after Germany, UK, and France, respectively)[1]. More interestingly, Bank of Italy (responsible for supervising Italian banks) is

[1] Source of data: European Banking Federation (EBF), Banking Sector Statistics Database 2012

one of the oldest banking supervisors that has been traditionally very active and severe in controlling Italian banks with on-site inspections: e.g. Bank of Italy has two independent department for off-site and on-site inspections, the number of on-site inspections between 2005 and 2012 was 927 (i.e. almost 20% of Italian banks supervised by Bank of Italy), 302 Banks in our sample have been formally sanctioned, and 3,588 persons in banks (among Board of directors, Top Managers, and Chief Executive Officers) have been personally sanctioned.

The remainder of the paper is organized as follows. In section 2, we review previous papers and develop our research hypotheses. Next, we describe our variable (section 3), data (section 4) and econometric approach (section 5). We discuss our results in section 6 and section 7 concludes

2. Literature Review and hypothesis

2.1 Off-site surveillance systems and on-site inspections

Banking supervision aims to ensure banks' compliance with the regulations and consists of various specific tools, such as remote controls (off-site surveillance systems) and spot checks (on-site inspections).

Off-site surveillance systems are conducted regularly by the supervisory authorities with the aim of: 1) ensuring that intermediaries comply with the prudential rules and the operating limits in time; 2) monitoring, with a preventive view, the evolution of business management; 3) verifying the effectiveness of interventions for the removal of deficiencies or abnormalities promoted by the banking management (Bank of Italy, 2008). Off-site surveillance systems are based on public corporate documents and supervision communications (i.e. financial, regulatory reporting mandatory, mandatory disclosures relating to the detention of significant shareholdings, etc.).

On-site inspections are performed on the basis of an annual plan for inspections and are based on confidential banking information and documents collected during the inspection by supervisors. Supervisors provide for three different types of inspections: 1) investigation wide-spectrum; 2) targeted/thematic; and 3) follow-up. The former focuses on the analysis of the overall business, with specific reference to the risks relevant to the supervisory authority. Targeted inspections relate to specific areas of activity, areas of risk or operational or technical aspects. Finally, the follow-up inspections verify the effectiveness of corrective action initiative promoted by the intermediary or solicited by the authority. Once the inspection is drawn up, a summary report (with indication of findings and observations) is delivered to the top management of the bank for the appropriate counter-arguments and subsequent interventions. In cases where it is required by law, shall be notified to interested persons a process of assessment relating to the presence of administrative offenses punishable (Bank of Italy, 2013). The framework of prudential supervision has been strengthened also in the perspective of Basle II since the 3 pillars (capital adequacy, prudential supervision and transparency towards the market) induce banks to take a more cautious behavior towards risk-taking (including others, Beck, Demirguc-Kunt and Levine, 2006; Demirguc-Kunt, Detragiache and Tressel, 2008).

2.2 The relationship between risk-taking and supervisory activity

The are few papers (Delis and Staikouras, 2011; Delis et al. 2013) providing empirical evidence about the relationship among bank risk-taking, supervisory activity and supervisors' enforcement actions, although this is crucial to ensure a high degree of compliance of the banking system (Mishkin, 2000; Black, 2001). In contrast, there is a substantial number of papers analyzing the relationship banking regulation (in the form of capital adequacy and disclosure requirements) and banking fragility (e.g. Hyytinen and Takalo, 2002; Chen and Hasan, 2006; Demirguc-Kunt, Detragiache and Tressel, 2008). However, they neglect the event of sanctions provided by the authorities and the impact on the supervised party. In this context, the few existing studies focus on U.S. banks and the supervisory reports issued annually by the Fed as a result of on-site inspections. The American supervisory banking system, in fact, provides the off-site monitoring systems based mainly on balance sheet data (call reports) prepared periodically by the banks and the annual on-site exams. During an on-site visit to exam regulators bank's offices and evaluate its financial soundness and compliance with laws, its system of internal control and its quality of management and at the end of the inspection is given a rating (CAMEL - Capital, Asset Quality, Management, Earning). A first analysis carried out by the U.S. General Accounting (U.S. GAO, 1991) on a sample of 72 formal enforcement actions such as sanctions for the benefit of confirmation on the level of bank capital. A subsequent study (Peek and Rosengren, 1995) suggests instead that the actions imposed on banks of New England during the period 1989-1993 by the FDIC and the OCC had an impact of reduction of bank loans rather than increases in bank capital.

Cole and Gunther (1998) empirically test the different predictive ability of the on-site inspection on U.S. bank failures compared to off site inspections; the authors find that the probability of default is anticipated by the financial ratios (used in off-site exams) rather than by CAMEL rating. However, the same authors argue that the reliability of accounting data (from which you can go back to a system of early warning off site) is affected by the presence of frequent on-site exams.

Bergern and Davis (1998) argues that the outcome of an on-site examination transmitted to the market can be divided into three types: auditing information, refer to the accuracy and truthfulness of accounting information; regulatory disciplines information, relating to the compliance of the bank to the supervisory disciplines; private information, refer to the overall condition of the bank (not encoded in the records); the analysis reveals that the information contained in CAMEL ratings also incorporate private information, can generate a change in share market prices. Subsequently, the theoretical studies of Milne (2002) and Furfine (2001) show that the threat of sanctions is forcing banks to reduce their exposure to credit risk.

Recently, Delis and Staikouras (2011) verify the relationship between regulation, supervisory effectiveness and bank risk using a sample of banks relating to seventeen countries over the period 1998-2008; the risk of the bank is measured with the non-performing loan ratio (NPLs/Loans) and the Z-score, the research shows the existence of a negative relationship between sanctions and risk of the bank and an inverted U-shaped relationship between on-site audits and bank risk. Finally, the study by Delis et al. (2013) investigates the effects of the 14 possible types of sanctions imposed on U.S. banks by the three supervisors (FIDC, OCC, FRB) using quarterly data for the period 2000-2010. The analysis considers the 4 years before and after the sanction and examines the characteristics of the bank in terms of capital (risk-based capital ratio, Tier 1 risk-based capital ratio, Tier 2 risk-based capital ratio) and bank risk and profitability (risk - weighted assets ratio, ROA, volatility of ROA and Z- score). The results confirm that high levels of bank risk make it more likely sanctions related to bank safety and soundness reduce the risk-weighted asset ratio but extend the volatility of ROA and the risk of insolvency probably because they are paid late. On the contrary, the sanctions related to internal control and risk management reduce the risk-weighted assets ratio without impairing bank fundamentals.

The present work focuses on the final results of the supervisory inspections, unlike previous studies based on the CAMEL rating (Cole and Gunther, 1998; Berger and Davis, 1998), empirical verification is based only on the banks sanctioned by the authority. It is not available to us the data on individual inspections or any opinion expressed, as well as the proposed corrective actions which are not followed sanctions. For example, in 2011 about 740 169 supervised banks have been the subject of an on-site inspection, among these, only 65 have received a penalty, while the others have been the subject of recommendations without any financial penalty against corporate officers (Bank of Italy, 2011; Bank of Italy, 2012).

Based on the previous studies, the empirical analysis aims to test the following hypotheses:

Hypothesis 1 (H1): riskier banks are more likely to be sanctioned by authorities.

Hypothesis 2 (H2) in the aftermath of the sanction, the risk exposure of the bank sanctioned is reduced.

3. Data

Data have been collected from various sources. First, we collected accounting and financial data from individual bank balance sheet data from the Italian Banking Association (ABI) database. Second, data about enforcement sanctions have been collected by hand from the Bank of Italy supervisory bulletins: over the period 2005-2012, we found that 3,588 persons (i.e. Board of directors, Top Managers, and Chief Executive Officers) were sanctioned in banks. Sanctions have been imposed, usually (though not exclusively) by inspections, a supervisory banking tool that provides to collect information and data on the results of intermediaries (Bank of Italy, 2013). We also collected from the Bank of Italy supervisory bulletins data about banks that have been forced to liquidation. Third, we also collected data from Bank of Italy concerning the regional distribution of branches, the location of bank headquarter and M&A operations. The third type of data is that of the regional GDP, obtained from ISTAT for the years 2005-2011.

The descriptive statistics reported in Table 2 show for the sample of banks (2005-2011 period), a total of 302 sanctions. The sanctions related to "deficiencies in organizational and internal control" reported 214 banks, and it's more frequently case. Sanctions related to credit risk (S1 and S2) are the most numerous, with 186 and 93 cases. The sanctions related to other reason are few in number. In detail are sanctioned 286 CEO, with average sanction amount of 16,100 euros per person. The number of Board of Directors sanctioned is 284 with an average sanction amount of 114.210 euros for each Board. The number of Board of Auditors sanctioned is 255, with an average fine amount of 29.140 euros per Board. The other descriptive statistics are properly reported in the Table 1.

< INSERT HERE TABLE 1 >

4. Variables

This section illustrates the variable used in the empirical analysis. First, we describe supervisory variables, then we summarize bank-level indicators and, in final, we report our macroeconomics variables. All variable used in the econometric model, except for dummy variable, are build in a standardized way as $\xi_{\mathrm{ikt}} - \overline{\xi_{kt}}$ where ξ_{ikt} is the value for the variable ξ for the year *t* of observation, the region k-th and the i-th bank and $\overline{\xi_{kt}}$ represents the average of the variable with reference to the year *t* to the k-th region. The standardization approach takes into consideration the operations of the bank in terms of branches at regional level. The banks that have branches in one region are defined as regional banks and the value $\overline{\xi_{kt}}$ is calculated taking into account the average of the variable for the year *t* for the specific region k. For banks that operate in two or more regions, the value $\overline{\xi_{kt}}$ is calculated as the average value of the variable refers to the entire banking system in year *t*.

4.1 Supervisory variables

Supervisory activity data have been hand-collected from the Bank of Italy Supervision Monthly Bulletin between 2005 and 2012.

We classified the sanction is various dummy variables that takes value equal 1, if a bank received a sanction in year *t*, and 0 otherwise. We create a variable for each of the following eight types of sanction. Specifically, we consider: 1) all deficiencies in organization and internal controls (labeled as "*generic organizational failure", S_1*); 2) faults (in organization, internal controls and management) related to lending: e.g. inaccurateness of the credit process and analysis of borrowers' creditworthiness (*credit risk failure, S_2*); 3) lack of reporting of impaired loans and loan loss provisions to the Supervisory Authority (*omitted credit risk disclosure, S_3*); 4) all cases of inaccurate or missing reports (*reporting and disclosure failure, S_4*). There are various type of event in this class as: a) inaccurate or missing reports of a big loans to the Supervisory Board; b) inaccurate or missing report to the Central Credit Register of any loans; b) any late communications to the Supervisory Authority; d) deficiencies in the process of reporting and control of consolidated reports; 5) inaccurate or missing communication to customers of regulation (*customer disclosure failure, S_5*); 6) violation of the regulation on risk concentration; non-compliance with the Minimum Capital Requirement; violation of the rules on risk mitigation techniques (*supervisory requirement failure, S_6*); 7) deficiencies regarding the management and control of other types of risk as liquidity, operational and market risks (*liquidity, operational and market risk, S_7*); 8) all other residual sanctions (*other sanctions, S_7*)

For each sanction, we also collected data in three dimensions: the organizational unit sanctioned, the number of people sanctioned components each organizational unit, the total amount of the sanction. Regarding the organizational unit, we build two dummy variables: the first variable (BSA) takes the value of 1 if the sanction refers to the Chief Financial Officer, or the Managing Director, or the Board of Directors; 0 otherwise. The second dummy variable (ASA) takes the value 1 if at least one member of the Board of Auditors received a sanction, 0 otherwise. The other two sanction variables refer to the number of people sanctioned (i.e. the Number of members sanctioned in the Board of Directors and Auditors, respectively BSA and NASA).

In order to assess the effect of sanctions, we also collected two other variables to capture if a sanctioned banks then is merged or forced to be liquidated (labeled as "Compulsory Administrative Liquidation", i.e. an extraordinary measure taken by the Bank of Italy for liquidating insolvent banks). Specifically, we have two variables: MA (Merger and Acquisition) taking value 1 if the bank was merged or acquired, and 0 otherwise: CAL (Compulsory Administrative Liquidation) taking value 1 if the bank was forced to be liquidated), and 0 otherwise.

All variables are described in the Table 1.

4.2. Bank-level and macro-economic variables

Data about accounting and financial information have been selected from the Italian Banking Association database.

First, we measure bank stability by using the Z-score that has been extensively used in banking papers (as in Houston et al., 2010; Demirguc-Kunt and Huizinga, 2010; Laeven and Levine, 2009; Fiordelisi and Mare, 2014, among the others). The Z-score is a proxy for the banks' distance to default (i.e. the number of standard deviations by which the banks' profitability has to fall to devour the entire capital buffer) and it is calculated as:

$$Z_{it} = \frac{\frac{E}{TA_{it}} + ROA_{it}}{a(ROA)_i} \tag{1}$$

where the *i* subscript denotes the cross-sectional dimension across banks; *t* denotes the time dimension; $Z_{i,t}$ is the Z-Score; $\frac{E}{TA_{it}}$ denotes the leverage ratio [i.e., the share of total equity (E) in total asset (TA)*]*, ROA is the return on asset, and $a(ROA)$ is the standard deviation of the return on asset. As such, a high Z-score implies a lower default probability. Since the Z-score is highly skewed, following the indication of Laeven and Levine, (2009) and Schaeck et al., (2012) we smooth extreme values taking the logarithmic transformation of the variable.

We also calculate various variables to account for credit risk according to severity of the losses. Specifically, we build the ratio between non-performing loans and Total Assets (CR1); the ratio between past due loans in arrears by 6 months and total assets (CR2); the ratio between restructured loans and total assets (CR3); the ratio between doubtful assets plus substandard loans over total assets (CR4). In final, we also make a variable to account for the overall credit risk, i.e. the ratio between total problem loans (i.e. the sum of non-performing loans, past due loans in arrears by 6 months, restructured loans, and doubtful assets plus substandard loans) to total assets (CR). As robustness check, we also use as a measure of credit risk, i.e. the ratio of new non performing loans produced in year t and the amount of gross performing loans at year *t-1*. The relevance of default rate is due the fact that it measures only the new NPLs produced during the year, by neutralizing the effects of securitization, a sudden change in the amount of the loan portfolio and the serial correlation problems.

We calculate some variables related to Liquidity and Market Risks. Specifically, the Liquidity Risk is calculated as cash and due from banks over total demand deposits, and Market Risk is estimated as the sum of government bond and corporate bonds divided to Total assets minus tangible and intangible assets. We also include various control variables related bank profitability (Return on Assets, ROA), cost inefficiency (operating costs on operating income), size (logarithm of Total Assets), and capitalization (Capital Ratio, i.e. Equity/Total Assets). We also consider various macroeconomics variables such as the Italian GDP per capita (GDP), Inflation (INFL), and Domestic Current Account (DCA).

5. Econometric approach

In order to answer our research questions, we need to adopt two different empirical strategies to assess the causes and the consequence of the sanctions.

5.1 Methods: assessing causes of sanctions

To investigate the cause of the sanctions we perform a Probit model as shown below:

$$(\ _{it}) = \ _{it} + \ _{it} + \ _{i\ t} \qquad (\ )$$

The “Sanction” dependent variable is a dummy that takes the value 1 if the bank is sanctioned in year t, 0 otherwise, *X* is a vector of bank characteristics, C is a vector of macroeconomic variables, , . We also include in the regression the dummy for the years (Year Fixed Effect) and belonging to the geographical area of the bank (Geographical Fixed Effect). To check if the supervisory Authority operates with a certain time lag broad, we also perform the same regression using as regressors the values *X* and *C* of variables at year *t-2*.

5.2 Methods: assessing consequences of sanctions

We analyze the impact that supervisory sanctions have an on various indicators of bank stability and risk. Our assumption is that each bank choses the level of stability (and consequently, assumes a desired level of risks), which fits best its features, and adjust it over time. To determine whether the institutional environment and, especially, sanctions significantly affect bank’s adjustment speeds, we start by estimating a partial adjustment model of bank stability as:

$$Z_{it} - Z_{it} = y(Z^{*}_{it} - Z_{it}\ ) + \ _{i\ t} \qquad (3)$$

where i denotes the bank, t denotes the time, Z is the Z-index measuring the distance to default at time t, Z^*_{it} is the desired level of stability and y is the proportional adjustment during one year (i.e. the average speed at which banks will bring back the stability on the desired level). This specification assumes that all sample banks adjust their stability level uniformly at a constant rate $\grave{A}$.

We assume that the desired level of bank stability (Z*) is influenced by various variables at the bank-level (X) and country level (C) by including a set of firm effects to control for unobserved heterogeneity.

$$Z^*_{i\ t} = \quad {}_{it} \quad + \quad {}_{t} \quad + f_i + r_t \qquad (4)$$

where X is a vector of bank characteristics, C is a vector of macroeconomic variables; , and f are the parameter to be estimated. Plugging (4) into (5), we obtain:

$$Z_{i\ t} - Z_{i\ t} \quad = y(\quad {}_{it} \quad + \quad {}_{t} \quad + f_i + r_t - Z_{i\ t} \quad) + \quad {}_{i\ t} \qquad (S)$$

We rearrange the equation (5) in the following estimable model:

$$Z_{i\ t} = (1 - y)Z_{i\ t} \quad + (y \quad) \quad {}_{it} \quad + (y \quad) \quad {}_{t} \quad + yf_i + yr_t + \quad {}_{i\ t} \qquad (6)$$

In order to test if the supervisory sanctions have an impact on the speed of adjustment, we use the coefficient estimated in the first step to calculate Z^*_{it}. Next, we subtract the actual level of stability from the calculated desired level of soundness to have a proxy for the deviation of each bank from its desired level of stability which we name GAP_{it}, finally letting the adjustment speed be a function of banks and country characteristics we can rewrite the equation (3) as follows:

$$Z_{it} - Z_{it} \quad = p_{i\ t}(GAP_{it}) + \quad {}_{i\ t} \qquad (\ )$$

Where $p_{i\ t}$ is the following:

$$p_{i\ t} = i \backslash Q_{i\ t} \quad = y_o + i \backslash^{X} \quad {}_{it} \quad + i \backslash^{c} \quad {}_{t} \qquad (8)$$

In final, we estimate $i\backslash$ using OLS form:

$$Z_{i\ t} - Z_{i\ t} \quad = i\backslash Q_{i\ t} \quad (GAP_{it}) + \quad _{i\ t} \qquad (9)$$

The coefficients' vector $i\backslash^{c}$ will give us an estimation of the impact of the supervisory style on the speed of adjustment.

6. Empirical results: the causes of sanctions

First of all, we run a univariate analysis of the data by comparing sanctioned banks' risk with non-sanctioned bank. As shown in table 3, our results show how the sanctioned-banks always provide a greater degree of credit risk than the other, regardless of the measure (default rate or other degrees of credit risk). The relation is significant at the 1%. With a 5% significance level sanctioned banks have a higher market risk, while liquidity risk not reports statistical significance.

<< INSERT HERE TABLE 3 >>

The results deriving from the probit regression model partially confirm the evidence obtained with the univariate analysis. In the Tables 4 and 5, we report results for probit models estimated by using one- and two-years lagged independent variables. We show both coefficient estimates (Panel A) and marginal effects estimates (panel B) of our regressors, i.e. how much the (conditional) probability of a bank to be sanctioned when there is a change of the value of a given regressor, holding all other regressors constant at some values.

<< INSERT HERE TABLE 4 >>

Focusing on one-year lagged variables (table 4), we show that banks with a higher level of credit risk at the time *t-1* have a greater likelihood of being sanctioned in year *t*. This relationship is statistically significant with reference to all credit risk measures adopted, specifically the overall credit risk (CR), all various sub-components of credit risk (i.e. CR1, CR2, CR3, and CR4) and the Default Rate (DR). Looking at the marginal effect, we find that the restructured loans ratio (CR3) has the greatest influence on the probability to be sanctioned, followed by past due loans ratio (CR2), the non-performing loans ratio (CR1) and the doubtful loans ratio (CR4). This suggests that banks with a higher credit risk have a greater probability to be sanctioned in the future. We do not find substantial evidence that market and liquidity risk have a statistical significant link with the probability to be sanctioned. In final, we find that banks' level of profitability (measured by ROA) at the time *t-1* display a negatively and statistically significant (with $p<0.01$) the probability to be sanctioned at the time *t*. We find strongly consistent results by analyzing the probability to be sanctioned with two-years lagged variables (table 5). It should also be noted that the dummy related to geographical Fixed Effect (the coefficient is not shown in the table) are significant and statistical significant with South of Italy dummy.

<< INSERT HERE TABLE 5 >>

To verify the relationship between the probability of being sanctioned and the various risk variables we declined the sanctions in the different categories (S_1, S_2, ..., S_8). Due to the small number of observations in some sub-categories, we have to limit our analysis to sanctions due to general organizational and internal control failures (S_1), deficiencies in the credit process (S_2), and omitted credit risk disclosure (S_3). Results are shown in the Tables 6 and 7 focusing on one- and two-years period.

<< INSERT HERE TABLES 6 AND 7 >>

Using as dependent variable S_1 (general organizational and internal control failures), we find that all risk measures (credit, market and liquidity) at time *t-1* do not display a statistically significant link (with $p<0.1$) with probability of being sanctioned (table 6, models 1 and 2). Conversely, we find that all risk measures (credit, market and liquidity) at time *t-2* are positively and statistically significant related to the probability of being sanctioned (table 7, models 1 and 2). In all cases (*t-1* and *t-2*), The ROA is a statistically significant predictor of the sanction S_1: as the ROA decreases, the higher is the probability of being sanctioned. This seems to suggest that more profitable banks put a great care in the general organizational and internal controls and so that are able to avoid failures in future.

When we use S_2 (i.e. deficiencies in the credit process) as dependent variable (tables 6 and 7, models 3 and 4), we find that the probability to be sanctioned for bank deficiencies in the credit process display a positive and statistically significant link with the overall credit risk (CR) in the model 3 and the CR_1 (i.e. the non performing loan ratio) at the time *t-1* in the model 4. These findings are strongly consistent when we use both one- or two-year lagged credit risk variables (table 6 and 8, respectively). While this result is not surprising (we show that the quality of a bank loan portfolio is a related to the probability to be sanctioned for inadequacy in the credit process in future), this also provides empirical evidence that the Bank of Italy focus on-site inspections on banks with a poor quality of the loan portfolio. Surprisingly, we also show that the probability of being sanctioned for inadequacies in the credit process is related to the market risk at the time *t-1*.

When we use S_3 (i.e. deficiencies to reporting credit losses to supervisory authority) as dependent variable (models 5 and 6), we find very consistent results with the previous case (S_2). Specifically, the probability to be sanctioned displays a positive and statistically significant link with the overall credit risk (CR) both at the time *t-1* and *t-2* in the model 5 and the CR_1 (i.e. the non performing loan ratio) both at the time *t-1* and *t-2* in the model 6. Furthermore, we find that CR_4 (i.e. the doubtful loans ratio) at the time *t-1* in model 6 is a statistically significant predictor of S_2: this suggests that the supervisory authority strength their control on banks with a greater amount of doubtful loans. In addition, we find that the liquidity risk (LR) at time *t-1* is negatively and statistically significantly related to the probability to be sanctioned.

6. Empirical results: the consequences of sanctions

In this section, we report our analysis about the impact of supervisory sanctions on bank stability (measured by the Z score) and risk (measured by credit risks). We used a two-step analysis: in the first step, we estimate the link between enforcement actions and the level of bank stability and risk (after one and two years) as stated in the model (7). In the second step, we estimate the impact of sanctions on relationship ($i\backslash$) between the adjustment speed of bank stability level over time ($Z_{it} - Z_{it}$) and the distance between the desired and actual level of stability (*GAP*) as stated in the model (10).

<< INSERT HERE TABLE 8 >>

First, we analyze the link between enforcement actions and bank stability over 1 and 2 years (i.e. bank Z score is measured at time *t* and sanctions are measured at time *t-1* and *t-2*, respectively). As shown in the table 8 (panel A), sanctions at time *t-1* display a negative and statistically significant ($p<0.01$) relationship with bank stability at time *t* (model 1). In order to check the robustness of this results, we omit from the sample banks that were forced to M&A after the sanction (model 3): overall, results are very consistent and the link between enforcement actions and Z score remains negative, statistically significant and the magnitude of estimated coefficient is very similar. Overall, our results suggest that sanctioned banks are unable to change their conduct over 1 year and stability levels do not improve. In models 2 and 4, we analyze the link between enforcement actions and bank stability over 2 years (i.e. sanctions are measured at time *t-2* and bank Z score at time *t*). In this case, estimated coefficients for the sanction dummy variable (both in models 2 and 4) is positive, statistically significant and very consistent each other. As such, we show that time plays a fundamental role to see the effect of sanctions: specifically, it is necessary at least a period of two years after an enforcement action so that banks are able to improve their stability. We also controlled for various factors at the bank-level, as bank inefficiency (cost-income ratio, CI) and credit risk (CR_1): we find a negative link between bank stability and cost inefficiency and credit risk, respectively. Not surprisingly, bank stability at the time *t* decline as cost inefficiency (both at time *t-1* and *t-2*) and credit risk (both at time *t-1* and *t-2*) increase. In the second step of our analysis (Table 8, panel B), we estimated the role of sanctions on banks adjustment speed of stability levels over two consecutive years (*t* and *t-1*). Overall, we find that sanctions do not play a statistically significant role on banks adjustment speed in both one- and two-years period (models from 1 to 4): as such, sanctions have an influence on the bank desired level of stability, but not the adjustment speed.

<< INSERT HERE TABLES 9 AND 10>>

Second, we analyze the link between enforcement actions and bank stability over 1 and 2 years (i.e. bank Z score is measured at time *t* and sanctions are measured at time *t-1* and *t-2*, respectively) by distinguishing among different type of enforcement actions (tables 9 and 10). Specifically, we find that all sanction variables used [i.e. sanctions related to credit risk (CSA), sanctions not related to credit risk (NCSA), sanctions regard members of the board of director or the managing director (BSA), the number of members of the board of director sanctioned (NBSA), the number of members of the board of auditors sanctioned (NASA)] at time *t-1* display a negative and statistically significant link with bank stability (measured by the Z-index) at time *t* (Table 9). Consistently with results in table 7, our results suggest that sanctioned banks are unable to change their conduct over 1 year and stability levels do not improve. Surprisingly, we do not find that any of the sanction variables used at time *t-2* display a statistically significant link (although coefficient estimates are still positive) with bank stability (measured by the Z-index) at time *t* (Table 10).

<< INSERT HERE TABLE 11 >>

Third, we change the measure of bank stability from a general measure (as the Z score expressing the bank distance to default) to a specific credit risk measure. Specifically, we reply our two steps approach for all credit risk measures, i.e. CR_1, CR_2, CR_3, CR_4, CR. We do not find a statistically significant link (with $p<0.1$) between sanctions and none of these credit risk, expect for the CR_4 (i.e. doubtful loans ratio). Focusing on this variable (Table 11), we shown in the panel A that sanctions at time *t-1* display a positive and statistically significant ($p<0.01$) relationship with bank credit risk at time *t* (model 1) suggesting that sanctioned banks are unable to change their conduct over 1 year and the doubtful loan ratio do not improve. In models 2, we analyze the link between enforcement actions and credit risk over 2 years (i.e. sanctions are measured at time *t-2* and CR_4 at time *t*). In this case, estimated coefficients for the sanction dummy variable is negative and statistically significant (with $p<0.01$). As such, these results confirms that time plays a fundamental role to assess the effect of sanctions: specifically, it is necessary at least a period of two years after an enforcement action so that banks are able to improve their stability.

<< INSERT HERE TABLES 12 AND 13 >>

In final, we take into account for the role of the geographical area in assessing the link between enforcement actions and bank stability (measured by the Z index). This is very important in Italy, whereas there are substantial economic, social and demographic differences within the country. Specifically, we divide our sample in four subsamples according to the geographical areas (North-East regions, North-West regions, Central regions and Sardinian, South regions and Sicily) where a bank has his headquarter. As reported in the Table 12, we find that enforcement actions at time *t-1* have a negative link with bank stability in all Italian regions, but the link is statistically significant in only one geographical area, i.e. the Northwest. In the panel B, we reports results for the adjustment speed. Consistently with panel A, we find that sanctions play a statistically significant role on banks adjustment speed only in the Northwest. Focusing on a two-year period Table 13). Looking at the results over a two-years period, the link between enforcement actions and bank stability (measured by the Z index) is strongly influenced by the geographical area: Specifically, estimated coefficients for the dummy variable capturing sanctions related to credit risk (CSA) at time *t-2* is positive and statistically significant in the North-West and South of Italy, while it is negative in the North-East: overall, enforcement actions show a positive impact on bank stability in the South and North West and a negative impact in the North-East. In the panel B, we reports results for the adjustment speed. We find that sanctions play a statistically significant role on banks adjustment speed in a two-years period only in the Northeast region. This confirms that socio-eco-demographic difference in Italy have an impact also on the bank reaction after enforcement actions.

7. Conclusion

The work aims to contribute to the discussions on “better regulation” rather than to “enforcement the regulation”. The literature seems to be particularly large with regard to the first aspect, while it seems lacking on the second aspect. The two instruments used by the supervisory authority to ensure enforcement mechanisms belong remote controls and on-site inspection. At the end of inspection the authority can sanctioned the top management of the bank. This paper investigates the reasons for the sanctions and the consequences thereof.

As for the causes of the sanctions actually emerges as a higher level of risk induces the supervisor to an intervention and sanction. The relationship seems to be very strong with regard to credit risk, while it is weak with regard to market risk and liquidity risk. From the results in part emerges a belated intervention of the supervisory authority as risk data of the previous year and in some cases from the previous two years are able to predict the sanction. Despite the sanctions are related to various aspects of the regulation (organizational deficiencies, internal controls, credit process, deficiencies in the management of liquidity risk, etc.) emerges as indicators of credit risk, altered, however, can lead to a sanction for more general organizational deficiencies.

Focusing on the consequences of enforcement actions, we show that time plays a key role: sanctioned banks are unable to change their conduct in the first year following the enforcement actions and stability levels do not improve. Rather, it takes at least two years after an enforcement action so that banks are able to improve their stability. Specifically, we show that these results are also consistent when we use a different measure focusing on credit risk, i.e. doubtful loan ratios. In final, we show that it is important to consider socio-eco-demographic difference in Italy since these have an impact on the banks reaction after enforcement actions.

Our results have important policy implications. Firstly, we show that enforcement actions are justified: excessive credit risk-taking is one of the main predictor of bank sanctions. Second, enforcement actions influence the desired level of bank stability of banks: sanctioned banks are unable to change their conduct in the first year following the enforcement sanction (and their stability does not improve). Rather, it takes at least two years after an enforcement action so that banks are able to improve their stability. Third, we show that it is important to consider socio-eco-demographic difference in Italy since these have an impact on the banks reaction after enforcement actions.

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Table 1 – Variable Description

Variables	Symbol	Description
Supervisory variable		
Sanction	SA	Dummy variable that takes the value 1 if the bank is sanctioned, 0 otherwise
Sanction 1	S_1	Dummy variable that takes the value 1 if the bank is sanctioned with reference to deficiencies in organization and internal controls, 0 otherwise (*general organizational failure*)
Sanction 2	S_2	Dummy variable that takes the value 1 if the bank is sanctioned with reference to deficiencies in the credit process, 0 otherwise (*credit risk failure*)
Sanction 3	S_3	Dummy variable that takes the value 1 if the bank is sanctioned with reference to impaired loans and loan loss provisions not reported to the Supervisory Authority, 0 otherwise (*omitted credit risk discolsure*)
Sanction 4	S_4	Dummy variable that takes the value 1 if the bank is sanctioned with reference to reporting and communication to the Supervisory Authority, 0 otherwise (*reporting and disclosure failure*)
Sanction 5	S_5	Dummy variable that takes the value 1 if the bank is sanctioned with reference to violation of disclosure regulation to customers, 0 otherwise (*disclosure failure*)
Sanction 6	S_6	Dummy variable that takes the value 1 if the bank is sanctioned with reference to supervisory requirements, 0 otherwise (*supervisory requirement failure*)
Sanction 7	S_7	Dummy variable that takes the value 1 if the bank is sanctioned with reference to liquidity, operational and market risk, 0 otherwise (*liquidity, operational and market risk*)
Sanction 8	S_8	Dummy variable that takes the value 1 if the bank is sanctioned with reference to residual cases, 0 otherwise
Sanctions related to credit risk	CSA	Dummy variable that takes the value 1 if the bank is sanctioned with reference to credit risk (i.e. either S2 or S3 is equal to 1), 0 otherwise
Sanctions unrelated to credit risk	NCSA	Dummy variable that takes the value 1 if the bank is sanctioned with reference to an issue not related to credit risk (i.e. S1 or S4 or S5 or S6 or S7 is equal to 1), 0 otherwise
Board Sanctions	BSA	Dummy variable that takes the value 1 if Board of Directors or the Managing director received a sanction, 0 otherwise
Number of Sanctioned Members of the Board of Directors	NBSA	Number of members sanctioned in the Board of Directors
Board of Auditors Sanctions	ASA	Dummy variable that takes the value 1 if Board of Auditors received a sanction, 0 otherwise
Number of Sanctioned Members of the Board of Auditors	NASA	Number of members sanctioned in the Board of Auditors
Financial variables		
Credit risk 1	CR1	CR1 is calculated as the ratio between Non Performing Loans and total loans
Credit risk 2	CR2	CR2 is calculated as the ratio between past due loans in arrears by 90 days and total loans.
Credit risk 3	CR3	CR3 is calculated as the ratio between restructured loans and total loans.
Credit risk 4	CR4	CR4 is calculated as the ratio between doubtful loans and total loans s.
Credit risk overall	CR	CR is calculated as: (non performing loans+ past due loans + restructured loans + doubtful loans)/ total loans.
Liquidity risk	LIQ	LR is calculated as cash and due from banks over total demand deposits.
Market risk	MR	MR is calculated as: (government bonds + local government bonds + short-term corporate bonds and corporate bonds) /(total assets - tangible fixed assets - intangible fixed assets).
Bank-control variables		
Bank asset size	TA	BAS is the natural logarithm of the total assets.
Cost Income Ratio	CI	Total Operating Cost / Total Operating Income
Macroeconomic-control variables		
GDP per capita	GDPP	
Inflation	INFL	
Domestic Current Account	DCA	

Table 2 – Descriptive statistic

Variable	N	Mean	SD	Min	Median	Max
SA (if SA > 0)	270	1.000	0.000	1.000	1.000	1.000
S1 (if S1 > 0)	187	1.000	0.000	1.000	1.000	1.000
S2 (if S2 > 0)	170	1.000	0.000	1.000	1.000	1.000
S3 (if S3 > 0)	92	1.000	0.000	1.000	1.000	1.000
S4 (if S4 > 0)	20	1.000	0.000	1.000	1.000	1.000
S5 (if S5 > 0)	16	1.000	0.000	1.000	1.000	1.000
S6 (if S6 > 0)	18	1.000	0.000	1.000	1.000	1.000
S7 (if S7 > 0)	08	1.000	0.000	1.000	1.000	1.000
S8 (if S8 > 0)	09	1.000	0.000	1.000	1.000	1.000
S9 (if S7 > 0)	01	1.000	0.000	1.000	1.000	1.000
S10 (if S8 > 0)	18	1.000	0.000	1.000	1.000	1.000
BSA*	255	1.000	0.000	1.000	1.000	1.000
NBSA*	255	10.168	2.987	4.000	10.000	22.000
ASA*	231	1.000	0.000	1.000	1.000	1.000
NASA*	231	3.070	0.702	1.000	3.000	11.000
MA (if MA > 0)	52	1.000	0.000	1.000	1.000	1.000
CR	4527	0.055	0.038	0.000	0.048	0.216
CR1	4626	0.023	0.021	0.000	0.019	0.122
CR2	4618	0.005	0.006	0.000	0.003	0.036
CR3	4526	0.001	0.003	0.000	0.000	0.023
CR4	4626	0.023	0.020	0.000	0.018	0.109
LR	2085	0.107	0.036	0.035	0.106	0.172
MR	3980	0.137	0.110	0.00	0.118	0.566
CI	3943	-0.702	0.235	-2.832	-0.673	-0.184
TA	4583	13.091	1.635	10.013	12.842	18.150
GDPP	4726	24,439	822.227	23,420	24,000	25,636
INFL	4726	2.327	0.906	0.76	2.22	3.5
DCA	4726	-2.101	1.030	-3.513	-1.986	-0.3873

* Only if sanctioned
Note: all variables at the bank-level are winsorized by dropping observations with a value greater than the 99th percentile and below the first percentile of the sampling distribution.

Table 3 – T-test of risk measure between sanctioned and not sanctioned banks

		Number of obs.	Mean	Sd. Error	Degree of freedom	t-stat	$H_0 = \mu_1 - \mu_2 = 0$ $H_1 = \mu_1 - \mu_2 <> 0$
LR	Non sanctioned Banks	3749	0.5606	0.0364	3,980	-1.0670	Not Reject H_0
	Sanctioned Banks	233	0.7240	0.1840			
MR	Non sanctioned Banks	3788	0.1401	0.0019	4,019	-2.2089	Reject H_0
	Sanctioned Banks	233	0.1575	0.0076			
DR	Not sanctioned Banks	3,622	0.0144	0.0002	3,847	-6.7559	Reject H_0
	Sanctioned Banks	277	0.0217	0.0012			
CR	Non sanctioned Banks	4,308	0.0544	0.0006	4,571	-11.6865	Reject H_0
	Sanctioned Banks	265	0.0841	0.0030			
CR_1	Non sanctioned Banks	4,406	0. 0239	0. 0003	4,674	-10.9285	Reject H_0
	Sanctioned Banks	270	0.0395	0. 0016			
CR_2	Non sanctioned Banks	4,406	0. 0052	0. 0001	4,674	-6.3698	Reject H_0
	Sanctioned Banks	270	0. 0080	0. 0005			
CR_3	Non sanctioned Banks	4,308	0. 0012	0. 0000	4,571	-3.5388	Reject H_0
	Sanctioned Banks	265	0.0020	0.0003			
CR_4	Non sanctioned Banks	4,406	0. 0232	0. 0003	4,674	-7.5399	Reject H_0
	Sanctioned Banks	270	0. 0332	0. 0015			

Table 4 – The probability for a bank to be sanctioned: base model over a one-year period

This table reports our results about the causes of the sanctions. Specifically, we run the following probit model to estimate the probability for a bank to be sanctioned on the basis of credit risk, market and liquidity risk: *(it) = it + it + i t*. $S_{i,t}$ is the "Sanction" variable (i.e. a dummy that takes the value 1 if the bank *i* is sanctioned in year *t*, 0 otherwise), *X* is a vector of bank characteristics, C is a vector of macroeconomic variables, , are the parameter estimated. We also include in the regression the dummy for the years (Year Fixed Effect) and belonging to the geographical area of the bank (Geographical Fixed Effect). To check if the supervisory Authority operates with a certain time lag broad, we perform the regression using as regressors the values *X* and *C* of variables at year *t-1*. Standard errors are reported in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. In panel A, we report the coefficient estimates. In panel B, we report the marginal effect estimates.

Panel A) Regression estimates

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
MR_{t-1}	1.0081***	0.8613**	1.1775***	1.0658***	1.4256***	1.3486***
	(0.3826)	(0.4212)	(0.3906)	(0.3853)	(0.3941)	(0.3983)
LR_{t-1}	-0.0045	0.0179	0.0074	0.0039	0.0079	0.0312
	(0.0444)	(0.0382)	(0.0416)	(0.0428)	(0.0427)	(0.0363)
$CR1_{t-1}$		12.9798***				
		(1.5567)				
$CR2_{t-1}$			20.0152***			
			(4.8569)			
$CR3_{t-1}$				25.6060*		
				(14.5136)		
$CR4_{t-1}$					6.2599***	
					(1.7984)	
CR_{t-1}						7.5335***
						(0.9361)
ROA_{t-1}	-21.8687***	-15.5343***	-20.6560***	-21.6674***	-20.8415***	-15.7776***
	(4.0380)	(4.4918)	(4.1617)	(4.0778)	(4.3156)	(4.4745)
TA_{t-1}	0.0517*	0.0704**	0.0551*	0.0415	0.0682**	0.0713**
	(0.0302)	(0.0326)	(0.0310)	(0.0303)	(0.0313)	(0.0325)
GDP_{t-1}	0.0075**	0.0063*	0.0066*	0.0071**	0.0060*	0.0050
	(0.0035)	(0.0037)	(0.0035)	(0.0035)	(0.0036)	(0.0037)
Constant	-183.6208**	-154.3899*	-162.0339*	-173.1574**	-148.2354*	-123.5510
	(83.7439)	(89.7535)	(84.1300)	(84.1471)	(85.4713)	(88.1144)
Observations	3,638	3,602	3,589	3,620	3,599	3,606

Panel B) Marginal Effect

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
MR_{t-1}	0.1101***	0.0888***	0.1202***	0.1137***	0.1416***	0.1223***
	(0.0342)	(0.0324)	(0.0334)	(0.0343)	(0.0341)	(0.0323)
LR_{t-1}	-0.0015	0.0007	-0.0001	-0.0007	0.0002	0.0022
	(0.0044)	(0.0032)	(0.0038)	(0.0041)	(0.0038)	(0.0029)
$CR1_{t-1}$		1.0860***				
		(0.1322)				
$CR2_{t-1}$			1.9523***			
			(0.4392)			
$CR3_{t-1}$				2.2096*		
				(1.3365)		
$CR4_{t-1}$					0.6422***	
					(0.1566)	
CR_{t-1}						0.6577***
						(0.0783)
ROA_{t-1}	-1.8411***	-0.9995***	-1.7067***	-1.7937***	-1.6718***	-1.1079***
	(0.3551)	(0.3531)	(0.3483)	(0.3574)	(0.3576)	(0.3536)
TA_{t-1}	0.0020	0.0022	0.0027	0.0009	0.0045*	0.0041*
	(0.0025)	(0.0024)	(0.0025)	(0.0025)	(0.0026)	(0.0023)
GDP_{t-1}	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Observations	3,638	3,602	3,589	3,620	3,599	3,606

Table 5 – The probability for a bank to be sanctioned: base model over a two-years period

This table reports our results about the causes of the sanctions. Specifically, we run the following probit model to estimate the probability for a bank to be sanctioned on the basis of credit risk, market and liquidity risk: *(it) = it + it + i t*. $S_{i,t}$ is the "Sanction" variable (i.e. a dummy that takes the value 1 if the bank *i* is sanctioned in year *t*, 0 otherwise), *X* is a vector of bank characteristics, C is a vector of macroeconomic variables, , are the parameter estimated. We also include in the regression the dummy for the years (Year Fixed Effect) and belonging to the geographical area of the bank (Geographical Fixed Effect). To check if the supervisory Authority operates with a certain time lag broad, we perform the regression using as regressors the values *X* and *C* of variables at year *t-2*. Standard errors are reported in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. In panel A, we report the coefficient estimates. In panel B, we report the marginal effect estimates.

Panel A) Regression estimates

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
MR_{t-2}	1.0081^{**}	0.9466^{**}	1.0625^{**}	1.0625^{**}	1.3260^{***}	1.3794^{***}
	(0.4291)	(0.4732)	(0.4352)	(0.4352)	(0.4488)	(0.4493)
LR_{t-2}	0.0530	0.0777^{**}	0.0601^{*}	0.0601^{*}	0.0595	0.0842^{**}
	(0.0368)	(0.0366)	(0.0361)	(0.0361)	(0.0366)	(0.0357)
$CR1_{t-2}$		12.7995^{***}				
		(1.8193)				
$CR2_{t-2}$			12.1692^{**}			
			(5.8655)			
$CR3_{t-2}$				12.1692^{**}		
				(5.8655)		
$CR4_{t-2}$					6.2412^{***}	
					(1.9411)	
CR_{t-2}						7.2117^{***}
						(1.0624)
ROA_{t-2}	-20.0638^{***}	-11.3560^{**}	-19.6964^{***}	-19.6964^{***}	-18.3554^{***}	-13.8435^{***}
	(4.9230)	(5.3548)	(5.0126)	(5.0126)	(5.1275)	(5.3034)
TA_{t-2}	0.0512	0.0666^{*}	0.0539	0.0539	0.0613^{*}	0.0685^{*}
	(0.0355)	(0.0378)	(0.0360)	(0.0360)	(0.0369)	(0.0379)
GDP_{t-2}	-0.0018	-0.0020	-0.0021	-0.0021	-0.0018	-0.0026
	(0.0037)	(0.0040)	(0.0037)	(0.0037)	(0.0037)	(0.0039)
Constant	40.5453	43.1188	46.4684	46.4684	40.1296	57.6552
	(89.0302)	(96.4655)	(89.7096)	(89.7096)	(89.6154)	(93.9971)
Observations	2942	2910	2903	2903	2910	2915

Panel B) Marginal Effect

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
MR_{t-2}	0.1014^{***}	0.0892^{**}	0.1073^{***}	0.1073^{***}	0.1247^{***}	0.1183^{***}
	(2.69)	(2.46)	(2.84)	(2.84)	(3.24)	(3.27)
LR_{t-2}	0.0038	0.0056^{*}	0.0046	0.0046	0.0047	0.0065^{**}
	0.1014^{***}	0.0892^{**}	0.1073^{***}	0.1073^{***}	0.1247^{***}	0.1183^{***}
$CR1_{t-2}$		1.0194^{***}				
		(6.91)				
$CR2_{t-2}$			1.2953^{**}			
			(2.43)			
$CR3_{t-2}$				1.2953^{**}		
				(2.43)		
$CR4_{t-2}$					0.5931^{***}	
					(3.44)	
CR_{t-2}						0.5920^{***}
						(6.88)
ROA_{t-2}	-1.2636^{***}	-0.3368	-1.2244^{***}	-1.2244^{***}	-1.1213^{***}	-0.6422
	(-3.01)	(-0.78)	(-2.88)	(-2.88)	(-2.61)	(-1.50)
TA_{t-2}	0.0004	0.0008	0.0007	0.0007	0.0024	0.0024
	(0.14)	(0.28)	(0.25)	(0.25)	(0.82)	(0.88)
GDP_{t-2}	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000^{**}
	(1.07)	(1.52)	(1.39)	(1.39)	(1.63)	(2.03)
Observations	2942	2910	2903	2903	2910	2915

Table 6 – The probability for a bank to be sanctioned: different sanctions over a one-year period

This table reports our results about the causes of the sanctions. Specifically, we run the following probit model to estimate the probability for a bank to be sanctioned on the basis of credit risk, market and liquidity risk: $(\ _{it}) = \ _{it} + \ _{it} + \ _{i\ t}$. We use three different dummy variables of bank sanctions (i.e. 1 if the bank *i* is sanctioned in year *t*, 0 otherwise).The three sanction variables are S_1 (i.e. general organizational and internal control failures), S_2 (i.e. deficiencies in the credit process), and S_3 (i.e. deficiencies to reporting credit losses to supervisory authority). *X* is a vector of bank characteristics, C is a vector of macroeconomic variables, , are the parameter estimated. We also include in the regression the dummy for the years (Year Fixed Effect) and belonging to the geographical area of the bank (Geographical Fixed Effect). To check if the supervisory Authority operates with a certain time lag broad, we perform the regression using as regressors the values *X* and *C* of variables at year *t-1*. Standard errors are reported in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. In panel A, we report the coefficient estimates. In panel B, we report the marginal effect estimates.

Panel A) Regression estimates

	y=s1 Model 1	y=s1 Model 2	y=s2 Model 3	y=s2 Model 4	y=s3 Model 5	y=s3 Model 6
MR_{t-1}	1.5861*	1.3039	2.2330***	1.9606**	1.3668*	0.8325
	(0.9023)	(1.0079)	(0.7792)	(0.8605)	(0.7071)	(0.7936)
LR_{t-1}	0.0744	0.0752	-0.8611*	-0.9240*	-0.1154	-0.0550
	(0.0549)	(0.0526)	(0.4935)	(0.5306)	(0.1065)	(0.0696)
ROA_{t-1}	-25.0179***	-22.5497***	-14.6869	-14.0636	-17.3521**	-15.3990
	(7.0146)	(7.5638)	(10.6029)	(12.0992)	(8.1123)	(9.7601)
TA_{t-1}	0.1886***	0.1531**	0.0921	0.0690	-0.0131	-0.0088
	(0.0684)	(0.0647)	(0.0789)	(0.0837)	(0.0614)	(0.0687)
CR_{t-1}	3.7365		8.6840***		13.7011***	
	(2.3352)		(1.7860)		(1.5211)	
$CR1_{t-1}$		7.5914		14.2896***		23.7567***
		(4.8309)		(3.2856)		(3.0924)
$CR2_{t-1}$		15.4341		4.9694		16.4566
		(13.7161)		(11.4868)		(10.1341)
$CR3_{t-1}$		53.6103*		34.1788		-40.2572
		(28.3751)		(30.9041)		(47.3319)
$CR4_{t-1}$		-11.7492		2.1858		5.3102
		(7.4817)		(3.8166)		(4.1857)
GDP_{t-1}	0.0002	0.0002	0.0005***	0.0005***	0.0004**	0.0004**
	(0.0002)	(0.0003)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Constant	-11.6649**	-11.4895*	-17.6724***	-17.8014***	-14.2359***	-14.9281***
	(5.8537)	(6.4721)	(5.2530)	(5.2407)	(5.0354)	(5.3726)
Observations	3,606	3,510	3,606	3,510	3,606	3,510

Panel B) Marginal Effect

	y=s1 Model 2	y=s1 Model 3	y=s2 Model 5	y=s2 Model 6	y=s3 Model 8	y=s3 Model 9
MR_{t-1}	1.7106**	1.4452	2.0928***	1.8981**	1.3484**	0.9724
	(0.8479)	(0.8974)	(0.7597)	(0.8214)	(0.6836)	(0.7287)
LR_{t-1}	0.0727	0.0716	-0.9454*	-0.9936*	-0.1077	-0.0613
	(0.0525)	(0.0489)	(0.4926)	(0.5227)	(0.0962)	(0.0752)
ROA_{t-1}	-24.4929***	-21.1457***	-11.4947	-8.9425	-14.9726**	-11.6903
	(6.1689)	(6.9440)	(9.6417)	(10.9806)	(7.4740)	(9.0117)
TA_{t-1}	0.1649***	0.1192*	0.0339	0.0082	-0.0229	-0.0381
	(0.0601)	(0.0610)	(0.0599)	(0.0675)	(0.0508)	(0.0569)
CR_{t-1}	4.1142*		8.3660***		13.6130***	
	(2.3459)		(1.7481)		(1.5092)	
$CR1_{t-1}$		7.3337		12.8996***		23.1187***
		(4.7525)		(3.1660)		(3.0579)
$CR2_{t-1}$		13.8226		4.9165		17.7408*
		(14.2073)		(10.8246)		(10.1160)
$CR3_{t-1}$		51.6500*		19.5457		-45.4647
		(27.8360)		(31.0737)		(46.9853)
$CR4_{t-1}$		-9.8661		2.7279		5.7746
		(6.9827)		(3.6974)		(4.0378)
GDP_{t-1}	0.0002	0.0002	0.0003***	0.0003***	0.0003***	0.0003***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Observations	3,606	3,510	3,606	3,510	3,606	3,510

Table 7 –The probability for a bank to be sanctioned: different sanctions over a two-years period

This table reports our results about the causes of the sanctions. Specifically, we run the following probit model to estimate the probability for a bank to be sanctioned on the basis of credit risk, market and liquidity risk: ($_{it}$) = $_{it}$ + $_{it}$ + $_{i\ t}$. We use three different dummy variables of bank sanctions (i.e. 1 if the bank *i* is sanctioned in year *t*, 0 otherwise).The three sanction variables are S_1 (i.e. general organizational and internal control failures), S_2 (i.e. deficiencies in the credit process), and S_3 (i.e. deficiencies to reporting credit losses to supervisory authority). *X* is a vector of bank characteristics, C is a vector of macroeconomic variables, , are the parameter estimated. We also include in the regression the dummy for the years (Year Fixed Effect) and belonging to the geographical area of the bank (Geographical Fixed Effect). To check if the supervisory Authority operates with a certain time lag broad, we perform the regression using as regressors the values *X* and *C* of variables at year *t-2*. Standard errors are reported in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. In panel A, we report the coefficient estimates. In panel B, we report the marginal effect estimates.

Panel A) Regression estimates

	y=s1 Model 1	y=s1 Model 2	y=s2 Model 3	y=s2 Model 4	y=s3 Model 5	y=s3 Model 6
MR_{t-1}	2.8595***	2.7488***	1.4229	0.6157	1.4939*	0.7500
	(0.9594)	(1.0435)	(0.8808)	(0.9610)	(0.7906)	(0.9293)
LR_{t-1}	0.0939*	0.0845	-0.4558	-0.5540	-0.1777	-0.3310
	(0.0539)	(0.0541)	(0.5287)	(0.5972)	(0.2478)	(0.2575)
ROA_{t-1}	-17.4551**	-16.3244**	-14.3966	-7.8695	-19.2185**	-11.3950
	(7.0726)	(7.3791)	(11.1724)	(12.3664)	(9.6330)	(11.3347)
TA_{t-1}	0.1750**	0.2013***	0.0979	0.0867	-0.0324	-0.0507
	(0.0781)	(0.0769)	(0.0892)	(0.0925)	(0.0693)	(0.0728)
CR_{t-1}	5.5322*		7.3067***		12.5764***	
	(2.9163)		(1.7158)		(1.8121)	
$CR1_{t-1}$		11.8395***		18.9033***		22.0243***
		(4.5531)		(3.2516)		(3.9042)
$CR2_{t-1}$		-3.4161		-6.8775		2.5299
		(17.7491)		(13.8075)		(13.6453)
$CR3_{t-1}$		0.0000		0.0000		0.0000
		(.)		(.)		(.)
$CR4_{t-1}$		-3.5626		-0.6511		8.0663**
		(5.7945)		(4.5016)		(3.9926)
-GDP_{t-1}	0.0002	0.0002	0.0005***	0.0006***	0.0006***	0.0006***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Constant	-12.3840**	-12.2878**	-18.3304***	-19.7518***	-18.1513***	-18.4454***
	(5.7104)	(5.7446)	(5.1361)	(5.5259)	(4.5728)	(4.8101)
Observations	2,846	2,915	2,846	2,915	2,846	2,915

Panel B) Marginal Effect

	y=s1 Model 2	y=s1 Model 3	y=s2 Model 5	y=s2 Model 6	y=s3 Model 8	y=s3 Model 9
MR_{t-1}	2.7183***	2.7049***	1.2858	0.7757	1.3876*	0.7468
	(0.9507)	(0.9919)	(0.8164)	(0.8456)	(0.7840)	(0.8776)
LR_{t-1}	0.0987*	0.0873*	-0.6889	-0.8060	-0.1681	-0.2982
	(0.0517)	(0.0520)	(0.5508)	(0.5860)	(0.2277)	(0.2612)
ROA_{t-1}	-13.8613*	-12.3793	1.1659	9.6976	-14.6950	-5.4371
	(7.8588)	(7.9965)	(11.6628)	(12.9900)	(9.2548)	(11.2562)
TA_{t-1}	0.1766**	0.1849**	-0.0118	-0.0391	-0.0532	-0.0824
	(0.0737)	(0.0748)	(0.0660)	(0.0703)	(0.0583)	(0.0635)
CR_{t-1}	4.9465*		6.2604***		12.1143***	
	(2.8021)		(1.7046)		(1.7933)	
$CR1_{t-1}$		10.8869**		14.9593***		20.7012***
		(4.4240)		(3.3167)		(3.7825)
$CR2_{t-1}$		-0.0466		-3.4513		4.1953
		(17.9497)		(12.7159)		(13.3529)
$CR3_{t-1}$		0.0000		0.0000		0.0000
		(.)		(.)		(.)
$CR4_{t-1}$		-4.3407		0.2261		7.9374**
		(5.5782)		(4.4382)		(3.8830)
-GDP_{t-1}	0.0001	0.0001	0.0000	-0.0000	0.0004***	0.0004***
	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Observations	2,846	2,915	2,846	2,915	2,846	2,915

Table 8 – The consequence of enforcement actions focusing on bank stability

This table reports our results about the impact of supervisory sanctions (SA) on bank stability (measured by the Z score, Z). We use a two-step analysis: in the first step (panel A), we estimate the link between enforcement actions and the level of bank stability and risk (after one and two years) as follows: $Z_{i\ t} = (1 - y)Z_{i\ t} + (y\ )_{it} + (y\ )_{t} + yf_i + yr_t + {}_{i\ t}$. In the second step, we estimate the impact of sanctions on relationship ($i\backslash$) between the adjustment speed of bank stability level over time ($Z_{i\ t}$ - $Z_{i\ t}$) and the distance between the desired and actual level of stability (*GAP*) as follows. $Z_{i\ t} - Z_{i\ t} = i\backslash Q_{i\ t}\ (GAP_{it}) + {}_{i\ t}$. We reported the standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors of Panel B are bootstrapped (1000 replications).

Panel A – Step 1

	Model 1	Model 2	Model 3 (no M&A)	Model 4 (no M&A)
Z_{t-1}	1.0792***	1.1438***	1.0975***	1.0540***
	(0.2006)	(0.3291)	(0.2095)	(0.3397)
SA_{t-1}	-0.0601***		-0.0616***	
	(0.0160)		(0.0167)	
SA_{t-2}		0.2780**		0.2791**
		(0.1344)		(0.1366)
CI_{t-1}	-0.3351***	-0.7493***	-0.3371***	-0.7434***
	(0.0877)	(0.1936)	(0.0917)	(0.1986)
TA_{t-1}	0.2611	0.7841***	0.2822	0.6695***
	(0.1723)	(0.2375)	(0.1873)	(0.2373)
$CR1_{t-1}$	-3.0859***	-5.7404***	-2.7623***	-6.0000***
	(0.9630)	(2.0371)	(0.9787)	(2.1239)
$GDPP_{t-1}$	-0.0001**	-0.0000	-0.0001**	-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$INFL_{t-1}$	0.0584***	0.0484***	0.0553***	0.0462***
	(0.0136)	(0.0139)	(0.0130)	(0.0138)
DCA_{t-1}	0.0224***	0.0355*	0.0235***	0.0315
	(0.0071)	(0.0211)	(0.0072)	(0.0204)
Observations	2,921	2,297	2,905	2,286
AR1	0.000	0.000	0.000	0.000
AR2	0.436	0.664	0.185	0.895
AR3	0.371	0.652	0.384	0.319
Hansen test	0.120	0.233	0.064	0.262

Panel B – Step 2

	Model 1	Model 2	Model 3	Model 4
SA_{t-1}	-0.0076		-0.0150	
	(0.0099)		(0.0123)	
SA_{t-2}		0.0024		0.0027
		(0.0020)		(0.0026)
CI_{t-1}	0.1386***	-0.0339***	0.0768*	-0.0397***
	(0.0363)	(0.0079)	(0.0432)	(0.0105)
TA_{t-1}	-0.0037	0.0020***	-0.0036	0.0020**
	(0.0026)	(0.0007)	(0.0030)	(0.0009)
$CR1_{t-1}$	0.1128*	-0.0685***	0.0674	-0.0797***
	(0.0673)	(0.0210)	(0.0902)	(0.0262)
$GDPP_{t-1}$	0.0000***	-0.0000***	0.0000**	-0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$INFL_{t-1}$	-0.0059	0.0049***	0.0015	0.0061***
	(0.0043)	(0.0010)	(0.0060)	(0.0013)
DCA_{t-1}	0.0023	0.0003	0.0064	-0.0001
	(0.0039)	(0.0009)	(0.0048)	(0.0012)
Constant	0.0651***	-0.0097***	0.0596***	0.0540**
	(0.0053)	(0.0014)	(0.0043)	(0.0262)
Observations	3,651	2,992	3,635	2,981

Table 9 - The consequence of enforcement actions on bank stability: a focus on different enforcement actions at time *t-1*

This table reports our results about the impact of supervisory sanctions (SA) on bank stability (measured by the Z score, Z) by distinguishing for different type of sanctions. We use a two-step analysis: in the first step (panel A), we estimate the link between enforcement actions and the level of bank stability and risk (after one and two years) as follows: $Z_{i\,t} = (1 - y)Z_{i\,t} + (y\ )_{it} + (y\ )_{t} + yf_i + yr_t + {}_{i\,t}$. In the second step, we estimate the impact of sanctions on relationship ($i\backslash$) between the adjustment speed of bank stability level over time (Z_{it} - Z_{it}) and the distance between the desired and actual level of stability (*GAP*) as follows. $Z_{i\,t} - Z_{i\,t} = i\backslash Q_{i\,t}\ (GAP_{it}) + {}_{i\,t}$. We reported the standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors of Panel B are bootstrapped (1000 replications).

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Z_{t-1}	1.0278***	1.0261***	1.0673***	1.0274***	1.0406***	1.0398***
	(0.1769)	(0.2121)	(0.2003)	(5.38)	(0.1982)	(0.1958)
CSA_{t-1}	-0.0568***					
	(0.0138)					
$NCSA_{t-1}$		-0.0599***				
		(0.0178)				
BSA_{t-1}			-0.0570***			
			(0.0151)			
$NBSA_{t-1}$				-0.0061***		
				(0.0017)		
ASA_{t-1}					-0.0629***	
					(0.0154)	
$NASA_{t-1}$						-0.0208***
						(0.0052)
CI_{t-1}	-0.3809***	-0.3664***	-0.3511***	-0.3447***	-0.3480***	-0.3483***
	(0.0778)	(0.0954)	(-3.94)	(0.0924)	(0.0907)	(0.0930)
TA_{t-1}	0.3152	0.2527	0.2606	0.2317	0.2429	0.2497
	(0.1937)	(0.1967)	(0.1720)	(0.1691)	(0.1742)	(0.1734)
$CR1_{t-1}$	-3.4714***	-3.4612***	-3.2638***	-3.2792***	-3.2695***	-3.1263***
	(0.9987)	(0.9733)	(0.9590)	(0.9649)	(0.9593)	(0.9689)
$GDPP_{t-1}$	-0.0000**	-0.0001**	-0.0001**	-0.0001**	-0.0001**	-0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$INFL_{t-1}$	0.0556***	0.0581***	0.0595***	0.0581***	0.0584***	0.0568***
	(0.0131)	(0.0134)	(0.0135)	(0.0137)	(0.0136)	(0.0137)
DCA_{t-1}	0.0247***	0.0230***	0.0229***	0.0220***	0.0225***	0.0232***
	(0.0075)	(0.0074)	(0.0071)	(0.0071)	(0.0071)	(0.0071)
Observations	2,921	2,921	2,921	2,921	2,921	2,921
AR1	0.000	0.000	0.000	0.000	0.000	0.000
AR2	0.399	0.361	0.433	0.468	0.438	0.445
AR3	0.441	0.223	0.370	0.330	0.357	0.349
Hansen test	0.145	0.012	0.115	0.099	0.130	0.126

Panel B – Step 2

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CSA_{t-1}	0.0044**					
	(0.0018)					
$NCSA_{t-1}$		0.0011				
		(0.0289)				
BSA_{t-1}			-0.0037			
			(0.0024)			
$NBSA_{t-1}$				0.0009**		
				(0.0004)		
ASA_{t-1}					-0.0032	
					(0.0028)	
$NASA_{t-1}$						-0.0016
						(0.0013)
CI_{t-1}	-0.0347***	0.0684*	0.1489***	0.0758***	-0.0036	0.1282***
	(0.0081)	(0.0369)	(0.0286)	(9.24)	(0.0359)	(0.0151)
TA_{t-1}	0.0021***	-0.0059**	0.0057***	0.1172***	0.0030	-0.0054***
	(0.0007)	(0.0026)	(0.0020)	(0.0140)	(0.0023)	(0.0008)
$CR1_{t-1}$	-0.0734***	0.0845	0.4656***	-0.0049***	-0.0082	0.1609***
	(0.0210)	(0.0910)	(0.0737)	(0.0008)	(0.1282)	(0.0359)
$GDPP_{t-1}$	-0.0000***	0.0000***	0.0000	0.1374***	-0.0000**	0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0336)	(0.0000)	(0.0000)
$INFL_{t-1}$	0.0051***	0.0008	-0.0022	0.0000***	0.0280***	-0.0119***
	(0.0010)	(0.0041)	(0.0025)	(0.0000)	(0.0059)	(0.0015)
DCA_{t-1}	0.0003	0.0049	-0.0003	-0.0111***	-0.0074	-0.0035**
	(0.0010)	(0.0040)	(0.0033)	(0.0013)	(0.0049)	(0.0016)
Constant	0.0838***	0.0598***	0.0678	0.0282	0.0323***	0.0265
	(0.0320)	(0.0056)	(0.0680)	(0.0204)	(0.0039)	(0.0192)
Observations	2,992	2,992	2,974	2,974	2,974	2,974

Table 10 – The consequence of enforcement actions focusing on bank stability: a focus on different enforcement sanctions at time *t-2*

This table reports our results about the impact of supervisory sanctions (SA) on bank stability (measured by the Z score, Z) by distinguishing for different type of sanctions. We use a two-step analysis: in the first step (panel A), we estimate the link between enforcement actions and the level of bank stability and risk (after one and two years) as follows: $Z_{i\,t} = (1 - y)Z_{i\,t} + (y\ )_{it} + (y\ )_{t} + yf_i + yr_t + {}_{i\,t}$. In the second step, we estimate the impact of sanctions on relationship ($i\backslash$) between the adjustment speed of bank stability level over time (Z_{it} - Z_{it}) and the distance between the desired and actual level of stability (*GAP*) as follows. $Z_{i\,t} - Z_{i\,t} = i\backslash Q_{i\,t}\ (GAP_{it}) + {}_{i\,t}$. We reported the standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors of Panel B are bootstrapped (1000 replications).

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Z_{t-1}	1.2396***	1.2241***	1.1039***	1.0781***	1.1453***	1.1234***
	(0.4254)	(0.4312)	(0.3432)	(0.3340)	(0.3659)	(0.3282)
CSA_{t-1}	0.2417					
	(0.2608)					
$NCSA_{t-1}$		0.2644				
		(0.3009)				
BSA_{t-1}			0.1660			
			(0.2006)			
$NBSA_{t-1}$				0.0063		
				(0.0131)		
ASA_{t-1}					0.3207	
					(0.2687)	
$NASA_{t-1}$						0.0297
						(0.0523)
CI_{t-1}	-0.7306***	-0.7443***	-0.7353***	-0.6979***	-0.7679***	-0.6977***
	(0.2279)	(0.2117)	(0.2068)	(0.2055)	(0.2034)	(0.2024)
TA_{t-1}	0.7757***	0.8306***	0.7872***	0.7797***	0.7829***	0.8237***
	(0.2440)	(0.2694)	(0.2525)	(0.2643)	(0.2705)	(0.2537)
$CR1_{t-1}$	-5.4715**	-4.9252**	-4.8331**	-4.0979**	-5.7015**	-4.2363**
	(2.4559)	(2.1165)	(2.0824)	(1.6475)	(2.3781)	(1.6627)
$GDPP_{t-1}$	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$INFL_{t-1}$	0.0447***	0.0516***	0.0503***	0.0500***	0.0520***	0.0499***
	(0.0144)	(0.0142)	(0.0132)	(0.0126)	(0.0138)	(0.0125)
DCA_{t-1}	0.0287	0.0410*	0.0416**	0.0435**	0.0393*	0.0430**
	(0.0252)	(0.0214)	(0.0205)	(0.0194)	(0.0218)	(0.0190)
Observations	2,297	2,297	2,280	2,280	2,280	2,280
AR1	0.000	0.000	0.000	0.000	0.000	0.000
AR2	0.820	0.712	0.842	0.937	0.629	0.888
AR3	0.571	0.462	0.337	0.460	0.245	0.451
Hansen test	0.223	0.245	0.200	0.171	0.326	0.163

Panel B – Step 2

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CSA_{t-2}	0.0044**					
	(0.0017)					
$NCSA_{t-2}$		0.0011				
		(0.0279)				
BSA_{t-2}			-0.0037			
			(0.0023)			
$NBSA_{t-2}$				0.0009**		
				(0.0004)		
ASA_{t-2}					-0.0032	
					(0.0027)	
$NASA_{t-2}$						-0.0016
						(0.0013)
CI_{t-1}	-0.0347***	0.0684*	0.1489***	0.1172***	-0.0036	0.1282***
	(0.0080)	(0.0378)	(0.0278)	(0.0136)	(0.0382)	(0.0151)
TA_{t-1}	0.0021***	-0.0059**	0.0057***	-0.0049***	0.0030	-0.0054***
	(0.0007)	(0.0027)	(0.0020)	(0.0007)	(0.0023)	(0.0008)
$CR1_{t-1}$	-0.0734***	0.0845	0.4656***	0.1374***	-0.0082	0.1609***
	(0.0206)	(0.0908)	(0.0739)	(0.0317)	(0.1229)	(0.0367)
$GDPP_{t-1}$	-0.0000***	0.0000***	0.0000	0.0000***	-0.0000**	0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$INFL_{t-1}$	0.0051***	0.0008	-0.0022	-0.0111***	0.0280***	-0.0119***
	(0.0010)	(0.0040)	(0.0025)	(0.0013)	(0.0057)	(0.0014)
DCA_{t-1}	0.0003	0.0049	-0.0003	-0.0033**	-0.0074	-0.0035**
	(0.0009)	(0.0038)	(0.0034)	(0.0015)	(0.0051)	(0.0016)
Constant	0.0838**	0.0598***	0.0678	0.0282	0.0323***	0.0265
	(0.0326)	(0.0059)	(0.0681)	(0.0213)	(0.0039)	(0.0193)
Observations	2,992	2,992	2,974	2,974	2,974	2,974

Table 11- The consequence of enforcement actions focusing on credit risk

This table reports our results about the impact of supervisory sanctions (SA) on bank stability (measured by the credit risk, CR_4). We use a two-step analysis: in the first step (panel A), we estimate the link between enforcement actions and the level of bank stability and risk (after one and two years) as follows: $R_{it} = (1 - y)\ R_{it}\ + (y\ )_{it}\ + (y\ )_{t}\ + yf_i + yr_t + \ _{it}$. In the second step, we estimate the impact of sanctions on relationship ($i\backslash$) between the adjustment speed of bank stability level over time (Z_{it} - Z_{it}) and the distance between the desired and actual level of stability (*GAP*) as follows. $R_{it} - \ R_{it}\ = i\backslash Q_{it}\ (GAP_{it}) + \ _{it}$. We reported the standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors of Panel B are bootstrapped (1000 replications).

	Model 1	Model 2
$CR4_{t-1}$	-1.6922***	-1.9128***
	(0.3271)	(0.2864)
CSA_{t-1}	0.0850***	
	(0.0157)	
CSA_{t-2}		-0.0671***
		(0.0075)
CI_{t-1}	-0.0037	0.0159**
	(0.0052)	(0.0081)
TA_{t-1}	0.0106	-0.0274
	(0.0171)	(0.0176)
$CR1_{t-1}$	1.2515***	1.9347***
	(0.2518)	(0.2704)
$GDPP_{t-1}$	0.0000*	-0.0000
	(0.0000)	(0.0000)
$INFL_{t-1}$	-0.0041**	0.0036***
	(0.0017)	(0.0012)
DCA_{t-1}	0.0007	0.0039**
	(0.0007)	(0.0018)
Observations	2,924	2,271
AR1	0.000	0.000
AR2	0.962	0.971
AR3	0.033	0.311
Hansen test	0.168	0.178

Panel B – Step 2

	Model 1	Model 2
CSA_{t-1}	-0.0233***	
	(0.0052)	
CSA_{t-2}		0.0045
		(0.0042)
CI_{t-1}	0.0039	-0.0074***
	(0.0052)	(0.0028)
TA_{t-1}	-0.0088***	-0.0022**
	(0.0007)	(0.0009)
$CR1_{t-1}$	-0.7820***	0.5848***
	(0.0557)	(0.0602)
$GDPP_{t-1}$	0.0000***	0.0000***
	(0.0000)	(0.0000)
$INFL_{t-1}$	-0.0009	-0.0009
	(0.0012)	(0.0008)
DCA_{t-1}	-0.0108***	-0.0017**
	(0.0014)	(0.0008)
Constant	-0.0602***	0.0226***
	(0.0047)	(0.0050)
Observations	3,674	2,979

Table 12 - The consequence of enforcement actions focusing on bank stability: a focus on different geographical area at time *t-1*

This table reports our results about the impact of supervisory sanctions (SA) on bank stability (measured by the Z score, Z) by distinguishing for different geographical area. We use a two-step analysis: in the first step (panel A), we estimate the link between enforcement actions and the level of bank stability and risk (after two years) as follows: $Z_{i\,t} = (1 - y)Z_{i\,t} + (y\ )_{it} + (y\ )_{t} + yf_i + yr_t + {}_{i\,t}$. In the second step, we estimate the impact of sanctions on relationship ($i\backslash$) between the adjustment speed of bank stability level over time ($Z_{i\,t} - Z_{i\,t}$) and the distance between the desired and actual level of stability (*GAP*) as follows. $Z_{i\,t} - Z_{i\,t} = i\backslash Q_{i\,t}\ (GAP_{it}) + {}_{i\,t}$. We reported the standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors of Panel B are bootstrapped (1000 replications).

	South	Central	North-East	North-West
Z_{t-1}	0.7072***	0.6243***	0.6456***	0.5573**
	(0.2037)	(0.2083)	(0.2154)	(0.2613)
CSA_{t-1}	-0.0217	-0.0234	-0.0042	-0.1046**
	(0.0234)	(0.0259)	(0.0225)	(0.0413)
CI_{t-1}	-0.4050***	-0.7669***	-0.3942***	-0.4610*
	(0.0744)	(0.1850)	(0.1410)	(0.2802)
TA_{t-1}	-0.1972	0.4431	0.5284***	0.4135*
	(0.1733)	(0.2899)	(0.1409)	(0.2368)
$CR1_{t-1}$	-2.7322***	-1.9831	-2.7081***	-3.4926
	(0.7066)	(1.3410)	(0.5340)	(2.3094)
$GDPP_{t-1}$	-0.0001***	0.0000	0.0000**	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$INFL_{t-1}$	0.0285*	0.0271	0.0162	0.0261
	(0.0168)	(0.0262)	(0.0107)	(0.0305)
DCA_{t-1}	0.0181**	0.0509***	0.0099	0.0519***
	(0.0090)	(0.0175)	(0.0081)	(0.0174)
Observations	636	635	1,095	576
AR1	0.000	0.050	0.011	0.004
AR2	0.580	0.613	0.852	0.261
AR3	0.399	0.570	0.283	0.678
Hansen test	0.409	0.322	0.000	0.154

Panel B – Step 2

	South	Central	North-East	North-West
CSA_{t-1}	0.0021	0.0011	0.0011	-0.0127*
	(0.0021)	(0.0064)	(0.0059)	(0.0077)
CI_{t-1}	0.0517***	-0.0797***	-0.0355***	-0.0306*
	(0.0085)	(0.0223)	(0.0115)	(0.0176)
TA_{t-1}	-0.0003	0.0050**	0.0021**	0.0029
	(0.0006)	(0.0023)	(0.0009)	(0.0019)
$CR1_{t-1}$	0.0793***	-0.1575**	-0.0597*	-0.0925
	(0.0208)	(0.0748)	(0.0309)	(0.0670)
$GDPP_{t-1}$	0.0000***	-0.0000***	-0.0000***	-0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$INFL_{t-1}$	-0.0002	0.0088**	0.0053***	0.0055**
	(0.0012)	(0.0042)	(0.0012)	(0.0025)
DCA_{t-1}	0.0011	0.0000	-0.0035***	0.0033
	(0.0011)	(0.0036)	(0.0013)	(0.0029)
Constant	0.1333**	0.0877**	-0.0052	0.1781***
	(0.0593)	(0.0348)	(0.0302)	(0.0603)
Observations	795	798	1,345	742

Table 13 - The consequence of enforcement actions focusing on bank stability: a focus on different geographical area at time *t-2*

This table reports our results about the impact of supervisory sanctions (SA) on bank stability (measured by the Z score, Z) by distinguishing for different geographical area. We use a two-step analysis: in the first step (panel A), we estimate the link between enforcement actions and the level of bank stability and risk (after two years) as follows: $Z_{i\,t} = (1 - y)Z_{i\,t} + (y)_{it} + (y)_{t} + yf_i + yr_t + {}_{i\,t}$. In the second step, we estimate the impact of sanctions on relationship ($i\backslash$) between the adjustment speed of bank stability level over time ($Z_{i\,t} - Z_{i\,t}$) and the distance between the desired and actual level of stability (*GAP*) as follows. $Z_{i\,t} - Z_{i\,t} = i\backslash Q_{i\,t}\ (GAP_{it}) + {}_{i\,t}$. We reported the standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors of Panel B are bootstrapped (1000 replications).

	South	Central	North-East	North-West
Z_{t-1}	0.4683**	0.4128	0.4197	1.0157**
	(0.2155)	(0.3725)	(0.3188)	(0.4585)
CSA_{t-2}	0.1502*	0.1521	-0.2697**	0.3601**
	(0.0863)	(0.1230)	(0.1109)	(0.1599)
CI_{t-1}	-0.5942***	-1.0407***	-0.3964**	-0.8909***
	(0.1511)	(0.3045)	(0.1786)	(0.2294)
TA_{t-1}	-0.1917	0.4809*	0.7193***	0.3173
	(0.2249)	(0.2896)	(0.1289)	(0.5152)
$CR1_{t-1}$	-3.1927***	-4.7133	-2.1017*	-8.3357**
	(0.9797)	(3.5612)	(1.1233)	(3.5701)
$GDPP_{t-1}$	-0.0001***	-0.0000	0.0001***	-0.0001**
	(0.0000)	(0.0000)	(0.0000)	(0.0001)
$INFL_{t-1}$	0.0593**	0.0863***	0.0213**	0.1084***
	(0.0238)	(0.0214)	(0.0106)	(0.0332)
DCA_{t-1}	0.0635**	0.0869**	0.0299***	0.0636
	(0.0255)	(0.0407)	(0.0088)	(0.0433)
Observations	502	500	868	444
AR1	0.002	0.250	0.220	0.001
AR2	0.873	0.307	0.422	0.576
AR3	0.258	0.616	0.202	0.561
Hansen test	0.572	0.286	0.201	0.263

Panel B – Step 2

	South	Central	North-East	North-West
CSA_{t-2}	0.0013	-0.0003	0.0040*	-0.0470
	(0.0088)	(0.0027)	(0.0023)	(0.0523)
CI_{t-1}	-0.1134***	0.0539***	-0.0317***	0.0606
	(0.0274)	(0.0092)	(0.0081)	(0.0658)
TA_{t-1}	0.0076***	-0.0008	0.0022***	-0.0063
	(0.0028)	(0.0006)	(0.0009)	(0.0065)
$CR1_{t-1}$	-0.1967*	0.0709***	-0.0447**	0.0972
	(0.1089)	(0.0211)	(0.0215)	(0.3506)
$GDPP_{t-1}$	-0.0000***	0.0000***	-0.0000***	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$INFL_{t-1}$	0.0152***	0.0001	0.0040***	-0.0010
	(0.0042)	(0.0012)	(0.0009)	(0.0107)
DCA_{t-1}	0.0024	-0.0002	-0.0015*	0.0067
	(0.0041)	(0.0011)	(0.0009)	(0.0095)
Constant	0.0747**	0.1659**	0.0214	0.0686***
	(0.0290)	(0.0742)	(0.0498)	(0.0156)
Observations	649	656	1,114	596

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