

# Supranational Supervision \*

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## Abstract

It is now common to have separate regulators for larger, more complex and cross-border active financial firms as opposed to smaller financial firms. Exploiting the establishment of a new supranational regulator responsible for banks larger than €30 billion in assets in Europe (the Single Supervisory Mechanism SSM), we investigate how separation of regulation impacts regulatory outcomes as well as risk shifting activities among banks under the different regulators. We show that local national regulators are systematically more lenient as compared to the supranational supervisor. Banks under SSM surveillance report higher risk weights, higher probability of default and lower collateral to loan ratios for exposures to the *same* firm as compared to banks under national supervision. The differential regulatory treatment results in higher capital charges for affected banks and has substantial impact on their activities. Affected banks react to the stricter supervision by shifting loans and security holdings to banks that do not fall under scrutiny of the SSM. This reduction is more pronounced in riskier assets which leads to a higher proportion of risky assets being held by smaller non-SSM banks. Matching the credit register with firm level balance sheet data, we further show that firms receiving loans only from SSM banks exhibit reduced employment, sales and investment compared to other firms.

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# 1 Introduction

An important trend in the design of a regulatory architecture has been a separation of regulators for larger, more complex and cross-border active firms as opposed to smaller firms in a given industry. A prominent example is the banking industry in the U.S. that is regulated at both the federal and state level depending on the type of charter a banking organization has. Similarly, the recent establishment of the Banking Union in Europe resulted in systemic relevant institutes to be monitored by a supranational body while smaller less significant institutions remain under the surveillance of a national regulator.

The main reason for establishing separate regulators for complex firms is that activities of firms often lie beyond the jurisdiction of its regulator and, therefore, local regulators do not take externalities of their decision making into account. With regards to financial markets that could be especially important given that systemic relevant banks are globally interconnected and the potential costs of their distress tend to spread internationally. Further, local regulators have higher coordination costs, and cannot capitalize on the economies of scale. With regards to less complex firms, local regulators might be better informed about local macroeconomic decisions and can potentially better evaluate the information reported by firms (Hayek, 1945).

A theoretical literature has discussed different motives for a separation of regulators such as regulatory competition and protection against collusive behavior (Laffont and Martimort (1999); Martimort (1999); Laffont and Martimort (1999); White (2011)). In this paper, we empirically investigate two further dimensions how separation of regulation impacts regulatory outcomes as well as market structure. First, we evaluate how having two different regulators in the same market impacts regulatory outcomes. More specifically, we want to understand how a supranational regulator treats firms differently as compared to a national regulator. Second, we want to understand how the presence of two regulators in the same market impacts market structure. Recent evidence by Agarwal et al. (2014) suggests that local regulators are more lenient as compared to centralized regulators. If this is the case, we would expect that certain activities move from firms with a stricter regulator to those firms which are overseen by a more lenient regulator. The latter is likely to affect allocative efficiency and the distribution of rents in the economy.

In order to investigate these questions we focus on the financial industry given this is one of the most regulated industries around the globe. We exploit the establishment a supranational regulator in Europe, the so-called of the “Single Supervisory Mechanism” (SSM). Following uncoordinated resolution of distress banks in Europe following the financial crisis of the year 2008, leaders of Eurozone government have decided to establish the European Banking Union in 2012. Before this event, all banks in a given national market had been under national supervision of a single national competent authority (NCA). From September 2012 on, the SSM took over supervisory tasks over Eurozone

banks having assets of more than €30 billion, or alternatively, constituting at least 20% of their home country's GDP, while banks beyond this threshold remained with the NCAs.<sup>1</sup> Irrespective of whether banks are supervised by supranational versus national supervisors, the same regulatory rules applies to all banks (during our sample period this is Basel II/III). This regulation, however, allows substantial discretion by the supervisor with regards to approving internal risk models of banks and verifying the quality of banks' assets during day-to-day supervision.

Based on a micro-level regulatory dataset of Deutsche Bundesbank, we investigate how the establishment of a supranational regulator resulted in a differential treatment of German banks depending on the regulator assigned to them.<sup>2</sup> Next, we examine how different treatment by regulators affects the lending, trading and risk shifting activities of banks. There are several challenges in empirically identifying these questions. First, regulator's jurisdictions do not vary significantly over time. Second, it is difficult to infer whether observed outcomes depend on bank behavior, regulator's incentives or both. Thirdly, it is hard to find important and comparable metric across the myriad dimensions affected by different regulators overseeing different firms, particularly for complex entities such as banks. Finally, it is difficult to obtain regulatory data to compare actions by different regulators.

In a first step, we define a metric to assess differences in the regulatory treatment. To ensure banks' capital adequacy, regulators set and monitor banks' capital requirements.<sup>3</sup> While determining the numerator of capital requirement (i.e. Tier 1 capital) is straight-forward, setting the denominator (i.e. total risk-weighted assets) is associated with substantial discretion. Under the internal rating based approach (so-called IRB approach) banks use their internal risk models as an input to determine a specific risk-weight to each loan (see Section 3.1 for details). Regulators approve and monitor the validity of these models constantly (see e.g. Behn et al. (2016)). In sum, supervisors have substantial discretion in determining banks' capital requirements through their impact on banks' internal risk models as well as verifying the quality of collateral. The risk weights resulting from this process (that banks use to determine their capital charges) are the outcome of the supervisory process and constitute the main metric we apply to evaluate supervisors' actions.

We find that reported risk weights of SSM banks have significantly increased following the introduction of the new supranational regulator. While there is no statistical

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<sup>1</sup>From November 4th 2014 on, ECB had taken over the supervisory responsibility for roughly 130 financial institutions in the Euroarea.

<sup>2</sup>Our sample focuses on German banks that use the IRB approach to determine their regulatory capital requirements.

<sup>3</sup>According to Basel III regulators capital requirements defined as the ratio of Tier 1 capital to total risk weighted assets have to be at least 10.5%. For further details regarding capital regulation see ADD BASEL III DOC.

difference between risk weights of non-SSM banks around our event, we observe that risk weights of SSM banks increase by about 6 percent following the shift to SSM. Our main identification strategy relies on firm with multiple loans before and after implementation of SSM from at least one SSM and one non-SSM bank. Pre-implementation of SSM, risk weights are determined by NCA approved models for both group of banks. Post-Implementation of SSM, risk weights are determined by models approved by two different regulators. The difference between the riskiness of the loans to the same firm should be differenced out in post and pre periods. What remains are differences in the treatment of the two supervisors. Our identification strategy is not influenced by both firm specific shocks. Applying this estimation strategy to our data, we estimate that reported risk weights for the *same* firm have increased by about 7 percent for affected compared to unaffected banks following the establishment of the SSM. To summarize, banks under the local NCA report systematically lower risk weights for the same firm compared to banks under the SSM.

In general, a change in regulatory risk weights could be either driven by a change in regulatory treatment or a actual change in loan terms. To differentiate between these two alternative, we investigate the parameters that determine risk-weights that banks report to the different regulators. The most important output of these models are estimated borrower specific probabilities of default (PDs).<sup>4</sup> Another important ingredient in determining risk-weights is the verification of borrowers' collateral. The higher the value of a collateral for a given loan, the lower the risk weight of a given exposure. Given this relationship, supervisors also review the quality of the collateral a bank has collected from its borrowers.

Investigating the parameters underlying banks' risk-weights yields the following results: the reported probability of default (PD) for the *same* firm is 4 percent higher for SSM bank as compared to a non-SSM institute following our event. Importantly, the regulatory assessment of a firm's PD is independent from any relationship specific loan terms and, therefore, should be (on average) the same for a all lenders. We, further, document differences in verifying the quality of the underlying collateral between the different regulators. Banks under SSM surveillance report a by 6 percent lower collateral to loan ratio for the same firm as a non-SSM bank following the emergence of the SSM.

A potential concern to our analysis is that those banks who were assigned to the SSM are larger in size and, therefore, unobservable factors differentially impacted their risk measurement other than the regulatory treatment. To address this issue we take advantage that the SSM was severely short-staffed in the beginning and joint supervisory teams (JSTs) were composed mainly of members from NCAs. According to the 2016

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<sup>4</sup>Under the so-called foundation IRB approach banks determine only borrower specific PDs, while under the so-called advanced IRB approach banks additionally determine LGDs as well as other risk parameters.

European Court of Auditors report the staff shortage in the JST came as a surprise to the ECB since the workload for the SSM was "at least been underestimated".<sup>5</sup> Staff was brought in first for larger SSM banks due to their size. Hence, supervision of larger SSM banks moved to ECB and for other smaller SIs, supervision effectively remained with NCAs. We utilize shortage of staff to illustrate that the fraction of national supervisors among SSM banks results in more lenient supervisory treatment. Further we provide robustness tests applying various size cut-offs and do not find that our results are sensitive to this choice.

In the second part of our analysis we focus on the impact of differential regulatory treatment on banks' behavior. Given all of our banks operate in the same market and a certain activities tend to be stricter regulated under one of the two regulators, banks under the more lenient regulator might take over some of the more risky activities. More specifically, we expect that those banks that had to increase their risk weights due to the stricter supervision are under pressure to reduce their assets. Applying our main specification to lending outcomes, we find that banks under tighter supervision reduce their lending to the *same* firm by about 10 percent more than banks under the national supervisor following SSM establishment. This result is robust to the inclusion of firm  $\times$  quarter fixed effects to control for any changes in loan demand. Interestingly, banks closer to the 30 billion cutoff on either side reduce their lending relatively more than other banks. This results is in line with banks trying to "shop" for a more lenient supervisor.

All else equal especially, banks under SSM surveillance are incentivized to shed exactly those assets that are associated to the highest risk weight. Given this, we look at high PD firms and document that these firms receive less funding following the event from affected banks (i.e. relative to low PD firms the cut in lending by affected banks is concentrated mostly on high PD borrowers). Note that this specification allows to systematically control for bank specific shocks by including bank  $\times$  quarter fixed effects. By doing so, we control for bank specific shocks and, at the same time, test for risk shifting between the two set of banks. Indeed, banks under the national supervisor lend more to the riskier firms compared to the other group. This is explained by SSM banks cutting their lending to riskier firms as a consequence of tougher supervision.

Our main identification strategy is based on existing loans and, in practice, it is difficult to liquidate or sell these loans they mature. We, therefore, examine the impact

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<sup>5</sup>European Court of Auditors (2016): Staffing note from DGMS I and II dated 16 March 2015, just four months after the start of ECB direct supervision, and requesting 29 new FTEs for DGMS I and 88 new FTEs for DGMS II (all permanent staff) indicates that the future workload had at the very least been underestimated. A number of reasons for the request were given in the note, namely ... the higher than expected workload required for some supervisory tasks .... We were not shown any studies, reports or other documentation from before the ECB took up its supervisory duties in November 2014 that quantified the resources that would be necessary to cope with the new, considerably more complex supervisory system. Nor did the ECB perform any ex-ante, bottom-up assessments of its anticipated resource needs.

of the SSM establishment on the issuance new loans where the effect of shifting risky assets from SSM to non-SSM banks should be even more pronounced. Indeed our findings show that and the magnitude for new loans is considerably higher as compared to existing loans.

To illustrate the point of shedding riskier assets, we further apply data on banks' security holdings and security transactions from Deutsche Bundesbank. Given that security holdings are more liquid compared to loans, affected banks can instantly sell these assets. We find that the SSM introduction has resulted in a drastic reallocation of security holdings by German banks. Using ratings as proxy of risk weights, we see almost all of the risky corporate bonds (for market making or other reasons that create demand of these bonds) are being held by non-SSM banks following the establishment of a new regulator. Further, we document that banks that remain under local supervision take over market making activities from those banks that are under SSM supervision.

Overall we document risk shifting between non-SSM and SSM banks. One implication of this finding is that in the future, riskier activities will be conducted by smaller banks. Given smaller banks tend to be less difficult to be resolved in case of distress this could be a desirable outcome. However, if smaller institutes take over more risky activities while operating under a less sophisticated risk management system, the aggregate implication for financial stability are unclear.

Finally, we also examine implications of the SSM for the real sector. Using balance sheet data provided by Bureau van Dyck for the German corporate sector, we find that risky firms - all else equal - obtain relative less funding following the SSM establishment. The real effects of this event depends on the fraction of the banking sector that falls under the supranational supervisor. Countries like France where almost all banks are under tighter supervision, riskier firms financing is relatively more suppressed as in Germany where a considerable fraction of banks is still under NCA supervision.

A recent literature focuses on the link between capital regulation and the emergence of shadow banking. From a theoretical point of view, tight capital regulation spurs shadow banking activity and especially riskier borrowers can be incentivized to obtain external finance from the shadow banking sector. Consequently, relaxing capital requirements might be optimal (Plantin (2015), Martinez-Miera and Repullo (2018), Farhi and Tirole (2017)). Our paper provides empirical evidence that discrepancy in regulator behavior results in a very similar trade-off. Following the emergence of systematically stricter regulator, we observe a shift of the most risky borrowers to banks under the more lenient regulator. This finding is similar to Irani et al. (2018) who document for the U.S. corporate loan market that in response to higher regulatory capital requirements less-capitalized banks reduce loan retention and non-banks fill the void.

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