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Transnational Banking Supervision and Resilience: the SSM Case

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Transnational banking supervision and resilience: the SSM case

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Abstract

In this letter we assess the impact of adopting a transnational supervisor on the resilience of large and complex banks, exploring the establishment of the Single Supervisory Mechanism (SSM) in 2014. Using a differences-in-differences approach, we compare the performance of SSM banks *vis-à-vis* other banks with a similar size and complexity. Our results suggest that the adoption of a transnational supervisor can improve the resilience of large and complex banks, particularly for those operating in countries with larger banking sectors, higher market concentration and higher supervisory discretion.

JEL classification: G20; G21; G28; G32.

Keywords: banking; supervision; resilience; performance; ONDs.

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1. Introduction

While the main goal of banking supervision is arguably universal (i.e., to ensure the soundness of banks and the banking system), the way in which to attain it, and subsequent outcomes, can differ substantially across countries (Barth *et al.*, 2004; Cihák *et al.*, 2012; Tabak *et al.*, 2016) – begging the question: would it be more effective to establish a common, transnational supervisor for large and complex banks, rather than the current 'one country, one supervisor' approach?

On one hand, a transnational supervisor could be expected to implement regulation in a more coherent and effective manner across jurisdictions, namely by ensuring a better grasp of cross-border activities (Duijm & Schoenmaker, 2021), implementing best practices (Cuong & Pahm, 2021), fending off government pressures (Calomiris & Haber, 2014) and handling complex crisis cases (Véron, 2007). On the other hand, a transnational (and therefore more distant) supervisor may tend to follow "prescriptive supervisory rules (…) leaving little room for a judgement-led style of supervision" that considers material national idiosyncrasies (Ferran & Vabis, 2013: p.265). As such, whether or not implementing a transnational banking supervisor pays off seems an important and eminently empirical question.

In this letter we analyze the effects of establishing the Single Supervisory Mechanism (SSM) in the end of 2014, after which the ECB became the direct supervisor of large and complex banks headquartered in Euro Area countries. Using a differences-in-differences approach, we compare the performance of SSM banks *vis-à-vis* banks that, having a similar size and complexity to SSM banks, remained under the supervision of national authorities during the entire sample period as they were headquartered outside the Euro Area (European non-SSM banks). Our results suggest that the adoption of a transnational supervisor can improve the resilience of large and complex banks, particularly of those operating in countries with larger banking sectors, higher

market concentration and higher supervisory discretion.

2. Recent empirical literature

Several studies have addressed the effects of the establishment of the SSM on the banking sector, focusing on a variety of phenomena such as the stock market reaction in terms of excess returns (Carboni *et al.*, 2017; Loipersberger, 2018) and CDS 'bank-sovereign' contagion (Sáiz *et al.*, 2019), or income smoothing (Osma *et al.*, 2019). Our study draws closer to the works of Fiordelisi *et al.* (2017) and Avignone *et al.* (2021), which empirically investigate the impact of the launch of the SSM on bank riskiness by employing a differences-in-differences approach. In particular, both studies focus exclusively on Euro Area banks: the treated banks are significant institutions that fall under the direct supervision of the ECB (SIs) and the control banks are the less significant institutions which remain under the supervision of national authorities (LSIs). The findings obtained by Fiordelisi *et al.* (2017) suggest that, since the establishment of the SSM, SIs reduced their lending significantly more than LSIs, while recording a higher capitalization growth; whereas Avignone *et al.* (2021) document that SIs significantly reduced credit risk when compared to LSIs. In our view, however, concerns may be raised on whether the use of small and often retail-oriented banks (LSIs) as a counterfactual to the riskiness of large and complex banks (SIs). On this point, an increasing body literature has shown that the drivers of riskiness seem to significantly differ across business models (e.g., Marques & Alves, 2021), suggesting that a different approach may be more adequate to gauge this important question.

3. Data and methodology

In contrast to the cited literature, in our analysis we compare the performance of banks under the direct supervision of the ECB (SSM banks) with banks of a similar size and complexity located in other European countries (non-SSM banks). The sample of SSM banks is based on the list of

significant institutions published by the ECB in the end of 2014. The non-SSM sample consists of banks that are headquartered in European countries outside the Euro Area, with total assets above €30bln or among the 3 largest banks in each country. For both samples, we retained the banks with full data coverage in the Moody's Analytics BankFocus dataset for at least 3 out of the 4 years of each sub-period (2011-2014 and 2015-18). The final sample consists of 148 banks: 81 SSM and 67 non-SSM. The distribution of banks per country can be found in **Table A1**.

We assess the impact of the establishment of the SSM on bank riskiness by estimating the following differences-in-differences model:

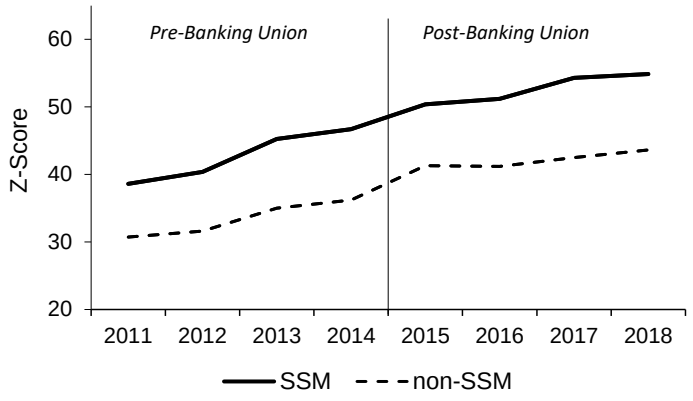
$$Y_{it} = \alpha_0 + \beta_1(SSM_i * BU_t) + \beta_2 SIZE_{it} + \beta_3 DIV_{it} + \beta_4 DEP_{it} + \beta_5 LOAN_{it} + \beta_6 NPL_{it} + \boldsymbol{\delta} B_i + \varepsilon_{it} \quad (1)$$

wherein Y_{it} is the outcome variable, including the Z-score, the sub-elements of Z-score (capital ratio and ROA) and the sub-elements of ROA (interest income, interest expenses, net interest income, net fees and commissions, net trading income, other income, staff expenses, administrative expenses, loan loss provisions)[3]; α_0 is the model constant; SSM_i is a dummy which takes on the value 1 if bank i falls under the supervision of the ECB; BU_t is a dummy which identifies if year t belongs to the post-Banking Union period (2015-18); the remaining right-side variables are bank controls used in literature (size, income diversification, customer deposits, gross loans customers, and non-performing loans), which are divided by total assets except size (log of total assets); B_i is a dummy to control for unobserved time-invariant confounders at the bank-level; β and δ are the regression coefficients; and $\varepsilon_{i,t}$ is the disturbance term. All variables (left and right-side) are transformed using the natural logarithm.

[3] All left side variables are risk-adjusted, i.e., divided by the standard deviation of ROA for the full period.

As required by the differences-in-differences approach (Imbens & Wooldridge, 2009), **Figure 1** shows a parallel trend in the evolution of the main outcome variable (Z-score) for both groups of banks (SSM and non-SSM) prior to the establishment of the SSM.

Figure 1. Evolution of the Z-score prior to the establishment of the SSM



Notes: Z-score weighted by total assets, in SSM and non-SSM countries.

In order to check whether our baseline results are sensitive to market and institutional factors, we compare the main coefficient of interest (β_1) for sub-samples of banks that, in the pre-Banking Union period, operated in countries with (i) large *vs* small banking sectors, (ii) high *vs* low market concentration, (iii) high *vs* low quality of institutional environment, and (iv) high *vs* low supervisory discretion. The countries are separated using the median value of the following dimensions, respectively: (i) ratio of total assets held by banks in our sample to GDP, (ii) Herfindahl-Hirschman Index (World Bank's Global Financial Development Database), (iii) sum of scores for Voice and Accountability, Rule of Law, Regulatory Quality, Control of Corruption, Government Effectiveness and Political Stability and Absence of Violence/Terrorism (Barth *et al.*, 2004); and (iv) level of supervisory options and national discretions for each country as assessed by CEBS (2008a, 2008b).

4. Results

The results in **Table 1** suggest that prior to the Banking Union (2011-14) SSM banks recorded a significantly higher distance-to-distress than non-SSM banks did, mainly due to higher levels of risk-adjusted capitalization. On the profitability side, however, no significant difference emerged, as the higher net margin of SSM banks was offset by a lower ability to generate trading income and higher risk costs. As for the post Banking Union period (2015-16), the distance-to-distress gap increased further between SSM and non-SSM banks, backed by a significant difference also in profitability – steaming from an increase in the generation of fees and commissions that more than covered the higher operating expenses. In general, these results are in line with the differences-in-differences regressions reported in **Table 2**, which also indicate that in the post-Banking Union period SSM banks benefitted from lower funding costs.

Table 1. Comparison of means

	Pre-Banking Union			**Post-Banking Union**		
	SSM	**Non-SSM**	**Diff.**	**SSM**	**Non-SSM**	**Diff.**
Z-score	42.6	33.4	9.2***	52.7	42.1	10.6***
Risk-adj. Total equity	46.5	31.7	14.8**	56.0	40.0	16.0***
Risk-adj. ROA	1.81	1.71	0.10	2.81	2.10	0.71***
Net interest income	1.15	0.96	0.18***	1.19	0.98	0.21***
Net fees & commissions	0.45	0.47	-0.02	0.49	0.44	0.05*
Net trading income	0.13	0.28	-0.15***	0.14	0.26	-0.12***
Other income	0.34	0.15	0.19***	0.31	0.15	0.15***
Staff expenses	0.66	0.64	0.02	0.69	0.62	0.07***
Administrative expenses	0.73	0.63	0.10***	0.72	0.66	0.06**
Loan loss provisions	0.42	0.24	0.18***	0.25	0.09	0.15***

Notes: Weighted mean values. Z-score, risk-adjusted total equity and ROA are computed using the standard deviation of ROA for the full sample period as the denominator; the remaining variables are computed as percentage of total assets. Variables winsorized at 1 and 99 percentiles. we compute Welch's t-test for the comparison of weighted means (Pasek, 2020). ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively.

We highlight three aspects possibly underlying these results. Firstly, the superior profitability of SSM banks in in the post-Banking Union period may reflect the fact that the SSM has adopted profitability and business model sustainability as a key supervisory priority since its onset (e.g., ECB, 2016). Secondly, the higher operating costs of SSM banks could reflect the

compliance costs (e.g., IT and specialized staff) stemming from tighter supervisory requirements on internal controls and reporting (Ayadi *et al*, 2016); on the other hand, in the current context of staff and branch reduction, such cost add-ons may reflect the efforts to digitalize business processes and one-shot expenses with voluntary retirement schemes. Finally, the focus on reducing non-performing exposures, via sales or securitizations, could explain the overall reduction in the cost of risk.

Table 2. Baseline regressions: Z-score decomposition

	Z-score	**Total equity**	**ROA**	**Interest income**	**Interest expenses**	**Net interest income**
SSM*Post-Banking Union	**0.209*** **	**0.207*** **	**0.079*** **	**-0.235*** **	**-0.486*** **	**-0.029***
Size	-1.176***	-1.154***	-1.167*	-0.215	-0.254	-0.388***
Income diversification	0.078***	0.057***	0.059***	-0.008	-0.024	-0.052**
Customer deposits	0.065	0.000	0.117*	-0.302**	-0.637***	0.212***
Gross loans to customers	0.030	0.046	-0.007	0.728***	0.598***	0.133***
Non-performing loans	-0.074***	-0.016	-0.079***	0.116***	0.445**	0.004
Observations	1171	1171	1171	1171	1171	1171
R-square	0.353	0.366	0.095	0.419	0.308	0.211
	Net fees and commissions	**Net trading income**	**Other income**	**Staff expenses**	**Administra-tive expenses**	**Loan loss provisions**
SSM*Post-Banking Union	**0.015***	**0.010**	**0.011**	**0.045** **	**0.051***	**-0.004**
Size	-0.247***	0.009	-0.162***	-0.530*	-1.275***	-0.009
Income diversification	0.010	0.085***	0.053***	0.002	0.057*	0.001
Customer deposits	0.007	-0.018	-0.061*	-0.012	-0.063	-0.011
Gross loans to customers	0.075***	0.013	-0.012	0.216***	0.029	0.008*
Non-performing loans	0.016*	0.017	0.028**	0.014	0.036	0.034***
Observations	1171	1171	1171	1171	1171	1171
R-square	0.131	0.035	0.063	0.134	0.254	0.011

Notes: OLS regressions with bank fixed effects and controls. All dependent variables are risk-adjusted (i.e., divided by the standard deviation of ROA for the full sample period). Both dependent and independent variables are transformed using natural log, except for total assets for which we use $\log_{10}$. ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively.

Next, we check for heterogenous effects of the establishment of the SSM for banks operating in different market and institutional settings. Indeed, the results in **Table 3** show that the positive effect of the SSM on distance-to-distress is significantly higher for banks operating in countries with larger banking systems and higher market concentration – suggesting that a transnational supervisor may be better able to resist government pressures (Calomiris & Haber, 2014). As for the institutional setting, while we do not find any significant difference in the impact

of SSM for banks operating in countries with different institutional quality, such difference does emerge when considering the level of supervisory discretion. Namely, the results suggest that the SSM was more beneficial for banks operating with high supervisory discretion – which we interpret as evidence that transnational supervision indeed allows the implementation of harmonized, best supervisory practices across countries.

Table 3. Sensitivity analyses

	High	**Low**	**Diff.**
Panel A: Size of banking sector (total assets of SIs to GDP)			
SSM*Post-Banking Union	**0.271*** **	**0.173*** **	**0.098** **
Observations	597	574	
R-square	0.457	0.248	
Panel B: Market concentration (Herfindahl-Hirschman Index)			
SSM*Post-Banking Union	**0.256*** **	**0.173*** **	**0.083** **
Observations	566	605	
R-square	0.352	0.371	
Panel C: Quality of institutional environment			
SSM*Post-Banking Union	**0.164*** **	**0.221*** **	**-0.057**
Observations	633	538	
R-square	0.409	0.320	
Panel D: Supervisory discretion (options and national discretions)			
SSM*Post-Banking Union	**0.272*** **	**0.125*** **	**0.147*** **
Observations	571	443	
R-square	0.435	0.204	

Notes: OLS regressions with bank fixed effects and controls on sub-samples (above or below median), computed using four country-level variables: in Panel A, the ratio of total assets held by banks in our sample to GDP; in Panel B, the Herfindahl-Hirschman Index (World Bank, Global Financial Development Database); in Panel C, the sum of scores for Voice and Accountability, Rule of Law, Regulatory Quality, Control of Corruption, Government Effectiveness and Political Stability and Absence of Violence/Terrorism (Barth *et al.*, 2004); in Panel D, the level of supervisory options and national discretions for each country as assessed by CEBS (2008a, 2008b) (Panel D). The dependent variable in all regressions is the natural log of Z-score. For brevity reasons, only the coefficient of the main independent variable is reported. In the last column we compute the Chi-Square Test for the equality of coefficients. ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively.

5. Conclusions

The heterogeneity of supervisory practices and outcomes across countries has fueled the debate over the costs and benefits of transnational supervision. Using the establishment of the SSM as empirical setting, we compare the distance to distress of large and complex banks under the direct supervision of the ECB with similarly large and complex banks operating outside the SSM. Our results suggest that since its establishment the SSM has been relatively successful in increasing

the resilience of supervised entities, particularly for those operating in countries with larger banking sectors, higher market concentration and higher supervisory discretion. In our view, these results may be interpreted as suggesting that transnational supervision seems to bear a superior ability to fend off government pressures and harmonize best supervisory practices.

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Appendix

Table A1. Distribution of banks per country

SSM	#Banks	Non-SSM	#Banks
Austria	4	Bulgaria	3
Belgium	4	Croatia	3
Estonia	2	Czech Republic	3
Finland	1	Denmark	4
France	10	Hungary	3
Germany	15	Liechtenstein	3
Greece	2	Norway	2
Ireland	4	Poland	5
Italy	7	Romania	2
Latvia	3	Sweden	6
Luxembourg	2	Switzerland	7
Malta	2	United Kingdom	26
Netherlands	6		
Portugal	3		
Slovak Republic	3		
Slovenia	3		
Spain	10		
Total	**81**	**Total**	**67**

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