

# **Does banks' systemic importance affect their capital structure adjustment process?**

**Accepted for publication in Journal of Banking and Finance**

**Available online 7 March 2019, 105518**

**<https://doi.org/10.1016/j.jbankfin.2019.03.002>**

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## **Non-technical summary**

Due to the vital role banking institutions play in the economy and the systemic risk their failure causes, it is not surprising that they are subject to many regulatory constraints, such as capital requirements. The global financial crisis of 2007–09 have spawned substantial pressures on banks' capital positions. In response, the Basel Committee on Banking Supervision redesigned the Capital Requirements Regulation, which eventually could have severe macroeconomic implications. In this regard, one of the new elements in the Basel III guidelines is the requirement of a capital surcharge for global Systemically Important Financial Institutions (SIFIs), which creates a higher loss absorbency capacity. Hence, SIFIs will be partly internalizing the costs of the risk externality they impose on the other banks and on the overall economy. This is expected to foster the stability of the financial system and increase the resilience of banks to exogenous shocks allowing them to sustain the real economy. While this regulatory adjustment may prove to be successful in the long-run, it currently poses at least two challenges. First, it requires the identification of SIFIs, as well as a quantification of their systemic risk exposure. Second, there is little knowledge on whether and how SIFIs make capital structure adjustments and the extent to which their adjustment process differs from or affects non-SIFIs. Against this backdrop, our contribution mainly pertains to the second issue, while touching upon the first one, to analyse the dynamics of SIFIs' capital structure. In particular, we provide insights into how SIFI banks, versus other peers, adjust regulatory capital ratios vis-à-vis a plain leverage ratio, while linking differences in adjustment costs and speeds towards optimal capital targets.

Both theoretical and empirical studies have documented that, like other nonfinancial firms, banks have an optimal capital structure, that is they set target capital ratios. Some studies also show that the determinants of banks' capital structure are similar to those of nonfinancial firms. However, random shocks and frictions in global financial markets may affect banks' actual capital ratios creating a positive or negative wedge between the actual and the target (i.e. optimal) capital ratio. Also, minimum capital requirements might not be binding because banks set target capital ratios well above minimum regulatory, and thereby such regulations might not affect banks' capital adjustment. Consequently, bank management is expected to periodically adjust towards the target capital structure. In addition, the adjustment speed depends on the trade-off between the costs (or the benefits) of being off the capital target and the costs (transaction costs and information asymmetries) of instantaneously adjusting back to the optimal capital structure. Overall, both banks and firms converge to the target level only partially at a certain adjustment speed, because of the magnitude of the frictions and governance problems. However, banks are known to adjust to their target capital ratio faster than nonfinancial firms.

The objective of this paper is to contribute to the debate on optimal capital structure and bank capital structure adjustment, by empirically investigating the possible conflicts between regulatory and non-regulatory optimal capital structure and whether banks' adjustment speed depends on their systemic importance. The latter could affect the bank's adjustment speed in two ways. On the one hand, systemically important banks enjoy favourable treatment from market participants as they have better access to government safety nets and subsidies. These banks also tend to have lower funding costs and higher credit ratings due to other safety net subsidy benefits. Hence, SIFIs may have easier access to the equity and debt markets to adjust their capital structure more frequently. In addition, the failure of a systemically important bank may spill over to the real economy and pose a threat to the stability the economy as whole. Hence, by reducing the costs of financial distress, adjustment to the target should be more valuable for systemically important banks.

Given these arguments, this paper addresses the following question: 'Do systemically important banks adjust their capital ratio at the same speed when they are above and below the target?' Besides, we ask: 'Are there differences in adjustment mechanisms and adjustment speed for leverage vis-à-vis regulatory capital requirements? Might they conflict?' and look into the mechanisms through which banks adjust their capital ratio (i.e. balance sheet reshuffling). Overall, these questions are novel, as previous studies have focused on the equilibrium implications of capital requirements and the dynamics of bank capital towards the new equilibrium, and the speed at which banks can adjust their capital ratios and mechanisms they can resort to.

In our empirical study, we limit the sample to listed banks headquartered in any of the OECD countries and analyse the period from 2001 to 2012. The panel dataset consists of 567 banks, from the 28 major advanced OECD countries. The sample accounts for 409 U.S. banks and 158 non-U.S. banks, among which 96 are European (from 22 countries) and 22 are Japanese. The data used combines accounting and market data from various sources. We retrieve bank stock price information and other market data from Bloomberg. We obtain bank-level accounting data from Thomsen-Reuters Advanced Analytics and Bloomberg. We collect macroeconomic data from the OECD Metadata stats.

In a first step, we implement a general partial adjustment model (for both non-risk weighted leverage and risk-weighted regulatory capital ratios) to model and estimate the target capital ratios. Then, we look into unconditional adjustment mechanisms when banks (i.e. broad bank sample) are either above or below their target capital ratios (i.e. capital gap), by investigating growth rates in assets (specifically lending), liability and equity classes. In a second step, we allow for time-varying speed of adjustment, specified by the covariates that quantify systemic importance of banks, and could affect the dynamics of banks' adjustment speed, mechanisms and behaviors. For that, we implement two systemic risk measures (exposure to systemic risk and contagion risk), two systemic size measures (crude size and systemic size) as well as an aggregated systemic risk index. Subsequently, we analyse whether the adjustment mechanisms differ for SIFIs, depend on the type of capital ratio and depend on the sign of the capital gap.

The empirical findings reveal that the speed at which banks adjust and the way they adjust show large differences. In general, banks are more flexible and faster in adjusting to their leverage capital ratio than to regulatory capital ratios; and therefore, deviations from optimal leverage ratios might be costlier for bank shareholders. However, SIFIs are slower than non-SIFI banks in adjusting to their target (optimal) leverage ratio but more concerned about adjusting quickly to reach their target regulatory ratios. Going deeper by investigating the specific aspects characterizing SIFIs, we find that these opposite findings on the leverage ratio and regulatory ratio are explained by the differential impact that size and systemic risk have.

Larger banks, too-big-to-fail seen as more complex and opaque, adjust slower and this effect dominates for the leverage ratio, whereas systemically riskier banks adjust faster and more so their regulatory capital ratios. Furthermore, banks that are closer to the regulatory minimum requirements are constrained in the adjustments they can make on their leverage ratio, resulting in a slower speed of adjustment. Further explorations document that SIFIs might be more reluctant to change their capital base by either issuing or repurchasing equity, or alter marketable securities and liquid instruments positions, and instead prefer sharper downsizing and/or faster expansion. That is, they prefer to reshuffle their risk-weighted assets or alter their asset holdings (including lending policies) to meet regulatory capital requirements. However, SIFIs found to extensively rely on equity issues when needed, only if they need a swift adjustment back to the optimal capital structure when they might be facing regulatory pressures. Overall, this asserts that that balance sheet adjustment processes are more procyclical for SIFIs. Systemic importance, i.e. systemic risk and size characteristics, significantly affect the extent to which banks adjust their capital ratios, and might play an opposite role (on the speed of adjustment) for leverage ratio vis-à-vis regulatory capital ratios. Such results indicate that SIFIs are slower than small banks in adjusting to their target leverage ratio but swifter in reaching their target regulatory ratios.

Our findings contribute to a better understanding of the bank capital structure adjustment literature and carry various policy implications. In case of any sudden need to augment capital ratios at systemically important banks, i.e. when they are undercapitalized, regulators and supervisors should be aware that such institutions would, according to our results, downsize to a larger extent than smaller banks (including loan contraction), which in turn have negative effects on real economic activity. Accordingly, if in a given country the market share of systemic banks is relatively large, the real effects on the economy will consequently be more important. Symmetrically, a relief in capital constraints or a positive capital shock is also expected to push SIFIs to expand faster than other banks. On the whole, this procyclical behavior is more pronounced for systemic institutions, which are however also found to more extensively rely on equity issues when needed than other banks. Such findings are also expected to be particularly useful for supervisors when they gauge and adjust the specific capital requirement they can impose on each bank in the industry differently and separately, which they are allowed to do through Pillar 2 of the Basel III Accord. The effects in our sample may be limited as we focus on banks from 28 OECD countries for which the institutional setting is more homogeneous. A further extension based on a larger cross-country setup could uncover these potential relationships.