

Too-Big-To-Fail Reforms and Financial Stability

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The Financial Stability Board (FSB) [published](#) its consultation report on the evaluation of effects of too-big-to-fail (TBTF) reforms for global systemically important banks (G-SIBs) in June. The reforms consist of three components: i) standards for additional loss absorbency through capital surcharges and total loss absorbing capacity (TLAC) requirements; ii) recommendations for enhanced supervision and heightened supervisory expectations; and iii) policies to improve the resolvability of banks. The FSB concludes that indicators of systemic risk and moral hazard have moved in the right direction. In this note, we will mostly focus on the third element of reforms and its impact on financial stability.

We show that while higher capital and liquidity regulation and TBTF reforms have significantly improved the resilience of GSIBs, improperly designed or overly stringent resolution regimes may ultimately lead to a financial system that can be fragile under systemwide shocks. The financial system can be viewed as a highly dense and interconnected network of banks and “lightly” regulated shadow banking entities. Large negative systemwide shocks increase the risk of contagion in dense financial networks. We will argue that improperly designed bank resolution regimes embedded in the financial system with lightly regulated non-bank financial intermediaries can amplify this effect and exacerbate contagion.

Bail-ins vs Bail-outs

Public bailouts of banks can be a source of moral hazard, they can also undermine market discipline. Bailouts also threatened the [solvency of different European countries](#) almost a decade ago. In an ideal world, losses of a failed enterprise would all be allocated to its owners and creditors in free market economies. Bail-in tools and powers of resolutions authorities are among the main elements of FSB’s Key Attributes of Effective Resolution Regimes for Financial Institutions ([Key Attributes](#)). The bail-in approach aims to shift the cost of bank failures to bank shareholders and creditors. Bail-in powers generally refer to the ability of resolution authorities to impose losses on private stakeholders in order to recapitalize a failing bank. Potential advantages of properly designed bail-in mechanisms are well-known, some of them are: improved *ex ante* risk management and so lower levels of moral hazard; improved credit monitoring and market discipline; lower funding cost advantages due to lowering public guarantees and subsidies; and improved protection of taxpayers.

We now briefly highlight some of the risks and disadvantages of *overreliance* on bail-ins. It is well-known -- particularly among academics (see, e.g. [Avgouleas and Goodhart \(2015\)](#)) -- that

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strict bail-ins can exacerbate panic-based and systemic crises, and that some forms of carefully designed and limited public support may ultimately be required to maintain financial stability under environments of heightened systemic risk. It is important to analyze and monitor who assumes the burden under the bail-in process and how losses are estimated and allocated when bail-in tools are triggered. According to the FSB, more than 40 percent of the bail-in-able debt in the EU banking sector is held by non-bank financial institutions, (FSB [consultation report](#); p.27). This indicates that a notable proportion of bank bondholders are non-bank financial intermediaries. In systemic crises, transferring the burden of losses from highly regulated G-SIBs to lightly regulated or unregulated shadow banking entities can increase the risk of contagion – a topic we will return to shortly. Triggering the bail-in process may also generate a capital flight, creditors who sense the possibility of a bail-in may sell debt or hedge their positions through short selling or purchase of credit protection which may lead to damaging the wider market confidence. [Dell'Ariccia, Peria, Igan, Awadzi, Dobler, and Sandri \(2018\)](#) have documented that imposing losses on unsecured creditors may have adverse implications not only for the bailed-in bank but also for other banks. More specifically, identifying 16 bail-in events in EU countries from 2013 to 2016, the IMF researchers show that in most of these cases, bank equity prices drop and credit default swap spreads increase significantly in countries other than the country in which the event took place.

Contagion

It is well-known from the work of [Acemoglu, Ozdaglar, and Tahbaz-Salehi \(2015\)](#) that a more densely connected and so *diversified* financial network can reduce contagion only if negative shocks affecting the financial system are sufficiently small in terms of their number or magnitude. When the magnitude or the number of negative shocks exceeds a certain point, which depends on the excess liquidity in the financial system, dense interconnections increase contagion and financial instability. As the number of bank counterparties and creditors increases and counterparty exposures and liabilities become more diversified, the financial network becomes denser and highly fragile under multiple negative shocks or a single large-sized shock. Intuitively, in a densely connected financial network, the adverse effects of negative shocks to distressed banks are directly transmitted to a large number of creditors and so increases contagion. The main “shock absorber” in dense financial networks is the excess liquidity available in non-distressed firms. If some of these firms are lightly regulated, the excess liquidity in the financial system can decrease, and the financial network becomes more vulnerable to negative shocks.

This result becomes useful when analyzing the FSB’s resolution framework, particularly its bail-in power and tools. Documenting the exposure of EU banks to shadow banking entities, [Abad, D’Errico, Killeen, Luz, Peltonen, Portes, and Urbano \(2017\)](#) show that EU banks have significant exposures to shadow banking entities globally. For instance, the exposure of EU banks to the U.S. shadow banking entities is approximately 27 percent of total exposures. The researchers illustrate that EU banks are connected to these shadow banking entities in a highly diversified

and dense way. They also document that almost 90 percent of shadow banking counterparties (by value of exposures) are lightly regulated or unregulated. If an improperly designed and stringent resolution framework with overreliance on bail-in powers is embedded in a highly dense financial network where a notable amount of bail-in-able debt is held by lightly regulated shadow banking entities, contagion may increase significantly under negative systemwide shocks.

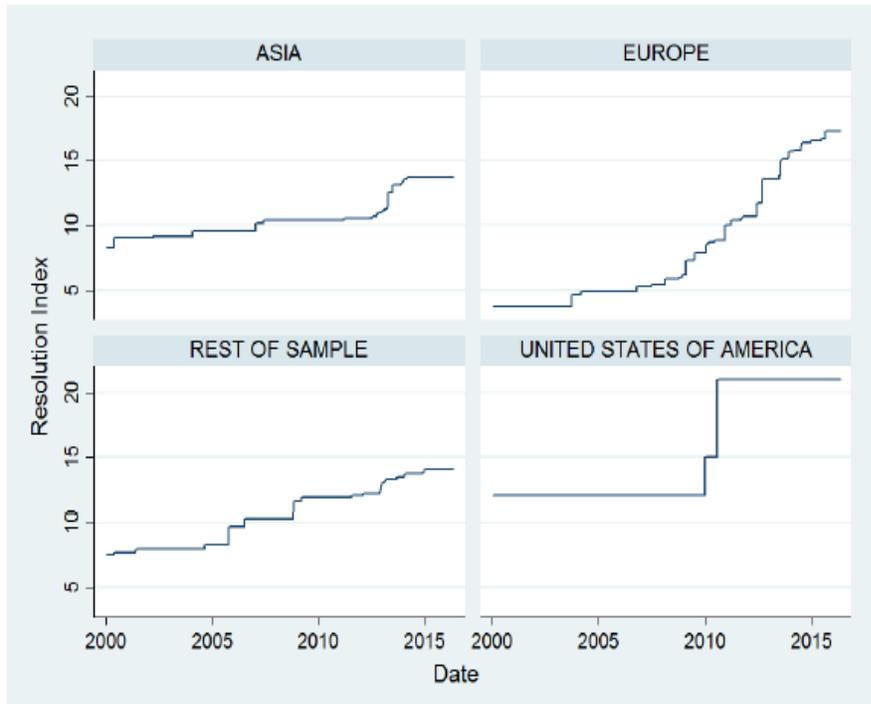
Stays on early termination rights of counterparties of distressed banks are also among important key attributes of the FSB's resolution framework and may have adverse impact on financial stability. Stay rules essentially rescind creditors' contract termination rights and grant them to the resolution authority or the debtor over a period of often 2 days. [Ghamami, Glasserman, and Young \(2020\)](#) show that stays in over-the-counter (OTC) derivatives markets can increase contagion when firms are not highly leveraged in terms of their derivatives transactions -- which is increasingly the case among GSIBs. The intuition behind this result is simple ([Ghamami \(2020\)](#)): stays can halt the flow of payments resulting from contract terminations, the flow of *contract termination payments* over the stay period can reduce contagion as long as derivatives leverage is low in the financial system. Consider a distressed bank that has entered resolution and one of its non-defaulting counterparties. Suppose that if all derivatives contracts between the two banks are fully terminated, the non-defaulting bank should make a payment to the distressed bank. And, the non-defaulting bank could fulfill this payment obligation easily due to its low derivatives leverage. The failing bank would then use this receivable to make payments to its other creditors. Under stays, selective or no contract termination can be enforced. So, there can be a suspension or distortion in the flow of payments through the financial system, this can increase the systemwide payment shortfall.

Resolution Regimes and Systemic Risk

In the previous section, we argued that a dense financial network of GSIBs and lightly regulated shadow banking entities operating under stringent resolution regimes can be fragile under systemwide negative shocks due to the heightened risk of contagion. We now use [CoVaR](#), a widely-used reduced-form measure of systemic risk and highlight the empirical results of [Beck, Radev, and Schnabel \(2020\)](#). As will be discussed shortly, their work suggests that systemic risk increases more for banks under more *comprehensive* resolution frameworks after negative systemwide shocks.

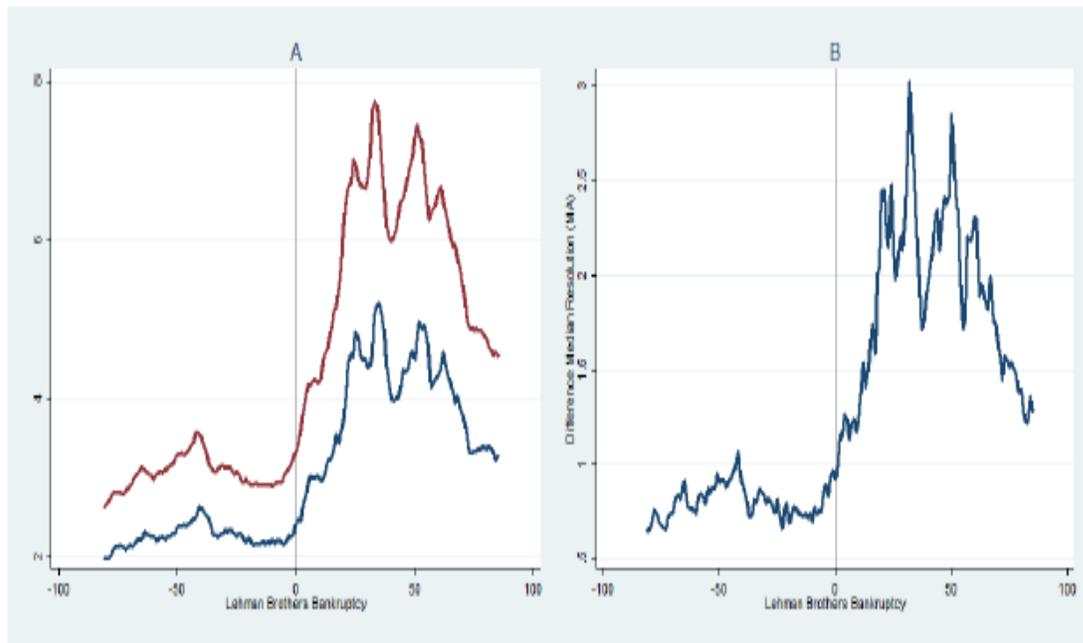
To capture the comprehensiveness of the FSB's resolution framework, Beck et al construct a resolution index (RI) taking values between 0 to 22. Higher values of RI represent more comprehensive resolution regimes. Figure 1 shows the dynamics of RI for the U.S. and averaged across three groups of countries: Europe, Asia, and emerging countries. The increase in RI over time has been accelerated by the 2007-2008 financial crisis. Figure 1 also shows substantial variation in the implementation of resolution regimes across countries.

Figure 1. Resolution Index: Average per country group. This figure depicts the average dynamics of the Resolution Index for Europe (France, Germany, Italy, Netherlands, Spain, Switzerland and the United Kingdom), Asia (China, Hong Kong, India, Indonesia, Japan, Republic of Korea, Singapore), the United States of America and the rest of the sample (Australia, Brazil, Mexico, the Russian Federation, South Africa and Turkey) between 2000 and 2016. Source: Beck et al (2020).



Returning to the reduced-form measure of systemic risk, $\Delta CoVaR$ can be defined as the change in the *value at risk* of the financial system conditional on a bank being under distress relative to its median state -- it quantifies the incremental change in systemic risk when a bank is under in distress relative to its median state. Beck et al use bank specific balance sheet data for 760 banks in 22 FSB countries, so $\Delta CoVaR$ captures the *conditional systemic risk* in the banking sector in their study. Figure 2 illustrates the dynamics of systemic risk after a negative systemwide shock, the default of Lehman Brothers. Panel A indicates that banks in countries with above median resolution regimes on average have higher $\Delta CoVaR$. Panel B highlights the clear divergence between the two bank groups after the default of Lemman.

Figure 2. CoVaR, Lehman. Panel A represents the average CoVaR of banks in countries with Sub-median (blue) and with Above-median Resolution Regime (red). Panel B represents the difference between average CoVaR of banks in countries with Sub-median (blue) and with Above-median Resolution Regime (red) from Panel A. Source: Beck et al (2020).



The insight from Figure 2 -- that systemic risk in the banking sector increases more strongly for banks under more comprehensive resolution regimes under negative systemwide shocks – can be confirmed more formally. Similar to event studies, Beck et al employ a difference-in-differences estimation framework and regress $\Delta CoVaR$ on a given event representing a systemwide shock, and its *interactions* with the resolution index as well as bank and macroeconomic variables. The regression coefficient on the interaction term between RI and the event is the main parameter of interest. It measures the sensitivity of banks' contribution to systemic risk in response to the systemwide shock to the comprehensiveness of the resolution framework. It is positive if systemic risk increases more in the presence of a more comprehensive resolution regime. The researchers find that this regression coefficient is indeed positive (Beck et al; p.46), showing that systemic risk increases more strongly after the default of Lehman for banks under more comprehensive resolution regimes. This suggests that overly comprehensive resolution regimes can have amplifying effects for systemwide events. This result is almost reversed under idiosyncratic or bank-specific shocks, more comprehensive resolution regimes have no effect or can even reduce systemic risk under negative idiosyncratic events.

Concluding Remarks

Higher capital and liquidity regulation and TBTF reforms have made the financial system resilient to bank-specific and idiosyncratic shocks. However, since the financial system remains highly dense, particularly in terms of the interconnectedness among banks and shadow banking entities, it can be fragile under systemwide shocks. Improperly designed and overly comprehensive or stringent resolution regimes can further increase this fragility. There are trade-offs between moral hazard and systemic risk. Overreliance on bail-in tools and powers may exacerbate panic-based crises. Also, stay rules and powers of resolution authorities need to be carefully designed due to their potential adverse impact on contagion. The FSB's consultation report notes that risks arising from the shift of credit intermediation to the non-bank financial intermediaries should be closely monitored. Improving the regulation of different shadow banking entities combined with improved resolution regimes can reduce both moral hazard and systemic risk.