

Chapter 14 – Micro- vs. Macro-prudential Regulation¹

Traditional regulation is designed to ensure the safety of individual financial institutions. Such *micro-prudential* regulation focuses on controlling the risks *within* intermediaries, reducing but not eliminating the possibility of failure. Yet, as the financial crisis of 2007-09 underscored, this kind of oversight is insufficient to prevent systemic risks.²

How, then, can regulators limit systemic risks in the future? One approach is to concentrate on the costly spillovers – the *externalities* – that the actions of one financial institution impose on other institutions and markets. These externalities can lead to systemic threats that authorities address using *macro-prudential* regulatory tools.

There are two types of externalities that pose systemic risks requiring regulatory intervention: (1) *common exposure* and; (2) the boom and bust cycles linking financial and economic activity – also known as *pro-cyclicality*.

Common Exposure. When many institutions, even small ones, have a common exposure to a specific risk, it can make the system vulnerable to even a small shock. In biology, for example, the creatures in an ecosystem may be sensitive to changes in climate or chemistry, or to the introduction of a new life form. Imagine the impact on “elk risk” when wolves were returned to Yellowstone National Park. More dramatically, think of the mass extinctions that punctuate the history of life on earth. Most species that ever lived are now extinct, but mass extinctions occurred only infrequently. On those occasions, many creatures presumably faced a common exposure to a change in their environment.

In finance, common exposures can arise *directly* or *indirectly*. Intermediaries may be directly exposed through financial contracts to one large, but frail, institution. They also may be exposed through any counterparties who are themselves directly exposed. Or, they may simply be exposed to the same underlying risks.

In the crisis of 2007-09, subprime mortgages infected many financial instruments and markets, ranging from asset-backed commercial paper (ABCP) to collateralized debt obligations (CDOs) to the market for repurchase agreements (repo). The infection damaged financial institutions through their portfolios and through their access to credit. When the contagion spread to the repo market, a biologist might say that the crisis became an “extinction-level event” for the species of large U.S. investment banks.

¹ This note draws significantly on the discussion of systemic risk in the BIS *Annual Report*, June 2009, pages 128-135.

² Conversely, most failures of intermediaries do not threaten the financial system, so that regulatory efforts to secure individual institutions may do little to make the financial system more secure.

Common exposure may be related to intermediary size, but it does not have to be. Large intermediaries usually are more interconnected, so they are typically a greater source of systemic risk. However, even small institutions that have identical balance sheets face common risks. Once again, a biological analogy is instructive. To survive, living creatures need water in its liquid form: their size does not matter. Liquidity is a matter of survival in finance, too.

Pro-cyclicality. How do the cyclical patterns in finance and other economic activity pose systemic risks? Financial activity appears especially prone to virtuous and vicious cycles. The interaction between financial and economic activity can be mutually reinforcing, leading to unsustainable booms and busts.

In a boom, investor complacency lowers market risk premia, boosting spending and profits that reinforce financial euphoria. Rising asset prices boost wealth and raise the value of collateral, making it easier for lenders to overcome the information asymmetries that lead to adverse selection and moral hazard. Both the value of bank capital and the willingness to leverage that capital rise, increasing credit supply and spurring new economic activity that contributes to financial euphoria. Rising asset prices also lower the cost of making markets, adding to liquidity (and to complacency).

As we saw in the Great Deleveraging that began in 2007, busts reverse this process. Falling asset prices depress wealth, collateral, bank capital, credit supply and liquidity. Leveraged intermediaries scramble to deleverage (to reduce risk-taking), but the financial system cannot deleverage all at once in a safe fashion. The liquidity and deleveraging spirals highlighted in the modules of Chapters 2 and 3 reinforce the vicious cycle both in finance and in economic activity. The depletion of capital makes the financial system vulnerable even to a modest shock. Someone (government) outside the financial system must supply the liquidity to counter a systemic crisis. Similarly, someone (government) outside the system may have to recapitalize damaged intermediaries.

Macro-prudential policy. Relying on someone outside the financial system to bear the costs of risky behavior encourages risk-taking that can lead to a systemic crisis. Macro-prudential regulation aims to make intermediaries bear – or *internalize* – the costs of their behavior, including the externalities (spillover costs) that fall on others.

The regulatory tools may be familiar, but macro-prudential policy applies them differently. For example, regulatory capital requirements would rise with an institution's contribution to systemic risk. That contribution depends on an intermediary's interconnectedness and the riskiness of its balance sheet, and is often correlated with its size. To be effective in limiting systemic threats, a *regulatory capital surcharge* probably would rise more than proportionally to a firm's systemic risk contribution. In this way, intermediaries that are seen as

systemically important would have an incentive to limit the systemic risks that they create.³

To counter the systemic risks from boom/bust finance, macro-prudential regulators also could make capital requirements pro-cyclical. In good times, capital requirements would rise to create a capital buffer against adverse shocks and to discourage euphoria. When leaner times arrive, receding capital requirements would allow intermediaries to meet the credit needs of healthy borrowers. Overall, the effect would be to dampen the cyclicity of credit supply that can be an important source of economic instability.

Other macro-prudential tools may be new and different. For example, regulators could require banks to buy catastrophe insurance: In the event of a systemic crisis, the payout from the insurance contract would replenish bank capital precisely when the financial system needs it.⁴ In this way, intermediaries pay in advance for the potential cost of recapitalization, rather than rely on a future government capital infusion that burdens taxpayers. If the price of the insurance rises with the intermediary's contribution to systemic risk, the insurance buyer also would have a new incentive to limit this contribution.

³ See the Chapter 13 module: Policy Response to Systemic Intermediaries. A systemically important intermediary is one that is so closely connected to other firms and markets that its failure poses a systemic threat.

⁴ See, for example, Anil Kashyap, Raghuram Rajan and Jeremy Stein, *Rethinking Capital Regulation*, Federal Reserve Bank of Kansas City Symposium at Jackson Hole, August 2008. <http://www.kc.frb.org/publicat/sympos/2008/KashyapRajanStein.03.12.09.pdf>