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Capital Shortfall: A New Approach to Ranking and Regulating Systemic Risks†

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The most severe impacts of the financial crisis of 2007–2009 arose immediately after the failure of Lehman Brothers on September 15, 2008. It is natural to wonder whether the United States should have arranged for an orderly rescue of Lehman as it did for Fannie Mae and Freddie Mac the week before and as it did for AIG, Merrill Lynch, Citigroup, Bank of America, Morgan Stanley, Goldman Sachs, Washington Mutual, and Wachovia as well as many smaller and foreign banks over the next days and weeks. How much capital would have been necessary ex post to arrange such an orderly rescue? Another policy recommendation of the Dodd-Frank Act of 2010 is to facilitate orderly liquidation and/or resolution and require living wills of financial institutions so that no future bailouts will be necessary. Will this work when we need it? There is, however, also a third choice. Rather than discuss whether to rescue or not, it is sensible to regulate ex ante financial institutions whose failure is likely to have major impacts on the financial and real sectors of the economy; for instance, regulate them to reduce their risk, and consequently the probability that taxpayers will face this choice.

Effective and efficient regulation of this type requires identification of systemically important financial institutions (SIFIs). A typical definition has been provided by Federal Reserve Governor Daniel Tarullo:[1] "*Financial institutions are systemically important if the failure of the firm to meet its obligations to creditors and customers would have significant adverse consequences for the financial system and the broader economy*." This definition is useful because it highlights two important ideas. The first is that the core problem is a firm's difficulty in performing financial services when it fails, i.e., when its capital falls short. The second is that systemic risk matters only to the extent there is an impact on the broader economy. There is a large theoretical and empirical literature that supports these two ideas (see, for example, Thakor 1996 and Holmstrom and Tirole 1997 on the theoretical side; and Bernanke 1983; Slovin, Sushka, and Polonchek 1993; and Gibson 1997 for empirical observations).

The definition, however, misses a key feature of systemic risk. Systemic risk should not be described in terms of a financial firm's failure per se but in the context of a firm's overall contribution to systemwide failure. The intuition is straightforward. When only an individual financial firm's capital is low, the firm can no longer financially intermediate. This has minimal consequences, though, because other financial firms can fill in the failed firm's void. When capital is low in the aggregate, however, it is not possible for other financial firms to step into the breach. This breakdown in aggregate financial intermediation is the reason there are severe consequences for the broader economy.

Motivated by this one economic point, it is possible to provide a precise definition of the systemic risk of a financial firm. Acharya et al. (2010c) develop a simple model in which a group of banks set leverage levels and choose asset

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Detailed analysis is provided at NYU Stern's Systemic Risk website, http://vlab.stern.nyu.edu/welcome/risk. Much of the work presented here comes from various collaborations with Christian Brownlees, Lasse Pedersen, and Thomas Philippon.

† To view additional materials, visit the article page at http://dx.doi.org/10.1257/aer.102.3.59.

[1] *Regulatory Restructuring*, Testimony before the Committee on Banking, Housing, and Urban Affairs, US Senate, Washington, DC, July 23, 2009.