American Economic Review 2015, 105(2): 564–608
http://dx.doi.org/10.1257/aer.20130456

Systemic Risk and Stability in Financial Networks†

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This paper argues that the extent of financial contagion exhibits a form of phase transition: as long as the magnitude of negative shocks affecting financial institutions are sufficiently small, a more densely connected financial network (corresponding to a more diversified pattern of interbank liabilities) enhances financial stability. However, beyond a certain point, dense interconnections serve as a mechanism for the propagation of shocks, leading to a more fragile financial system. Our results thus highlight that the same factors that contribute to resilience under certain conditions may function as significant sources of systemic risk under others. (*JEL* D85, E44, G21, G28, L14)

Since the global financial crisis of 2008, the view that the architecture of the financial system plays a central role in shaping systemic risk has become conventional wisdom. The intertwined nature of the financial markets has not only been proffered as an explanation for the spread of risk throughout the system (see, e.g., Plosser 2009 and Yellen 2013), but also motivated many of the policy actions both during and in the aftermath of the crisis.[1] Such views have even been incorporated into the new regulatory frameworks developed since.[2] Yet, the exact role played by the financial system's architecture in creating systemic risk remains, at best, imperfectly understood.

The current state of uncertainty about the nature and causes of systemic risk is reflected in the potentially conflicting views on the relationship between the structure of the financial network and the extent of financial contagion. Pioneering works by

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†Go to http://dx.doi.org/10.1257/aer.20130456 to visit the article page for additional materials and author disclosure statement(s).

[1] For an account of the policy actions during the crisis, see Sorkin (2009).

[2] An example of recent policy changes motivated by this perspective is the provision on "single counterparty exposure limits" in the Dodd-Frank Act, which attempts to prevent the distress at an institution from spreading to the rest of the system by limiting each firm's exposure to any single counterparty.