



MACROECONOMICS

Measuring Systemic Risk

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Financial regulations seek to limit each institution's risk. Unless the external costs of systemic risk are internalized by each financial institution, institutions will have the incentive to take risks that are borne by all. An illustration of this is the current crisis in which financial institutions had levered up on similar large portfolios of securities and loans which faced little idiosyncratic risk, but large amounts of systematic risk.

In this paper, we argue that financial regulation should be focused on limiting systemic risk, that is, the risk of a crisis in the financial sector and its spillover to the economy at large. We present a simple model of systemic risk and show that each financial institution's contribution to systemic risk can be measured as its systemic expected shortfall (SES) — that is, its propensity to be undercapitalized when the system as a whole is undercapitalized.

SES increases with an institution's leverage and its expected loss in the tail of the system's loss distribution. Institutions internalize their externality if they are "taxed" based on their SES. We demonstrate empirically the ability of SES to predict emerging risks during the financial crisis of 2007-2009, in particular, (i) the outcome of stress tests performed by regulators; (ii) the decline in equity valuations of large financial firms in the crisis; and, (iii) the widening of their credit default swap spreads.

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