When Micro Prudence Increases Macro Risk: The Destabilizing Effects of Financial Innovation, Leverage, and Diversification

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Abstract

By exploiting basic common practice accounting and risk-management rules, we propose a simple analytical dynamical model to investigate the effects of microprudential changes on macroprudential outcomes. Specifically, we study the consequence of the introduction of a financial innovation that allows reducing the cost of portfolio diversification in a financial system populated by financial institutions having capital requirements in the form of Value at Risk (VaR) constraint and following standard mark-to-market and risk-management rules. We provide a full analytical quantification of the multivariate feedback effects between investment prices and bank behavior induced by portfolio rebalancing in presence of asset illiquidity and show how changes in the constraints of the bank portfolio optimization endogenously drive the dynamics of the balance sheet aggregate of financial institutions and, thereby, the availability of bank liquidity to the economic system and systemic risk. The model shows that when financial innovation reduces the cost of diversification below a given threshold, the strength (because of higher leverage) and coordination (because of similarity of bank portfolios) of feedback effects increase, triggering a transition from a stationary dynamics of price returns to a nonstationary one characterized by steep growths (bubbles) and plunges (bursts) of market prices.

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