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The Effects of Interbank Networks on Efficiency and Stability in a Macroeconomic Agent-Based Model

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Abstract

We develop a macroeconomic agent-based model that consists of firms, banks, unions and households who interact on labour, goods, credit and interbank markets. The model endogenises pricing decisions by firms, wage setting by unions and interest rate setting by banks on both firm and interbank lending. Banks also set leverage targets and precautionary liquidity buffers on the basis of internal risk models. Our model produces endogenous fluctuations driven by the pricing behaviour of firms and the wage setting behaviour of unions. Fluctuations lead to loan defaults which are exacerbated as lenders reduce lending and charge higher interest rates, inducing a credit crunch. We also study how making the inter-banking network more connected affects the key outcomes of the economy and find that while the flow of funds from surplus banks to firms can be increased, the latter effect is soon dominated by increasing instability in the real sector as firms default at higher rates. While the banking sector experiences fewer defaults as a whole, losses on the interbank market increase as a source of bank defaults.

Keywords: Financial fragility, liquidity hoarding, macroeconomic stability, Agent-Based macroeconomics, interbank market
JEL Classification: G21, G28, E32

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