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Macroprudential capital requirements and systemic risk ☆

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ABSTRACT

When setting banks' regulatory capital requirement based on their contribution to the overall risk of the banking system we have to consider that the risk of the banking system as well as each bank's risk contribution changes once bank equity capital gets reallocated. We define macroprudential capital requirements as the fixed point at which each bank's capital requirement equals its contribution to the risk of the system under the proposed capital requirements. We use a network based structural model to measure systemic risk and how it changes with bank capital and allocate risk to individual banks based on five risk allocation mechanisms used in the literature. Using a sample of Canadian banks we find that macroprudential capital allocations can differ by as much as 25% from observed capital levels, are not trivially related to bank size or individual bank default probability, increase in interbank assets, and differ substantially from a simple risk attribution analysis. We further find that across all risk allocation mechanisms macroprudential capital requirements reduce the default probabilities of individual banks as well as the probability of a systemic crisis by about 25%. Macroprudential capital requirements are robust to model risk and are positively correlated to future capital raised by banks as well as future losses in equity value. Our results suggest that financial stability can be substantially enhanced by implementing a systemic perspective on bank regulation.

☆ The views and findings of this paper are entirely those of the authors and do not necessarily represent the views of the Bank of Canada.

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