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AUTHOR OR EDITOR

Carlos A. Arango

Oscar M. Valencia

Autores y/o editores

[Arango-Arango, Carlos Alberto](#)

[Óscar M. Valencia](#)

This paper presents a DSGE model with banks that face moral hazard in management. Banks receive demand deposits and fund investment projects. Banks are subject to potential withdrawals by depositors which may force them into early liquidation of their investments. The likelihood of this happening depends on the bank management efforts to keep the bank financially sound and the degree of bank leverage. We study the properties of this model under different monetary and macro-prudential policy arrangements. Our model is able to replicate the pro-cyclicality of leverage, and provides insights on the interplay between bank leverage and bank management incentives as a result of monetary, productivity and financial shocks. We find that a combination of pro-cyclical capital requirements and a standard monetary policy are well suited to contain the effects on output and prices of a downturn, keeping the financial system in check. Yet, in an expansionary phase (i.e. a productivity shock) this policy combination may produce desirable results for some macro-variables but at the expense of a deterioration in other macro-financial indicators.