

Probing the mechanism: lending rate setting in a data-driven agent-based model

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Abstract

The mechanism underlying banks' interest rate setting behaviour is an important element in the study of economic systems with important policy implications associated with the potential of monetary and -recently- macroprudential policies to affect the real economy. In the agent-based modelling literature, lending rate setting has so far been modelled in an ad-hoc manner, based almost exclusively on theoretical grounds with the specifics usually chosen in an arbitrary fashion. This study tries to empirically identify the mechanism that approximates the observed patterns of consumer credit interest rates within a data-driven, agent-based model (ABM). The analysis suggests that there is heterogeneity across countries, both in terms of the rule itself as well as its specific parameters and that often a simple, borrower-risk-only mechanism adequately approximates the historical series. More broadly, the validation exercise shows that the model is able to replicate the dynamics of several variables of interest, thus providing a way to bring macroeconomic ABMs "close to the data".

JEL classification: C63; E21; E27; E43

Keywords: Agent-based modelling, Lending rate mechanism, Consumer credit, Model validation, Functional calibration

"... you don't know the rules of the game, but you're allowed to look at the board [...] and from these observations you try to figure out what the rules of the game are, what the rules of the pieces moving are."

Richard P. Feynman²

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² "The Rules of the Game" in The pleasure of finding things out. Helix Books, 1999