Validating and Calibrating Agent-Based Models: A Case Study

Published: 26 July 2007

Volume 30, pages 245–264, (2007) Cite this article

Computational Economics

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Abstract

In this paper we deal with some validation and calibration experiments on a modified version of the Complex Adaptive Trivial System (CATS) model proposed in Gallegati et al. (2005 *Journal of Economic Behavior and Organization, 56*, 489–512). The CATS model has been extensively used to replicate a large number of scaling types stylized facts with a remarkable degree of precision. For such purposes, the simulation of the model has been performed entering ad hoc parameter values and using the same initial set up for all the agents involved in the experiments. Nowadays alternative robust and reliable validation techniques for determining whether the simulation model is an acceptable representation of the real system are available. Moreover many distributional and goodness-of-fit tests have been developed while several graphical tools have been proposed to give the researcher a quick comprehension of actual and simulated data. This paper discusses some validation experiments performed with the modified CATS

model. In particular starting from a sample of Italian firms included in the CEBI database, we perform several ex-post validation experiments over the simulation period 1982–2000. In the experiments, the model parameters have been estimated using actual data and the initial set up consists of a sample of agents in 1982. The CATS model is then simulated over the period 1982–2000. Using alternative validation techniques, the simulations' results are ex-post validated with respect to the actual data. The results are promising in that they show the good capabilities of the CATS model in reproducing the observed reality. Finally we have performed a first calibration experiment via indirect inference, in order to ameliorate our estimates. Even in this case, the results are interesting.

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Cite this article

Bianchi, C., Cirillo, P., Gallegati, M. *et al.* Validating and Calibrating Agent-Based Models: A Case Study. *Comput Econ* **30**, 245–264 (2007). https://doi.org/10.1007/s10614-007-9097-z

Received	Accepted	Published
15 September 2006	11 June 2007	26 July 2007

Issue Date
October 2007
DOI
https://doi.org/10.1007/s10614-007-9097-z

Keywords

Validation | Calibration | Agent-based models | Indirect inference | Size distribution | Tail analysis | EVT

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