

Modelling an RTGS system with SLAPP *

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Abstract

In a typical day of a developed country, the amount of economic transactions processed by the payment system is roughly 20% of the yearly GDP. This huge volume of payments is closely supervised and regulated by central banks in order to minimise their main risks (operational, credit, liquidity). Real Time Gross Settlement systems have been implemented from the early nineties for major payments, and these payment systems are often directly managed by central banks. A model that simulates realistically a RTGS can be a useful tool to analyse the intrinsic characteristic of these complex structures. In this work we present an agent-based simulation using a SLAPP protocol and we check the property of this simulation model with an empirical application on Italian data. The agent-based approach generates complexity from single agents' interplays and it is particularly suitable in a context where analytical solutions are often unfeasible. The SLAPP protocol has enabled to develop a fully functioning model that encompasses a realistic number of agents that deal with true payment requests data. A monetary market is included too, where agents interact to find the necessary liquidity. Further planned developments include the insertion of payment scheduling rules that reproduce those really implemented by the banks' treasurers.

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