An hybrid simulation of banks lending process

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Abstract

The aim of our research project is to analyze the lending process and the relationship that takes place between banks and enterprises. Indeed banks offer permanents credit lines to firms for their activities, in order to support the financial management of both current activities and long term investments. The decision whether to give or not the financial support depends on the evaluation of the credit capacity, that is to say a process in which it is evaluated the capability of the enterprise to cope with the obligations incurred: so the bank brings on a risk selection process, that will be followed by the management of the same risk.

We analyze two aspects of the problem using simulation techniques:

- the granting of credit process, both in strategic terms (credit capability and risk management) and organizational terms (hierarchical levels of deliberation and commercials policies);

- the resultant systemic relationship between the counterparts and the deriving effects of macroeconomic nature.

We put beside the Agent Based simulation made with Swarm, a model developed with a new tool: AnyLogic. Such environment, also based on the Java programming language, permits to develop hybrid models. In our case we realize a process simulation model enriched with typical agent based features such as a more realistic and flexible description of the decision making process.

In this work we present the first of the two aspects of the project, focusing our attention on the micro level and studying in detail the credit capability evaluation, the time management, the costs and the profitability of the process, from the point of view of the commercial bank. In the end, we briefly compare the two simulation environments underlying both advantages and disadvantages.

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