The interbank market

A young Italian researcher has created a new model for depicting financial systems. In the future, multi-layered interbank models might help to prevent another crisis like the one in 2008.

The financial crisis in 2008 was a shock, not just to the financial system but to the entire global economy, it also made economists aware that their assumptions about the functioning of the financial system were wrong. Until the Lehman Brothers bankruptcy, it was assumed that the financial system was so well-regulated that even if the financial institutions composing it had sound balance sheets - those being statements of a company's financial condition, containing data on assets, liabilities and ownership equity - the "financial crisis high-lighted the problem of false assumptions", states Mattia Montagna, doctoral candidate at the Kiel Institute of Economics.

"Because of the crisis triggered by the bankruptcy of the Lehman Brothers we know that one single imbalance can destabilize the entire system," Montagna explains.

Montagna and Lux found out how the structure of a banking system affects the stability of the system as such, in relation to the concept of systemic risk - this refers to the risks caused by interdependencies or links in a system, where the failure of a single entity can cause a domino effect that could potentially bring down the entire system.

For his model, Montagna created three networks of interdependencies of banks in the European Union. Just as in reality, Montagna assumed a system containing a large pool of medium and small financial institutions ("nodes") and a small pool of large nodes, all of them with fixed links. "This system is quite resilient", the young researcher states. "If a problem occurs in one of the small nodes, nothing will happen; but applied to the big player, the shock will spread through the system."

One element that needed to be included in the model was the behavioral factor. "The problem with the common approach is that it does not take into account that the bank itself can change the existing structure by reacting to a problem in a certain way."

Also, some financial institutions are linked not directly but indirectly. They have no business relations but share the same assets. Montagna's model consists of those three layers: portfolio overlaps, credit lines or short-term interbank loan, and relations in form of long-term interbank loans.

"Our model is the first that uses this multi-layered structure", Montagna points out. "With it we have actually proven a non-linear effect in a propagative process."

This is due to the fact that some banks might be able to receive the shock from one layer, and transmit problems across different layers. For example, if it has to cut an interbank loan to reduce its activities, the lending institution cannot transmit funding problems to its borrowers, and thus spread the shock. This in turn will affect the links with other banks on other layers. For one single institute, the probability to fail might remain the same", the Italian says, "but we know that it is not enough to look at a single bank in a pattern of reference and to establish the grounds for a financial crisis. We have to get a global picture."

"Findings are valuable not only to economics but also to the financial system", Montagna is planning to fund the young researcher for another year to find new steps. Future plans will probably lie in teaching. "I love to do research. I will go on doing research", the Italian says.

Dr Heidrun Allert and her team have created a guideline for the process of design as the creative core of the process. This involves searching and selecting design options by testing different options. This stage is meant to be a form of extraction which allows a deeper understanding of the problem.

Designing changes

The phenomena scientists are asked to investigate are not given, but in fact essentially shaped by the context in reality. Scientists who would like to draw on their theoretical knowledge, sharing of findings (“pre-manuscripts”) and framing. Here, information about the object of design has to be collected: an understanding of people's needs, practices and the situation at hand has to be gathered. The aim of the exploration is (...) to develop a preliminary understanding of the situation people are confronted with or living in", the handbook states.

The second stage constitutes the creative core of the process. This involves searching and selecting design options by testing different options. This stage is meant to be a form of extraction which allows a deeper understanding of the problem, Allert says.

The next stage is design prototyping. This might result in a simple sketch, a storyboard or role-play. It might be followed by a presentation to a larger audience.

The last activity is articulation of knowledge, sharing of findings ("pre-presenting") and reflecting upon the design option. In class, the students will work with a computer-like object that supported students' epistemological activities. With this Tamagotchi-like device, students are meant to find a topic for their thesis that actually fits their interests.

The EU-funded project will come to an end this year. The 300,000 Euros funding had been shared among 15 projects. The project "Creating Knowledge, Sharing of Findings" ("pre-presenting") and reflecting upon the design option. In class, the students will work with a computer-like object that supported students' epistemological activities. With this Tamagotchi-like device, students are meant to find a topic for their thesis that actually fits their interests.

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