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No company is an island

Why economists are looking at markets as networks rather than collections of individual traders

Adam Smith famously noted in his *Wealth of Nations*: 'it is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest.' Since then, mainstream Western economists have tended to focus on how the rational individual – the *homo economicus* – is motivated to make and spend money in a way that affords him or her maximum profit.

The 2008 financial crisis shows the inadequacy of this analytical framework. When Lehman Brothers went bankrupt, it set off a chain of events that led to further collapses and the loss of millions of jobs. Analysts soon realised they couldn't view individual companies, bankers or investors in isolation. Single players were part of larger networks. If one ran into trouble, there were implications for whole industries, and even entire countries. This paradigm shift in the way in which financial markets are analysed has begun to change the field of economics, albeit very slowly.

Just as the human brain comprises a network of neurons, constantly interacting with each other, so markets are made up of networks of individuals and companies, whose behaviour can have a profound effect on the whole system. It is not possible to understand the brain by examining one neuron and then attempting to extend the findings to cover 100 billion other neurons. It is the network of neurons that is crucial.

Relationship status? It's complicated

A new interdisciplinary subject area is attempting to incorporate this insight into its research. Complexity research analyses the raw empirical data in an interaction-based global model. The key term 'Big Data' refers to the unprecedented volume of usable data that is produced by the sum total of all human activity. Gathering and storing such data is becoming cheaper and easier by the hour. However, in order to extract meaningful information from this large bulk of data, we also need a new way of

thinking. The focus can no longer be on individual mathematical abstractions, but on the real interactions within the system.

This is the philosophy my co-authors and I adopted in a study published in 2011: The Network of Global Corporate Control. From a data volume of approximately 30 million economic players, we created a network comprising around 600,000 nodes. The links between the players show the cross-shareholding relationships that were in existence in 2007. For example, Shareholder A owns X per cent of the shares of Company B, which in turn owns Y per cent of the shares of Company C. That is how the network is formed. The possibility of control goes hand in hand with a stake in the company. We were able to give a quantitative answer to the question of how much influence a part-owner or shareholder could potentially have.

The invisible hands: institutions that dominate the market

The study caused quite a stir. For one thing, this approach to economic systems was still new. In addition, our results surprised many observers. We identified a tiny but dominant core of around 150 powerful players in the core of the global network who were all very closely interconnected, and who had firm control over the whole system. These were predominantly Anglo-American financial institutions such as Goldman Sachs and Barclays, but also Deutsche Bank and – the then still operating – Lehman Brothers.

This shed new light on the stability of the global economic system, using an approach that was empirically founded rather than ideological. New findings in the field of complexity research had previously demonstrated the following paradoxical situation: if the level of interconnection within an economic system increases, that system initially becomes more stable. But beyond a certain threshold of interconnection, each new link begins to increase the systemic risk. Armed with this knowledge, the degree of interconnectedness we had measured appeared to be a permanent threat to global financial stability. Moreover, our findings revealed that the degree of control held over the companies within the global economic system was distributed very unevenly – another typical example of global economic structures of inequality.

Herd mentality

Despite these new approaches, the field of economics is still dominated by a way of thinking that is aligned with very specific ideas and methods.

Complex models strive to work on the basis of mathematical correctness, but they often do not make use of that very empirical data that is available in increasingly large volumes. The perspective of mainstream economics is a distorted one – for example, the theoretical construct of the individual who acts on a purely rational and profit-oriented basis is stubbornly upheld. At the same time, well-known psychological and neuroscientific insights relating to herd behaviour, cognitive distortions and criminal energy are being completely ignored. Many economists continue to analyse the global economy on the assumption of an efficient market.

In spite of this, alternative approaches such as network research are slowly gaining acceptance. New research groups that analyse the global interconnection of companies have been established. Furthermore, supervisory authorities and political decision-makers have recognised the general relevance of the networked interactions – for example the European Systemic Risk Board, established in 2011 and tasked with the early detection, prevention and control of these risks in the financial market. The focus on the systemic components of the economy is simply a shift from the 'too big to fail' discourse to 'too connected to fail'. It is only when we know and understand the network of interactions that we can identify the trouble spots in the system.

How do things stand today, ten years after the data for our first study was collected? We are currently working on extending the 2011 study. We are now analysing the entire global shareholding network and its evolution from 2007 to 2012. Although some of the top players have yielded their power status, the financial crisis did very little damage to the power structures of the global network itself. It appears that such structures, once established, cannot be dismantled by external forces. We are also observing a transfer of power from the European universal banks to American asset managers, with BlackRock at the fore. These financial players have massively increased their holdings in companies. Together, the three biggest asset managers (BlackRock, Vanguard and State Street) own a majority holding in almost 90 per cent of the largest American companies.

These are all indications that urge a re-evaluation of a range of problems within the global network of economic power. Furthermore, we see increasingly limited competition to the detriment of consumers, new opportunities for tax avoidance, and of course the issue of global financial stability itself. Ten years after the financial crisis, our economic systems are no more robust, flexible or sustainable than before.



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