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Unravelling capitalism's hidden networks of power

<https://www.newscientist.com/article/mg22630224-500-unravelling-capitalisms-hidden-networks-of-power/>

By Jacob Aron

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NEVER again? The global financial crisis of 2008 saw banks around the world bailed out to the tune of billions by governments worried that the entire financial system was in meltdown. “Too big to fail”, the thinking went, and since then, efforts have been made to increase scrutiny of large institutions. But the latest research suggests a much more sophisticated analysis is needed to prevent another crisis.

We already know that firm size isn’t the only problem in a financial crisis. In 2011, *New Scientist* revealed that 147 interconnected entities – not all of them large financial institutions – control the network of global capitalism. A problem with any of them could have a significant effect on the system, demonstrating the ongoing potential for vulnerability.

Shortly after the *New Scientist* story was published, the Financial Stability Board, an international body that monitors global finance, published a list of 29 systemically important financial institutions (SIFIs) – which could harm the global economy if they fail. SIFIs are now required to safeguard against collapse by holding significant amounts of their capital as collateral, even though this affects their profitability. The FSB has since added more firms to the list, including some that aren’t banks.

A SIFI designation is based on an institution’s size, interconnectedness and complexity – but there is no consensus on how these factors interact to determine a firm’s global importance, so the designations can be challenged. For instance, US insurance company MetLife is currently disputing its SIFI designation – although the US Department of Justice last week dismissed its lawsuit, saying the firm was “significantly interconnected”.

Most of the emphasis in SIFI designation is placed on this interconnectedness, which has been much studied by academics, along with size, which is easy to determine. To date, relatively little attention has been paid to the third part of the SIFI designation – complexity – says Robin Lumsdaine of American University in Washington DC.

Complexity has been overlooked for the same reason that it causes problems for global capitalism: it is hard to quantify. If a company has many subsidiaries in multiple countries working in a variety of different industries, it can be difficult for anyone – either inside or outside the company – to be sure of what’s going on. And when there’s uncertainty, financial markets worry. This year, for instance, HSBC shares fell in the wake of news that the firm’s executives in the UK and Hong Kong were unaware of tax evasion at a Swiss subsidiary.

Firms with a complex structure are not only a potential source of dangerous financial uncertainty – they are also more difficult to sell off if they do get into trouble. Lehman Brothers collapsed in 2008, but is still being unwound.

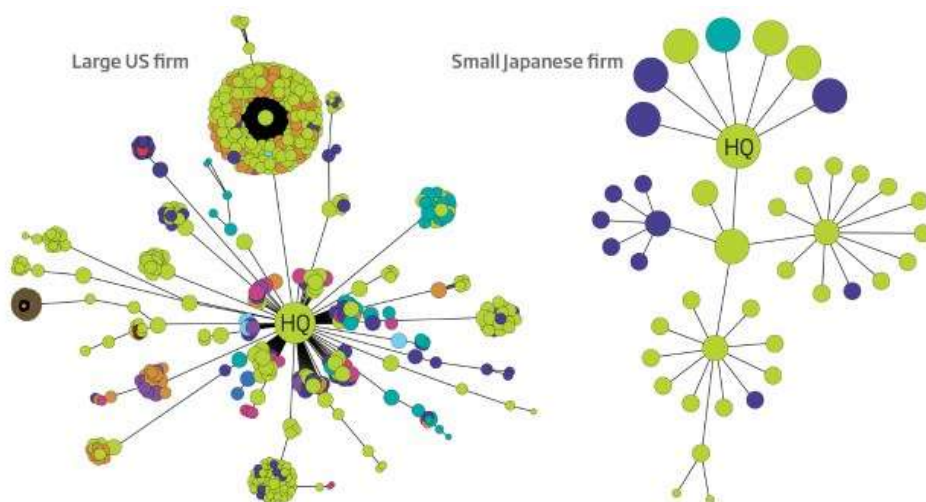
To better understand complexity, Lumsdaine and her colleagues used tools from network science to analyse the corporate structure of a variety of financial institutions, including Goldman Sachs, Barclays and HSBC. The researchers anonymised the firms – identifying them only by their country – and used snapshots of data from 26 May 2011 and 25 February 2013 to see if the firms’ complexity had changed.

Their method involves mapping out a firm's subsidiaries, and then each subsidiary's subsidiaries and so on. These “control hierarchy” networks are then labelled according to the country or industry of each subsidiary (see diagram).

Web of control

Robin Lumsdaine and her colleagues measured the complexity of companies by assessing how many subsidiaries they own, what industries they are part of and how they are connected

- Mining & construction
- Manufacturing (light)
- Manufacturing (heavy)
- Transportation & public utilities
- Trade
- Finance & insurance
- Services
- Public administration



A large control hierarchy isn't necessarily a complex one; the question for regulators is whether they are organised in an easily understandable way that allows effective scrutiny.

Rather than rate companies against each other, the team compared each firm to an idealised version. They imagined a firm with the same network structure but with each node perfectly organised – meaning, for instance, that every Japanese subsidiary of a US firm would ultimately report to a single top-level Japanese subsidiary.

Scores for complexity

It's unrealistic to expect real-world businesses to follow exactly this model, so the team generated 1000 variations of each firm, with the same network structure but with the nodes shuffled at random. Both actual and generated firms were then scored according to how well they match the idealised version. The higher a real firm scores against its 1000 simulations, the less complex it is.

The team calculated two complexity scores for each firm based on its organisation by country and by industry. For example, when it comes to industry groups, a small Japanese firm in 2011 was better organised than 95.2 per cent of simulations, versus 70.2 per cent for a large US company. Both firms perform well on organisation by country, with 99.85 and 100 per cent respectively (arxiv.org.1505.02305).

Across the board, country complexity seems to have fallen between 2011 and 2013, the researchers found. That's in line with a recent report in *The Economist* showing that banks aren't seeing the expected returns from globalising their operations and are starting to withdraw, says Stefano Battiston of the University of Zurich, Switzerland, who carried out the 2011 interconnectedness work.

But while falling complexity is a positive trend in terms of reduced financial uncertainty, the comparisons between different kinds of firms is more revealing. The team found essentially no difference in the complexity of banks, whether or not they were SIFIs. In other words, we may be over-emphasising the “too big to fail” mantra: even small companies can be complex in a way that could threaten financial stability if they failed.

“It speaks to the size threshold as being inadequate,” says Lumsdaine. Regulators already know this, she adds, but the team’s analysis highlights the need for change. “There should be greater focus on complexity and more metrics are needed.”

The rankings also revealed that insurance firms tend to be more complex than banks, despite being smaller, having fewer subsidiaries and less geographical and industry diversity. We already know the risk an insurance company can pose to the global economy, as US insurer AIG had to be bailed out during the 2008 crisis, but MetLife’s fight to resist SIFI designation shows the difficulty facing regulators.

“The challenge is how to compare banks and insurance companies in a way that recognises that [they] have very different business models and supervisory structures,” says Lumsdaine. “Our metrics may help to make that comparison.”

“It’s nice because it is very simple, and regulators like simple things,” says David Veredas of the Free University of Brussels (ULB) in Belgium. The method highlights how complexity may be growing outside the banking sector, he adds. “The finding on insurers is probably the most interesting one.”

Christophe Pérignon of HEC Paris, a business school in France, says that high complexity alone doesn’t mean insurance firms should be designated as SIFIs, but he thinks it is helpful to have an independent way of measuring it. “We don’t really know how the regulators are measuring the complexity of a firm,” he says. “I like that it is very transparent.”