

Coronavirus shows why we should be stress-testing corporations

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Published

1 April 2020

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The economic impact of COVID-19 is sobering, far reaching and changing day to day. But could we have foreseen it?

In the years since the crisis of 2008, financial institutions have been forced to measure risk in a way that other sectors haven't. Banks have developed robust stress-testing measures to see how they would respond to a variety of risks and scenarios.

But would the wider business world benefit from this rigour? If you can predict what might happen – what the effects of a crisis might be on a specific business – you can better prepare for the unexpected.

Effects of the coronavirus on business

Fallout from the coronavirus (COVID-19) has been punishing: [a reduced workforce](#), a drop in demand, and [countries in lockdown](#). Certain sectors such as [tourism and air travel](#) have been devastated. And the [grocery sector has been unprepared](#) for the surge in demand.

In this current outbreak, there's too much data flying around, and the sands are shifting. We need time and perspective to sift meaningful information from this pandemic before we can use it to measure the impact, to inform us of how companies and society can prepare for similar scenarios in the future.

But currently there are no standardised processes and methods for stress testing businesses beyond the financial sector. In our research, we've examined how different ways of stress testing companies perform – from what data is used, to how scenarios are modelled, to how results are derived – by examining two sizeable events from this century (the dotcom bubble of 2001 and the economic crash of 2008) and their effects upon US companies (excluding banks and other financial institutions). We've come up with a formal stress-testing framework that we've run to see if it could have predicted how both events would have dented business. Could it be used to predict how companies will fare in crises of the future – and allow them to plan accordingly?

Machine-learning methods

Our approach makes use of both balance sheet data and financial and macroeconomic information to stress test corporate earnings. There are different approaches to stress testing: traditional spreadsheet calculations have the benefit that they're relatively simple to use, but we've also tested out machine-learning methods to see how they cope with a range and combination of complex scenarios.

And by running simulations based on real events and data, we've discovered two particular machine-learning methods do an accurate job of predicting how corporate earnings would fare. Both methods perform better than traditional spreadsheet-based calculations in predicting corporate revenue, because unlike those traditional methods they can cope with a wide combination of interrelated scenarios.

We could be on the way to building a robust system for stress testing companies in the face of financial upheaval. We've been able to test hypothetical scenarios and

we've also shown the model works for historical events. We've clarified what factors and information can be used to help predict future risk, and there's potential to broaden the remit – to use data from events in other countries for instance, or incorporate natural disasters or political upheavals.

There are no standardised processes and methods for stress testing businesses beyond the financial sector

This is only a first step, but an important one in the absence of a clear best-practice approach to stress testing companies. Giving companies the tools to understand their risk exposure could allow them to have a deeper understanding of their own particular vulnerabilities. Armed with this information, they'd be better placed to prepare for the unknown and able see the future through a new lens – as the financial sector has already done.

And this is essential. Outbreaks such as COVID-19 will come and go and there is a need to understand and measure the impact. But it mustn't overshadow our efforts to prepare for threats that are real and will undoubtedly be a problem in the longer term – such as climate change or a significant cyber-attack. With the right tests, our businesses – and therefore our societies – will be much better prepared.

This article draws on findings from [“Stress Testing Corporate Earnings of US Companies”](#) by Davide Benedetti (Imperial Business School) and Ratislav Molnar (Imperial Business School).

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