To preserve the benefits from globalization, global connectivity requires global coordination.

Globalization has been a powerful force that has promoted sustained periods of peace and lifted many of the world's poorest out of poverty. In their new book, The Butterfly Defect, **Ian Goldin** *and* **Mike Mariathasan** *argue that it has also contributed to the building up of systemic risks, such as environmental hazards or a collapse of global IT architecture. To preserve the benefits of globalization, more global policy coordination to promote resilience, encourage transparent communication and prepare for contingencies, is necessary.*

Global integration has brought unprecedented progress, not least through the exchange of resources, skills, and ideas that it enables. Globalization has fostered global economic growth, lifted many of the world's poorest out of poverty, and has facilitated access to knowledge and education around the globe. It has contributed to global democratization, and played a vital role in confining and eradicating some of the world's most deadly diseases. Global connectivity has promoted, and feeds off, global migration, which throughout history has been a key driver for innovation and progress, and an escape from poverty, conflict and climatic and other disasters. It has enriched our lives by providing us with access to a wider range of opportunities, people, cultures, and traditions.

And yet, there is inherently also great danger in (mismanaged) global connectivity. Along with more efficiently produced goods, more diversely skilled individuals and more innovative ideas, globalization also contributes to the building up and spreading of a long list of risks. As we illustrate in our recent book, these risks arise within and across domains as diverse as the physical and virtual global infrastructure, the ecosystem, the global financial sector, the web of global supply chains, social inequality, and the realm of pandemics and public health.

In the aftermath of the recent financial crisis, the notion that a complex global network cannot only spread "goods", but also vastly damaging "bads", is not a novel insight. What appears to be insufficiently emphasized, however, is that many of the features of this crisis are symptomatic of the hyper-connected world of the 21^{st} century. As a result, the lessons that need to be learned from the crisis should not be limited to financial regulation, but should be applied to the restructuring of global governance more generally.

By the 2000s, finance had become the most sophisticated of the global governance regimes. It was overseen by a number of national and international institutions that are well funded and well staffed (for example, central banks, the International Monetary Fund, or the Bank of International Settlements); there was a vast amount of historic and real-time data available, and a battery of analytical tools to study it. And yet, the Global Financial Crisis could neither be averted, nor could it be quickly contained. From the American West coast, it spread to the world's financial centres in New York, London and Singapore, before destabilising the real economies that relied on them, across Europe and the rest of the world.

We have built globalization on a variety of complex and interconnected networks, without which many of the vital functions of our societies can no longer be provided. The speed with which technological progress and innovation have allowed these networks to grow since the turn of the century has outpaced the institutional structures that support them. The governance regimes available for many of the aforementioned global networks are less sophisticated than that of finance, and the structures available to respond to risks cascading across domains are even more limited.

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The financial crisis was in many ways severely damaging; yet one can easily imagine more devastating damage being inflicted, for example by environmental hazards, a collapse of the global IT architecture, or a contagious virus spreading through global traffic and transport networks. The damage may initially be, confined to a specific sector or location, but – as with the spreading of financial risk – it is an illusion to believe that the impact will not be felt across borders.

In our book we have examined numerous examples of such local risk events, and their globalized impact in the interconnected world of the 21st century. We have studied policy responses in the different domains and distilled them into six guiding principles for global governance. These six principles are:

1) Promote resilience and sustainability: Public and private leaders should be aware of the increasing unpredictability of risk and prepare to face unforeseen challenges with resilient organizational forms. This preparation should include fostering flexibility and avoiding over-reliance on single channels and geographical nodes. Sustainability requires taking into consideration the broader context and longer time horizons.

2) Foster the transparent communication of choices, risks, and uncertainties about policy alternatives to address political and attribution challenges: The ability to link cause to action is being reduced by the increasing complexity and speed of transactions. Leaders need to understand this and respond by increasing transparency. If attribution of responsibilities is impossible, it undermines accountability. Shareholders require information on which to make their decisions, including those with respect to potential sources of instability and risk. Electorates similarly require transparency in order to make informed choices and ensure democratic stability.

3) Improve risk measurement: Due to rising complexity and interdependency, we are reaching our limits in terms of correctly assessing cross-sector and cross-border risks. This does not imply, however, that we should abandon our efforts; rather, we should redouble them. In particular, we should invest in understanding complexity and “big data”.

4) Rectify economic incentives: Research in economics has an important role to play in political responses to the complexities of our times. Salaries, taxes, insurance payments, markets and prices have an important influence on the choices of millions. These choices can harm the environment, create financial risk, or make us vulnerable to infrastructure failures or other risks, including those arising from the virtual domain.

5) Prepare for contingencies: In combination with conducting research on risk management, public actors in particular need to work toward designing contingency plans and the capability to respond to unforeseen risks swiftly. This includes setting aside resources, educating risk and disaster management experts, and defining contingencies for times when global political coordination is suddenly required.

6) Define and enforce unified legal responsibilities: Unifying and enforcing legal responsibilities do not necessarily lead to the assimilation of national legal frameworks. They require, however, that every firm – whether it operates from Taiwan, the Cayman Islands, or the United States – be held to the same standards in terms of its impact on the global stage.

Our main goal with this exercise is to draw attention to the essence of what we have identified from studying the nature of systemic risk in today's globalized world. We are convinced of the beneficial force of globalization and worry that current institutional structures put its continued success at risk.

Our main conclusion is that, although globalization is the cause of systemic risk, it is also its solution; provided that it is carefully managed. More connectivity and openness, rapid change, growing populations, and higher incomes bring greater complexity and higher potential for systemic risk. The cultivation of a resilient globalization, however, is also the best means available to us to manage it. Building firms and societies that focus on sustainability is vital. Core to this, as is emphasised in the Oxford Martin Commission for Future Generations report *Now for the Long Term*, is the need to overcome short-termism in business and politics. For businesses and societies to thrive, we need to tame *The Butterfly Defect* which is the underbelly of globalization.

This article is based on: Ian Goldin and Mike Mariathasan 'The Butterfly Defect: How Globalization Creates Systemic Risks, and What to Do about It', Princeton University Press, 2014.

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