

Introduction



This book examines the consequences of living in a more connected, complex, and uncertain world.¹ The central theme is that globalization must be managed more effectively, which, as we show in the concluding chapter, includes investing in institutions and policies to build resilience at all levels. Globalization permeates every element of our daily lives. By *globalization* we mean the movement of people, goods, services, and ideas across a widening set of countries. The process of globalization is not confined to multinational corporations and their global supply chains or to banking conglomerates and their international investment portfolios. It affects even the most unsuspecting among us. Globalization has shaped our lives and options for the future.

Globalization informs not only our choices but the composition of almost all the goods and services we consume. We are more tightly linked than ever before, and the connections are more complex, more frequent, and more central to our lives and our economies. They shape the ways in which countries and societies are developing. Politics may be driven by local concerns, but, as this book shows, the key opportunities and risks facing societies are increasingly determined beyond national borders. At the same time, what happens in any one community can quickly cascade into a global event. Small places and single individuals can become globally significant, just as what happens globally can have dramatic consequences for the most remote locality or community.

To politicians, local concerns may often appear more important than global developments. Foreigners do not share a common history, background, or nationality, and laws, borders, and other restrictions separate global citizens. But whether we live in Manhattan, Moscow, or Mumbai,

2 INTRODUCTION

we are connected by an increasingly dense and complex web of overlapping and intertwined links. These are both physical and virtual and have allowed us to take the principle of comparative advantage to levels that David Ricardo could not have imagined when he was writing his path-breaking insights on global development in 1817.² Although many are critical of globalization, few would deny the gains from integration and exchange. In this book we focus on neglected aspects of accelerated integration, notably the systemic risks that arise from globalization.

Following earlier waves of globalization (from about 1820 to 1914 and 1960 to 1980, respectively), the period since around 1990 has been associated with innovative leaps in information and transport technologies—alongside a fundamental reshaping of international politics and the global economy.³ The haphazard development of a range of integrated global relationships and systems—such as those associated with infrastructure, finance, transport, information, economics, and business—means that the context of individual and other choices is constantly widening and becoming more complex. It is now impossible to account for all the consequences of any individual's choices. As we show, this shortcoming pervades the global system for the exchange of goods and services, skills, information, and people. Because the ramifications of individual or collective decisions are increasingly unclear, defining responsibility, rewards, and punishments is more challenging.

As complexity increases, the task becomes harder. Our actions, as individuals and through our local and national governments, are bound to have systemic consequences that we are unable to foresee in advance and often fail to understand afterward. In a complex system, resilience becomes a separate goal and has to be considered separately from other goals.⁴

Two interrelated problems arise. The first is that although each of our individual actions may be rational, collectively they may lead to failure. Economists and social scientists have studied the “tragedy of the commons” for centuries. The problem is compounded as the population grows and as incomes rise and individuals become freer to choose what they want to consume. Bluefin tuna fishing was once sustainable, but in January 2013 one such tuna sold for \$1.7 million.⁵ As in the case of rhinoceros horn, it is simply a question of time until the market mechanisms lead to extinction. Similar problems arise with biodiversity,

climate change, antibiotic resistance, and other management failures of the global commons. The more people there are on earth and the higher our incomes, the more each individual's activities have spillover effects.

The second challenge is that as complexity and integration grow, attribution becomes more difficult and the unintended or unknown consequences of actions increase. Failure to understand or even acknowledge the nonlinear and highly complex nature of global linkages on every level of governance leads to growing weaknesses and can paralyze decision making. The world has become like a living organism, with the physical connections equivalent to blood pumping through veins and the virtual connections comparable to our nervous system. Understanding the system dynamics and interdependencies has become vital to sustainable global growth and development.

Each element of the global system—finance, supply chains, health, energy, the Internet, the environment, and others—needs to be maintained in good health. The biggest systemic risk, however, is not the collapse of any one of these individual systems but rather our lack of capacity to manage the growing complexities and interdependencies between them. Politics and economics have demonstrated a singular failure to proactively address collective action failures or to resolve problems with international cooperation.⁶ One way of addressing collective failure is through learning from past experiences. Often the lessons are learned relatively late in the day and are quickly forgotten. In cases in which genuine change ensues, it is not always sufficient for the intended purpose.

Historically, advances have arisen following terrible tragedies. Our current system of global management arose from the ashes of the Second World War. Our hope is that increased information and education and closer physical and virtual connections are giving rise to a more informed global citizenry that is capable of producing more effective governance. We are able to learn faster because there are more educated people with more information at their fingertips. There has also been a release of individual genius as billions more people have become educated and engaged globally, so, simply based on the random distribution of exceptionally talented individuals engaging in global activities and problem solving, humanity should be able to identify more solutions. Collective genius is an even more powerful source of innovation.

Many more minds can now be connected and contribute fragments of knowledge and information, leading to a more rapid evolution of ideas. Connectivity and complexity are not only curses. New networks and combinations of old and new ideas can yield powerful insights and new politics. These are urgently required to ensure that we are able to comprehend the power that has been unleashed and make sure that it is managed inclusively and in a sustainable manner. The failure to harvest this potential will mean that globalization will be perceived to be more of a threat than an opportunity. It will be in danger of being associated with increasing systemic risk and cascading crises. The consequences are likely to be rising xenophobia, protectionism, and nationalism as individuals around the world seek to reduce their exposure to exogenous shocks. Such actions would be counterproductive and would compound global mismanagement. The challenge is to get ahead of the curve and harvest the benefits of globalization while building resilience and mitigating against the inevitable interdependency and vulnerability arising from increased connectivity and complexity.

This book examines the consequences of living in a more connected, complex, and uncertain world. It aims to help us manage the risks associated with globalization. It is interdisciplinary in its approach, seeking to draw insights from the different dimensions of potential systemic risk. We focus on systemic risk in domains ranging from ecology to economics as well as industry and infrastructure. Although we highlight the systemic nature of risk within a number of apparently distinct areas, we also emphasize the common insights and linkages between them and explore the resulting risks for governance and for societies more generally.

We necessarily are not providing an exhaustive or specialist view of any one domain. Because we are economists, our analysis of finance is the foundation of our understanding of the key relationships between globalization and systemic risk. Outside economics, in health, infrastructure and other areas, we provide perspectives that are informed by our understanding of the key drivers and fragilities but that clearly require disciplinary expertise for further analysis. Drawing on lessons from scholars in other disciplines allows us to deduce general principles and to identify best practices. By bringing together for the first time evidence on the nature of systemic risk in each of these different sectors, we are able

to identify the importance of the interdependencies generated by globalization and the need to consolidate research and action.

The book is organized in eight chapters. Chapter 1 explains our concerns regarding systemic risk in the hyperconnected world of the twenty-first century. It identifies why we believe that there has been a fundamental change in the nature of global relations in recent decades, providing a historical perspective on global integration. We show why we care about globalization, as a source of unprecedented opportunity. We then show why we worry that this is not sustainable and that the systemic risks generated by globalization threaten to be its undoing. The chapter lays out the key concepts and provides the intellectual foundation for the chapters that follow.

Chapter 2 draws on our knowledge as economists, presenting evidence that the financial crisis of 2007/2008 was the first of the systemic crises of the twenty-first century. Finance has been at the cutting edge of globalization in recent decades. We show how a combination of technological and other advances in a climate of political and ideological failures created a recipe for the unsustainable integration and expansion of the system. We draw on the illustrative case study of Iceland to highlight the extent of incomprehension and mismanagement and show how the failures in Iceland are mirrored in the United States, Europe, and elsewhere. In chapter 2 we call for two pillars of systemic risk governance: (1) to improve efforts toward understanding, measuring, and predicting the evolution of the complex system and (2) to devise institutions and procedures that are globally coordinated yet locally flexible and responsive and are, in themselves, based on simple rules that will allow us to manage complexity and change. We emphasize the need for simple rules and caution that rising complexity cannot be matched by ever more complex regulations.

Chapter 3 examines systemic risk in business and trade. It pays particular attention to the risks associated with global supply chains and the globalization of management education. As is the case in finance, we see these resulting primarily from behavioral risks. The threat originates in the otherwise healthy desire of individual firms to maximize profits and to reap the benefits of streamlined risk-sharing strategies or production processes. Individual people similarly consider their own individual, family, and community interests rather than wider collective interests. The more that individuals and communities live according to the rules of

free markets, the greater this individual expression of choice. Although this has been a key driver of global development and wealth creation, it simultaneously leads to an increasing failure to account for the spillover or systemic consequences of our individual atomized actions. The more that each individual or firm believes that system stability and sustainability are not their responsibility, the more the system as a whole may become unstable and subject to systemic risk. We show that this also reflects governance failures as governments have shied away from national or multilateral responsibility for the management of the rising externalities and collective risk arising from the rapid economic and population growth associated with the current phase of accelerated globalization.

In chapter 4 we focus on the physical infrastructure that has created the arteries through which the lifeblood of globalization flows. Without these, global integration would be impossible and our societies would become dysfunctional. Our focus is on the vulnerabilities of trade and travel networks, energy supply networks, and the global information technology architecture. We document the degree of integration in these areas and consider the risks of these networks' failure. We learn from past incidents about the propagation of hazards and the interaction between physical failure and crisis management. Our aim in the chapter is to identify the key characteristics of physical networks and establish how infrastructure may become more robust and resilient to systemic shocks so it is a source of stability rather than an amplifier of cascading shocks.

Chapter 5 examines ecological risks and the relationship between globalization and the environment. Globalization affects and is affected by the environment. We consider the dual causality by which the ecosystem is shaped and by which it influences the process of global integration. We show that although globalization has accelerated economic growth, it has been a cause of increased fossil fuel use, thereby increasing carbon emissions. It also has resulted in a sharp reduction in ecological diversity. The accumulation of greenhouse gases and declining biodiversity have the potential to engender catastrophic outcomes. The acceleration of human development associated with globalization threatens the stability of the ecosystem in a manner that is fundamentally different from that of the historical degradation of the past. This is because of its accelerated impact and potential systemic consequences. Globalization threatens the stability of the global ecosystem, but the environment is itself a source

of growing hazard. Floods, droughts, and other extreme weather events, together with the consequences of accelerated degradation of land, water, and other natural resources, pose systemic risks that threaten to undermine many of the benefits of globalization and to compound its risks. This systemic risk has particularly negative consequences for poor people, not the least for those who live on marginal and vulnerable land.

Chapter 6 presents evidence on what is perhaps the oldest form of systemic risk, which is that arising from viruses and pandemics. The factors that characterize globalization increase these risks. These factors include the movement of people and goods at increasing speeds and over greater distances, with many passing through a small number of key airports and other hubs. Rising population density and urbanization and the increasing use of and proximity to animals as food and pets foster the development and rapid dispersion of pandemics. The development of antibiotics has brought some respite, but increasing antibiotic resistance is a major concern. Technological developments have the potential to be misused, and the exponential decline in the cost of DNA sequencing not only provides extraordinary new health care opportunities but also carries new risks due to the potential for contagious diseases to be constructed synthetically in laboratories. The current phase of globalization is adding new dimensions of complexity to the management of pandemics. The interplay of globalization and disease is not new, but, as we show in chapter 6, it has entered a dangerous new phase of systemic risk.

Chapter 7 is concerned with social risks. We focus on questions of economic inequality and social cohesion. Globalization has been associated with emerging markets' catching up with earlier developers, but this convergence masks the fact that dozens of countries are falling further behind. Globalization also has been associated with rising inequality in virtually all countries. We consider the causes and implications of growing inequality and the extent to which individuals and societies are disconnected or even disadvantaged by globalization. The uneven nature of globalization and the increasing restrictions on migration are part of the explanation, as is the failure of policies at the national and global levels to promote a more inclusive system. Of particular concern is the evidence that poor people and poor countries are the most vulnerable to systemic risk, which accentuates inequality. We see weakening social cohesion and the widening institutional failures as interrelated, with

politicians receiving neither the mandate nor the support to focus on longer-term and strategic concerns. The attribution issues identified in chapter 1 also are seen to contribute to the weakness of leadership and to the growth of extreme parties. The drift to more local politics and rising support for extremist parties, as well as nationalism, protectionism, and xenophobic behavior, are seen to be responses to this as citizens seek to exercise greater control over their immediate environment and to wrest control from distant and apparently unaccountable institutions to which they feel little connection. When *foreign* is synonymous with *threat*, the case for collective action is made more difficult. Yet, as we show, it is only through collective action that we can build resilience and mitigate the gravest systemic threats. Social cohesion is seen to be a necessary condition for more effective management of systemic threats. We argue that a more inclusive globalization is a prerequisite for the continued success of global integration and globalization.

The concluding chapter 8 examines the interdependent nature of global systemic risk. We highlight the need for international coordination and interdisciplinary efforts and conclude that risk in our hyper-connected environment can no longer be treated as something that is confined to particular sectors or domains. The risks arising from the behavior of individuals and firms and those associated with physical infrastructure and the natural environment all influence each other. The environment is both affected by globalization and a serious threat to its continued services. The causalities in the relationship between economic integration and social cohesion run both ways as well.

A primary goal of this book is to alert government, business, and civil society leaders and policy makers as well as students and citizens to the relationship between globalization and systemic risk. To this end, we conclude the chapter by suggesting general principles and offering concrete recommendations for managing and sustaining globalization. We emphasize the need for a more thoughtful understanding and management of globalization and for striking a balance between economic integration and sustainable outcomes at the national and global levels.