

Executive summary

In recent decades, value chains have grown in length and complexity as companies expanded around the world in pursuit of margin improvements. Since 2000, the value of intermediate goods traded globally has tripled to more than \$10 trillion annually. Businesses that successfully implemented a lean, global model of manufacturing achieved improvements in indicators such as inventory levels, on-time-in-full deliveries, and shorter lead times.

However, these operating model choices sometimes led to unintended consequences if they were not calibrated to risk exposure. Intricate production networks were designed for efficiency, cost, and proximity to markets but not necessarily for transparency or resilience. Now they are operating in a world where disruptions are regular occurrences. Averaging across industries, companies can now expect supply chain disruptions lasting a month or longer to occur every 3.7 years, and the most severe events take a major financial toll.

This report explores the rebalancing act facing many companies in goods-producing value chains as they seek to get a handle on risk. Our focus is not on ongoing business challenges such as shifting customer demand and suppliers failing to deliver, nor on ongoing trends such as digitization and automation. Instead, we consider risks that manifest from exposure to the most profound shocks, such as financial crises, terrorism, extreme weather, and, yes, pandemics.

The risk facing any particular industry value chain reflects its level of exposure to different types of shocks, plus the underlying vulnerabilities of a particular company or in the value chain as a whole. We therefore examine the growing frequency and severity of a range of shocks, assess how different value chains are exposed, and examine the factors in operations and supply chains that can magnify disruption and losses. Adjusted for the probability and frequency of disruptions, companies can expect to lose more than 40 percent of a year's profits every decade, based on a model informed by the financials of 325 companies across 13 industries. However, a single severe shock causing a 100-day disruption could wipe out an entire year's earnings or more in some industries—and events of this magnitude can and do occur.

Recent trade tensions and now the COVID-19 pandemic have led to speculation that companies could shift to more domestic production and sourcing. We examined the feasibility of movement based on industry economics as well as the possibility that governments might act to bolster domestic production of some goods they deem essential or strategic from a national security or competitiveness perspective. All told, we estimate that production of some 16 to 26 percent of global trade, worth \$2.9 trillion to \$4.6 trillion, could move across borders in the medium term. This could involve some combination of reverting to domestic production, nearshoring, and shifting to different offshore locations.

Moving the physical footprint of production is only one of many options for building resilience, which we broadly define as the ability to resist, withstand, and recover from shocks. In fact, technology is challenging old assumptions that resilience can be purchased only at the cost of efficiency. The latest advances offer new solutions for running scenarios, monitoring many layers of supplier networks, accelerating response times, and even changing the economics of production. Some manufacturing companies will no doubt use these tools and devise other strategies to come out on the other side of the pandemic as more agile and innovative organizations.