

FEATURE

Supply chain resilience in the face of geopolitical risks

Preparing for the tumult ahead

Ira Kalish and Michael Wolf

Understanding the geopolitical environment (especially the shifting US-China relationship), its effect on global supply chains, and what may lie ahead is critical for companies to remain competitive.

ASSESSING GEOPOLITICAL TRENDS and risks has become an increasingly important risk mitigation strategy for businesses around the world. As such, we use two geopolitical scenarios to examine how changes to the US-China relationship could affect supply chains and the global flows of data, people, and capital. Understanding how such risks could affect your business can allow your company to remain competitive regardless of how the geopolitical landscape evolves.

Although global trade has faced a backlash in recent times and indeed has contributed to job losses in certain industries and geographies, it remains central to global economic growth and poverty alleviation. Opening economies to freer trade and capital movement tends to boost the purchasing power of low-income households by

holding down prices. Open economies usually have higher economic and productivity growth than closed economies (figure 1).¹ However, despite these benefits, some countries allow geopolitical considerations to trump economic ones and pursue policies that cause retrenchment in globalization. Recent examples include Brexit, US tariffs on imports from the European Union, the South Korea-Japan trade dispute, and the US-China trade war. These geopolitical challenges come on top of other numerous disruptions to supply chains, including the pandemic and natural disasters.

How geopolitical tensions and globalization evolve from here remains uncertain. Some experts anticipate a further retrenchment from globalization, while others are more sanguine, expecting mutual interdependence to restrain cross-border provocations. Regardless of what the

FIGURE 1

Global trade leads to higher economic and productivity growth



Source: Oxford Economics.

future holds, it is clear that businesses with cross-border operations—especially those reliant on global supply chains—must seriously consider how geopolitical factors will affect their strategies and risk mitigation efforts, and balance those against the costs and risks that making changes entail.

One way to assess the impact of geopolitical risks is to look at the different scenarios projecting what could happen over the next 10 years and test how they will affect your business operations and those of your competitors. In the subsequent sections, we provide two scenarios that focus on the US-China relationship. The “strategic competition” scenario has China and the United States using restrictive trade practices to gain advantage in high-tech industries that are of national importance, while exhibiting mutual restraint and cooperation in others. One of the largest concerns under this scenario is that commercial goods could have military applications, what has historically been called “dual use.” Importing such goods raises the risk of corporate and state espionage. For example, chips hidden in a server can be used to infiltrate the user’s computer systems. Exporting them,

One of the largest concerns under this scenario is that commercial goods could have military applications, what has historically been called “dual use.”

therefore, raises the risk of providing a foreign government with military capabilities it would not otherwise have. The “decoupling” scenario presents a more contentious US-China relationship where a reduction in interdependence is more urgently pursued across most industries. Although neither scenario is likely to materialize exactly as described, each scenario presents a reasonably plausible outline of how the geopolitical landscape may change in the coming 10 years and raises complex

questions about current supply chains and cross-border operations and flows.

Scenario 1: Strategic competition

Under the strategic competition scenario, China and the United States are concerned with the security of their supply chains for nationally important goods. Both countries reduce their exposure to the other for goods such as semiconductors, large capacity batteries, and telecommunications equipment. Although China and the United States make efforts to decouple these supply chains, they recognize the benefits of trading other types of goods with one another.

Primarily, the United States reduces its reliance on China by raising the cost of importing goods of national importance from China and by diversifying its sourcing of these critical inputs. The United States also provides modest incentives for companies to move operations to America and implements additional export controls to prevent

Chinese companies from obtaining US intellectual property (IP). China pursues its plans to onshore the production of critical components to reduce its reliance on foreigners and prevent the United States from exerting greater control in the future. As China builds

those capabilities at home, it sources critical inputs from countries other than the United States as an interim measure.

Efforts to reduce the flows of nationally important goods between the world’s two largest economies come with several challenges. Numerous parts of these supply chains are highly concentrated. For example, China processes 80% of all minerals used in lithium-ion batteries² and controls a substantial

fraction of the world's mineable lithium supply. The United States provides nearly three-quarters of the world's electronic design automation and IP cores, which are some of the most highly technical aspects of the semiconductor manufacturing process. In addition, moving just one part of a supply chain can force the migration of whole supply-chain ecosystems. For example, certain chemicals used to produce semiconductors require special transportation and storage that are not conducive to long shipments.³ Therefore, companies face the need to move production of those chemicals to areas where the chips are being manufactured.

Another challenge is that companies involved in these nationally important supply chains perform best if they maintain access to both the US and Chinese markets because this ensures these companies have access to the huge amounts of capital and research they need to push past the frontier of innovation.⁴ However, restrictions in the United States and China make it more difficult for American and Chinese companies to have access to both markets. For example, maintaining

access to the US market requires that components with "dual use" are not sourced from China. Other components of nationally important goods can be produced in China, but the United States discourages it through trade barriers. Finally, Chinese-owned companies that provide inputs to nationally important goods can also export to the United States duty-free if their production occurs outside of China and does not include Chinese-made components with dual-use capabilities. This latter group of companies, however, is at a high risk when flare-ups occur between the two countries.

Maintaining access to China's market ultimately requires moving production of nationally important goods and their components within its borders. The same company can provide inputs to China and the United States. For example, a semiconductor manufacturer might establish a foundry in China that sells into China and another one in South Korea that sells into the United States. The migration of this production will take years. In the interim, China continues to primarily source these goods from non-American companies.



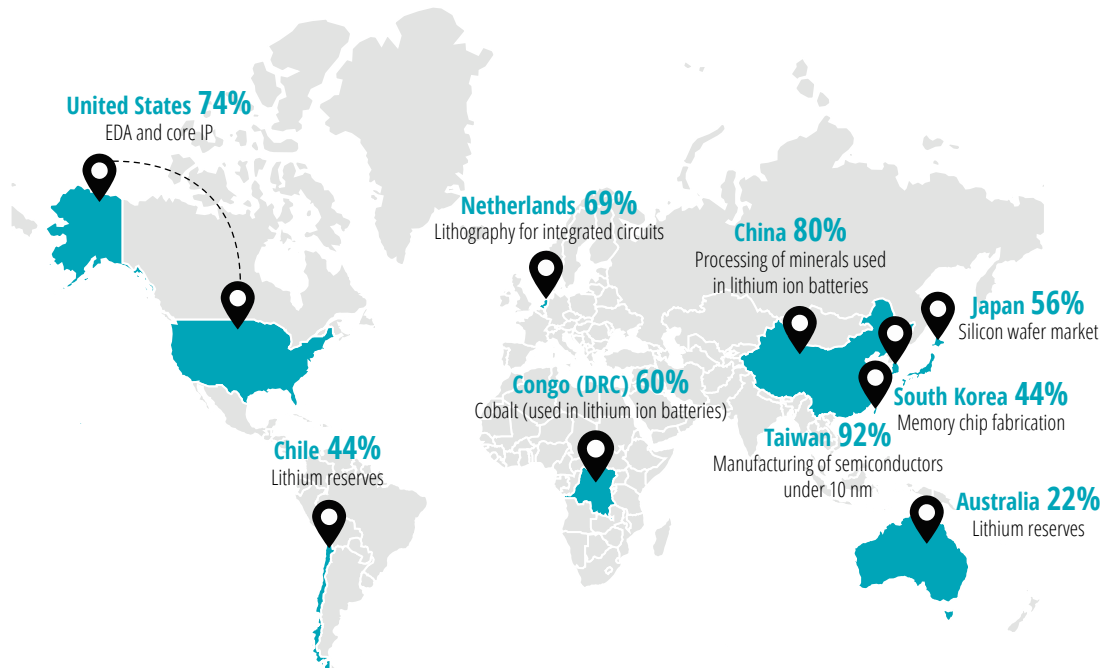
Restrictions on US and Chinese companies operating in these industries provide a strong boost to demand for their competitors in Asia and Europe. Those competitors are largely able to maintain market access to both the United States and China, allowing them to generate more revenue, which provides them with the capital necessary for large research and development operations. One exception is Taiwan, which accounts for 92% of the global market share of the production of chips under 10 nm (figure 2).⁵ Such a high concentration of this critical technology in a country that China claims as its own and to which the United States provides military capabilities is untenable for China and the United States. Under the strategic competition scenario, both countries provide large subsidies for these high-tech operations to relocate to their territory or to a more neutral third country.

The relatively narrow focus on technology-related goods in this scenario does not mean that companies in other industries avoid becoming collateral damage as the two countries compete for dominance. Periodic trade conflicts arise, affecting goods that are entirely unrelated to nationally important goods. However, these conflicts are temporary and relatively limited.

The flow of capital, people, and data faces only modest pressure. Foreign direct investment (FDI) between the United States and China remains constrained, particularly in high-tech sectors, but other investments continue as usual. The United States eases its pressures on Hong Kong SAR, allowing US multinationals to keep their presence there. In addition, the visa process in both countries continues as normal. However, data flows are scrutinized as they are deemed important

FIGURE 2

High concentrations in the global tech supply chain



Sources: The White House, *Building resilient supply chains, revitalizing American manufacturing, and fostering broad-based growth*, June 2021; Boston Consulting Group and Semiconductor Industry Association, *2021 state of the us semiconductor industry*, April 2021.

for national security. Data localization is encouraged in both countries, though most companies can accommodate these restrictions.

A full technology decoupling is avoided under the time frame considered in this paper. Neither country is able to become fully self-sufficient in the production of nationally important goods, and therefore they continue to rely on third parties for some of their inputs. For the most part, both countries continue to work within the frameworks set by global standard-setting bodies such as the Institute for Electrical and Electronics Engineers (IEEE), which has rules that specifically discourage one entity or country from dominating the standard-setting process.⁶ The difficulties of establishing a de facto standard are illustrated by what happened when Japan attempted to set cellular phone standards; the technology was so unique that it had the unintended consequence of preventing Japanese consumer electronics companies from being successful in global mobile phone markets,⁷ an outcome both China and the United States would like to avoid. Nevertheless, first-mover success in setting global standards is not out of the question—China, the United States, or another country can seek opportunities to dictate standards for strategically selected technologies, leading to additional tensions.

Scenario 2: Decoupling

The decoupling scenario is one where tensions between the United States and China worsen. Both countries pursue policies to dramatically reduce dependence on the other to produce goods of national importance. At the same time, they attempt to gain and preserve dominance in critical sectors by stymieing the other's efforts to gain critical IP. Trade between the two countries plummets, even for goods that do not have national importance. Reliance on third-party suppliers is diminished, business ownership structures are

heavily scrutinized, and data localization and privacy regulations are strengthened.

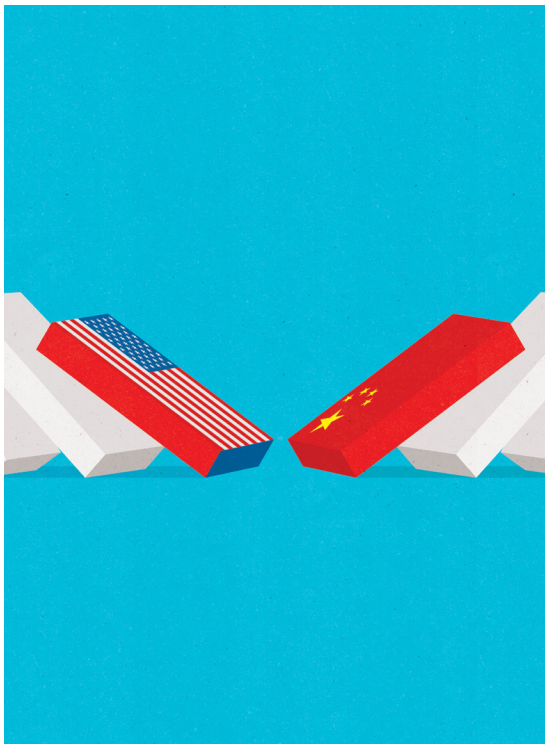
In practice, the United States and China effectively stop all trade of dual-use goods and their critical components between the two countries. For example, the United States no longer imports or exports semiconductors from China, fearing the potential of dual use. This ban includes any goods containing a semiconductor, including seemingly innocuous products such as dishwashers and light-emitting diode (LED) light bulbs. Similarly, China stops importing chips designed with American IP, opting instead for European designs until such capabilities can be built domestically.

The more contentious relationship between China and the United States disrupts production and sourcing in a broader category of goods as well. All components of nationally important goods are heavily scrutinized, irrespective of their dual-use capabilities. For example, the United States implements high tariffs on any batteries using refined lithium from China to encourage greater production outside of China. At the same time, China restricts exports of critical components such as rare earth metals to the United States to raise costs for American competitor companies. Even products far beyond the scope of national security and technology face barriers to trade. The United States raises barriers to trade on a broad swath of goods coming from China to erode China's competitiveness in international markets and thwart its economic development. China increasingly sources products, such as agricultural goods, from third-party countries to deprive the United States of a large export market.

Similar to the strategic competition scenario, restrictions on US and Chinese companies boost demand for their competitors in Asia and Europe as those companies are better positioned to maintain access to both markets. Maintaining access to the United States and China prevents companies from importing or exporting dual-use

goods from or to the other. However, unlike the strategic competition scenario, these import bans happen more quickly and begin to include a larger set of goods that go beyond those with dual use. Chinese-owned companies face intense scrutiny in the United States and struggle to operate in or sell to the country, regardless of where those goods are produced. American-owned companies similarly face scrutiny in China and find their goods to be more frequently boycotted or subject to import bans.

The United States and China attempt to create or maintain alliances with third-party countries to ensure they maintain access to critical inputs and to restrain the other country's advancement. For example, some of the most technologically advanced aspects of semiconductor production are extremely concentrated in the United States and Europe, making Chinese alliances with Europe a priority in the near term. The United States and China also provide strong incentives for Taiwanese chipmakers to move production elsewhere.



Resource-rich countries, especially those in Africa and Latin America, that contain minerals necessary for nationally important goods, increasingly become recipients of large investments from the United States and China. Some of these countries have high concentrations of these critical minerals, making the security of those minerals a top concern for both the United States and China. For example, the Democratic Republic of Congo has about 60% of the world's cobalt,⁸ which is needed in lithium-ion batteries. China has already invested heavily in Africa and already holds equity stakes in some of these mines.⁹ The United States also attempts to exert control over minerals in these countries by offering additional investments.

Restrictions hindering access to the markets in the United States and China, especially for high-tech goods, raise the potential for creating two entirely separate technology ecosystems. However, both countries source inputs from the same companies, which initially helps prevent loss of interoperability. As China produces a larger share of these goods domestically, the separation grows. In sectors where both countries become major exporters of these goods, their customers in other countries demand that the two systems remain largely interoperable.

Goods are not the only flows that face disruption. Capital, people, and data flows also face new challenges in the decoupling scenario. FDI between the United States and China continues to dip lower. FDI in industries of national concern becomes virtually nonexistent. Greenfield FDI in other industries is heavily scrutinized by both countries. Likewise, access to capital is restricted, as foreshadowed by recent actions by both Chinese and US policymakers. US multinationals struggle to operate in Hong Kong SAR as its special status is permanently revoked by the United States. Similarly, visa-free travel between the United States and Hong Kong SAR is terminated. Furthermore, work and student visas face increased scrutiny in both countries. Specialists in

virtually every discipline increasingly face restrictions on participation in conferences and cooperative research projects. Even intracompany travel for technical specialists is impacted by technology transfer constraints. Data is more closely held throughout the world. Data localization regulations become more stringent as each country attempts to prevent the other from obtaining sensitive information.

Recommendations

As noted, it is possible, even likely, that neither of these hypothetical scenarios will come to fruition. However, the probability that something similar will occur is not negligible. Although the strategic competition scenario creates a lesser degree of disruption than the decoupling scenario, both will result in significant changes to supply chains. The following recommendations should be implemented across products and business lines to gain the most comprehensive view into your supply chains' exposure to geopolitical risks.

The first step is to review your competitive strategy and identify which inputs are most essential for your business. Consider inputs beyond the scope of traditional supply chains, such as skills and IP. For example, identify the owners of software essential to operations. Then, identify how the supply chain supports the maintenance of these critical inputs and which geographies are involved. Go as far back in the supply chain as possible to gain a detailed understanding of where these inputs originate and how exposed your company really is to disruptions across the globe.

Once the most important geographies and suppliers are identified, the relevant geopolitical risks can be examined. Consider the factors that could disrupt your ability to obtain those critical inputs, such as changes in government policy, loss of market access, and the security of the country. This examination requires a deep understanding of

the relevant countries' national assets, political processes, national security priorities, and diplomatic capabilities. Develop a database of current and potential suppliers and their relevant risk ratings.

Scenario analysis can allow companies to examine a range of market conditions that could arise over a relevant time period, including those that have high impact but have a relatively low probability of occurring. Understanding how these scenarios will affect your operations and what alternatives are viable is of primary importance. However, understanding how competitors will be affected and how they will react is also critical. For example, if a geopolitical event causes numerous competitors to shift their sourcing to a particular country, capacity constraints may inhibit your company's ability to get the necessary inputs in the time frame required. Having the best possible insights into your competitors' strategies and industry supply chains will give your company an advantage.

When shifting supply chains from one country to another, other considerations need to be made. The new country's regulatory environment, tax code, environmental considerations, workforce skills, available financing, and infrastructure—all need to be included when evaluating the benefits and costs of such a move.

When shifting supply chains from one country to another, other considerations need to be made. The new country's regulatory environment, tax code, environmental considerations, workforce skills, available financing, and infrastructure—all need to be included when evaluating the benefits and costs of such a move. For example, reducing geopolitical risks by moving production to a new country may come with the benefits of lower labor costs and fewer taxes, but lurking political risks and environmental, social, and governance-related liabilities are issues that should not be overlooked.

Prioritizing adjustments is an integral part of the assessment. Some changes can be made in the near term, including those that are either a top priority or would be helpful across most or all scenarios. Contingency plans for changes that are unique to particular scenarios can be made and executed once it is more probable that one or all such scenarios are likely to materialize. Risk-scanning processes, such as customized newspaper monitoring, can be used to spot new developments that raise the probability of a particular scenario

occurring. In addition, making investments today that confer the right—but not the obligation—to take action in a future period could be undertaken when feasible.

Remaining competitive in the future will require an understanding of how the geopolitical landscape is changing and what that might mean for a given industry and business. Scenario planning across business functions can provide insights into where a company is most vulnerable to geopolitics and elucidate what changes should be made most immediately. Proposals for new investments, products, and market expansions can be tested against these scenarios to reduce the likelihood that geopolitical tensions will hamper future returns. Inaction on such assessments risks ceding market share to competitors that are better prepared and positioned to navigate the rapidly changing geopolitical environment. By adjusting to the new era of geopolitical risk, your company can be a leader in navigating the turbulence that lies ahead.

Endnotes

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About the authors

Dr. Ira Kalish | ikalish@deloitte.com

Dr. Kalish is the chief global economist at Deloitte Touche Tohmatsu Ltd. He is a specialist in global economic issues as well as the effects of economic, demographic, and social trends on the global business environment. He advises Deloitte clients as well as Deloitte's leadership on economic issues and their impact on business strategy. In addition, he has given numerous presentations to corporations and trade organizations on topics related to the global economy. He is widely traveled and has given presentations in 47 countries on six continents. He has been quoted by the *Wall Street Journal*, *The Economist*, and *The Financial Times*. Dr. Kalish holds a bachelor's degree in economics from Vassar College and a PhD in international economics from Johns Hopkins University.

Michael Wolf | miwolf@deloitte.com

Michael Wolf is a global economist at Deloitte Touche Tohmatsu Ltd. He provides written commentary and analysis on global economic issues that affect the firm and its clients. He has been quoted by various media outlets, including the *Wall Street Journal* and NPR. Wolf began his career as an economist at the US Labor Department and has since held economist positions at Moody's Analytics, Wells Fargo Securities, and PwC. He has two graduate degrees, one in economic policy from Columbia University, and the other in statistics from Baruch College. He also has a bachelor's degree in economics from the University of Maryland.

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Dr. Ira Kalish

Chief global economist | Deloitte Touche Tohmatsu Limited
+1 213 688 4765 | ikalish@deloitte.com

Dr. Kalish is the chief global economist at Deloitte Touche Tohmatsu Ltd. He is a specialist in global economic issues as well as the effects of economic, demographic, and social trends on the global business environment.

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