

## SUSTAINING CAPITALISM

A series focused on nonpartisan, reasoned solutions in the nation's interest to the central challenges we face in order to provide prosperity for all Americans.

# A Road Map to Achieving Free but Secure Trade with Resilient Supply Chains

## Introduction

The tumultuous disruption of global supply chains, first crippled by the pandemic shutdowns and then further disrupted by war in Europe, has accelerated the collapse of the ever-weakening, decades-long consensus for global trade and economic globalization. From pandemic-related lockdowns around the world to US port bottlenecks and rising gasoline and food prices, supply chain challenges have filled headlines and worried businesses, consumers, and public policy officials. “Just-in-time” production over the last 30 years has relied on global supply chains that needed to be reliable, secure, and efficient. The pandemic and the subsequent lockdowns reduced economic activity around the world, idling parts of supply chains that other parts needed to maintain production, undermining the resiliency of supply chains in an interconnected world.

Now, that world has changed. The initial impact of the pandemic, the war in Ukraine, extensive economic sanctions, and Russia's weaponization of supply chains has been compounded by global labor shortages, China's zero-COVID lockdowns and global trade institutions' inability to provide a level playing field for competition as China's economy developed. These crosscurrents have coalesced to further erode the already weakening confidence in global supply chains and a global trading system. For many companies, that means a push toward diversification and resilience, even redundance, in their supply chain management practices, including bringing supply chains closer to customers, reversing earlier trends toward globalization. And for major trading countries, and particularly for the US, that means a further intensification of trade policy focusing on regional and bilateral trade and a turn toward more broad consideration of on-shoring manufacturing of critical technologies and components.

In short, the current supply chain challenges are a test of economic globalization, and the crisis, which is contributing to inflation and projections of recession at home and abroad, has demanded the attention of business and government leaders. In a recent survey of CEOs by The Conference Board, almost half of CEOs say they are diversifying global source countries over the long term in their supply chains. Additionally, more than one-third of CEOs reported that the biggest challenge they face from economic sanctions against Russia are input shortages and supply chain issues.<sup>1</sup> Furthermore, in the same survey, CEOs and the C-suite express high levels of worry over rising US/China tension and the potential division of the world into competing economic blocs (i.e., the US and its allies vs. China and its allies)—an issue likely to have a significant negative impact on global trade and economic growth for years to come.

As for major public policy leaders, European Central Bank President Christine Lagarde has spoken of “the shifts from dependence to diversification, from efficiency to security, and from globalization to regionalization.”<sup>2</sup> Similarly, Treasury Secretary Janet Yellen has defined US aims as “free but secure trade. We cannot allow countries to use their market position in key raw materials, technologies, or products to have the power to disrupt our economy or exercise unwanted geopolitical leverage,” a worry that leads to work with “countries we know we can count on. Favoring the ‘friend-shoring’ of supply chains to a large number of trusted countries, so we can continue to securely extend market access, will lower the risks to our economy, as well as to our trusted trade partners.”<sup>3</sup> Major legislation is also under consideration in the US Congress that addresses investment and competition, including on-shoring critical manufacturing such as semiconductors. For the US, the issue is not only global but local: in 2015, 43 percent of US workers were connected in some way to supply chains, either at lead firms or suppliers.<sup>4</sup>

This Solutions Brief will examine how the crisis came to be; consider the options of reshoring, nearshoring, and friend-shoring; consider trade policy more broadly; and then examine an important special case, that of semiconductors. The Solutions Brief’s objective is to provide a road map for achieving resilient supply chains and free but secure trade, so that the US economy can continue to grow and prosper and provide equal opportunity for all Americans during these very challenging times.

# Insights for What's Ahead

## Recommendations for achieving free but secure trade with resilient supply chains

While the issue of supply chains directly affects the strategy and business models of private sector companies, the challenge is one that can only be solved by collaboration between private and public sector leaders, given the cross-section of public and private sector roles and responsibilities for the growth of the US economy and, consequently, in the production and flow of goods and services in the US domestic economy and the global economy.

Following are recommendations on how to achieve free but secure trade with resilient supply chains:

### 1. Establish formal consultation/collaboration groups for leaders in the public/private sectors to fully understand global supply chains and determine priorities for supply chain challenges

- Collaborate more closely with business to identify sources of potential weaknesses in supply chains:
  - Establish criteria of potential risk, including threats to national security, possible predatory pricing, threats to public health, possible economic disruption, and considerations of market strengths and weaknesses of US industries.
  - Develop practical solutions including on-shoring, nearshoring, and friend-shoring.
  - Prioritize supply chain challenges for semiconductors and critical minerals, given their significant role in the US ability to compete and thrive in the global economy.
    - Consider tax and other incentives.
    - Streamline regulation.
    - Train workers through public and private initiatives for positions in the semiconductor industry.
    - Seek alternative on-shoring and friend-shoring supply chain sources of both rare earth and essential minerals needed for staying competitive in the advanced, digitized economies.
  - Establish formal consultative groups of port authorities and their customers to establish clear priorities for efficient and effective operations.

### 2. Improve feasibility of practical solutions developed by private and public sector leaders as they analyze each unique supply chain risk and prioritize and determine solutions

- Make reshoring more feasible:
  - Eliminate or streamline red tape/unnecessary regulation that prevents factories from locating in the US.

- Consider tax credits for location of factories here in a way that distorts markets as little as possible; consider domestic subsidized production for special cases (e.g., semiconductors).
- Target investments to improve roads and ports, including smooth multimodal connections at ports; include a supply chain focus in Bipartisan Infrastructure Law spending; solve the truck driver shortage; train more Americans for careers in logistics.
- Expand nearshoring opportunities:
  - Convene a special “Three Amigos” (US, Mexico, Canada) postpandemic summit on supply chains, seeking ways to strengthen links and reduce barriers to trade.
  - Establish a tri-national private sector advisory council under United States-Mexico-Canada Agreement (USMCA) to advise the three governments on nearshoring opportunities and North American economic integration.
  - Focus USMCA Commercial Operations Advisory Council on supply chains.
  - Help the Dominican Republic-Central America Free Trade Agreement (CAFTA-DR) countries to grow their economies by building their infrastructure for resiliency and integrate more fully into US supply chains, building potential for surge capacity, with a particular focus on health care.
  - Reengage with South America as an opportunity to expand US trade relationships, starting with the countries with which the US has free trade agreements (Chile, Colombia, Panama, and Peru).
- Strengthen friend-shoring opportunities:
  - Build country partnerships with supportive countries. Many countries in Africa, Asia, Europe, Latin America, and the Middle East would qualify, starting with those with whom we already have trade and/or security agreements.
  - Find ways to help new countries become “friends” in supply chains—strengthen economic assistance to build links to US supply chains (e.g., helping reach US standards on labor rights, food safety, etc.), including targeted assistance from USAID, Economic Support Funds, and development finance.
  - Deepen the mission of the US Foreign Commercial Service to include knowledge of supply chains of US producers to help US companies better understand foreign supply chains.

### 3. Deepen trade policy engagement: promote supply chain resilience through new trade agreements

- The US should develop a plan for a reformed World Trade Organization, in particular its dispute resolution mechanisms, and continue to promote the benefits of an open global trading system.
- The US should consider opening negotiations for additional bilateral and regional trade agreements, with USMCA, which passed the Congress with bipartisan and labor support, as a possible model to attract domestic support.
- The US should launch discussions to join the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, the follow-on agreement to the Trans-Pacific Partnership (TPP).
- The US needs to prioritize protection of intellectual property.

### 4. Invest in R&D

- Increase government funding of basic research, which has lagged despite the important role this funding has in ensuring US competitiveness. Increased public sector funding should include further investments in critical technologies such as advanced materials manufacturing, biotech, power-storage solutions, semiconductors, AI, quantum computing, and advanced cyber networking.
- Increase private sector R&D funding to meet the competitive demands of effectively and efficiently reshoring and nearshoring advanced manufacturing capacity.

### 5. Determine alternatives to economic lockdowns as a response to the next public health crisis

- Economic lockdowns in response to the pandemic helped trigger the current global supply chain disruptions. Many important lessons can be drawn from the current pandemic that can help avoid such a draconian response to the next major public health challenge, including:
  - **Determine essential businesses** Private sector leaders should coordinate with public sector leaders on the federal, regional, and state levels to use the lessons of the COVID-19 pandemic to determine and prioritize essential businesses that would need to operate in a public health emergency and the requirements that the workforce would need to operate in person and remotely.
  - **Determine business plans for future disruptions** Businesses should update their business plans/playbooks now with lessons learned for future disruptions and coordinate with state and local officials to ensure that essential business infrastructure that requires public sector support to continue operating in a future public health crisis is addressed. (See *CED Solutions Brief: Preparing for the Next Public Health Crisis: Lessons from the Pandemic.*)

## Decades in the Making

The World Trade Organization's 2021 Global Value Chain Development report<sup>5</sup> gives a comprehensive study of value chains across industries around the world. In the first decade of this century, supply chains lengthened, with two-thirds of global trade crossing at least two borders before a product was ready for sale. Supply chains of that length, by definition, are riskier. They demand efficient transportation networks, smooth crossing of borders, and a commitment by nations to open trade.

After the financial crisis and the Great Recession, this pattern started to change. As China grew, it became not merely an exporter but also a producer for its own wealthier domestic market. Other countries experienced similar changes, and as global trade negotiations foundered in favor of regional negotiations, there began a centrifugal pressure toward greater regionalization—with, however, many Western companies still highly dependent on supply chains in China. China has been the largest exporter of goods since 2009 and the largest trading nation in the world since 2013. For many companies, China offers a deep and strong value chain of suppliers and a large pool of skilled labor (Foxconn's iPhone City campus reportedly employs 200,000 people), making it difficult to find alternative locations,<sup>6</sup> conditions which help explain why in a late 2021 survey, 83 percent of members of the American Chamber of Commerce in China had no plans to shift operations out of China.<sup>7</sup>

However, starting around 2017 as the US withdrew from the Trans-Pacific Partnership (which excluded China) and as the US-China trade relationship began to fray, some companies began thinking more deeply about supply chain diversification, often to a "China+1" strategy. Vietnam was a major beneficiary of this change, rising from fifth ranked in the US goods trade deficit figures in December 2017 to number three, just below Mexico, today.<sup>8</sup> But other countries benefited as well.

Then, the world faced a perfect storm of events. At least four factors have contributed to the current global supply chain crisis and changes in trading patterns.

- 1 Changes in the US-China trade and strategic relationship** These changes predate the pandemic, as trade tensions with China in 2018 and 2019 made some investors nervous. Many companies are in the world's largest consumer market because of opportunities there ("in China for China"), but Chinese policies began to raise concerns as they constructed roadblocks to penetration by foreign companies into the domestic consumer markets. Furthermore, for those for whom investments in China principally involve exporting products (or components of products) to the US or other countries, trade issues—including currency manipulation, subsidies for Chinese companies, and other unfair trading practices—and the pandemic exposed vulnerabilities in global supply chains, and US consumers faced shortages of consumer goods from China and other countries. China remains a focus of US trade and foreign policy.<sup>9</sup> Some supply chains still rely heavily on China and are vulnerable at a single point<sup>10</sup>—a risky situation for any business relying on that supply chain.

China's own economy changed dramatically in the 2010s, with major implications for global supply chains. China is now often the *market* for a product rather than simply the exporter of a product. Instead of assembling products based on inputs

that may have come from other countries, China now often controls the complete value chain, leading to a situation in which there is a “complex value chain” in China, but it is not strictly a global value chain.<sup>11</sup>

Further, China is a strategic global competitor of the US. China’s Belt and Road Initiative seeks to shift global trade patterns in China’s favor and to leverage those shifts to strengthen China’s bilateral and regional relations with the corresponding countries. China competes for minerals in Africa and controls most of the world’s mined output of rare earth minerals. It also dominates mining and/or processing of key minerals such as lithium and cobalt, all critical minerals needed to perform and prosper in a technological advanced economy.<sup>12</sup> China and the US are rivals in the Pacific and elsewhere, with particular flashpoints in the South and East China Seas and the Taiwan Strait. It makes good strategic sense to avoid overdependence on China for supply chains, particularly for materials for critical industries. This is particularly poignant with regard to Taiwan and the high concentration of the semiconductor industry on the island. The uncertainty and tensions surrounding the China/Taiwan relationship, particularly in the wake of Russia’s invasion of Ukraine, have only furthered the erosion of trust in China as the world’s premier manufacturing hub. The US, its allies and partners, and business leaders should be accelerating the building of more trade resilience into their trading dependencies with China.

The US goods trade deficit with China was \$418.23 billion in 2018, fell to \$342.63 billion in 2019 as US tariffs on Chinese goods took hold, fell further to \$308.14 billion in 2020 during the pandemic, and then grew sharply to \$353.49 billion in 2021—above its 2019 level.<sup>13</sup> Globally, even during the height of the pandemic, China was a resilient exporter; its exports fell in the first quarter of 2020 but stabilized by the second quarter and rebounded by the third quarter of that year—a very different scenario than in many other economies. While the US growth rate was negative for both imports and exports in 2020, China’s trade volumes in both categories increased.<sup>14</sup>

- 2 The pandemic** Globally, the pandemic accelerated the trend to greater regionalization as borders and economies closed. More recently, lockdowns in China to combat the Omicron variant have had strong global ripple effects for many goods, from toys to autos to smartphones. One pandemic-related shutdown in Yantian port in Shenzhen, Guangdong Province, decreased import volumes in southern California ports by 14 percent. Shortages affect many other products, including technology products, as well. As an example, a lockdown covering a factory in Shanghai has led to a shortage of Omnipaque, an iodinated contrast medium for medical imaging, in New York.<sup>15</sup>

One of the most important lessons that can be learned from the response to the current pandemic is to **determine alternatives to economic lockdowns as a response to the next public health crisis**. Economic lockdowns in response to the pandemic triggered and deepened the current global supply chain disruptions. In the US during the early stage of the pandemic, one-sixth of the economy was idled and employment fell by 14 percent, nearly double the



impact of the financial crisis and over half the 23 percent fall during the Great Depression of 1929–1932.

Two ways to avoid such a draconian response to the next major public health challenge:

- a **Determine essential businesses** Private sector leaders should coordinate with public sector leaders on the federal, regional, and state levels to use the lessons of the COVID-19 pandemic to determine and prioritize essential businesses that would need to operate in a public health emergency and the requirements that the workforce would need to operate in person and remotely.
  - b **Determine business plans for future disruptions** Businesses should update their business plans/playbooks now with lessons learned for future disruptions and coordinate with state and local officials to ensure that essential business infrastructure that requires public sector support to continue operating in a future public health crisis is addressed.
- 3 **Russia's invasion of Ukraine** This conflict forced a rapid disruption and reevaluation of supply chains, most critically in energy. But Russia and Ukraine are also major producers of other important international commodities such as grains, aluminum, steel, palladium, neon, and platinum; these supply chains have been disrupted by sanctions, war, and maritime blockade in the Black Sea. Further, rail shipments from China to Europe had been growing rapidly before the pandemic but are now disrupted as goods for the EU cannot transit Russia by land or air. The war affects all countries, not merely those in the West,<sup>16</sup> for instance with respect to food supplies to Africa and the Middle East.

Professor Tinglong Dai of Johns Hopkins University argues that the Russian invasion of Ukraine will permanently shift the global chain and create an “economic Iron Curtain.” In Dai’s view, Western companies will no longer be able to avoid considering geopolitical risk in their decisions about supply chains,<sup>17</sup> including risks from operating in countries with authoritarian governments. This pushes companies toward supply chain diversification, in essence toward a more regionalized system. A June 2022 poll of global CEOs by The Conference Board showed that 83 percent fear the reemergence of competing economic blocs, and 43 percent are highly concerned about this development.<sup>18</sup>

- 4 **The transition to stakeholder capitalism** This shift drives a greater focus on economic, social & governance (ESG) issues, affecting supply chains. Consumers increasingly demand to know more about a company’s social commitment, and this includes its commitment to responsible and ethical sourcing. Additionally, important steps to move toward a greener economy raise significant issues on supply chains. For instance, rare earth minerals are used in the production of electric vehicles and other advanced technologies. China controls 85 percent of refining of rare earths,<sup>19</sup> making supply chain diversification and resilience difficult in the short term and shifting more emphasis on developing new sourcing from “friends” in the medium term.

Similarly, the shipping industry is a globally significant exporter of carbon. The World Economic Forum has claimed that shipping is the world’s sixth biggest



emitter of greenhouse gases (as much as Germany and the Netherlands combined); decarbonizing shipping might cost up to \$1.5 trillion by 2050.<sup>20</sup> Here, shifting supply chains from global to regional could have a positive effect on greenhouse gas reduction. Shifting to a green economy will require deep and careful analysis of supply chains.

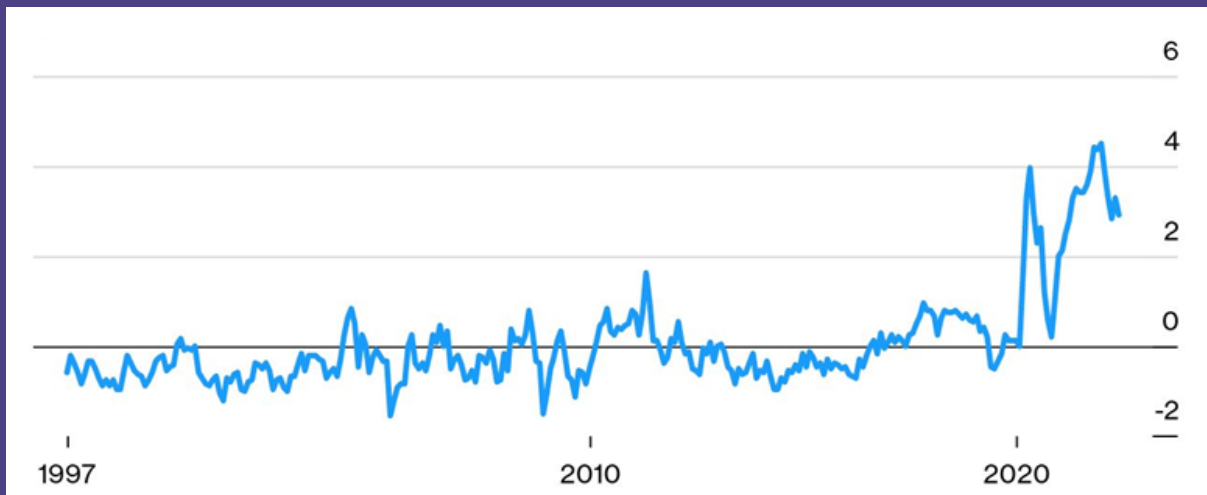
Each factor would have been significant on its own; together, they elevate supply chain adequacy and resiliency to a national crisis. Each requires business and government leaders to take a hard look at supply chains, with an eye to diversification and resilience and to look more deeply into supply chains. Who makes the component products? From where do raw materials come? Where is the system most likely to break down? Perhaps most importantly, what short-term costs are companies willing to assume to promote a better long-term outlook? What US government policies are needed to support resilient and reliable supply chains?

## Trade Trends Since the Pandemic

Trade remains vital to the US and global economy and US and global growth. Efforts to restrict trade will, therefore, lower global growth. After falling sharply in 2020, the value of total global trade (goods and services) increased to an estimated \$28.5 trillion in 2021, according to the UN Conference on Trade and Development (UNCTAD)—25 percent above 2020 and 13 percent higher than the prepandemic year of 2019.<sup>21</sup> UNCTAD predicts that the rate of growth in trade will slow in 2022 as forecasts indicate lower overall growth. It is clear that trade has rebounded strongly. But, it is also clear there is a broad trend toward regionalism and away from globalism—a trend that will reduce overall global growth, and, if costs are shifted to countries with higher input costs, could reinforce inflationary pressures.

### Still Pressured

Global supply-chain problems ease in May but are near historical highs



Source: Global Supply Chain Pressure Index (GSCPI), New York Fed

Congestion at the ports, exacerbated by the impact of the pandemic, is one of the main drivers to finding alternative trade patterns and more resilient and efficient supply chains.<sup>22</sup> The US Department of Agriculture estimates that the global container fleet included 5,587 ships in 2021, which can collectively carry 24.7 million TEU (“twenty-foot equivalent unit,” one shipping container).<sup>23</sup> But those ships are taking longer to deliver their goods, often waiting outside crowded ports. Bloomberg calculated that at the worst of the port backlog earlier this year, over 500 ships—9 percent of the global fleet—were awaiting clearance to enter a port.<sup>24</sup> This has ripple effects across the economy. The Institute for Supply Management reported that in April 2022 companies waited on average 100 days for production materials, the longest delay it had ever recorded, pushing average lead times for capital expenditures higher—to 173 days.<sup>25</sup>

There has recently been some relief, as noted in measures such as the US Logistics Managers’ Index<sup>26</sup> and the broad-based Global Supply Chain Pressure Index (GSCPI) published by the Federal Reserve Bank of New York,<sup>27</sup> which dropped from 3.4 in April to 2.9 in May (it was 4.4 in December 2021).

Companies and public policy leaders are responding to these challenges in a variety of ways. The Federal Reserve’s June 2022 Beige Book<sup>28</sup> notes that the varied solutions include shipping freight by air, increased stockpiling of supplies in lieu of “just-in-time” inventory management, and extended hours at US ports. Each, of course, raises costs for businesses and drives inflation. One response is “nearshoring,” bringing supply chains closer to the region of consumption (“regionalization”); another is “reshoring”—bringing supply chains back to the country of consumption, essentially removing them to the degree possible from the global market. And a third option is “friend-shoring,” shifting trade policy and supply chains to “friendly” nations to ensure supply chain and trade flow resiliency.

Yet supply chains are not always easy to shift, particularly for more complex products. Shifting production elsewhere can be very costly and time consuming. Building a new semiconductor fabrication plant, for instance, is very expensive and can take years. Even less complex products often require building a new factory, training workers, or finding new sources for specialized inputs (such as precursor chemicals for pharmaceuticals). Given the current pressures on supply chains, business leaders must look very deeply into their own supply chains—perhaps seven or eight levels down for some products—to fully understand the points of vulnerability and the risk of single point supply chain failures.

Business leaders are looking in many cases for support from regional and national public policy leaders in terms of funding, regulation, and trade policies.

While decisions on when and how to reshore, nearshore, and friend-shore need to be accelerated to meet the rapidly growing challenges, they still need to be made deliberately and judiciously given the downside costs. US policy and business leaders need to work together to fully understand supply chains and determine supply chain priorities, taking into account both national security and economic imperatives, and also focus specifically on individual supply chain vulnerabilities. This approach will best determine which business and public policy responses are most appropriate.

## Supply Chain Risks and Opportunities

Supply chains take many forms, including vertical integration, domestic outsourcing, offshoring, outsourcing from a central node, and others.<sup>29</sup> Labor is not the only cost businesses must consider in evaluating where to invest. Lower costs of offshore suppliers must be balanced by other costs—not only transportation but also risks from longer supply chains, greater lead times, and reduced innovation.<sup>30</sup>

Generally, collaborative relationships with suppliers add value and help reduce costs, defect rates, and lead times, leading to “sticky” relationships with suppliers. Apple is one company that has worked hard to develop collaborative relationships with major first-tier suppliers. Apple has worked for many years with suppliers in China, notably Foxconn, and relies on that company’s suppliers as well in what has been described as “factory-less” manufacturing, in which “manufacturers organize GVCs [global value chains] based on their [intellectual property], including patents, trademarks, copyrights, brand names, product designs, software, databases, and special business organization structures”; Apple has done this so efficiently that it has been able to capture 59 percent of the value added in its chain for the iPhoneX.<sup>31</sup> Apple is now reportedly developing a similar supply chain in India, diversifying its global supply chains and taking advantage of Indian talent.<sup>32</sup> The US auto industry, which once treated semiconductors essentially as a commodity, is now working toward more collaborative relationships with semiconductor manufacturers, as Japanese automakers have, as well as shifting suppliers.

A survey by The Conference Board in December 2021 showed that the top three reasons for changing the design of a supply chain were to manage transportation risks (40 percent of respondents), improve sustainability performance (39 percent), and greater ability to adjust to changing demand (38 percent), with customer concerns about sourcing from certain countries fourth at 27 percent. The survey analysis nonetheless concluded: “Geopolitics should be a deliberate consideration in decisions to locate manufacturing plants, along with labor costs, existing supplier bases for available inputs, and other structural factors such as labor shortages, particularly for the US and European economies.”<sup>33</sup>

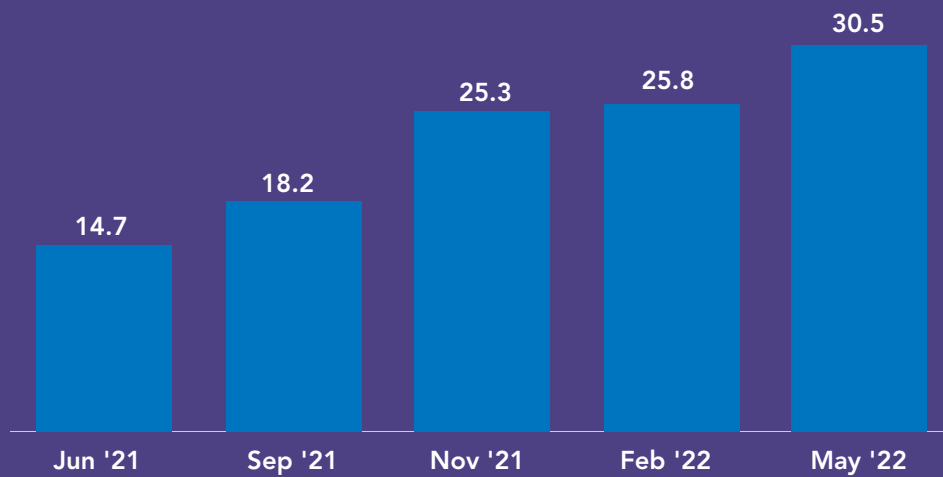
One important danger from excessive reshoring or regionalization of supply chains is the potential for higher inflation. Supply chain disruptions themselves lead to higher producer prices simply from the law of supply and demand; beyond this, as The Conference Board noted in its report, “[m]ajor restructuring of supply chains could add to inflation pressure in the next decade” as firms seek reshoring or regional solutions that often involve higher costs for labor and other inputs.<sup>34</sup> The Federal Reserve Bank of Dallas Manufacturing Report recently confirmed this worry, as 87 percent of Texas manufacturers surveyed are passing on higher supply chain–related costs to consumers.<sup>35</sup>

## The US Government Response to the Crisis

Given the myriad government policies and agencies that affect production and flow of goods and services in and out of the country, the supply chain challenge and the corollary trade policies need to be addressed through public-private collaboration. Shortly after taking office, President Biden issued Executive Order 14017, “Securing America’s Supply Chains,”<sup>36</sup> launching a 100-day review focused on securing four areas: semiconductors,

## Taking longer to repair

Fed surveys show percentage of companies expecting supply-chain strains to persist for a year



Notes: Data as of May 2022. Question only posed to firms reporting supply-chain disruptions or delays.  
Source: Federal Reserve Bank of Dallas, Texas Manufacturing Outlook Survey.

high-capacity batteries (including for electric vehicles), critical minerals (including rare earths), and pharmaceuticals and active pharmaceutical ingredients. (The president had earlier issued Executive Order 14001 on “A Sustainable Public Health Supply Chain.”<sup>37</sup>) This was followed by deeper studies in areas such as the ICT industry and the energy sector industrial base from relevant federal agencies, including reports on the US’ current manufacturing base and any gaps; “supply chains with a single point of failure, single or dual suppliers, or limited resilience”; “exclusive or dominant supply of critical goods... [from “unfriendly or unstable”] nations”; current US workforce skills for critical sectors; and the need for additional domestic research and development capacity.<sup>38</sup>

The studies noted many strengths of the US, including our university and research base, skilled workforce, spirit of entrepreneurship, and global leadership, concluding that the US “is well-positioned to maintain and strengthen our innovative leadership and rebuild our productive capacity in key sectors and value chains.” More specifically, the administration proposed “a public-private consortium for advanced manufacturing and onshoring of domestic essential medicines production”; efforts to expand production of critical materials in the US; and using incentives under Title III of the Defense Production Act, such as “grants, loans, loan guarantees, and offtake agreements” not only for production of critical materials but for a wide range of essential technologies in critical industries.<sup>39</sup> In addition, the administration proposed examining using existing authorities of the US Export-Import Bank (EXIM) to support manufacturing through a new Domestic Financing Program, in particular to help small- and medium-sized firms’ exports.<sup>40</sup>

More broadly, the administration worked in partnership with business to reduce supply chain challenges to the degree possible, in particular avoiding a crisis before the holidays last year, including pushing for 24-hour port operations, partnering with major retailers, and working to increase the supply of truckers.<sup>41</sup> The president has also used authority under the Defense Production Act to promote domestic manufacturing of essential goods, including a public-private consortium for advanced manufacturing of essential medicines and critical materials and more recently to address production of electric batteries and a severe shortage of infant formula.<sup>42</sup>

Overall, the administration's perspective is that "[t]he public sector can play an important role in promoting supply chain resilience, especially in helping to incentivize private sector decisions that align with broader geostrategic and economic priorities."<sup>43</sup> This is true, so long as the public sector does not seek to interfere with market forces where supply chains are working well or where there is no evidence of market failure or externalities. The goal should be achieving both security and prosperity at the lowest cost and with the least disruption to market forces.

## Proposed Congressional Legislation

Congress has been active as well. A bill originally known as the CHIPS Act has, with some differences between the House and Senate versions, been incorporated into the America COMPETES Act,<sup>44</sup> which the House passed in February, and the US Innovation and Competition Act (USICA),<sup>45</sup> which the Senate passed in late March. The two Acts are in conference between the House and the Senate and progress has stalled over differences in the two versions of this broad sweeping legislation.

Both the House and Senate bills would establish a Supply Chain Resiliency and Crisis Response Office at the Commerce Department and a "national supply chain database" to track disruptions in US supply chains. The House bill authorizes \$45 billion through FY2027 "to provide grants, loans, and loan guarantees that support the resilience, diversity, security, and strength of supply chains, including for activities that support the manufacturing or acquisition of critical goods, enhance manufacturing facilities, and create surge capacity." Funding may go to state governments and educational institutions. It also authorizes \$90 million for the State Department for embassies "to hire contractors to assist interested US persons and businesses with supply chain management issues related to China." Specifically with respect to telecommunications supply chains, both bills propose an innovation fund for wireless technology supply chains to avoid reliance on Chinese technology.

Furthermore, USICA and the COMPETES Act call for an increase in R&D funding to maintain US competitiveness and continue to sow the seeds of innovation, in a rapidly advancing global economy where a number of countries are making leaps to catch up to the US technological lead. USICA would authorize a new "Directorate for Technology and Innovation" in the National Science Foundation (NSF) and centralizes some funding there; the COMPETES Act distributes funding across many agencies. USICA would authorize (not appropriate) approximately \$81 billion to NSF over five years, with about a third of that money for the new technology directorate and other monies going to STEM education and for existing NSF programs. In contrast, the COMPETES Act authorizes

raising NSF's budget to about \$18 billion, as well as providing about \$4 billion to the Energy Department.

The House bill also authorizes \$1.5 billion for a “supply chain flexibility manufacturing pilot program” to “maintain domestic reserves of critical medical supplies,” including drugs, vaccines, diagnostic tests, and other supplies. Similarly, the Senate bill would require federal agencies to purchase personal protective equipment in contracts at least two years in length and “must be for PPE that is grown, reprocessed, reused, or produced” in the US.

Specifically with regard to semiconductors, the House bill includes \$52 billion for CHIPS Act funding (\$50.2 billion for the Commerce Department and \$2.0 billion for the Defense Department). The Commerce Department would provide subsidies to domestic manufacturers of semiconductors and entities in their (presumably domestic) supply chains. The Senate bill has a similar provision at a slightly lower funding (\$49.5 billion). The bills are now subject to conference between the chambers.

## Solutions Addressing Supply Chain Issues

### Reshoring

For some companies, reshoring is a viable solution. As just one example, Stanley Black & Decker expanded its North American production facilities to reduce lead times and build “regional development of our supply chain base over time, enhancing local sourcing and speed to market.”<sup>46</sup>

Yet, while reshoring—bringing facilities back to the US from abroad—at first glance seems the simplest solution, this approach has real costs as well. In many cases, the price of labor would make products uncompetitive. Not all elements of a finished product (for instance, some precursor chemicals for pharmaceuticals and cobalt for electric vehicle batteries) are produced here, so partial reshoring would not solve supply chain problems in many industries.

Most basically, however, the open global trading system since the end of the Second World War has overall been extremely positive for the US. While increased globalization has led to disruption in many traditional industries, others—in particular technology-based industries—have arisen in their place, using US strengths of entrepreneurship, the ease of starting a business, and a research base. The open trading system has also been strongly positive for exports of US agriculture. Consequently, reshoring decisions need to be judiciously weighed, taking into consideration whether they make good business sense and reduce geopolitical risk for vital goods and services.

But in order for reshoring to be a feasible option, the US government needs to invest more in R&D in basic research, which has lagged, despite the important role this funding has placed in ensuring US competitiveness.<sup>47</sup> Increased public sector funding should include further investments in critical technologies such as advanced materials manufacturing, biotech, power-storage solutions, semiconductors, AI, quantum computing, and advanced cyber networking. Private companies also need to invest in R&D that is much

more focused on product outcomes to meet the demands of effectively and efficiently reshoring and nearshoring, particularly with regard to advanced manufacturing capacity.

The US can also do more to maintain an open environment to attract foreign investment here. Too often, permitting processes for new plants and manufacturing facilities take too long and deter foreign investment. Our infrastructure badly needs upgrading. Our immigration system can deter foreign investment as well. Companies may not be able to get the workers they need, and our labor force participation rate remains low.<sup>48</sup> Many solutions involve removing bottlenecks to getting goods to market, including urgently needed upgrades to our roads and ports.

To improve roads, Bipartisan Infrastructure Law (BIL) funding should be targeted to improve connections to ports, factories, airports, and other major supply chain nodes. The Transportation Department has already taken steps here, updating State Freight Plan Guidance to reflect the BIL.<sup>49</sup>

**Trucking** accounts for 72 percent of US freight tonnage, and the volume moved is expected to increase by 2.4 billion tons over the next decade.<sup>50</sup> But trucking faces a serious driver shortage, with an expected shortfall of 160,000 by 2028. Currently, 49 states permit those under 21 to hold a commercial driver's license, but federal law precludes this for interstate trucking and for hauling goods that originated from out of state. One approach under consideration in Congress would require an apprenticeship with 400 hours of additional training beyond state commercial driver's license training and working with a second driver. Fixing this problem expeditiously would get more truckers on the roads quickly.<sup>51</sup>

Many US **ports** badly need upgrades. According to the World Bank Group's Container Port Performance Index,<sup>52</sup> Chinese ports perform well, with three (Yangshan, Ningbo, and Guangzhou) in the top 10, while too many US ports lag far behind (Seattle at 336, Savannah at 367, and Long Beach and Los Angeles taking the bottom two places at 369 and 370). The Transportation Department's \$450 million Port Infrastructure Development grants program<sup>53</sup> is a step in the right direction, but greater investment in our ports will be needed, from BIL and other funding, to move freight more quickly and efficiently.

**Ocean shipping** has become a contentious issue as the supply chain crisis has worsened. Shipping alliances and nine companies dominate transoceanic trade; they raised prices during the pandemic, leading to charges that the lines are overcharging business customers. Indeed, one consulting firm has estimated that the container-line industry may make \$300 billion in profits in 2022, on top of \$214 billion in 2021.<sup>54</sup> In a study earlier this year, the Federal Maritime Commission (FMC) concluded that "the current market for ocean liner services in the Trans-Pacific trade is *not* concentrated and the Trans-Atlantic trade is only *minimally* concentrated. Competition among ocean common carriers, among the three major alliances and among the members in each of these alliances, is vigorous."<sup>55</sup> To the degree that ocean shippers are raising prices, this encourages manufacturers to shift and diversify supply chains, which would tend to reduce prices over time. The president recently signed the Ocean Shipping Reform Act, which will give the FMC new powers to begin investigations on allegedly anticompetitive practices, address detention and demurrage charges applied when cargo is not moved quickly enough at a port (about which US companies have complained), and require carrier lines



to report new information to the agency and ban carriers from unreasonably declining to carry US exports.

Finally, consider **logistics** itself. As in the health care industry, the intensity of supply chain–related positions since the pandemic began has led to burnout and increased turnover. According to LinkedIn figures, the average separation rate for supply chain managers increased 28 percent last year amid the pandemic and supply chain crisis.<sup>56</sup> Training more people for logistics careers will be essential to smooth supply chains in the future.

## Nearshoring

The second alternative is “nearshoring.” European and Asian companies are adopting or reinforcing their own versions of nearshoring as the costs of shipping and the uncertainties of geopolitics rise. Citing a tenfold rise in the cost of shipping from China to Europe since the pandemic, PIERER Mobility of Austria brought e-bike production to Bulgaria, stating that the company needed “a continental supply chain” bringing factories closer to consumers and that “close control over our supply chain” is essential to success.<sup>57</sup> Nearly 1 in 4 European firms are considering shifting at least some operations out of China, according to the European Union Chamber of Commerce in China.<sup>58</sup>

For the US, nearshoring essentially means leveraging the supply chains connected to the USMCA and CAFTA-DR trade agreements. Nearshoring offers the benefit of speedier delivery times, and integrated supply chains that can be more efficient than trans-Pacific ones may reduce geopolitical risk. But nearshoring has costs as well. Labor can be more expensive than in some outsourcing destinations, raising the price of finished goods for US consumers and hurting US competitiveness. Some regional countries may not have the same resources, talent, or specialties or may lack raw materials that would have to be imported, so that supply chain risk is not really eliminated. There are ways to strengthen nearshoring as a realistic option for the medium term, but they will require a renewed effort by the US to take advantage of nearby opportunities and significant efforts by partner countries to upgrade their infrastructure, workforce, logistics, and protection of intellectual property rights.

The **United States-Mexico-Canada Agreement (USMCA)**,<sup>59</sup> which entered into force on July 1, 2020, replaced the North American Free Trade Agreement (NAFTA). USMCA is an essential element of US trade policy, vital to our economy and an important model for nearshoring and its expansion. Census Bureau data show that Canada and Mexico remain our top two trading partners (China and Japan are third and fourth); Canada and Mexico also top the list for both imports and exports.<sup>60</sup>

USMCA was explicitly designed to shift NAFTA toward an agreement perceived to be more favorable for US workers. It added strong protections on intellectual property and new chapters on digital trade, anticorruption, and good regulatory practices. While much of USMCA builds on NAFTA, there are some significant differences. Regional value content increased from 62.5 percent to 75 percent, and at least 70 percent for steel and aluminum, pushing supply chains from Asia to North America. A Labor Value Content provision requires that a percentage of a vehicle be manufactured by workers earning at least \$16 an hour, effectively prohibiting factories from locating entirely in Mexico.<sup>61</sup> USMCA contains a “sunset clause”<sup>62</sup> that will require renegotiation of the agreement after

six years, or in 2026, and by its terms the agreement ends in 2036 unless renewed during the six-year reviews.

Overall, particularly in the important auto sector, USMCA will require businesses to understand their full supply chains more deeply to be able to take advantage of the agreement, as NAFTA's Certificate of Origin has been changed to be more precise with certain required elements (the name and contact information for the certifier, importer, exporter, and producer and a description of the goods and their tariff classification) to prove North American content to obtain USMCA benefits.

How can USMCA be improved to promote deeper economic integration and expanded nearshoring that addresses the supply chain challenge?

- 1 The sunset clause strikes at the heart of the agreement to promote cross-border trade. Because it causes uncertainty for manufacturers who must make decade-long decisions as to where to invest, it should be removed—providing a strong signal that North American free trade is here to stay.
- 2 Focus more intently on supply chains in USMCA-related bodies. The US Commercial Operations Advisory Council advises on the commercial operations of the Customs and Border Protection agency, including regulation and policy.<sup>63</sup> This council should adopt an explicit focus on supply chains; ideally, the council would welcome ideas from Canada and Mexico as well.
- 3 The US should think on a continental scale and encourage national leaders (the “Three Amigos”) to establish a tri-national business council to advise the three governments on nearshoring opportunities and further steps for North American economic integration, focusing on regulatory and infrastructure solutions in all three countries, building new supply chain linkages where they do not exist and reinforcing and deepening them where they do.

**Canada**, the US' largest trading partner, offers many advantages for US companies, including strong energy and minerals sectors, electricity exported to the US, a highly skilled labor force, and a similar business environment. Trade in goods with Canada in 2021 exceeded the prepandemic levels of 2019 (\$665.545 billion vs. \$611.409 billion).

Mexico has many advantages; perhaps most important is proximity to the US and its integration into the US economy under NAFTA since the 1990s. Goods can arrive much more quickly by land rather than dozens of days at best crossing oceans.<sup>64</sup> NAFTA had already built some integrated—or at least more closely linked—supply chains. Many Americans speak Spanish and Mexicans English, making business ties easier; it has a strong industrial base and lower labor costs. Mexico is taking good advantage of the agreement and changes in supply chains from the pandemic; over half of Mexican exports by value are concentrated in the border states of Baja California, Chihuahua, Coahuila, Nuevo Leon, and Tamaulipas.<sup>65</sup> Mexico already participates in some aspects of US semiconductor manufacturing, accounting for 21 percent of capacitors and resistors and 30 percent of electronic connectors imported.<sup>66</sup> If Congress enacts the CHIPS Act, Mexico has a good opportunity to build tighter supply chains for all aspects of semiconductor manufacturing.

It is inaccurate, however, to posit that supply chains can simply shift from China to Mexico. Most basically, Mexico already participates in some supply chains involving Asia. Mexico also starts from a more difficult position; six countries of ASEAN have three times as much manufacturing value added as Mexico, and China's output is 20 times larger than Mexico's.<sup>67</sup> Mexico also faces challenges in logistics (where it is behind most Asian competitors), protection of intellectual property rights, and corruption.<sup>68</sup> Compared with the industrial nations in ASEAN, Mexico ranks in the middle of other measures that businesses often use in deciding where to invest, such as economic freedom, innovation, the quality of credit markets, and availability of electricity.<sup>69</sup>

Mexico has an opportunity to use USMCA to improve its regulation, infrastructure, and logistics. The Good Regulatory Governance provisions under Chapter 28 are useful in outlining a path forward for Mexico. Its partners should help, not least through the North American Competitiveness Committee, a new body established at Mexico's suggestion.<sup>70</sup> That committee should also seek ideas from the private sectors in each country.

For USMCA to realize its full potential, the public and private sectors in all three countries will need to work much more closely together to identify sectors that are good candidates for further integration of supply chains and trade. Building a North American market for essential supplies for public health emergencies is a good place to start.

Mexico is a major nation, the 15th largest economy in the world. It can meet the challenges with political will at home and dedicated support here. Perhaps most of all, USMCA needs a greater political commitment in all three countries to achieve the full potential of the North American market. The partners should convene a special Three Amigos postpandemic summit focusing on supply chains, seeking ways to strengthen links and reduce barriers to trade.

**CAFTA-DR** Beyond USMCA, there is also the CAFTA-DR trade agreement, which entered into force in 2006, covering the Dominican Republic as well as Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua. These countries have the potential to be alternative markets for the US to China and its Asian neighbors in certain areas. Using the Office of the US Trade Representative's prepandemic figures, the total trade between the US and these countries was \$57.4 billion in 2018, with \$32.2 billion of exports and \$25.2 billion of imports.<sup>71</sup> Clearly, the US has benefited strongly from the agreement.

Apparel has been a particular focus of the agreement, based on strong rules of origin provisions designed to ensure that goods receiving duty-free treatment actually qualify for it. But these countries can move to new industries with higher economic value added.

The US can promote targeted investment in the region through financing and help with upgrading regional roads and ports. Jump-start the process with a US/CAFTA-DR summit and set up a regional business council to build deeper links to the US business sector and advise all governments on steps necessary to bolster trade. Most of all, the US should help CAFTA-DR countries build their infrastructure for resiliency and integrate more fully into US supply chains, building the potential for surge capacity, with a particular focus on health care, light manufacturing, and other industries where speed to market has high importance. An economically stronger Central America would also help reduce illegal immigration across the southern US border.

**Latin America** The US has free trade agreements (FTAs) with four countries in Latin America: Chile (2004), Colombia (2012), Panama (2012), and Peru (2009). These countries also came together in 2011 in an “initiative of regional integration” known as the Pacific Alliance. For all four countries, principal US exports include agricultural products, mineral fuels, and machinery, while imports included crude oil (Colombia), copper (Chile), and agricultural products (Chile and Peru in particular). With the benefit of the FTAs, US economic relations can go deeper. Apart from the Pacific Alliance, South America’s other principal economic bloc is Mercosur (Argentina, Brazil, Paraguay, and Uruguay); together, these four countries form the world’s fifth largest economy.

US economic competitors are targeting Latin America. The EU has had a trade agreement with Mercosur since 2019; China is South America’s largest trading partner, and Argentina recently became the 20th country in Latin America and the Caribbean to join China’s Belt and Road Initiative.<sup>72</sup>

The US has several options to pursue closer relationships with Latin America. It could seek additional FTAs. It could seek to establish ties with both the Pacific Alliance and Mercosur as institutional blocs (in addition to the individual FTAs it currently has with the countries of the Pacific Alliance). Ignoring Latin America is not in the fundamental interests of the US, which risks being marginalized in an increasingly important area of the world. Latin America, for its part, has a strong opportunity to be an attractive investment destination close to the US as companies seek additional options besides China. Will Latin American countries leverage this opportunity or move backward on liberalization of their economies, harming domestic economic growth? The US can help by being far more engaged in the region.

## Friend-shoring

In Asia, regional trade has grown during the pandemic, rising 31 percent in the first three quarters of 2021 and accounting for 58.5 percent of total Asian trade in 2020.<sup>73</sup> Japan committed \$2.2 billion to return production to Japan, generally from China, and has worked with 87 companies to move production either to Japan or to countries in Southeast Asia.<sup>74</sup>

Neither Secretary Yellen nor anyone else in the administration has provided a list of countries that qualify as “friends” for the purposes of friend-shoring. Many countries in Africa, Asia, Europe, Latin America, and the Middle East would qualify. A good place to start is with the US FTAs outside the hemisphere (Australia, Bahrain, Israel, Jordan, Korea, Morocco, Oman, and Singapore);<sup>75</sup> NATO members; US major non-NATO allies with which the US does not have an FTA (Argentina, Brazil, Egypt, Japan, Kuwait, New Zealand, Pakistan, the Philippines, Qatar, Thailand, and Tunisia);<sup>76</sup> the European Union; and other European countries such as Norway, Sweden, Switzerland, and the United Kingdom. In Africa, many countries enjoy duty-free access to US markets under the African Growth and Opportunity Act.<sup>77</sup> Australia and New Zealand are important sources of minerals and agricultural products and US partners in the Five Eyes intelligence-sharing agreement. India, a member of the Quad group of countries including the US, Japan, and Australia, has received recent attention as an alternative to China for building supply chain resilience. The list is large; each country has unique capabilities and can offer

benefits to US companies as they think about diversifying supply chain solutions for resilience and redundancy.

Given the recent importance of China to global supply chains, trade tensions with the US, and the pandemic, a great deal of attention has focused on the more industrialized countries in ASEAN. Locating in ASEAN offers many advantages—a large population base, generally open economies, English as an official language in several countries (and for ASEAN as an institution), relatively low labor costs, and increasingly strong logistics and educated workforces. These countries offer somewhat less geopolitical risk than China and as a result have received increasing investment from Western companies seeking to diversify supply chains. However, there are geopolitical and economic risks from operating in countries such as Vietnam and the Philippines, and China holds strong influence in several ASEAN countries.

Some ASEAN countries are expanding partnerships with the US. Intel has recently announced plans to build a \$7 billion semiconductor testing and packaging plant in Malaysia, and Malaysia agreed to a semiconductor partnership with the US.<sup>78</sup> The president recently removed tariffs for two years on importing solar cells and modules from Cambodia, Malaysia, Thailand, and Vietnam.<sup>79</sup> Southeast Asia is the source of nearly 75 percent of solar modules imported in 2020. Indonesia has strong relationships with many US consumer brands and other companies.

But there can also be major challenges in simply switching production from China to an ASEAN country. Logistics and infrastructure may be less efficient; labor costs may be higher, and some elements necessary for production may still have to come from China. As a result, these supply chains may not truly be diversified, leading to limited capacity in those markets.<sup>80</sup> Overall, however, the outlook for trade relations with the ASEAN countries is bright. US goods trade with ASEAN was \$307.7 billion in 2020, with exports of \$76.4 billion and imports of \$231.3 billion—just over half the total of goods imported from China.<sup>81</sup> Further, in 2020 the US had \$328.5 billion in foreign direct investment in ASEAN, making the US the largest investor in the region, while US exports supported over 625,000 US jobs.<sup>82</sup>

How can companies best understand which countries offer the best opportunities for resilient supply chains at favorable costs with less geopolitical risk? Here, government can help. The America COMPETES Act authorizes \$90 million for the State Department for embassies “to hire contractors to assist interested US persons and businesses with supply chain management issues related to China.” More broadly, the mission of the US Foreign Commercial Service should be expanded to include deeper understanding of and greater connections with the local supply chains of US producers, to give early warning of potential problems and help companies build quick solutions for supply chain resilience.

The US’ many friends around the world have a vital role to play in the security and resilience of our supply chains. We should welcome, not fear, their role.

## Trade Policy

These three options for supply chain reform all have advantages, but they must also be addressed in the broader context of US trade policy. Since the World Trade Organization

failed to adopt a new global trade agreement in the Doha Development Round, which should have concluded in 2005, the focus has shifted to regional and bilateral market access agreements that are easier to negotiate.

Other powers have been active in negotiating trade agreements, particularly in the Pacific. Following US withdrawal from the Trans-Pacific Partnership in 2017, the remaining countries set up the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP),<sup>83</sup> which has entered into force. Further sidelining the US is the rise of the competing Regional Comprehensive Economic Partnership (RCEP),<sup>84</sup> which will help China strengthen its relationships in the region. Based on an idea for an “East Asian Economic Caucus” dating back to 1997, the RCEP includes the 10 countries of ASEAN with China, Japan, Korea (“ASEAN+3”), and now adds Australia and New Zealand. India was invited to join but declined. RCEP is now the world’s largest FTA, accounting for 30 percent of global GDP (over double that of the CPTPP countries because of China’s inclusion). Thus, while the TPP included the US but excluded China, now the RCEP includes China but excludes (by design) the US, as well as Canada, Mexico, and the Pacific states of Latin America.

Broadly speaking, the RCEP focuses principally on reduction of tariffs and regulation; despite its name, it is less comprehensive than CPTPP and other trade agreements, with their additional, stronger emphasis on issues such as labor, environment, robust intellectual property protection, and state-owned enterprises. RCEP’s provisions in those areas are, generally, less strict than CPTPP’s. Still, under both agreements, the world’s most dynamic economic region is now moving forward without the full participation of the US, further pushing world trade into regional blocs. Already in 2017, one organization calculated that the US would suffer a \$133 billion loss from the shift from TPP to CPTPP.<sup>85</sup> The economic stakes are high.

The administration’s response is the Indo-Pacific Economic Framework (IPEF) for Prosperity,<sup>86</sup> formally launched in May 2022. It includes 12 countries (Australia, Brunei, India, Indonesia, Japan, South Korea, Malaysia, New Zealand, the Philippines, Singapore, Thailand, and Vietnam) that account for about 40 percent of global gross domestic product. The framework is “intended to advance resilience, sustainability, inclusiveness, economic growth, fairness and competitiveness [.]”<sup>87</sup>

Unlike traditional trade agreements, the Indo-Pacific Economic Framework will not negotiate tariff reductions or market access. Instead, it focuses on promoting economic integration through agreements on standards in the digital economy, supply chains, clean-energy infrastructure, and anticorruption. Commerce Secretary Gina Raimondo said that the “framework is intentionally designed not to be a same old, same old traditional trade agreement [.]”<sup>88</sup>

In response to the launch of IPEF, one Chinese academic noted that “the US wants to create and set new standards for trade in the region through this framework—this is clearly aimed at China...Will these standards in this framework become new conditions or new barriers for countries to further develop their economic and trade relations with China?”<sup>89</sup> High standards in the areas covered by the IPEF and CPTPP are important in 21st-century trade and in supply chains. But the broader question remains: is it wise for the US to remain on the sidelines of market access agreements in the region?

The US has important choices here. While issues such as supply chains and intellectual property are important for building strong 21st-century trade links, the US should not shy away from negotiating traditional trade agreements to increase market access, despite the challenge of obtaining ratification of those agreements. Our competitors, notably China and the EU, are negotiating these agreements. Our absence from this aspect of the changing trade landscape ultimately hurts the US and risks our exclusion from markets as trade patterns shift to follow trade agreements such as RCEP and CPTPP.

Labor unions supported USMCA. It could be a model for future FTAs and lead the US back to the negotiating table for both bilateral and plurilateral or regional agreements. Our partners want US engagement; Japan, for instance, expressed the hope that the US would rejoin the TPP process.<sup>90</sup> We should return to the playing field if we want a favorable outcome for the US.

## Semiconductors

Semiconductors, along with rare earth and critical minerals, are indispensable to the functioning of a modern economy. But the US faces challenges as the most modern segments of the semiconductor and mineral mining and processing industry are abroad.

Taiwan is the world's leader in semiconductor manufacturing, with over 60 percent of total global semiconductor foundry revenue in 2020 and 90 percent of advanced semiconductors; one company, TSMC, itself accounts for 54 percent of total global foundry revenue.<sup>91</sup> Preliminary estimates for 2022 show that Taiwan and TSMC will likely maintain or even increase (to as much as 66 percent) market share.<sup>92</sup> Taiwan, South Korea, and China account for 87 percent of global market share; one US company (Global Foundries) has 7 percent.<sup>93</sup> Unsurprisingly, TSMC is also a leader in advanced and next-generation chip production, where Taiwan's lead is even greater in the more advanced smaller chips, with one consulting firm estimating its market share at 92 percent (South Korea holds the other 8 percent; China does not yet have this capacity).<sup>94</sup> By any measure, Taiwan is a friend of the US, but this level of market share leads to sharply increased geopolitical and supply chain risk.

Given the size of its domestic market, China is rapidly developing its semiconductor industry, building many new manufacturing facilities as well as buying chips from Taiwan; by one industry estimate, Chinese companies have even larger sales than Taiwan's as a percentage of total global sales.<sup>95</sup>

The European Union is also embarking on a program to encourage new semiconductor fabrication in its proposed European Chips Act, involving more than €43 billion in public and private investments and monitoring the semiconductor value chain through a new coordination mechanism between Member States and the European Commission.<sup>96</sup> The US is gaining more semiconductor fabrication capacity; TSMC has announced plans to build a 5-nanometer chip plant in Arizona, and Samsung will build one in Texas; Intel is expanding its facilities in Arizona and will build two new plants in Ohio.<sup>97</sup>

It is hard to build a stand-alone semiconductor industry. Taiwan's started with strong government assistance, including building links between domestic manufacturers and purchasers and offering intellectual property to TSMC and another company. The



US Department of Defense believes that subsidies from both Taiwan and China have approached nearly 30 percent of corporate revenues.<sup>98</sup>

By any measure, \$50 billion in subsidies for one industry under the CHIPS Act would be a significant investment, one that involves government more deeply in the economy. An alternative would be to provide tax credits for investment in semiconductor manufacturing facilities rather than direct subsidies. Tax credits shift the burden to the private sector to determine whether investments make sense while providing significant incentives for investments that do pass the test. Subsidies run the risk of supporting inefficient projects that might not have been started without the subsidy.

Normally, market solutions are far preferable to direct government subsidies. The case for government subsidies in this instance, however, would rest on three arguments:

- 1 Semiconductors are important to national security, and it is dangerous to depend on foreign sources of supply for an item essential to national defense.
- 2 The US is in a truly global competition for semiconductors, which have become indispensable to the functioning of the modern economy. As competitive rivals (and even friends such as the EU) offer subsidies for location of facilities, the US may lose the competition, putting supply chains throughout our economy at risk.
- 3 In general, market solutions can be suboptimal in the presence of an externality, in this case the exceptionally high cost of shifting semiconductor manufacturing, a cost ultimately borne by industries that use semiconductors as well as manufacturers themselves. In the presence of an externality of this magnitude, public finance is appropriate in a way that it is not for the production of less essential goods and services.

The CHIPS Act alone will not offer the US a complete supply chain; there would still be risk. The CHIPS Act provides that subsidies may be used for “machinery or equipment that is designed and used to manufacture or process semiconductors,” a usefully broad definition. While it is important to locate semiconductor fabrication plants in the US, for true supply chain resilience, it would also be essential to address the need for assembly, testing, and packaging facilities as well; currently, just 3 percent of global semiconductor packaging takes place in the US.<sup>99</sup> Those facilities would not all have to be in the US—but a resilient supply chain would consider geopolitical concerns as well as issues of labor and other costs.

New US capacity would also require perhaps as many as 90,000 trained workers, which would require a 50 percent increase in trained workers, according to one report.<sup>100</sup> Public-private training initiatives will be essential to meet the challenge.

## The Global Imperative

Diversified supply chains, including regionalization, offer many benefits for companies as they seek to respond quickly to market demands. However, it is important not to lose sight of the bigger picture: an open global trading system. This system has been good for the US over three generations, lifting hundreds of millions of people from poverty and opening markets abroad.

But the World Trade Organization (WTO) has significant problems.<sup>101</sup> Because the body operates by consensus, it is extremely difficult to get its 164 members to agree on reform. The dispute settlement mechanism is effectively broken, and the US has blocked appointments of judges to the Appellate Body claiming it has gone beyond its mandate into issues of domestic jurisdiction.

The WTO needs significant reform, not least in how it handles disputes between members. By 2020, the US had brought 23 challenges against China at the WTO, on issues ranging from taxes, subsidies, intellectual property rights, market access, and discriminatory licensing regimes. These disputes take years to litigate, and there is little recourse if a nation refuses to comply with WTO rulings.<sup>102</sup>

The WTO, however, is essential to a prosperous global economy. As Director-General Dr. Ngozi Okonjo-Iweala has said, “[r]ather than retreat from it, we should invest in and strengthen it.” The US should take a leadership role in this effort, offering concrete proposals for reform and modernization of the system. In particular, a reformed WTO’s enforcement procedures should have clearly defined penalties such as restrictions on market access and fines, with proscriptive timetables, benchmarks, and oversight processes to improve its effectiveness.<sup>103</sup>

## Conclusion

Even as Russia has invaded Ukraine and China remains a geostrategic competitor and rival of the US, it is important to ensure that global mechanisms continue. It is important that both China and the US remain committed to global trade, conducted under fair rules, and to maintaining their economic relationship. Reshoring, nearshoring, and friend-shoring offer benefits, particularly for critical inputs, but policies that divide the world sharply into regional blocs will harm the global economy, reduce global growth, and ultimately make the world more dangerous. Even as the US encourages reshoring, nearshoring, and friend-shoring to strengthen supply chains to be more resilient and diverse, a global economy built on the foundation of open trade remains essential to US national and economic security interests. While that objective may seem difficult to attain, it should remain the rules-based goal of our international economic policy.

Recent record activity at US ports shows the resilience of the US economy. After the extraordinarily shocks of the pandemic and now the war in Ukraine, market forces will work to reform supply chains in a new era of geopolitical tension. Government and private industry must work together to help build resilient, diverse, and effective supply chains across the US economy and beyond.

Renewed US leadership in trade will require forthright US engagement and a serious plan to respond with determination and imagination to the significant developments that have occurred in our nation’s absence. The world is no longer simply waiting for US leadership in trade; instead, we must provide it to regain respect and trust—the more rapidly, the better.

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