

POLICY MEMO

## Next Steps for US Trade, Manufacturing, and Supply Chains After COVID-19

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July 2020

### Overview: Covid-19 Accelerates Pre-existing Trends

The imperative to return supply chains to the United States for products important to national defense, medical security, and competitiveness in key industrial and technology sectors is not new. The explosive growth of the Chinese manufacturing sector, its mercantilist challenge to the world trading system, and its impact on jobs and industrial leadership in the United States is well documented.<sup>1</sup> This challenge has prompted new research and policies to help reverse the erosion of US supply chains. US technology leadership has been undermined by China's forced technology transfer, theft of intellectual property, and subsidization of traditional and new higher technology sectors. In turn, the loss of global markets and US manufacturing jobs have resulted in social problems of increasing devastation to communities in industrial areas.

China's economic growth depends, in a historically unprecedented way, on its export model and the suppression

of domestic consumption. This results in a cycle of overproduction, expansion of external spheres of economic influence, and dumping of products abroad. In recent years, the United States has begun to challenge the Chinese model. However, much work remains to be done to accomplish the goal of ending mercantilist practices, establishing a level playing field for US producers, and reinvigorating domestic production.

Critical supply chains for US national defense and high technology leadership have become overly dependent on China and other foreign sources. The vulnerability of supply chains has been demonstrated by interruptions in supply of key materials by both natural disasters and political decisions such as Beijing's cutoff of rare earth metals a decade ago. More recently, in July 2020, the production of critical personal protective equipment was interrupted by massive flooding in the interior of China.<sup>2</sup> Beyond Beijing's unfair practices, China is a continental economy with the ambition to displace the

United States as the leader in the global economy of the 21st century and has the economies of scale to represent a serious, long term threat to US leadership and markets.

The COVID-19 pandemic has accelerated these preexisting trends and underscores the importance of bringing industrial supply chains, including medical products, back to the United States. First, the cut-off of medical supplies, not just from China but from Europe and other allies, brought the vulnerabilities of relying on outside sourcing into clearer and more immediate focus. Ninety countries blocked the exports of medical products during the early months of the pandemic. Second, border closures around the world, even within the European Union (EU), added to the worries about supply chain interruptions, including for workers and logistics. Seventy percent of the world's points of entry restricted foreign travelers at some point as the pandemic grew.<sup>3</sup> Third, border closures and supply chain interruptions increased tensions between nations, especially between the United States and China, which was criticized for its suppression of information at the start of the pandemic. Beijing's brazen imposition of a new security law in Hong Kong while the world was preoccupied by the pandemic further eroded its global standing, especially in Europe. Fourth, the economic collapse due to the pandemic response again focused attention on the need to create more domestic jobs, including those in the hard-hit industrial sector. Finally, all these developments led allies such as the United Kingdom, Japan, and the EU to advance new policies meant to bring production back to home territories. These trends support initiatives to increase the resiliency of domestic production, even beyond the parameters of defense and medical security.

### Measures to Encourage Resilience and Reshoring

Before turning to specific policies to incentivize the return of supply chains to the United States and ensure domestic supplies of critical products, it is useful to examine a few

general principles that should guide policymakers. First, policies should only target specific industries or products in limited areas such as national security or medical security. This also includes an array of specialized technologies such as biological products, artificial intelligence, advanced communications, and quantum computing. These technologies are often dual-use, but are vital to a wide range of sectors that support the industries of the future.<sup>4</sup> For this latter category, the executive branch should begin a careful analysis of sectors like semiconductors, such as one the Department of Defense recently initiated, to determine how to support the economic viability of the sector. Even with foundational support such as funding for basic research, the emphasis should be on assisting private sector development rather than subsidization of commercial development.

Second, the United States should refrain from the type of explicitly mercantilist industrial policy practiced by China. It should do so not only because of the policy's harmful effect of misallocating capital, but also because Washington risks getting into an escalating cycle of subsidization with both China and US allies. It is especially notable that the EU is now following this path. It is focusing on creating "national champions" not only in medical products to counter the pandemic, but also in high technology areas like cloud computing and semiconductors. Japan, too, is taking steps to subsidize the return of supply chains to its territory. Among other problems, a cycle of competitive subsidization would go against both the letter and spirit of the World Trade Organization, and undermine any effort to bring Chinese state-owned and subsidized industries under the sanction of international norms to ban, or at least limit, these practices.

Third, within practical limits, it is both economically and politically wise to work with allies to meet many of our crucial needs. In the arena of national security, we should cooperate with our closest allies, especially those in the "Five Eyes" intelligence sharing group, but perhaps also Japan, to secure

supplies of the raw materials and finished products needed for defense and medical security needs.<sup>5</sup> Cooperation with European countries is also highly desirable, especially because Washington needs their support to convince Beijing to limit its aggressive mercantilist and expansionist practices.<sup>6</sup> Unfortunately, such cooperation will be difficult to achieve, as the EU is increasingly dependent on China for markets for its manufacturing sector, insists on trying to create national champion industries, and continues to undertake efforts to undermine US high technology companies with its tax, regulatory and antitrust policies.<sup>7</sup> Nonetheless, recent developments, some in reaction to Chinese behavior involving the pandemic and human rights in Hong Kong and Xinjiang, give hope that future collaboration might be possible.

Fourth, policies that promote a flourishing ecosystem for industrial production in the United States are the most important ones to encourage the return of supply chains. Generally, they involve efforts to ensure that tax and regulatory policies do not encourage offshoring, to pursue robust federal support for basic research in key sciences and engineering areas which bolster manufacturing and technology, and to ensure that we train a workforce that is strong in both the advanced sciences and skills needed to support domestic production in technology and manufacturing.

Some specific policy recommendations and assessment of their impacts follow.

### Tax Policy

There are many ways in which US tax policy can be adjusted to help stimulate industrial growth. First, it is important that US taxes on corporate income be at least equivalent to and preferably lower than the average of developed countries, as represented by the membership of the Organization for Economic Cooperation and Development. Next, under current law, the federal government allows full deduction in the first year of new capital investments by businesses. This

incentive will begin to be phased out after 2022. Washington can promote new domestic capital investment by making this program permanent. A bill to accomplish this, *H.R. 4549 - The American Innovation and Competitiveness Act of 2019*, has bipartisan support in Congress. Third, the Research and Experimentation Tax Credit (more commonly the R&D tax credit) is a valuable and proven tool to encourage the sort of research needed to maintain the technological lead of US firms. The credit should be increased and made more accessible to small and startup firms. One proposal by Robert Atkinson of the Information Technology and Information Foundation deserves scrutiny. It would increase the credit by approximately 30 percent and ensure that it extends to investments in needed workforce development.<sup>8</sup>

Other ideas for more specific incentives for certain critical products, especially related to medical products, are also important to pursue. Rep. Kevin Brady (R-TX), the Ranking Member of the House Committee on Ways and Means, has introduced legislation that would give special tax credits to firms investing in products to combat the coronavirus pandemic; reduce dependence on unreliable foreign suppliers of basic medical ingredients for antibiotics and vaccines; and encourage startup companies and venture capital sources to invest in new therapeutics and vaccines. Given the vulnerabilities exposed by the COVID-19 outbreak, these ideas deserve quick consideration to combat the current crisis.

### Support for Research

After World War II, the United States was the clear leader in both the manufacturing production and scientific research needed to maintain its technological lead. The country's leaders were wise enough to recognize the connection between scientific research and innovation on the one hand, and economic performance on the other. The National Science Foundation (NSF) was created to enhance this leadership position, with an explicit mission of aiding the manufacturing sector. Over time, the creation of a system of national laboratories bolstered the



NSF and supplemented the US university system—which in turn became the best in the world. Specific projects, like the Apollo program and support for satellite systems and modern defense gave added impetus to the scientific-technological juggernaut of US industry. At its height in the 1960s, the United States government invested over 1% of GDP in basic research and development, including space and defense. The combined effort helped maintain a leadership position and spurred the development of new technologies such as aerospace, communications, and computing.

The overall investment of the US federal government has declined, both as a proportion of the total budget and relative to other competitor nations such as China, South Korea, Taiwan, Japan and other advanced countries. The rise of global competition in the 1960s led to smaller profit margins for private firms and less flexibility to fund cutting-edge research. Additionally, as private manufacturing firms have moved production abroad, their research facilities have often moved with them.<sup>9</sup> While many US industries, especially pharmaceuticals, semiconductors, aerospace and software, devote as much as 20 percent of revenues to research, subsidized Chinese firms are becoming more technologically capable and undermining the profits needed by US firms to sustain their own research programs. The example of Huawei is instructive: it appropriated technology from competitors and benefited from \$70 billion in state subsidies to drain the profitability out of western telecommunications infrastructure companies.<sup>10</sup> The United States now has no single firm which can offer integrated infrastructure and mobile communication networks.

To sustain its lead and compete with rising technology powers, the United States needs to support its industry by increasing investments in basic research. Just to return to the investment levels of the 1980s would require an 80 percent boost in federal support for research, or about \$100 billion annually.<sup>11</sup> In addition to increasing the R&D tax credit, such an investment is well worth while to support both traditional industries like

automobiles, which is making a transition to autonomous and electric vehicles, and newer high technology sectors like semiconductors, computing and biopharmaceuticals.

Another component of an integrated program to support domestic research and innovation is to create public/private research groups in critical areas of technology and manufacturing. These organizations can facilitate and incentivize private research with participation from universities and government research laboratories with requisite expertise. Such efforts were successful in the 1960s with the creation of Comsat in response to the Sputnik wake-up call, as well as in the 1980s with the formation of Sematech, which was motivated by the Japanese challenge in semiconductors. Harvard Professor Willi Shih notes the salient operating characteristics of this model:

Participants share knowledge and mitigate risk, leveraging a larger scale and scope of information, resources, and capabilities across firm boundaries. They share lab space, instruments, tools, materials, and all the infrastructure for collaboration. They also share people, and this has the benefit of broadening the pool of ideas. For firms where the incentive to do research may not necessarily be high, being able to tap into a broader knowledge base widens exploratory activities and the development of new ideas.<sup>12</sup>

Existing federal programs such as Manufacturing USA and the National Science Foundation's Industry/University Cooperative Research Centers also promote collaborative research for specific industries. Both programs are especially useful for small and medium sized firms generally unable to mount the deep research efforts which are possible for Fortune 100 firms.

### Trade and Investment Policy

Trade policy, although often a double-edged sword, can change the incentives that affect production location

decisions.<sup>13</sup> It can also combat China's unfair trade practices such as dumping products on global markets and subsidizing production to undercut competitors. It can likewise be used to sanction the improper acquisition of legally protected intellectual property.<sup>14</sup> Investment and export control laws, which are complementary to trade law, can also ensure that sensitive defense related industries or those important to key industries of the future, do not fall into the hands of adversaries.

Trade policy can also impact the attractiveness of outsourcing production to China and reducing its ability to compete in high technology industries. It is worth noting that the Chinese economy depends on exports for over 20 percent of GDP, and fully 5 percent from the United States. As George Friedman argues: "Anything that could reduce China's economy by about 20 percent over the long term is a desperate vulnerability."<sup>15</sup> It also depends on foreign sources for technology. Trade actions already taken, such as the Section 301 tariffs and the 2020 US-China Phase I agreement, began the process of limiting Chinese market access and opening some markets to US producers. These actions by the United States and other like-minded countries deny large markets to Chinese producers, thus reducing the economies of scale available to them. They also reduce access to new technologies crucial in the development of their domestic industries. In 2016, more than 75 percent of Chinese exports of advanced technology goods to the United States were made by wholly foreign owned or joint-venture companies. During the same year, the domestic content of all advanced-technology exports from China was less than 50 percent.<sup>16</sup> As many analysts have shown, the ability of China to innovate also still depends on access to American firms and research institutions.<sup>17</sup>

The World Trade Organization (WTO), unfortunately, has not been a good vehicle to push back against Chinese mercantilist practices.<sup>18</sup> The WTO does not settle disputes expeditiously, strays too far in making new law without member agreement, fails to enforce transparency obligations, and does not

adequately cover some of the main issues presented by Chinese practices. These include subsidies from state-owned enterprises, lack of transparency, discriminatory government procurement, and adequate sanctions for forced technology transfer and theft of intellectual property. Reform will be difficult due to the unanimity requirement and because of lack of real political commitment by some allies to challenge Chinese practices. However, it is still necessary for the United States to push for needed reform, especially since China will not likely change the structure of its economy without broad support from other major actors.

Finally, a related tool that could be important in limiting China's ability to acquire new technologies and develop new industries is restricting access to the largest capital market in the world, that of the United States. China is heavily indebted but has benefited from access to capital markets abroad to help finance its new ventures and build new industries. However, Chinese companies are not subject to oversight of their accounting and reporting practices by firms registered by the US Securities and Exchange Commission.<sup>19</sup> Indeed, the public reporting by Chinese firms is frequently so opaque that their real ownership and operations cannot be determined. The Trump administration, prodded by Members of Congress, has begun the process of limiting investment of US government pension funds in Chinese firms due to lack of transparency and oversight by competent accounting authorities. Chinese companies that are complicit in suppressing the Uighur ethnic minority in Xinjiang and to the surveillance state in general have also been targeted. The Labor Department is reportedly considering extending these limits to private pension funds.<sup>20</sup> Prohibiting listings on US stock exchanges for companies not compliant with international accounting standards would also be worth considering. Finally, prohibiting any US funds, persons, or institutions from investment in Chinese firms with ties to the People's Liberation Army or otherwise on the US Entity List should be considered as well. If the United States could convince its allies to adopt such policies, the impact on

China's ability to illicitly acquire new technologies would be even greater.

### Concern over Raw Materials

The United States is also highly dependent on foreign sources, increasingly including China, for key mineral resources, and must find methods to gain better access to these resources if it wants to reinvigorate domestic production.<sup>21</sup> Through its Made in China 2025 and Belt and Road Program, China has embarked on a systematic effort to control the extraction and processing of important minerals used in manufacturing. The most visible of these are rare earths and the various minerals used in production of lithium ion batteries. China does not possess all the key raw materials it needs to build its industrial powerhouse but has rapidly acquired ownership or control of mines in Central Asia, Africa and South America to meet its needs.

Rare earth minerals are used in a wide variety of key defense and technology industries, from the production of guidance systems for cruise missiles and of night-vision goggles, to production of semiconductors, lasers, fiber optic cables, and advanced solar cells. China now controls over 85% of the world supply of rare earths, and the United States imports 80 percent of its needs from China. We also depend on China for gallium, used in advanced telecommunication equipment, and tungsten, which is crucial to harden metals for applications in mining and cutting equipment. The \$500 billion semiconductor industry, for which the United States is the leading developer and producer, depends heavily on rare earths, and is vulnerable to Chinese supply interruptions. The processing of rare earths is environmentally difficult, and one reason why China dominates the current market is its lack of concern with the many environmental issues involved in mining and processing.

China is also the world's largest producer of raw materials (cobalt, lithium, graphite and magnesium-based metals) going

into lithium-ion batteries. These batteries are vital to many industries of the future: electric vehicles, mobile phones, computers, and renewable energy production. The United States is almost totally dependent on foreign sources for these metals. In contrast, China has bought cobalt mines in the world's largest source of cobalt, the Republic of Congo, and now controls 8 of the 14 largest mines there. Mining practices in that country are especially damaging to the environment and exhibit appalling conditions for worker safety.<sup>22</sup> China is determined to dominate electric vehicle production, solar electric production, and to try to become dominant in semiconductors.

To avoid deterioration of US production in these industries, reduce dependence on China, and to build an environment more conducive to domestic production, the United States should consider a number of strategies. The tax policies mentioned above will help promote new investments. Senators Cruz and others have suggested additional tax incentives for production of domestic rare earths, as the United States does have good supplies of the raw materials. In the Onshoring Rare Earths Act of 2020 Cruz suggests both a further tax incentive for investment in domestic production and processing, as well as a 200 percent deduction for purchasers of domestically produced rare earths.<sup>23</sup> The Trump administration has also issued an executive order promoting reduced time frames for the permitting processes needed for new or re-opened mines, among larger goals for quicker permitting. To that end, a three-year limit on environmental and land use reviews for production of critical materials like rare earths should also be considered. Finally, the United States should work with our allies in the Five Eyes group to source critical mineral resources.

To limit the ability of China to acquire and exploit foreign sources of raw materials such as cobalt and lithium, the United States should call out the mining practices which exploit human labor and ignore international standards for environmental protection. Although China has not yet joined the WTO's

Government Procurement Agreement (GPA), which would prevent many of the subsidized loan agreements and exclusive use of Chinese contractors for mines and related infrastructure, the United States should work with allies to pressure them to join. China has for many years indicated it would join the GPA, but its offers exclude so many sectors and transparency procedures that they do not yet merit serious negotiations.

### Training a Skilled Workforce

Without the right workforce, any industrial renaissance in the United States will be difficult to achieve. Hudson's Arthur Herman notes that some 70 percent of candidates for science, technology, engineering, and mathematics (STEM) degrees in the United States are citizens of other countries, notably our arch-rival China and potential ally India.<sup>24</sup> Many of these eventual degree winners return home and help their nations advance in technology industries and manufacturing. The United States must do a better job in attracting its own students to pursue STEM degrees. More investment from NSF in graduate students would help accomplish this goal, as would collective efforts to promote interest among secondary school students in the careers enabled by STEM degrees. Perhaps the challenge of conquering the pandemic will assist in this drive, as will renewed excitement in space exploration, autonomous vehicles, or artificial intelligence. Public officials can promote STEM careers as well by highlighting national efforts to address pressing challenges such as COVID-19 or maintaining national technology leadership. Special efforts are needed as well to attract women and minorities into these fields, as both are seriously underrepresented in STEM fields.<sup>25</sup>

It is also important to meet well documented shortages in the skilled labor required to enable the development of sophisticated manufacturing and technology projects. Too often plans for new production facilities founder when firms discover a lack of skilled workers in the intended plant location, as happened when Foxconn announced a new electronics assembly facility in Wisconsin.<sup>26</sup> Much interest has been generated in recent years for apprenticeship programs to fill the skills gap. US labor unions have long employed such programs for construction and manufacturing, but the higher skilled production occupations often need close collaboration between employers and educators to get the right skill sets for local or regional industries. Foreign firms operating in the United States, especially in the automobile and machinery sectors, have been successful in partnering with community colleges to create successful apprentice programs. The federal government could assist state and local programs by matching tax incentives given for apprentices (as in South Carolina), and by consolidating the 47 federal job training programs around successful apprentice models. Public officials could also help change the culture which discourages parents and students alike from undertaking community college or apprentice programs.<sup>27</sup> Federal policy might also consider allowing Pell Grants and other student aid programs to support such skills training programs.<sup>28</sup>

*This report is adapted from [testimony given before the House Committee on Ways and Means on July 23, 2020](#). Dr. Duesterberg would like to acknowledge the research assistance of Suri Xia, a master's degree student at the O'Neill School.*

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