

## **Testimony of Thomas J. Duesterberg**

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**Lessons from Covid-19”**

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My name is Thomas J. Duesterberg and I am a Senior Fellow at the Hudson Institute in Washington, DC. I have served in various positions in the Congress and in the George H. W. Bush administration. I have also served as President and CEO of the Manufacturers Alliance for Productivity and Innovation, as a Senior Fellow at the Aspen Institute, and on the Board of Advisors of the Manufacturing Policy Initiative at the O’Neill School of Public and Environmental Affairs at Indiana University. I would like to acknowledge the research assistance of Suri Xia, a master’s degree student at the O’Neill School. The views expressed in this testimony are mine alone and do not represent the Hudson Institute, nor any other organization or firm.

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

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

China’s growth model depends in a historically-unprecedented way on its export model, as its domestic policy punishes consumers and savers alike and results in a cycle of

overproduction, expansion of spheres of economic influence, and dumping of products abroad. In recent years the United States has begun to challenge the Chinese model, but much work remains to be done to accomplish the goal of ending the mercantilist practices, establishing a level playing field for U.S. producers, and reinvigorating domestic production. Critical supply chains for national defense and high technology leadership have become overly dependent on foreign sources, especially, but not limited to, China. The vulnerability of supply chains has been demonstrated by interruptions in supply of key materials by natural disasters and by political decisions such as China's cutoff of rare earth metals a decade ago. This week important supplies of personal protective equipment have been interrupted by massive flooding in the interior of China.<sup>ii</sup> This challenge is not limited to unfair practices by China, but the Middle Kingdom is a continental economy with the ambition to displace the United States as the leader in the global economy of the 21<sup>st</sup> century and has the economies of scale to represent a serious, long term threat to U. S. leadership and markets.

The COVID-19 pandemic has accelerated these important, preexisting trends toward bringing industrial, including medical products, supply chains back to the United States. First, the cut-off of medical supplies, not just from China but from Europe and other allies to some extent, brought the vulnerabilities of relying on outside sourcing into clearer and more immediate focus. 90 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, added to the worries about supply chain interruptions, including for workers and logistics. 70% of the world's points of entry restricted foreign travelers at some point as the pandemic grew.<sup>iii</sup> Third, border closures and supply chain interruptions increased tensions between nations, especially between the United States and China, which suffered severe reputational damage for its suppression of information at the start of the pandemic. China's brazen imposition of a new security law in Hong Kong under the cover of a world preoccupied by the pandemic further eroded its standing in the world, 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 of these developments led allies such as the United Kingdom, Japan and the European Union (EU) to reinvigorate thinking, and to advance concrete policy proposals, meant to bring production back to home territories. Clearly, these trends support policies 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 facilitate and incentivize the return of supply chains to the United States and ensure domestic supplies of critical products, I would like to outline a few general principles that should guide policymakers. First, policies should only target specific

industries or products in limited areas. These are national security, medical security, and a carefully selected array of specialized technologies that are often dual-use and are important to a wide variety of technologies important to industries of the future such as biological products, artificial intelligence, advanced communications and quantum computing.<sup>iv</sup> For this latter category the U.S. executive branch should undertake careful analysis of sectors like semiconductors, such as 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, emphasis should be on assisting private sector development rather than subsidization of commercial development.

Second, we should refrain from the type of explicit industrial policy practiced by China and Japan (before it largely abandoned the practice) because of its impact on misallocating capital but also because, in the wake of the pandemic, we risk getting into an escalating cycle of subsidization not only with China but with allies as well. It is especially notable that Europe is now following this path. Instead 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 some steps to subsidize the return of supply chains to its territory. Among other problems, a cycle of competitive subsidization would go against the letter and spirit of the World Trade Organization, and indeed 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” group, but perhaps including Japan, to secure supplies of both raw materials and the finished products needed for both defense and medical security needs.<sup>v</sup> Cooperation with friends in Europe is highly desirable, especially because we need their support to convince China to limit its aggressive mercantilist and expansionist practices.<sup>vi</sup> Unfortunately, such cooperation will be difficult to achieve, as Europe 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 U.S. high technology companies with its tax, regulatory and antitrust policies.<sup>vii</sup> Nonetheless, recent developments, some brought on by reaction to Chinese behavior involving the pandemic and human rights in Hong Kong and Xinjiang, give some hope that future collaboration might be possible.

Fourth, policies that generally improve the conditions favoring a robust eco-system for industrial production in the United States are the most important ones to encourage the return of supply chains. I will outline a few of these below. 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**

This committee has been focused on tax policies which would encourage reshoring by creating at a minimum a level global playing field in terms of tax burdens. In this sense it is important that U.S. 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 (OECD). A first step in incentivizing renewed domestic capital investment is to make permanent (at least past 2022, when it is scheduled to begin phasing out) the full, first year expensing of such investments. A bill to accomplish this, H. R. 4549 has bipartisan support in this Congress. Second, the Research and Experimentation Tax Credit (more commonly the R&D tax credit) is a valuable tool to encourage the sort of research needed to maintain the technological lead of U.S. firms. The credit should be increased and made more accessible to small and start up firms. One proposal by Robert Atkinson of the Information Technology and Information Foundation (ITIF) deserves scrutiny. It would increase the credit and ensure that it extends to investments in needed workforce development.<sup>viii</sup>

Other ideas for more specific incentives for certain critical products, especially related to medical products, are also important to pursue. Representative Brady and many members of this Committee have introduced legislation to give special tax credits to firms investing in products to combat the coronavirus pandemic; to reduce dependence on unreliable foreign suppliers of basic medical ingredients for antibiotics and vaccines; and to encourage start up companies and venture capital sources to invest in new therapeutics and vaccines. Given the evident vulnerabilities exposed by the Covid-19 outbreak, these ideas deserve quick consideration to combat the current crisis.

Other critical needs related to defense industries and to crucial technologies of the future also could benefit from targeted incentives. In the section on critical minerals later in this testimony I will discuss some of these ideas.

## Support for Research

Emerging from the devastation of the Second World War, the United States was the undisputed leader in both manufacturing production and the scientific research needed to maintain its technological lead. The country was wise enough to recognize the nexus 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 robust system of national laboratories bolstered the NSF and supplemented the U.S. university system which 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 U.S. industry. At its height in the 1960s, the United States 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.

Over time, the overall investment of the U.S. federal government has declined as a proportion of total budget and relative to other competitor nations such as China, but also including Korea, Taiwan, Japan and other advanced countries. The rise of global competition in the 1960s and later led to compression of profit margins and less flexibility to fund cutting-edge research. Additionally, as private manufacturing firms have moved production abroad, their own research facilities have often moved with them.<sup>ix</sup> While many U.S. industries, especially pharmaceuticals, semiconductors, aerospace and software, devote as much as 20 percent of revenues to research, subsidized Chinese firms are gradually moving up the technology ladder and undermining the profitability needed to sustain cutting-edge research programs on their own. The example of Huawei is instructive: it appropriated technology from competitors and benefitted from subsidies of roughly \$70 billion to drain the profitability out of western telecommunications infrastructure companies.<sup>x</sup> The United States now has no single firm which can offer integrated infrastructure and mobile communication networks.

In order to sustain its lead and compete with rising technology powers, the United States needs to support its industry by ramping up investments in basic research. Just to regain investment levels of the 1980s would require an 80 percent boost in federal support for research, or about \$100 billion annually.<sup>xi</sup> In addition to increasing the Research and Development Tax Credit, such an investment is well worth while to support both traditional industries like automobiles, which must make 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 enable pre-competitive research consortia in critical areas of technology and manufacturing. Such consortia can facilitate and incentivize private research by authorizing pre-

market consortia among private firms, with participation from universities and government research laboratories with requisite expertise. Such efforts were successful in the 1960s in response to the Sputnik wake-up call, with the creation of Comsat, and 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:<sup>xii</sup>

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.

Shih also notes that government purchasers can assist in early phases of development by creating a market for new products. The Department of Defense is expert at this type of incentive, which can of course be broadened to sectors like medical products or critical minerals. Other government agencies can contribute to helping build scale for new products and stockpiles of strategic ones in areas like medical products and critical minerals.

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 and has made a contribution to changing the incentives affecting production location decisions.<sup>xiii</sup> It can combat unfair trade practices such as dumping products on global markets and subsidizing production to undercut competitors. It can be used to stop acute, market disrupting trade flows which damage domestic industries. It can sanction improper acquisition of legally protected intellectual property.<sup>xiv</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.

Since outsourcing of production to China is the most visible concern in analyzing how domestic supply chains have eroded, I will concentrate on how trade policy can impact the attractiveness of producing in China and reduce 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>xv</sup> It also depends on foreign sources for technology. Trade actions already taken, such as the Section 301 tariffs and the Phase I 2020 agreement, began the process of limiting Chinese market access and opening some markets to U. S. producers. These actions by the United States (and by other like-minded countries) deny large markets to some Chinese producers, thus reducing the economies of scale available to them. They also reduce access to new technologies crucial in the development of their indigenous 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>xvi</sup> Many analysts have shown that the ability of China to innovate also still depends on access to American firms and research institutions.<sup>xvii</sup>

The World Trade Organization (WTO), unfortunately has not been a good vehicle to push back against Chinese mercantilist practices.<sup>xviii</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: 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. But it is 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. The use of plurilateral agreements, especially for services, may offer a way to achieve progress on some major issues.

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 U.S. Securities and Exchange Commission.<sup>xix</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 U.S. government pension funds in Chinese firms due to lack of transparency and oversight by competent accounting authorities. Chinese companies complicit in suppression of ethnic minorities in Xinjiang and to the surveillance state in general have been

targeted as well. Reports indicate the Labor Department is considering extending these limits to private pension funds.<sup>xx</sup> Prohibiting listings on U. S. stock exchanges for companies not compliant with international accounting standards would also be worth considering, since transparency is lacking in the reporting of many Chinese firms. Finally, prohibiting any U.S. funds, persons or institutions from investment in Chinese firms, whether state owned or private, with ties to the People's Liberation Army or otherwise on the U.S. Entity list would also be worth considering. If the United States could convince its allies to adopt such policies, the impact would be even greater.

### **Concern over Raw Materials**

As the United States focused on vulnerabilities in supply chains, attention has also turned to supplies of the raw materials needed for production of key end products. This is most clearly recognized for the lack of basic chemicals used in pharmaceutical product production. Other panelists are better informed than I regarding this sector, so I will concentrate on basic mineral resources of critical importance to defense and high technology manufacturing industries. 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>xxi</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 China is able to dominate 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 of course key 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. 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 in that central African country, where mining practices are appalling from a labor and an environmental perspective.<sup>xxii</sup> China is determined to dominate electric vehicle production, solar electric production, and to try to become dominant in semiconductors in the future.

To avoid deterioration of U. S. production in all of these industries, reduce dependence on China, and to build an environment more conducive to domestic production, the United States ought to 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. Cruz suggests both a bonus tax incentive for investment in domestic production and processing, as well as a 200 percent deduction for purchasers of domestically produced rare earths. 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. I think a three-year limit on environmental and land use reviews for production of critical materials like rare earths should be considered. Finally, we 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 (with allied support when it can be obtained) 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. My colleague Arthur Herman notes that some 70 percent of candidates for science, technology, engineering (STEM) degrees in the United States are citizens of other countries, notably our arch-rival China and potential ally India.<sup>xxiii</sup> Many of the 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 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>xxiv</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>xxv</sup> Much interest has been generated in recent years for apprenticeship programs to fill the skills gap. U.S. 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, and including not only German but also Japanese, Austrian, Swedish, and Korean firms, 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>xxvi</sup> Federal policy might also consider allowing Pell grants and other student aid programs to support such skills training programs.<sup>xxvii</sup>

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<sup>i</sup> See John Lee: “China’s Economic Slowdown: Root Causes, Beijing’s Response and Strategic Implications for the US and Allies.” Hudson Institute, December 16, 2019. <https://www.hudson.org/research/15551-china-s-economic-slowdown-root-causes-beijing-s-response-and-strategic-implications-for-the-us-and-allies>

<sup>ii</sup> Derek Van Dam, “Record China Flooding impacts PPE supply chain to US.” *CNN*, July 19, 2020. <https://www.cnn.com/2020/07/19/weather/china-flood-ppe-supply-chain/index.html>

<sup>iii</sup> For a recent overview of pandemic-related restrictions of global movement of goods and travelers, see: Jacob M. Schlesinger, “How the Coronavirus Will Reshape World Trade.” *The Wall Street Journal*, June 19, 2020. [https://www.wsj.com/articles/how-the-coronavirus-will-reshape-world-trade-11592592995?mod=hp\\_lead\\_pos5](https://www.wsj.com/articles/how-the-coronavirus-will-reshape-world-trade-11592592995?mod=hp_lead_pos5)

<sup>iv</sup> Thomas J. Duesterberg, “America Doesn’t Need an Industrial Policy,” *The Wall Street Journal*, June 22, 2020 <https://www.wsj.com/articles/america-doesnt-need-an-industrial-policy-11592845985>.

<sup>v</sup> J. Rogers, A. Foxall, M. Henderson and S. Armstrong, “Breaking the Supply Chain: How the ‘Five Eyes’ can Decouple from Strategic Dependency.” Henry Jackson Society (London), May 14, 2020. <https://henryjacksonsociety.org/publications/breaking-the-china-supply-chain-how-the-five-eyes-can-decouple-from-strategic-dependency/>

<sup>vi</sup> Thomas J. Duesterberg, “Trump Needs Allies on Trade.” *The Wall Street Journal*, April 23, 2018. <https://www.wsj.com/articles/trump-needs-allies-on-trade-1524524224>

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- <sup>viii</sup> See Robert Atkinson, “On Tax Incentives: a tax credit for domestic investment is the best way to reduce production costs.” *American Compass*, June 8, 2020. <https://americancompass.org/essays/on-tax-incentives/>
- <sup>ix</sup> Arthur Herman, “Bringing the Factories Home.” *The Wall Street Journal*, July 19, 2020. [https://www.wsj.com/articles/bringing-the-factories-home-11595180872?mod=hp\\_opin\\_pos\\_2](https://www.wsj.com/articles/bringing-the-factories-home-11595180872?mod=hp_opin_pos_2)
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- <sup>xiii</sup> Thomas J. Duesterberg, “On Terms of Trade: The International Trading System Must Recover the Core Principles of Reciprocity, Security and Democracy.” *American Compass*, June 11, 2020. <https://www.hudson.org/research/16173-testimony-the-impact-of-covid-19-on-mineral-supply-chains-the-role-of-those-supply-chains-in-economic-and-national-security-and-challenges-and-opportunities-to-rebuild-america-s-supply-chains>
- <sup>xiv</sup> Former Undersecretary for International Trade at the U. S. Department of Commerce, Gilbert Kaplan has shown that most U.S. trade enforcement cases fall under the anti-dumping, countervailing duty and intellectual property protection sections of U. S. trade law. See Gilbert Kaplan, “Will Trade Enforcement Trends Continue?” Indiana University, Manufacturing Policy Initiative, June 2020. <https://www.nbr.org/publication/data-security-in-a-5g-world-why-it-matters-more-than-ever/>
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- <sup>xvii</sup> See John Lee, “Decoupling the US Economy from China after Covid-19,” Hudson Institute, May 7, 2020. <https://www.hudson.org/research/16009-decoupling-the-us-economy-from-china-after-covid-19>
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- <sup>xx</sup> Susan Crabtree, “Labor Rule Could Cost Chinese Billions in U. S. Investments,” *Real Clear Politics*, July 19, 2020. <https://www.hudson.org/research/16009-decoupling-the-us-economy-from-china-after-covid-19>
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<sup>xxvii</sup> “Bringing the Factories Back Home,” *op. cit.*