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Protectionism Is Failing and Wrongheaded: An Evaluation of the Post-2017 Shift toward Trade Wars and Industrial Policy

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ABSTRACT

The Trump–Pence and Biden–Harris administrations enthusiastically embraced protectionism. Each administration explicitly argued for a break from the bipartisan consensus of recent decades that has been generally supportive of free trade and of allowing markets to shape US industrial and employment composition. But the protectionism of the Trump and Biden administrations has not succeeded and likely will not succeed at meeting its goals: they have caused manufacturing employment to decline, not to increase; they have not reduced the overall trade deficit; they have not led to a substantial decoupling of the US and Chinese economies. More fundamentally, the goals that have not been met are wrongheaded: policymakers should not pay inordinate attention to manufacturing employment, and the trade deficit is a poor guide to economic policy. Finally, these wrongheaded goals often rest on fundamental economic misperceptions: free trade is not a policy to create jobs; it is a policy to increase productivity, wages, and consumption. The balance of the evidence suggests that free trade, including trade with China, has not reduced employment. Of course, trade has been disruptive. But populist policies adopted in response will hurt workers, not help them.

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Introduction

The protectionism, trade wars, and industrial policies of the Trump–Pence and Biden–Harris administrations have provided an argument in favor of free trade and of allowing markets to determine industrial and employment composition: Protectionism has not succeeded, even when measured against its own goals. Moreover, it often works against those same (misguided) goals.

Free trade offers substantial economic benefits. But the argument in favor of open trade does not only rest on those benefits. It is also the case that the alternative to free trade imposes substantial costs on US workers, households, and businesses. The resurgence of protectionism in the United States has created a body of evidence showing not only that trade helps but that protectionism harms.

Does free trade cause labor market disruption? Of course. But populist solutions have hurt workers, not helped them.

President Trump's trade war was sold to the American people as a case of concentrated benefits and diffuse costs. For instance, Commerce Secretary Wilbur Ross went on television and, holding up cans of soup and soda, argued that they would cost only a fraction of a cent more due to the Trump administration's tariffs.[1] In exchange, according to Mr. Ross, the US would see a revitalized manufacturing sector and a substantial increase in manufacturing employment.

In reality, the Trump tariffs increased consumer prices and *decreased* manufacturing employment. They were not a case of concentrated benefits and diffuse costs—they were a case of costs and costs. A lose-lose.

Both protectionist administrations seek to reduce US imports, particularly from China. Protectionism is largely failing at this goal, as well. Despite substantial tariffs, on a value-added basis the US was importing slightly more from China in 2020 than in 2017.

The protectionist policies of the past eight years have largely failed to achieve their goals. But their goals are wrongheaded. Manufacturing's share of employment has been falling since the end of the Second World War because technological advances have increased the productivity of workers. More-productive workers have commanded higher wages, and their families have enjoyed higher incomes. We should not wish to roll back the clock on rising living standards.

1 Video of the appearance is available at Wilbur Ross, "Commerce Secretary Wilbur Ross on Tariffs and Trade Policy," posted March 3, 2018, by CNBC, YouTube, 21:26, https://www.youtube.com/watch?v=YrVADC083xk.

Economic policy should be focused on connecting workers to the jobs of the future rather than trying in vain to recreate the jobs of the past. Though manufacturing's share of employment is falling, recent decades have seen significant growth in other middle-wage occupations.

"Economic policy should be focused on connecting workers to the jobs of the future rather than trying in vain to recreate the jobs of the past."

Much of the rise in protectionism owes to the view that free trade has led to substantial employment reductions. This conclusion is incorrect. Economic theory suggests that trade liberalization should have no effect on the level of employment. And the evidence from the "China shock," taken as a whole, suggests that trade with China did not affect the aggregate number of jobs in the United States.

It is also predicated on the wrongheaded assumption held by many elected officials and commentators that free trade is about jobs. But open trade is not about jobs. It is about wages and consumption. Leveraging comparative advantage allows nations to specialize in their productive activities. Specialization makes their workers more productive, putting upward pressure on their wages and incomes. Specialization increases world output, raising the level of consumption and the quality and variety of consumer goods and services.

Industrial policy—which is broader than, and can be separate from, trade policy—can be effective when its goals are clearly defined, a priori plausibly achievable, and nonpartisan. It can be effective if there are existing US businesses in place with the technological capability and human capital necessary to meet the goal at the time it is implemented, and when it is not trying to balance a variety of competing goals.

Operation Warp Speed—the 2020 program to develop a COVID-19 vaccine—is an example of successful industrial policy that met these criteria. But as with tariffs and trade wars, the Biden administration's semiconductor and green-energy industrial policies will likely not pass a reasonable cost-benefit test. They will likely demonstrate not only that allowing market forces to determine industrial composition leads to good outcomes, but also that not doing so leads to subsidy wars and high bills for taxpayers with limited returns.

None of this is to say that economists and policymakers do not have valuable lessons to learn from recent decades. The US is in a strategic competition with China. Given this increasingly adversarial situation, a narrow set of specific goods exists that warrant special attention by the government, including semiconductors. There is legitimate reason to be concerned about the production of those goods being located in places where their supply could be disrupted due to geopolitical developments. But

it is a long leap from those rather obvious observations to the conclusion that their production should be located in the United States. Resilience and security would be better served if their production were diversified across a number of nations that are allies with the United States.

From the disruption of the China shock, economists have learned that the labor market is less fluid than many had thought. It is harder than was widely expected for workers specialized in a sector with declining opportunities—in the case of trade, in import-competing sectors—to reallocate to other sectors with expanding opportunities. We have also learned that workers may be less willing than many economists had thought to relocate from regions with declining opportunities to regions with expanding ones.

These lessons are generalizable and apply to labor market disruptions broadly. Given the geographic concentration of traditional domestic-energy production, economists and policymakers should keep them front of mind as they contemplate the energy transition away from fossil fuels.[2] The development of generative artificial-intelligence capabilities portends substantial labor market disruption, as well.

The right policy response to disruption—regardless of its cause—is to provide more economic opportunity to workers who need it. As the evidence from the past eight years clearly implies, the wrong response is protectionism, which hurts the workers it seeks to help.

In some ways, this new evidence merely reinforces findings from previous eras of protectionism. The Smoot-Hawley tariff of 1930, for example, failed to meet its objective of raising agricultural prices to help farmers. Because it led other nations to retaliate against the United States with their own protectionist measures, Smoot-Hawley also led to a large reduction in exports, which hurt export-intensive businesses (Irwin 2011).

Evidence from a policy enacted in 1930 is not dispositive in current policy debates, of course. In November 1993, Vice President Al Gore and former presidential candidate Ross Perot debated the North American Free Trade Agreement (NAFTA). Mr. Gore supported NAFTA, and Mr. Perot opposed it. President Clinton had yet to sign NAFTA into law. Mr. Perot suggested that the US impose a tariff on Mexican imports to counter the relatively lower wages of Mexican workers.

Mr. Gore responded: "We've had a test of his theory." The vice president theatrically produced a framed picture of Senator Smoot and Representative Hawley, arguing that the Smoot-Hawley tariff was an economic calamity. Mr. Gore handed the picture to

2 Hanson (2023) offers a set of policy recommendations in the face of disruption from the green energy transition.

Mr. Perot, saying, "Now I framed this so you can put it on your wall if you want to." Mr. Perot took the picture from the vice president without making eye contact and placed it face-down on the desk, responding: "We are talking [about] two totally different, unrelated situations."

Vice President Gore won the debate. But Mr. Perot's point about the applicability of Smoot-Hawley is well taken. Arguments about the effect of policies enacted decades ago can often be less persuasive when applied to current policy debates because the economic effects of a policy depend on the economic and geopolitical context in which that policy is enacted. Standing in 1993, a lot had changed since 1930. In 2024, nearly a century after Smoot-Hawley, the world is even more different.

But evidence from the protectionist experiment of recent years is certainly relevant for whether the experiment should continue. This article will highlight evidence and arguments that are particularly relevant to current policy debates. Like Smoot-Hawley, protectionist policies from the post-2017 years have had disappointing results, even when measured against their own misguided goals.

1. The Post-2017 Shift

President Trump argued in his inaugural address that his administration would offer a decisive break from the economic policies of previous administrations. "For too long," Mr. Trump declared, "the establishment protected itself, but not the citizens of our country." Trump described an America of "rusted-out factories scattered like tombstones across the landscape of our nation" and spoke of "American carnage."

"For many decades," President Trump said, "we've enriched foreign industry at the expense of American industry"; "we've made other countries rich while the wealth, strength, and confidence of our country has disappeared." "One by one," in Mr. Trump's telling, "the factories shuttered and left our shores, with not even a thought about the millions upon millions of American workers left behind." Trump promised to "protect our borders from the ravages of other countries making our products, stealing our companies, and destroying our jobs. Protection will lead to great prosperity and strength" (Trump 2017a).

Trump's US trade representative, Robert E. Lighthizer, has championed what he calls "the New American System: Trade for Workers in the 21st Century." In a 2022 speech, Ambassador Lighthizer argued that the pursuit of trade liberalization in the 1990s—the North American Free Trade Agreement, the creation of the World Trade Organization (WTO), and China's accession to the WTO—led to the loss of "millions of good jobs," "saw tens of thousands of factories close," and led to wage stagnation

economic, division, growing inequality, large trade deficits, and the transfer of wealth that "made our children poorer" and China wealthier. Ambassador Lighthizer argued that "this economic upheaval" contributed to the destruction of communities, the rise of opioid addiction, and "deaths of despair."

Mr. Lighthizer argued that "free traders" are wrong to focus on lower prices and that trade policy should care more about US production than US consumption: "Our primary objective should be policies that will build strong American families and communities and create productive high-paying jobs. That should be our goal, not cheap stuff" (Lighthizer 2022).

President Biden's public statements point in the same direction as Mr. Trump's and Mr. Lighthizer's. In a speech in June 2023 on "Bidenomics," the president declared his intention to reverse "40 years of Republican trickle-down economics that helped few but hurt the middle class" (Biden 2023).

The sitting US trade representative, Katherine Tai, said last year that the Biden administration was working to create a "new economic world order," centered on protecting workers.[3] In her confirmation hearing, Ambassador Tai echoed her predecessor, arguing that the US should pursue trade policies "that recognize that people are workers and wage earners, not just consumers" (Tai 2021).

Jake Sullivan, the US National Security Advisor, offered last spring the clearest articulation of the Biden administration's goal of breaking with the economic liberalism of previous administrations. Speaking at the Brookings Institution, Mr. Sullivan noted that the post– World War II international economic order was initially successful but added that "the last few decades" have seen "a shifting global economy [that has] left many working Americans and their communities behind," a financial crisis, "a pandemic [that has] exposed the fragility of our supply chains," and climate change.

Mr. Sullivan's conclusion was sweeping: "This moment demands that we forge a new consensus. That's why the United States, under President Biden, is pursuing a modern industrial and innovation strategy."

Mr. Sullivan referred to this approach as a "new Washington consensus," drawing a contrast to the Washington consensus that promotes trade liberalization, a reliance on free markets to determine industrial composition, deregulation, and fiscal responsibility (Sullivan 2023).

3 Gavin Bade, "Joe Biden Wants a 'New Economic World Order,'" *Politico*, May 25, 2023, https://www.politico.com/news/2023/05/25/joe-bidens-economy-trade-china-00096781.

1.1 Post-2017 policies

More than just rhetoric accompanied this shift. President Trump launched a trade war to advance his goals of increasing manufacturing employment, reducing the trade deficit, and reducing economic ties with China. President Biden largely kept in place the Trump administration's tariff regime, and he expanded Trump's trade war with China. In addition, President Biden embraced industrial policy to advance his goals of reviving domestic manufacturing employment and establishing the US as a leader in semiconductor and clean-energy manufacturing.

President Trump officially withdrew the United States from the Trans-Pacific Partnership Agreement (TPP) in January 2017. The Trump administration renegotiated the North American Free Trade Agreement (NAFTA), replacing it with the United States-Mexico-Canada Agreement (USMCA), which took effect in 2020.

The Trump trade war began in January 2018, when the administration announced new tariffs on washing machines and solar panels. In March, the US announced section 232 tariffs on steel and aluminum imports, including those from the European Union, Canada, and Mexico. Many nations retaliated by imposing tariffs on US exports. The Trump administration announced in July 2018 that it would use a Depression-era law to subsidize American farmers for lost export sales due to retaliatory tariffs imposed on the US. Later in 2018, the US imposed a 10 percent tariff on a wide swath of Chinese imports. China retaliated. A year later, the US applied tariffs to a broader set of Chinese imports and increased tariff rates to 25 percent. China again retaliated.[4]

President Biden kept in place the Trump administration's tariffs on more than $300 billion of Chinese imports. Moreover, the Biden administration announced in May 2024 that it would impose a 100 percent tariff on Chinese electric-vehicle imports and increase tariff rates on imports of steel, aluminum, solar cells, semiconductors, and larger storage batteries. The Biden administration announced new duties on $18 billion of Chinese imports, including on shipping cranes, medical products, and natural graphite.[5] In October 2022, the administration announced export controls to China. In October 2023, the administration tightened the controls, further limiting the types of semiconductors US firms would be able to sell to China, with a focus on chips used for military purposes.

President Biden signed the Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act into law in August 2022. The CHIPS Act appropriates $39 billion

4 For greater detail, see Bown and Kolb 2023.

5 Andrew Duehren and Andrew Restuccia, "Biden Levies Sweeping Tariffs on China, Intensifying Trade Fight with Trump," *Wall Street Journal*, May 14, 2024, https://www.wsj.com/politics/elections/biden-trump-tariffs-d405cbca.

in direct-payment subsidies for expanding domestic semiconductor manufacturing and includes incentives for downstream materials and equipment suppliers. The act also includes incentives to build new semiconductor fabrication plants—authorizing a 25 percent tax credit toward the purchase, construction, manufacture, or utilization of equipment or property for the purpose of operating an advanced semiconductor manufacturing facility—that are estimated to cost $24 billion over the next five years. The act includes billions of dollars for research, development, and workforce training (Kersten et al. 2022).

The Inflation Reduction Act (IRA) of 2022 creates around two dozen tax credits to encourage domestic clean-energy innovation and manufacturing, including credits for clean electricity generation and storage, carbon capture and sequestration, nuclear power production, clean fuels, clean energy and efficiency incentives for individuals, and a $7,500 credit for individual purchases of new electric or hydrogen-fuel-cell vehicles under certain conditions. The IRA also includes direct expenditures for agriculture and forestry conservation programs, energy loans, energy efficiency programs, and programs for industrial decarbonization.[6]

Because most of the tax credits are uncapped, their fiscal cost will be determined by the extent to which they are used. Estimates of the fiscal costs of the IRA's climate provisions vary. Bistline, Mehrotra, and Wolfram (2023) estimate that the tax credits will cost $781 billion through 2031, with a total fiscal cost over that period of $902 billion. Goldman Sachs estimates that the fiscal cost of the IRA's climate provisions will be $1.2 trillion through 2031 (Goldman Sachs 2024).

2. Protectionism has not met its own goals

The protectionism of recent years has been designed to advance three economic goals. Presidents Trump and Biden share the goal of reviving manufacturing employment and reducing the US's economic ties with China. In addition, a major goal of President Trump was to shrink the overall trade deficit.

These goals have not been met. The evidence from recent years shows that President Trump's 2018–2019 trade war failed to revive domestic manufacturing. Even worse for supporters of protectionism, the Trump trade war worked against that goal—it reduced manufacturing employment. The tariff regime of recent years has failed to

6 Bistline, Mehrotra, and Wolfram 2023 includes an excellent discussion of the provisions of the IRA and their economic implications.

reduce the US trade deficit. Finally, on a value-added basis, protectionist measures have largely failed at reducing imports from China.[7]

2.1 The 2018–2019 tariffs likely reduced manufacturing employment

Presidents Trump and Biden have stressed that increasing manufacturing employment is among their top priorities, and they have implemented a number of programs to advance that goal. An examination of aggregate manufacturing employment demonstrates that, at least so far, efforts to increase manufacturing jobs have not succeeded at putting manufacturing employment on an upward trend.

Indeed, manufacturing's share of employment has fallen consistently since the end of the Second World War, as displayed in figure 1. There is no obvious change in the rate at which manufacturing's employment share declined during the decade following China's accession to the World Trade Organization in 2001 or during the post-2017 period, when the US adopted protectionist policies. The slope of the trend line does change following the 2008 global financial crisis and Great Recession. This change roughly corresponds with the slowdown in aggregate US productivity growth, which is generally thought to have begun around 2005 (see, for example, Syverson 2017) and with the slowdown in manufacturing productivity growth.

Labor productivity (output per hour for all workers) in the manufacturing sector has not grown since the 2008 financial crisis. Taken as a whole, this is suggestive evidence that advances in technology—robotics, automation—are primarily responsible for longer-term trends in manufacturing employment.

In section 5, I will discuss President Biden's policies to boost manufacturing employment, which have not succeeded but which were enacted in 2022, too recently to render any firm judgment. In this section, I will focus on the Trump trade war, the employment effects of which have been rigorously evaluated by economists.

Flaaen and Pierce (forthcoming) study the effects of the 2018–2019 Trump tariffs on the US manufacturing sector and labor market. Noting that the Trump tariff regime was unprecedented for a large, advanced economy in the modern era of international commerce and complex global-supply chains, Flaaen and Pierce carefully account for different channels through which import tariffs might affect the manufacturing sector and the labor market.

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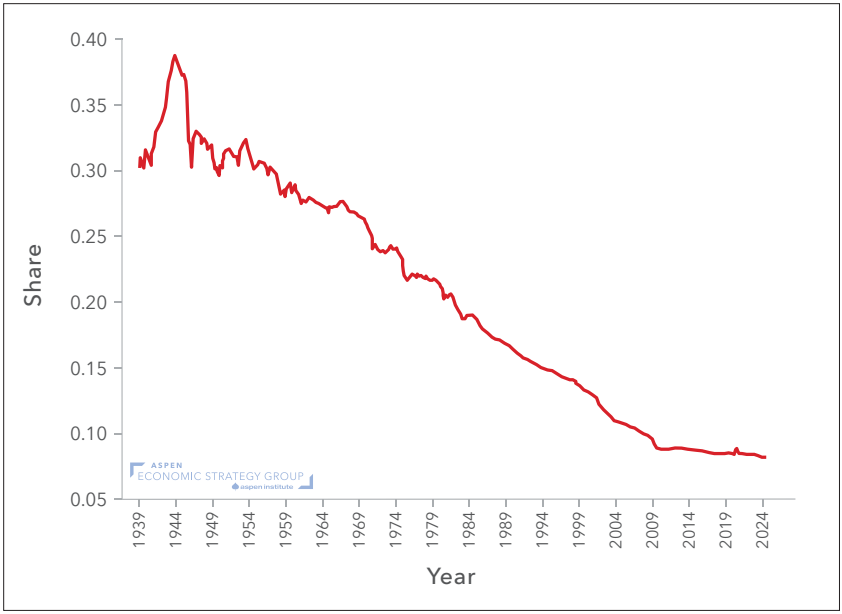
7 In what follows, I focus on evidence of the effect of recent protectionist policies on employment, the current account deficit, and the bilateral US–China trade deficit. Amiti, Redding, and Weinstein (2019) consider the welfare effects of the 2018 tariffs and conclude that their full incidence fell on US consumers and importers, with a reduction in aggregate US real income of $1.4 billion per month by the end of 2018. For additional papers on welfare effects, see Fajgelbaum et al. 2020; Amiti, Gomez, Kong, and Weinstein 2024; Caliendo and Parro 2023; and Handley, Kamal, and Monarch forthcoming.

Figure 1. Manufacturing employment as a share of total nonfarm employment, 1939–2024



Source: Author's calculations from BLS 2024a.

Specifically, they consider three channels. First, tariffs might protect US-based manufacturers from competition from imports, allowing them to gain market share over foreign competitors. Second, because many domestic manufacturers import intermediate inputs to production, tariffs might raise the cost of production for US-based manufacturers, reducing their competitiveness in both domestic and export markets. Finally, America's trading partners imposed retaliatory tariffs of their own, reducing the competitiveness of US exports

The first channel—protection from import competition—should, considered in isolation, boost the US manufacturing sector, including manufacturing employment. The second two channels should weaken domestic manufacturing and employment. The size of the three separate effects is an empirical question, driven in part by the relative importance of intermediate inputs for domestic manufacturers and the degree of retaliation. Flaaen and Pierce construct detailed (four-digit NAICS) industry-level measures of exposure to each of those three channels, and they relate those exposure measures to production, prices, and employment.

They find little evidence that the Trump tariffs affected industrial production. They show that this lack of effect may have been due to the historically high orders backlog

in place at the time the tariffs were enacted. They find that the tariffs led to an increase in producer prices due to their effect on input prices.

Flaaen and Pierce conclude that the Trump tariffs reduced US manufacturing employment. They find that shifting a detailed industry from the 25th to the 75th percentile of exposure to the Trump tariffs led to a 0.4 percent increase in employment due to the import-protection channel, a 2.0 percent decrease in employment due to the rising-input-costs channel, and a 1.1 percent decrease in employment due to the retaliation channel. On net, moving from the 25th to the 75th percentile of exposure reduced employment by 2.7 percent. They provide evidence that this employment response occurs mostly through lower rates of job creation. Outside the manufacturing sector, they estimate that counties with higher exposure to the Trump tariffs experienced higher unemployment rates.

Autor et al. (2024) study the effect of the Trump trade war on employment in local labor markets (specifically, commuting zones). Like Flaaen and Pierce, their specification separately considers the employment effects of exposure to US import tariffs and of foreign retaliatory tariffs. In some specifications, they also consider the employment effect of the US agriculture subsidies put in place to counteract the negative effects of foreign retaliatory tariffs.

Autor et al. do not find evidence that US import tariffs, considered in isolation, led to employment increases.[8] Across the specifications they consider, they consistently find that retaliatory tariffs imposed against the United States led to declines in the employment rate in local labor markets. They also find that agricultural subsidies offset a minor part of the adverse employment effects of retaliatory tariffs.[9] Autor et al. do not find evidence that import tariffs boosted manufacturing employment in local labor markets.

Additional evidence on the labor market effects of the Trump trade war comes from Javorcik et al. (2022), who study the effect of the war's first year (2018) on a measure of labor demand. Specifically, Javorcik et al. find that a local labor market's exposure to tariff-driven higher intermediate-input costs and foreign-export tariffs both led to declines in online job postings, and that relative declines were larger for postings for lesser-skilled jobs. They do not find evidence that exposure to import protection increased job openings. Finally, Waugh (2019) studies a county- level dataset with the

8 When studying aggregate commuting-zone-level employment effects, Autor et al. (2024) estimate a positive coefficient for US import tariffs in specifications with standard control variables, but that coefficient is not statistically significant at conventional levels.

9 Carter and Steinbach (2020) analyze the effects of retaliatory tariffs against US agriculture and food exports and find substantial declines. After accounting for changes in trade patterns, they find net export-related losses of more than $14.4 billion.

universe of new auto sales and finds that exposure to retaliatory tariffs led to declines in tradeable and retail employment.

2.2 Post-2017 protectionism did not reduce the US trade deficit

Substantially reducing the US trade deficit was a major priority of the Trump administration.[10] President Trump would frequently characterize the US trade deficit as money "lost" to other countries because we were buying goods and services from foreign businesses that (in his view) domestic businesses could and should have been producing. Mr. Trump vowed to reduce the deficit to stop what he (incorrectly) viewed as a major economic problem.[11]

President Trump's protectionist policies did not succeed at reducing the trade deficit. The current-account deficit reflects the balances on trades in goods and in services, as shown in figure 2, along with income flows between domestic and foreign residents. When President Trump took office in the first quarter of 2017, the current-account deficit stood at $85.5 billion. When he left office, the deficit was around $180 billion.

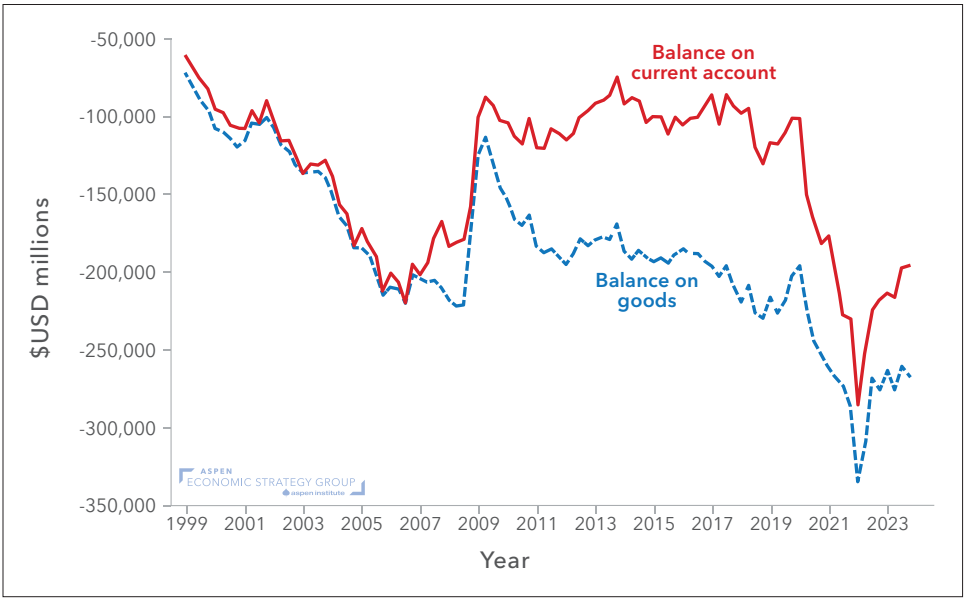
President Trump frequently ignored services trade and focused on goods trade. After deepening over the course of his administration, the trade deficit in goods was largely unchanged when he left office. Both deficits are larger today than they were in the first quarter of 2017.

Of course, the trade deficit might have been even larger in the absence of Mr. Trump's protectionist policies. But for reasons I will discuss in section 3.4, basic economics refutes this view. And when evaluating the success of President Trump's protectionist policies against their stated goal, the chart above makes it clear that those policies failed.

10 For example, in remarks at the White House on November 15, 2017, President Trump said: "Fair and reciprocal trade—so important. These two words—fairness and reciprocity—are an open invitation to every country that seeks to do business with the United States, and they are a firm warning to every country that cheats, breaks the rules, and engages in economic aggression—like they've been doing in the past, especially in the recent past. That is why we have almost an $800-billion-a-year trade deficit with other nations. Unacceptable. We are going to start whittling that down, and as fast as possible" (Trump 2017b).

11 For example, in remarks at the White House on March 5, 2018, President Trump said: "So we may have friends, but remember this: We lost, over the last number of years, $800 billion a year. Not a half a million dollars, not 12 cents. We lost $800 billion a year on trade. Not going to happen. We got to get it back. And, of course, the biggest problem—the biggest problem is China. We lost $500 billion. How previous Presidents allowed that to happen is disgraceful. But we're going to take care of it" (Trump 2018).

Figure 2. US trade balance on goods and current account balance, 1999– 2023



Source Author's calculations from BEA 2024.

2.3 Post-2017 protectionism did not reduce value-added imports from China

Although the current account and goods trade deficit did not respond to the Trump administration's protectionist policies, the bilateral US– China trade deficit did. In 2017, the US ran a $375.2 billion trade in goods deficit with China. The bilateral deficit had fallen by 17.9 percent in 2020. President Biden largely kept in place the Trump-era China tariffs, and the 2023 bilateral deficit was lower than it had been since 2011. In May 2024, Mr. Biden announced plans to substantially increase tariff rates on many Chinese imports, including electric vehicles, solar cells, cranes, storage batteries, natural graphite, and steel and aluminum.

This bilateral deficit with China fell in large part because US trade with other nations surged over this period. The share of US manufactured-goods imports coming from China fell from 22 percent to 14 percent between 2017 and 2023. Over this period, imports from Mexico, Vietnam, and other Asian economies increased. Vietnam's import share nearly doubled over this period. In 2023, Mexico surpassed China as the largest exporter to the United States.

In an economic sense, the shift may not be as dramatic as the bilateral trade deficit makes it appear.[12] The United States is still importing goods to which Chinese companies contributed value. Foreign value added in domestic final demand is the amount of foreign value-added present in final goods or services purchased by US households, business, or governments. It can be thought of as imports of value added.

As figure 3 shows, China's share of foreign value added in US manufacturing domestic final demand rose steadily throughout the 1990s and the first decade of the 2000s, from 4 percent in 1995 to 26.5 percent in 2014. It has remained roughly at that level through 2020, the last year for which OECD data are available.

China's value-added import share was higher in 2020 than in 2017, the year before the Trump trade war began. Even as China's gross import share fell (by 3 percentage points), its value-added import share increased (by 1.4 percentage points). This pattern could occur if the US imported goods that were largely produced in China but were rerouted to a third country that contributed a small amount to the final value of the good. Despite longer supply chains, value-added relationships are qualitatively similar (WTO 2023).

President Biden is rightly concerned that his 100 percent tariff on Chinese electric vehicles could be circumvented by Chinese manufacturers moving production to Mexico. At the time of this writing, the Biden administration has floated the possibility of additional penalties to discourage such circumvention.[13] But there is little reason to be confident that the administration will be able to outmaneuver foreign manufacturers in this game of whack-a-mole.

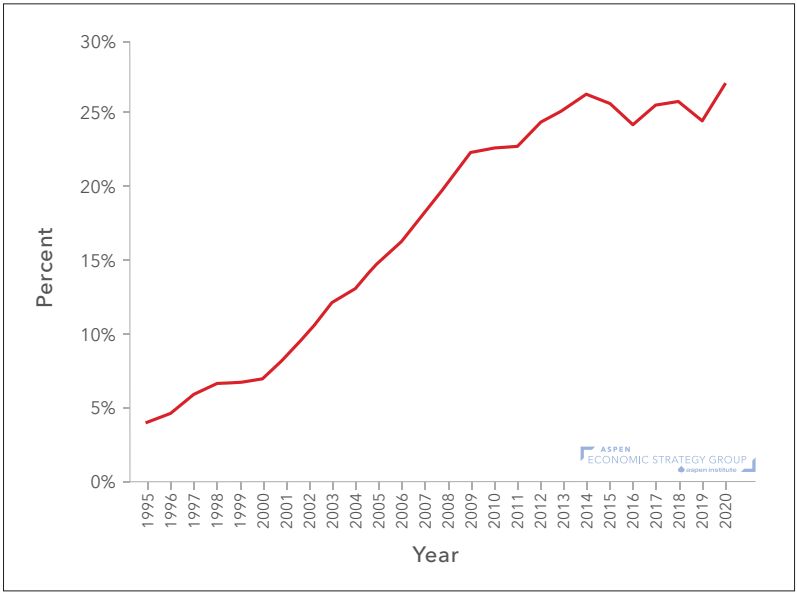
For example, between 2017 and 2022, US imports of laptops from Vietnam increased by about $800 million. Over the same period, Vietnam's imports from China of laptop parts also increased by about $800 million (Seong et al. 2024).

A goal of protectionist policies toward China—shared by the Trump and Biden administrations—is to reduce the economic linkages between China and the US. Judging by value-added imports, that effort has not been nearly as successful as the declining trade in goods deficit with China suggests.

12 Setser (2024) notes that the fall in bilateral US–China trade is neither good evidence of deglobalization nor a sign of true "derisking."

13 Josh Boak, "US Suggests Possibility of Penalties If Production of Chinese Electric Vehicles Moves to Mexico." *Hill* (blog), May 14, 2024, https://thehill.com/homenews/ap/ap-business/ap-us-suggests-additional-tariffs-if-production-of-chinese-electric-vehicles-moves-to-mexico/.

Figure 3. China's share of foreign value added of US manufacturing domestic final demand, 1995–2020



Source: Author's calculations from OECD 2024.

2.4 Wrongheaded goals

Presidents Trump and Biden share the goal of substantially increasing manufacturing employment. This goal is wrongheaded. As demonstrated above, the government can do little to meaningfully reverse the declining manufacturing employment share. Goals that cannot be achieved are by definition wrongheaded.

Even if reversing this trend were achievable, we should not wish to reverse it because the long, downward trend in manufacturing employment is a consequence of productivity increases that have lifted and will continue to lift living standards for typical workers and households. Those productivity increases have been accompanied by disruption—and this disruption has been the focus of politicians, public intellectuals, and economists.

But creative destruction creates as well as destroys. Strain (2020) examines employment dynamics for middle-wage occupations from 2000 to 2018 and finds substantial increases in the employment share of "new middle" occupations, including sales representatives, truck drivers, heating and air conditioning mechanics and installers, computer support specialists, event planners, health technologists and technicians,

social workers, audiovisual technicians, and food service managers.[14]

These occupations (among many others) offer a pathway to the middle class in today's economy, in the same way that manufacturing employment offered a middle-class life to workers decades ago. Policymakers should stop trying to turn back the clock and should instead focus on doing more to help workers access the opportunities presented by these growing occupations.[15]

Some argue that the US needs a revival of domestic manufacturing for national security purposes. This argument is used particularly often to justify the CHIPS Act. These arguments are unpersuasive. Of course, a narrow set of specific goods exists that warrants special attention by the government, including semiconductors. And of course there is legitimate reason to be concerned about the production of those goods being located in nations with whom the US has an increasingly adversarial relationship (for example, China) or in places where their supply could be disrupted due to geopolitical developments (for example, Taiwan). But it is a long leap from those rather obvious observations to the conclusion that their production should be located in the United States. Resilience would be better served if their production were diversified across a number of nations that are allies with the United States.

Moreover, talk of the importance of resilience and the need for "friendshoring" often seems to be little more than a fig leaf for rank protectionism rather than being based on legitimate concern about national security. Presidents Trump and Biden have both publicly opposed the acquisition of US Steel by Nippon Steel, a Japanese steelmaker, despite the fact that this acquisition would benefit manufacturing workers—both in US Steel and more broadly—by increasing their productivity and putting upward pressure on their wages. US Steel's facilities and workers would remain in the United States, so any concerns about national security seem implausible.[16]

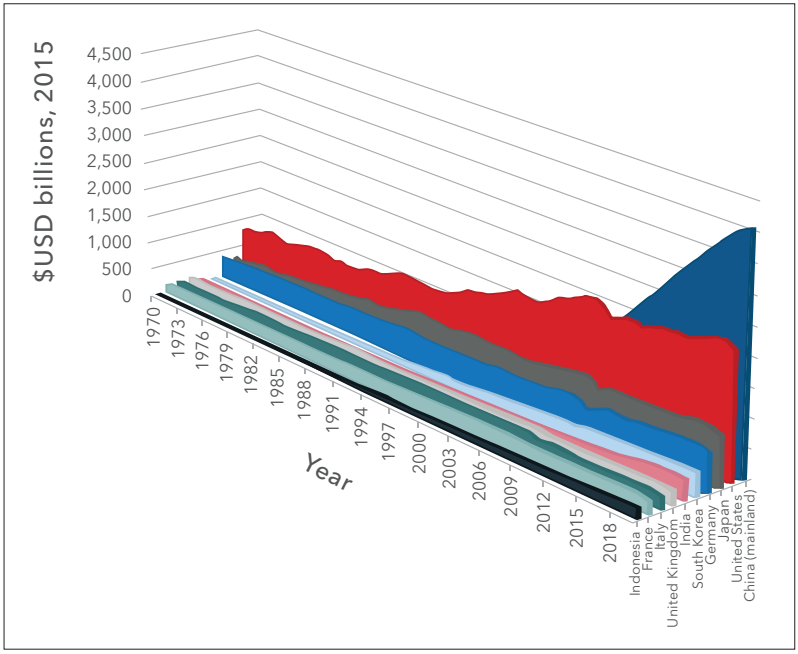
General concern about the erosion of the US's manufacturing capability is (often wildly) overstated. US industrial production and manufacturing output are each near record highs. Perhaps more importantly, the US remains a global manufacturing powerhouse. As shown in figure 4, US manufacturing value added is the second largest in the world.

14 Deming, Ong, and Summers (2024) analyze shifts in occupational structure.

15 A similar argument can be made about struggling geographic areas. Of the counties with a disproportionately large share of manufacturing jobs in 1970, 6 in 10 have successfully transitioned to new industries, and 23 percent exhibit solid economic performance while still having a large manufacturing sector (Strain 2020). Policymakers should focus on drawing policy lessons from the places that have transitioned rather than trying to turn back the clock in struggling areas.

16 I develop this argument more fully in Strain 2024a.

Figure 4. Manufacturing value added, top 10 manufacturing countries



Source: Thomas 2023.

There are six reasons why the Trump administration's goal of eliminating the US trade deficit is wrongheaded. First, it misunderstands the ultimate cause of the trade deficit. The US trade deficit is not driven by foreign governments blocking US exports or subsidizing their own exports. Instead, the trade deficit is driven by the savings and investment decisions of American households and businesses and by the taxing and spending decisions of the US government.

The US spends more than it produces. The US invests more than it can finance through national savings. Simple national income accounting demonstrates that this state of affairs requires that the US also run a trade deficit. Trade policy can affect bilateral trade flows, but it cannot counter these broad macroeconomic aggregates.[17]

The second reason: If your goal is to reduce the trade deficit, then your goal must also be reducing flows of foreign investment into the United States. When the US consumes and invests more than it produces, it must be running a current account deficit. To finance the deficit, the US sells assets to the rest of the world, and capital flows into the US from abroad. It is also helpful to consider an intertemporal context.

17 President Trump's signature tax cuts, the 2017 Tax Cuts and Jobs Act, expanded the trade deficit by increasing domestic demand and decreasing national savings.

Today, the US wants to invest more than it saves, so it must attract foreign capital. For that foreign capital to exist, the rest of the world must be saving some of its output and income. So, some of the output of foreign nations flows into US markets.

Foreign direct and portfolio investments are votes of confidence from other nations in the US economy and, more broadly, in the United States as a whole. These investments make workers more productive—increasing their wages and incomes—and make US firms more competitive. Because the trade deficit and foreign investment in the US are linked, waging war on the former is waging war on the latter. The consequence of that war is to reduce the wages of US workers and the incomes of US households.

Because President Trump frequently cited the (supposed) job-destroying effects of the trade deficit, the third reason that eliminating the trade deficit is a wrongheaded goal is that wiping out the trade deficit would not increase employment in the United States. I will develop this argument in section 4.

In addition, eliminating the trade deficit would be a partial retreat from economic engagement with other nations. But the post–World War II liberal international order—of which free trade is a major component—has been a bedrock of peace and prosperity on both sides of the Atlantic for seven decades.

The fifth reason relates to the role the US plays in providing liquidity to the global economy. This liquidity provision makes the trade deficit central to global economic stability. Demand for US financial assets is driven in part by the dollar's role as the global reserve currency and as the currency in which many global transactions occur. This reduces the cost of foreign borrowing, allowing the US to consume and invest more than it produces at relatively low cost.

Finally, an assault on the trade deficit is an assault on economic liberty. Free exchange is good. As a general matter, two parties should be left to their own judgment as to whether a voluntary transaction makes each better off, free from the interference of government. I run a substantial trade deficit with my grocery store, which makes both my family and the store better off. Similarly, free trade between individuals and businesses in different nations makes those parties better off.

Economic liberty is not an absolute good, and of course there are times when it should be curtailed. But in the absence of strong reasons for curtailing it, in a free society it should be the default position of economic policy. Indeed, a free society has little choice but to accept free trade. The economic police state required to eliminate the trade deficit would be so intrusive as to substantially reduce not just economic liberty but political liberty as well.

A legitimate concern about the trade deficit is the debt levels required to finance it, particularly since much of US borrowing goes to finance consumption and not investment (Gagnon 2017). In addition, the larger the deficit grows, the more moving back toward balance risks exchange-rate instability and, potentially, financial-market instability (Obstfeld and Rogoff 2005).[18]

The best ways to address these concerns through trade policy are not with protectionism, tariffs, and industrial policy. Instead, negotiating better access to export markets would be a good step, as would applying prudently calibrated pressure to nations with current account surpluses not to manipulate their currencies. Beyond trade policy, increasing national savings, especially through reducing the federal budget deficit, would reduce the trade deficit. Long-term productivity and incomes will rise if greater national savings (through a smaller budget deficit or higher household savings) leads to additional investment. Importantly, these are sound economic policies even if one is not concerned about the trade deficit.

Similarly, focusing on the bilateral US– China trade deficit is wrongheaded. The relationship between China and the United States is increasingly adversarial, and for national security and geopolitical reasons it is reasonable for policymakers to want to reduce US reliance on China for a small number of strategically important items. But the size of the bilateral US– China trade deficit is an imprecise metric for that goal. It is easy to imagine scenarios in which the bilateral deficit decreases while China continues to provide a large share of value added to sensitive domestic imports.

"The evidence suggests that the 2018–2019 tariff regime likely reduced manufacturing employment by increasing the cost of intermediate inputs to production and because other nations retaliated against US exporters."

2.5 Conclusion

The case for open trade rests not only on its benefits but also on the damage wrought by its protectionist alternative. Evidence from the post-2017 protectionist era in the US confirms this point. That evidence shows that the Trump trade war failed at its goal of substantially increasing manufacturing employment by protecting domestic manufacturing from import competition. More than that, the evidence suggests that the 2018–2019 tariff regime likely reduced manufacturing employment by

18 Bernstein and Baker (2016) argue that trade deficits are harmful during periods of persistent and high unemployment because domestic consumer spending would be flowing to foreign businesses at a time of labor market underutilization. This concern is coherent, but it is the responsibility of the central bank to ensure maximum sustainable employment (along with price stability). And as discussed in this article, trade policy would be ineffective at reducing the trade deficit.

increasing the cost of intermediate inputs to production and because other nations retaliated against US exporters.

Major goals of protectionists have been to reduce the US trade deficit and to reduce economic ties with China. To date, neither goal has been met.

As shown in figure 5, global trade was growing ever more open until the 2008 global financial crisis. Since then, its growth has stopped. But the retreat from globalization has been exaggerated: trade's share of global economic output remains roughly as high as it has ever been, in part because protectionist policies designed to roll it back have failed.

3. Free trade is not about jobs

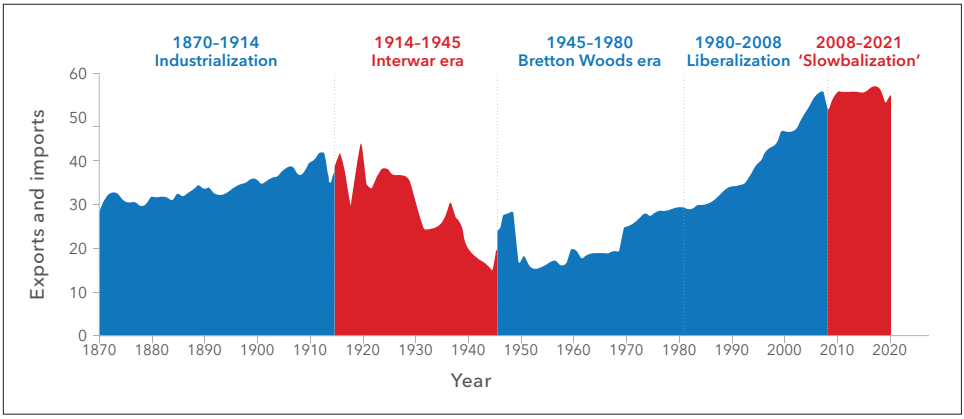
Elected officials often present trade policy as a means to increase the number or quality of jobs in the United States. Leaders who support free trade claim that it will have positive employment effects. For instance, at a signing ceremony in 1993 for the North American Free Trade Agreement, President Clinton declared: "First of all, because NAFTA means jobs. American jobs, and good-paying American jobs. If I didn't believe that, I wouldn't support this agreement" (Clinton 1993).

Leaders who oppose free trade claim that it has negative employment effects—not just presidents but rank-and-file elected officials as well. For example, in defending President Biden's decision to increase and expand tariffs on Chinese imports this spring, Representative John Moolenaar, a Republican from Michigan and chairman of the China Select Committee, said: "We want to encourage jobs here in the United States."[19] Presidents Trump and Biden themselves often motivate their own trade policies with appeals to employment, as well.

Both sides of this debate are making specious arguments. Free trade is not about jobs, and as a first-order approximation we should expect that trade volumes and barriers have no effect on the level of employment in the United States. Instead of affecting jobs, trade affects productivity, wages, and consumption.

19 Rep. Moolenaar made this comment on CNBC's *Squawk Box* (2024).

Figure 5: Trade openness: sum of exports and imports as a share of GDP, 1870–2021



Source: Aiyar et al. 2023.

3.1 Trade and employment: Theory

In a world without trade between nations, each nation must produce all the goods and services its citizens consume. But nations differ in terms of their levels of technological progress and human capital, and with respect to the amounts of land, labor, and capital they possess. Those differences give rise to comparative advantages between nations in the production of certain goods and services. Trade between nations allows a given nation to specialize in the production of those goods and services for which that nation has comparative advantage, and to trade in order to receive and consume other goods and services. Trade and specialization would not reduce a nation's level of employment, but they would allow for world output—and, therefore, for world consumption—to increase.

Increased openness will increase both export and import volumes. As exports increase, the demand for workers in export-intensive sectors will increase, putting upward pressure on the wages of workers in those sectors and increasing their employment opportunities. At the same time, increased import volumes can reduce the demand for workers in sectors competing with imports, putting downward pressure on their wages and reducing employment opportunities.

In addition, by capitalizing on and encouraging specialization in production, increased trade will increase domestic income and wealth. This outcome will in turn increase consumer demand for goods and services, including those produced in sectors with little or no exposure to trade. Stronger consumer demand will increase the demand for labor, wages, and employment opportunities throughout the economy.

Because trade increases both exports and imports, to a first approximation it is reasonable to expect that its employment effects will be a wash. Moreover, with inelastic labor supply, the wage effects of shifts in labor demand will be larger than any employment effects. Increased wealth and income should boost labor demand. But from a macroeconomic perspective, the Federal Reserve's mandate to achieve maximum stable employment (along with price stability) is inconsistent with sustained increases in trade-driven labor market overheating or slack.

For sectors heavily exposed to offshoring and import competition—like manufacturing—we must also consider the effects of competition between relatively lower-paid foreign workers and relatively higher-paid domestic workers. Here again, there are offsetting effects that, to a first approximation, suggest that trade will not affect the level of employment. Lower-cost foreign labor may be a substitute in production for domestic workers, pushing down their wages and reducing their employment opportunities.

But this reduction in production costs will reduce the price of the good, increasing the demand for it and, therefore, increasing the demand for labor, including domestic labor. Perhaps more importantly, demand for domestic labor that produces complementary goods will increase. And, again, trade-driven unemployment should be reduced by looser monetary policy, as would unemployment arising from any macroeconomic imbalance.

While trade should not affect the level of employment, it will affect the composition of jobs in the US labor market, and increased trade will disadvantage some workers and benefit others. Domestic workers who are close substitutes in production to foreign workers and those in sectors that shrink as trade expands are relatively more likely to be displaced. Domestic workers who are in jobs that are complements in production to foreign workers and those in export-intensive sectors or in sectors for which the US has a comparative advantage are relatively more likely to benefit from increased trade. But trade should not be expected to affect the aggregate level of employment or of employment opportunities.

In this way, free trade is like any other dynamic force in the economy. Technological advances affect the production functions of firms and increase national income. Changes in tastes and preferences and the introduction of new products and services are similarly disruptive and can cause similar compositional changes in the occupation distribution of the labor market.

But as with trade, there is little theoretical reason to be concerned that this disruption would systematically reduce aggregate employment, particularly over longer periods

of time and in the presence of policies designed to assist workers with transitioning to new occupations and industries.

3.2 Trade and employment: evidence from the "China shock"

The effect of trade liberalization on employment is ultimately an empirical question. The best evidence suggests that the expansion of trade in recent decades—including trade with China—did not reduce the level of employment in the United States.

Autor, Dorn, and Hanson (2013) study how local labor markets in the United States adjusted to the surge of imports from China. Specifically, they study the relationship between the decadal change (1990–2000 and 2000–2007) in the manufacturing employment share of the working-age population and exposure to Chinese imports from 1990 to 2007 within 722 commuting zones, which vary in the importance of different manufacturing industries for local employment.

Autor, Dorn, and Hanson conclude that rising exposure to Chinese import competition was responsible for 16 percent of the decline in overall US manufacturing employment between 1990 and 2000 and for 26 percent of the decline between 2000 and 2007. This decline translates into a net reduction in US manufacturing employment of 1.53 million jobs over the full sample period.

In a 2016 paper, Autor, Dorn, and Hanson, in joint work with Acemoglu and Price, estimate the relationship between employment in (four-digit) manufacturing industries to industry-level exposure to Chinese imports, from 1991 to 2011. Acemoglu et al. (2016) also find manufacturing employment losses. They estimate that increased import competition from China led to a net reduction of 560,000 manufacturing jobs from 1999 to 2011, or around 10 percent of the total decline in manufacturing employment over this period.

Economic linkages between sectors mean that rising import competition that reduces domestic production will have effects on the suppliers of domestic producers. Including these indirect employment effects increases Acemoglu et al.'s estimate of a net employment reduction due to Chinese imports to 1.98 million jobs, including 985,000 manufacturing jobs.[20]

20 Additional studies of this episode include Pierce and Schott 2016, which explores how China's 2001 World Trade Organization accession affected US manufacturing employment using variation in the growth in China trade that resulted from the post-2001 removal of uncertainty surrounding tariff rates applied to Chinese imports to the United States. They conclude that competition with Chinese imports (through this channel) contributed to the post-2000 reduction in US manufacturing employment. Caliendo and Parro (2023) survey the literature on the "China shock," including the papers discussed in this article, and conclude that its effects on US manufacturing employment are economically relevant but not the main cause of the overall observed decline.

In addition, Acemoglu et al. complement their industry analysis with an analysis of commuting zones in order to estimate the local general-equilibrium effect of exposure to import competition from China. They jointly estimate labor reallocation effects and aggregate demand effects within local labor markets and conclude that import growth from China led to 2.4 million fewer jobs between 1999 and 2011.[21]

Placing those estimates in the broader context of US labor market dynamism can help to anchor one's view on the degree to which import competition during those years was disruptive. Autor, Dorn, and Hanson (2013) find an average reduction in manufacturing employment of 90,000 jobs per year from 1990 to 2007. Acemoglu et al. (2016) find an average reduction in manufacturing employment of 200,000 per year from 1999 to 2011. But see figure 6. In a typical month, five million workers separate from their employers. In the manufacturing sector, typical monthly separations are 350,000.[22]

Moreover, Autor, Dorn, and Hanson and Acemoglu et al. focus on half the story of increased trade openness. As discussed previously, trade liberalization is associated with increased imports *and exports*. Economic theory suggests that employment reductions in sectors exposed to import competition should be roughly balanced by employment increases in export-intensive sectors and in other sectors. While Autor, Dorn, and Hanson present some results using net imports, they focus on import competition—one side of the ledger. Acemoglu et al. attempt to estimate general equilibrium effects in (and, importantly, not across) local labor markets, but the focus of their study is also employment reductions due to import competition.

Feenstra, Ma, and Xu (2019) note that the literature on the "China shock" focused on the impact that surging imports from China have had on job losses, with little attention paid to the job gains from growing exports.[23] They expand the Acemoglu et al. framework to incorporate not only US imports from China but also imports from the rest of the world, exports to China, and exports to the rest of the world.[24]

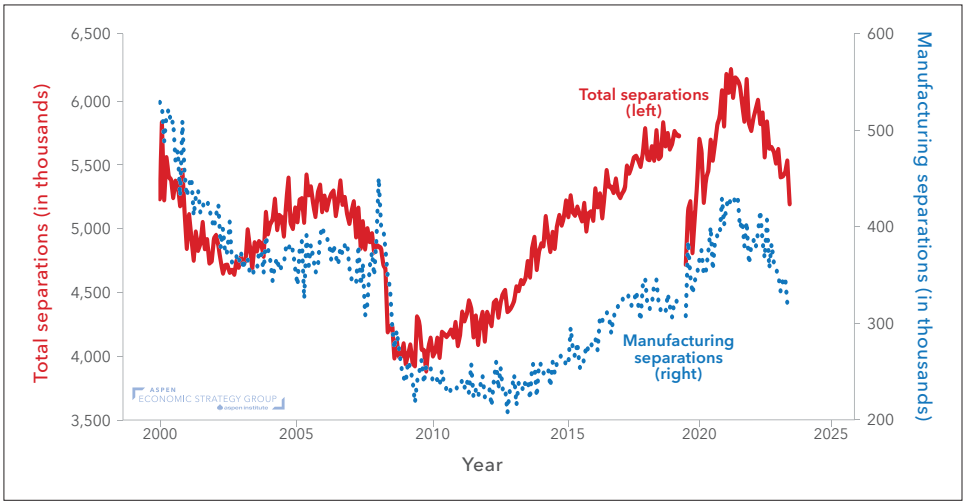
21 Jaravel and Sager (2019) estimate the distributional effects of the "China shock" by benchmarking their estimates of the effect of increased trade with China on consumer prices against estimates from the literature of job losses from Chinese import competition. They find that falling product prices create $411,464 of consumer surplus per displaced job.

22 These calculations (and the associated chart) exclude March 2020 and April 2020, when total and manufacturing separations spiked due to the COVID-19 pandemic. Separations include voluntary quits, involuntary layoffs and discharges, and separations due to retirement, disability, and other reasons. Bureau of Labor Statistics data on separations begin in December 2000, later than the starting years in the Autor, Dorn, and Hanson (2013) and Acemoglu et al. (2016) studies. Through 2007, average monthly manufacturing separations were 425,000; through 2011, they were 381,000.

23 Feenstra and Sasahara (2018) note the same. Using global input-output analysis, they study the impact of imports and exports on labor demand in the United States from 1995 to 2011. They find that US imports from China led to reduced demand of 1.4 million jobs in manufacturing and 0.6 million in services—findings quite similar to those of Acemoglu et al. (2016). Over the same period, they find that the growth of US exports led to increased labor demand of 2 million manufacturing jobs, 0.5 million jobs in resource industries, and 4.1 million jobs in services. Focusing only on goods exports, labor demand increased by 3.7 million jobs in total, for an increase in net labor demand of 1.7 million jobs. Factoring in imports from the rest of the world and services exports, they conclude that labor demand increased on net over this period.

24 To deal with the endogeneity of trade volumes and employment, Feenstra, Ma, and Xu use two instruments. The first is the Autor, Dorn, and Hanson instrument of trade flows to other nations. The second is a model-based prediction of trade flows, including the effect of changes in tariff rates.

Figure 6. Monthly separations: total US economy and manufacturing sector, 2000– 2024



Source: BLS 2024b.

In their preferred specification, Feenstra, Ma, and Xu estimate that, at the industry level, a 1 percentage point rise in import penetration from China reduces industry employment by 0.81 percentage points. This estimate is very similar in magnitude to the findings of Acemoglu et al. But when they study the effects of trade more broadly, Feenstra, Ma, and Xu find that the job losses identified by Acemoglu et al. and Autor, Dorn, and Hanson are fully offset by job gains due to US exports.

Specifically, in their preferred specification they find job losses of 533,000 due to import competition between 1999 and 2011. These losses were offset by job gains of 411,000 due to exports. Since export-driven gains were greater than import-driven losses during the 1990s, over the entire 1991–2011 period they find a net gain of 379,000 jobs.[25] As robustness checks, Feenstra, Ma, and Xu examine specifications using only Autor, Dorn, and Hanson-style instruments and ending their time period in 2007. They find job losses from Chinese import competition totaling 671,000 alongside export-driven job gains of 1.2 million.

Feenstra, Ma, and Xu's industry-level results use variation in exposure to import penetration and export expansion to predict changes in manufacturing-sector employment. This methodology does not address the geographic effects of trade

25 Feenstra, Ma, and Xu (2019) also provide estimates of job changes driven by trade between the US and China. Exports to China are substantially smaller than imports from China. Over the full 1991–2011 period, they find that trading with China led to 322,000 job losses.

liberalization. To study the effects of both import competition and export expansion on local labor markets, they follow Autor, Dorn, and Hanson and Acemoglu et al. in examining 722 commuting zones.

Feenstra, Ma, and Xu confirm the result that import competition at the commuting-zone level caused employment losses. Over the 1991–2011 period, they estimate 1.9 million job losses due to import penetration. These losses are balanced out by export-driven gains. They estimate an additional 830,000 jobs lost due to competition with imports from the rest of the world (on top of the 1.9 million jobs lost from Chinese imports) and 2.6 million job gains due to export expansion. Moreover, they find some evidence that commuting zone with higher percentage losses are relatively more likely to also experience higher percentage gains.

3.3 Learning from the "China shock"

There are two important lessons for economists and policymakers from the "China shock" literature. First, the labor market is less fluid than many economists had thought, and it is harder for workers specialized in one sector with declining opportunities—in the case of trade, in import-competing sectors — to reallocate to other sectors with expanding opportunities. The second lesson is that workers may be less willing to relocate from regions with declining opportunities to regions with expanding opportunities than many economists had thought.

These are generalizable lessons that apply to labor market disruptions broadly, regardless of the source of the disruption. For example, the development of generative artificial intelligence raced forward in 2023 and portends substantial labor market disruption (Strain 2024b). The energy transition away from fossil fuels could create a situation similar in kind to the China shock, given the geographic concentration of that industry. These lessons from the China shock will apply to AI and the energy transition.

Other lessons from the China shock are important for understanding that episode but may be of limited generalizability. China's export growth was explosive, with its share of world manufacturing exports rising from 3 percent in 1995 to 18 percent in 2014, to 21 percent in 2020.[26] And the reallocation of workers across sectors was likely severely adversely affected by the 2008 global financial crisis and Great Recession, in which the US unemployment rate peaked at 10 percent and there were as many as six unemployed workers for every one job opening in the labor market. To the extent that adverse effects on import-competing workers created Keynesian aggregate-demand reductions, post-2007 economic slack was a major contributor.

26 These statistics are based on my calculations using data from the OECD. Baldwin (2024) has similar calculations.

3.4 Conclusion: trade is about productivity, wages, and consumption—not jobs

Prior to the China shock, economists generally believed that trade was not a major factor in declining manufacturing employment. The research reviewed here demonstrates that the surge in imports from China two decades ago was much more disruptive than many economists would have expected. But trade liberalization increases both import and export volumes. Taken as a whole, the China-shock literature supports the pre–China shock consensus: Trade creates winners and losers, and trade reduces some employment opportunities and expands other employment opportunities. But trade does not reduce aggregate employment.

Trade is about productivity. By leveraging a nation's comparative advantage and increasing specialization in production, trade increases the productivity of workers. Because workers are more productive, they are more valuable to employers, who will compete more aggressively to retain and attract them. This competition will put upward pressure on workers' wages and incomes.

"Trade creates winners and losers, and trade reduces some employment opportunities and expands other employment opportunities. But trade does not reduce aggregate employment."

Trade is about consumption. By leveraging a nation's comparative advantage and increasing specialization in production, trade increases world output and national consumption. Trade also increases the quality and variety of goods and services available to consumers.

The wrong lesson from the import surge from China at the turn of the century is to increase tariffs and advance protectionist measures and industrial policy. Instead, the lesson should be to provide more economic opportunity to workers who are displaced by trade—or, for that matter, by any source of labor market disruption.

Among many ideas to consider, recent advances in job training hold out promise that workers who are displaced can transition into new jobs and industries with more success than occurred two decades ago (Holzer 2023). Increasing the productivity of workers should increase their compensation (Strain 2019). Reemployment bonuses could encourage unemployed workers to find new jobs and remain attached to the labor force following shocks to labor demand (Hobbs and Strain 2024). Expansion of earnings subsidies could encourage labor force participation among workers who have lost their jobs (Schanzenbach and Strain 2021). Regulatory barriers to worker reallocation, such as occupational licensing and high minimum wages (Clemens and Strain 2023), should be scaled back.

Government subsidies for long-term unemployed workers to move from regions with declining opportunity to regions with expanding opportunity is a promising policy to explore, both to help those workers maintain employment and earnings and to help localities recover from high unemployment following local shocks to labor demand (Strain 2014). The US should also encourage entrepreneurship so that new jobs can be created to absorb displaced workers and to help localities recover from regional shocks. Greater immigration flows could help regions recover from shocks to their local economies.

But tariffs and protectionism will hurt the very workers their advocates hope to help.

4. Industrial policy is (almost) always bad policy

Industrial policy is a term without a clear and widely accepted definition. I prefer a simple and clear definition: Industrial policy is government intervention to override market outcomes with the goal of promoting a politically favored industry. This definition encompasses the tariff regimes discussed earlier in this article. In this section, I will focus on recent government spending programs.

Operation Warp Speed was a public-private partnership announced by President Trump on May 15, 2020, with the goal of developing, manufacturing, and distributing COVID-19 vaccines. The US government committed in advance to large purchases of any vaccines that would be developed, subsidized inputs to avoid bottlenecks during production, and used the Defense Production Act to give priority access to components of the vaccine supply chain. The cost of the program was $18 billion, mostly spent on vaccine purchase agreements and research and development grants to pharmaceutical companies (Hufbauer and Jung 2021).

Operation Warp Speed was remarkably successful. By December 2020, four new COVID-19 vaccines were authorized for use. The GDP gains from faster vaccine development were an order of magnitude larger than the cost of the program (Gagnon, Kamin, and Kearns 2021).

Operation Warp Speed had five attributes that contributed to its success. First, it had a clearly defined goal. Second, the program was not trying to balance competing goals. Third, although success was far from certain, the goal of the program was a priori plausibly achievable. Fourth, the goal was not part of a partisan political agenda. Finally, there were US businesses in place with the technological capability and human capital necessary to meet the goal at the time the goal was implemented.

It is too early to offer strong, evidence-based judgments on President Biden's two signature industrial-policy programs, the CHIPS and Science Act of 2022 and the

Inflation Reduction Act of 2022. Not enough time has passed since those policies were enacted to enable economists to rigorously evaluate their effects. But the structure of the programs does not inspire confidence that they will succeed. Consider the programs through the framework for success described above.

The CHIPS Act and the IRA do not have clearly defined goals. Together, their goals include revitalizing domestic manufacturing, establishing the US as a leading producer of semiconductors, spurring development in green technology, slowing the pace of climate change, and advancing economic and national security. What does success look like? How do we know when we have "revitalized" domestic manufacturing? How will taxpayers know if their investment in slowing the pace of climate change has paid off? How do we know when the US is producing enough of the world's chips? What would pass the cost-benefit test? What would fail that test?

These programs are trying to balance competing goals in a way that will likely mitigate their success. For example, supporters of the CHIPS Act wanted to waive environmental regulations that lengthened the time it would take to construct fabs, pitting the goals of boosting domestic manufacturing and addressing climate change against each other. Commerce Secretary Gina Raimondo has warned that requiring companies to go through standard environmental reviews could delay CHIPS Act projects by years.[27]

President Biden's decision to impose a 100 percent tariff rate on imports of Chinese electric vehicles protects domestic automakers at the expense of addressing climate change.[28] The Biden administration's goal of expanding access to affordable childcare has arguably slowed the development and approval of CHIPS Act–funded projects.[29]

In my view, the goals of these programs are not a priori plausibly achievable when factoring in costs as well as benefits. In an episode of protectionism similar in scope but vanishingly smaller in scale, President Obama in 2009 sought to protect domestic tire manufacturers from competition with Chinese imports. His initiative protected a maximum of 1,200 jobs at a cost to American consumers (in the form of higher prices) of $1.1 billion (Hufbauer and Lowry 2012). A policy that costs $900,000 per job saved is not successful.

27 Mackenzie Hawkins, "Raimondo Warns US Chips Push Faces Long Delays in Permit Process," *Bloomberg*, December 12, 2023, https://www.bloomberg.com/news/articles/2023-12-12/raimondo-warns-us-chips-push-faces-long-delays-in-permit-process?sref=1pnqJ0TR.

28 Alan Rappeport and Jim Tankersley, "U.S. to Announce New Tariffs on Chinese Electric Vehicles," *New York Times*, May 10, 2024, https://www.nytimes.com/2024/05/10/us/politics/us-biden-china-tariffs-electric-vehicles.html.

29 Jim Tankersley, "To Tap Federal Funds, Chip Makers Will Need to Provide Child Care, " *New York Times*, February 27, https://www.nytimes.com/2023/02/27/us/politics/child-care-chip-makers-biden.html.

The CHIPS Act and IRA will likely cost more than $1 trillion over the next ten years.[30] It would be surprising if that spending did not lead to a reallocation of jobs into manufacturing from other sectors.[31] But these subsidies have yet to generate noticeable manufacturing employment gains, and they will not meaningfully change the long trend in manufacturing employment. Even if these subsidies increased manufacturing employment by 50 percent—a huge increase—that would merely return the manufacturing employment share to its level from two decades ago, far from the golden era of manufacturing in the decades following the Second World War.

Unlike revitalizing domestic manufacturing, there is a chance that offering massive subsidies for green energy development will lead to innovation that causes an inflection point in the pace of climate change. But a carbon tax—which would change the relative price of alternative sources of energy without requiring the government to pick winners and losers—or public funding for basic scientific research and innovation would be much more effective at developing new energy technologies. Moreover, these approaches would have a much higher chance at succeeding, and they would succeed at much less expense to taxpayers.

Given the importance of semiconductors to a wide variety of products and the large share of their production located in Taiwan, the CHIPS Act is much more defensible than the IRA. It is also expected to have a fiscal cost two orders of magnitude less than the IRA's. The CHIPS Act will likely see more semiconductor manufacturing in the US than would otherwise have been the case. But for resilience and national-security purposes, there is little reason to conclude that this activity needed to be moved to the United States at great expense to taxpayers.

The US produced 12 percent of the world's chips in 2020. A study commissioned by the Semiconductor Industry Association concludes that the CHIPS Act will lift this share to 14 percent in 2032. The study also finds that the US's production share of cutting-edge chips would rise from zero to 28 percent.[32] Even if these optimistic forecasts come to pass, it is not clear whether these projected increases in US production would materially advance either resilience or security. Is the US qualitatively more resilient or secure if 72 percent, rather than 100 percent, of cutting-edge chips are produced in other nations?

Instead of industrial policy, safeguarding national security should involve identifying a narrow set of specific inputs and goods that genuinely warrant special attention

30 See section 2.1 for more discussion of the fiscal costs of these programs.

31 Inflation-adjusted manufacturing construction spending has more than doubled since the end of 2021. This surge is likely due in large part to the Inflation Reduction Act and CHIPS and Science Act's manufacturing subsidies.

32 I relied on the summary of these results provided by the *Wall Street Journal*: Asa Fitch, "The U.S. Gave Chip Makers Billions: Now Comes the Hard Part." *Wall Street Journal*, June 4, 2024, https://www.wsj.com/tech/chips-act-funding-semiconductor-investments-us-22cc1ea8?mod=hp_lead_pos9.

by the government, and working with allies to ensure that their supply is diversified away from adversarial nations or geopolitical hotspots. Coordinating with allies would allow production to be relocated to nations that are best situated to produce. It is a large leap from arguing that the supply of certain, select critical inputs and goods not be exposed to adversarial nations to arguing that their production should be located in the United States. Countering China with a coordinated coalition of allied trading partners would be much more productive than bursts of bilateral protectionism.

When an industrial policy becomes a partisan football, its odds of success decline substantially. The CHIPS Act was passed with bipartisan support and is on relatively stable footing. The IRA was not, passing the Senate with all Republicans voting against it and Vice President Harris breaking the tie. President Trump has made his opposition to the IRA clear, and many progressives are concerned that a second Trump administration would successfully hobble and undermine the law.

Finally, unlike Operation Warp Speed, the CHIPS Act and the IRA require technological capability and human capital—and an ecosystem that can deploy them—that the US does not currently possess, putting at risk the latter's success. For example, the Taiwan Semiconductor Manufacturing Company announced in August 2023 that it was required to delay production at an Arizona fab due to a lack of workers with the right training and experience.[33] Deloitte estimates that the domestic semiconductor industry will face a shortfall of up to 90,000 workers over the next several years (Deloitte 2022).

Like Mr. Trump's trade war, Mr. Biden's IRA has also (predictably) provoked an international response. Its subsidies for clean-energy projects have so dramatically tilted the playing field toward the United States that French president Emmanuel Macron warned that the IRA could "fragment the West."[34] This, at a time when geopolitical challenges with respect to Russia, China, and Iran make Western cooperation and coordination more important than at any time since the end of the Cold War.

The US's embrace of industrial policy has created a permission structure for other nations to do the same. Unsurprisingly, South Korea and the European Union have responded to the IRA with their own subsidies. A tit-for-tat subsidy war distorts relative prices, reduces economic efficiency by prioritizing political ambition over comparative advantage, and reduces the ability of any one nation's subsidies to achieve their own self-defined goals.

33 Kristina Partsinevelos, "Growing Talent Gap in U.S. Chip Space Emerges as Makers Spend Billions, " *CNBC*, August 9, 2023, https://www.cnbc.com/2023/08/09/us-chip-sector-talent-gap-emerges-as-makers-spend-billions.html.

34 Yasmeen Abutaleb, Rick Noack, and Toluse Olorunnipa, "Biden Says He Might Meet with Putin—but Not Now," *Washington Post*, December 1, 2022, https://www.washingtonpost.com/politics/2022/12/01/macron-biden-warning-western-alliance/.

Industrial policy works better in theory than in practice. It often fails because real-world factors, limits on state capacity, and competing political objectives often prove to be insurmountable obstacles. All the old questions about industrial policy are worth repeating in light of its revival: Why should we expect the government to do a good job of picking winners and losers or to allocate scarce resources better than the market? If the government intervenes in markets, how will it avoid mission creep, cronyism, and corruption?

There are already reasons to be concerned. Regarding real-world factors and state capacity: An investigation by the *Financial Times* found that around 40 percent of the CHIPS Act and IRA projects worth more than $100 million had been substantially delayed or paused indefinitely as of the summer of 2024.[35] Regarding the potential for cronyism: Intel has been a major recipient of CHIPS Act funding. To recover from a series of stumbles, on August 1, 2024, the company announced a plan to cut costs, including laying off 15 percent of its workforce. Intel's stock plummeted in the wake of the announcement. The president of a prominent technology think tank responded to the news: "I don't think we can lose Intel. That would be a bridge too far." "So, then the question becomes, what if Intel says, 'we need a cash infusion?' I think the U.S. government would have to take that seriously."[36]

The Biden administration will likely spend over $1 trillion on its industrial policies. That money has an opportunity cost. The Biden administration has awarded grants of $8.5 billion to Intel.[37] On a fundamental level, policymakers should ask themselves: Why does Intel need $8.5 billion of taxpayer money? The CEO of Intel is already worried that the CHIPS Act was insufficient; by the spring of 2024, he was arguing for a "CHIPS 2.0."[38] How do we know whether additional subsidies are needed? Where does taxpayer support for this industry stop?

To advance American innovation, the government should invest public funds in basic research and infrastructure. The goal of this investment should not be to create manufacturing jobs and should not be targeted at specific products (like semiconductors) or target specific goals for sections (like clean energy). Instead, the goal should be to increase innovation and dynamism more broadly, which in turn will increase productivity and wage growth.

35 Amanda Chu, Alexandra White, and Rhea Basarkar, "Delays H it 40% of Biden's Major IRA Manufacturing Projects," Financial Times, August 12, 2024, https://www.ft.com/content/afb729b9-9641-42b2-97ca-93974c461c4c.

36 Matthew S. Smith, "Intel's Troubles Complicate U.S. Chip Independence," *IEEE Spectrum*, August 26, 2024, https://spectrum.ieee.org/chips-act-and-intel.

37 Kif Leswing, "Intel Awarded up to $8.5 Billion in CHIPS Act Grants, with Billions More in Loans Available, " *CNBC*, March 20, 2024, https://www.cnbc.com/2024/03/20/intel-awarded-up-to-8point5-billion-from-chips-act-with-loans-available.html.

38 Christine Mui, "Biden Needs a Win from Intel: Can the Company Deliver?" *Politico*, March 29, 2024, https://www.politico.com/news/2024/03/29/biden-intel-chips-00149636.

Public support for basic research is not industrial policy—it is not designed to override market forces to advance a politically favored industry. But industrial policy can be used to advance scientific research with a clear, specific, and achievable goal. Again, Operation Warp Speed is a good example.

So is the Defense Advanced Research Projects Agency (DARPA), frequently lauded as a gold standard for successful industrial policy. Following the Soviet Union's 1957 Sputnik launch, President Eisenhower established this research agency within the Department of Defense. DARPA awards research and development grants to researchers and institutions (universities and industry) studying high-risk, high-reward projects advancing breakthrough technologies for national security.

DARPA-funded projects have made important contributions in computer science, materials sciences, and information and communication. The agency is insulated from partisan politics and is staffed by managers with scientific training. Its projects are classified, but many have commercial spillovers (Gallo 2021).

DARPA-funded projects have contributed to the creation and development of weather satellites, global satellite navigation, the computer mouse, explosive metal forming, the internet, semiconductor chips, miniaturized GDS receivers, high-definition television, and wafer-scale semiconductor integration, among others (Hufbauer and Jung 2021). These contributions have created wealth (and jobs) far in excess of the funding appropriated to the agency.

Public investment in basic research can pay enormous dividends. Narrow, specific, achievable industrial policy with clear, nonpartisan goals can succeed. But government efforts along the lines of the Biden administration will very likely not pass a reasonable cost-benefit test.

5. Conclusion

The protectionism, trade wars, and industrial policies of the Trump and Biden administrations have not succeeded at meeting their goals and likely will not succeed at meeting their goals. They have caused manufacturing employment to decline, not to increase. They have not reduced the overall trade deficit, and they have not led to a substantial or definitive decoupling of the US and Chinese economies. They will likely not pass a reasonable cost-benefit test with respect to semiconductor and clean-energy innovation and manufacturing. Moreover, the goals that have not been met are wrongheaded.

These policies have arisen from a combination of nostalgia for an imagined past, fundamentally unsound economic analysis, and legitimate concerns regarding the

US's strategic competition with China. Misplaced nostalgia and unsound economics are bad guides to economic policy. And spasms of protectionism do not make for a coherent approach to strategic competition.

The conversation around that strategic competition often seems to assume that the United States is "lagging" China, and that the US must "catch up" to Chinese manufacturing using protectionist measures.[39]

But why should the US wish our economic policy to be more like China's? China's central planning will not be remembered as a long-term success. It has led to overinvestment in many sectors, a deeply imbalanced economy with too little consumption spending, a growth model struggling to transition away from exports, massive overbuilding of real estate, and an inadequate safety net. State policies have led to demographic problems that will have enormous economic ramifications.[40] Moreover, to the limited extent that China's model is working, it only works because their economy is embedded in an authoritarian state with a compliant industrial sector.

Rather than uniting our allies, the protectionist policies of the Trump and Biden administrations have antagonized allies and called into question whether the US is a reliable partner. Rather than pursuing narrow and clear objectives, the US's goals are broad, muddled, and in conflict with each other.

A better strategy would clearly acknowledge that China is a bad actor while taking a judicious approach; targeting a narrow set of practices, products, and technologies that clearly warrant intervention on economic security grounds; and pursuing that intervention in concert with as broad a coalition of allies as possible. It would not conflate economic security goals with domestic economic considerations, like trends in manufacturing employment. It would involve strengthening—and certainly not continuing to weaken—international institutions like the World Trade Organization.

Finally, it would proceed with confidence in the American system of democratic capitalism. Over the past three decades, the real wages of typical workers have grown substantially, and after-tax real median household income has grown even

39 As one example of many, consider the headline and subheading on a *New York Times* article: Patricia Cohen, Keith Bradsher, and Jim Tankersley, "How China Pulled So Far Ahead on Industrial Policy: The United States and Europe Are Trying to Catch Up to a Rival Skilled in Using All the Levers of Government and Banking to Dominate Global Manufacturing, " *New York Times*, May 27, 2024, https://www.nytimes.com/2024/05/27/business/economy/china-us-tariffs.html.

40 Krugman (1997) provides a general argument against the fighting-fire-with-fire approach to international economic policy: "The economist's case for free trade is essentially a unilateral case: a country serves its own interests by pursuing free trade regardless of what other countries may do. Or, as Frederic Bastiat put it, it makes no more sense to be protectionist because other countries have tariffs than it would to block up our harbors because other countries have rocky coasts."

more. The process of creative destruction has led to new opportunities in expanding middle-wage occupations. For well over a decade, broadly measured income inequality has stagnated. America remains an upwardly mobile society. Rising tides may not lift all boats at the same speed, but the hot economy of recent years shows that macroeconomic gains diffuse throughout the economy and are not captured by the elite.[41]

Globally, the free-enterprise system has delivered astonishing results. Over the past three decades, hundreds of millions of people have been lifted out of abject poverty due to the spread of capitalism. Infant mortality has plunged. The world became more peaceful and secure.

The 2008 global financial crisis, Great Recession, and COVID-19 pandemic each led to great economic and human hardship. They led to and sustained the rise of populist politics. But as traumatic as those events were, they should inspire confidence in the American system of democratic capitalism. That system has created the remarkably resilient and innovative workforce, economy, and society that were able to meet these challenges—and to overcome them.

The populist focus on the working class has been a welcome development, and the right response to populism is to take seriously the need to increase economic opportunity and advance participation in economic life, including by focusing on overall economic growth. The wrong response is to advance policies that will hurt the working class and threaten long-term prosperity.

41 For more detail, see Strain 2020 and Strain (forthcoming).

References

Acemoglu, Daron, David Autor, David Dorn, Gordon H. Hanson, and Brendan Price. 2016. "Import Competition and the Great US Employment Sag of the 2000s." *Journal of Labor Economics* 34, no. S1 (January): S141–98. https://doi.org/10.1086/682384.

Aiyar, Shekhar, Jiaqian Chen, Christian H. Ebeke, Roberto Garcia-Saltos, Tryggvi Gudmundsson, Anna Ilyina, Alvar Kangur, Tansaya Kunaratskul, Sergio L. Rodriguez, Michele Ruta, Tatjana Schulze, Gabriel Soderberg, and Juan P. Trevino. 2023. "Geoeconomic Fragmentation and the Future of Multilateralism." Staff discussion note no. SDN/2023/001. Washington, DC: International Monetary Fund, January 15.

Amiti, Mary, Matthieu Gomez, Sang Hoon Kong, and David Weinstein. 2024. "Trade Protection, Stock-Market Returns, and Welfare." Working paper no. 28758. Cambridge, MA: National Bureau of Economic Research, revised May. https://www.nber.org/papers/w28758.

Amiti, Mary, Stephen J. Redding, and David E. Weinstein. 2019. "The Impact of the 2018 Tariffs on Prices and Welfare." *Journal of Economic Perspectives* 33, no. 4 (Fall): 187–210. https://www.jstor.org/stable/26796842.

Autor, David H., Anne Beck, David Dorn, and Gordon H. Hanson. 2024. "Help for the Heartland? The Employment and Electoral Effects of the Trump Tariffs in the United States." Working paper no. 32082. Cambridge, MA: National Bureau of Economic Research, January. https://www.nber.org/papers/w32082.

Autor, David H., David Dorn, and Gordon H. Hanson. 2013. "The China Syndrome: Local Labor Market Effects of Import Competition in the United States." *American Economic Review* 103, no. 6 (October): 2121–68. https://doi.org/10.1257/aer.103.6.2121.

Baldwin, Richard. 2024. "China Is the World's Sole Manufacturing Superpower: A Line Sketch of the Rise." *VoxEU*, January 17. https://cepr.org/voxeu/columns/china-worlds-sole-manufacturing-superpower-line-sketch-rise.

Bernstein, Jared, and Dean Baker. 2016. "Why Trade Deficits Matter." *The Atlantic*, December 18. https://www.theatlantic.com/business/archive/2016/12/trump-trade-deficit/509912/.

Biden, Joseph R. 2023. "Remarks by President Biden on Bidenomics." Old Post Office, Chicago, IL, June 28. https://www.whitehouse.gov/briefing-room/speeches-remarks/2023/06/28/remarks-by-president-biden-on-bidenomics-chicago-il/.

Bistline, John, Neil R. Mehrotra, and Catherine Wolfram. 2023. "Economic Implications of the Climate Provisions of the Inflation Reduction Act." *Brookings Papers on Economic Activity* (Spring). https://www.brookings.edu/wp-content/uploads/2024/01/16653-BPEA-SP23_WEB_Bistline-et-al-session_print.pdf.

Bown, Chad P. 2019. "The 2018 US-China Trade Conflict after Forty Years of Special Protection." *China Economic Journal* 12, no. 2: 109–36.

Bown, Chad P., and Melina Kolb. 2023. "Trump's Trade War Timeline: An Up-to-Date Guide." Peterson Institute for International Economics, December 31. https://www.piie.com/blogs/trade-and-investment-policy-watch/2018/trumps-trade-war-timeline-date-guide.

Bureau of Labor Statistics. 2024a. "Table B-1: Employees on Nonfarm Payrolls by Industry Sector and Selected Industry Detail." In "Data Retrieval: Employment, Hours, and Earnings (CES)." July 17. https://www.bls.gov/webapps/legacy/cesbtab1.htm.

Bureau of Labor Statistics. 2024b. "Job Openings, Hires, and Total Separations by Industry, Seasonally Adjusted." July 17. https://download.bls.gov/pub/time.series/jt/.

Caliendo, Lorenzo, and Fernando Parro. 2023. "Lessons from US-China Trade Relations." *Annual Review of Economics* 15: 513–47. https://doi.org/10.1146/annurev-economics-082222-082019.

Carter, Colin, and Sandro Steinbach. 2020. "The Impact of Retaliatory Tariffs on Agricultural and Food Trade." Working paper no. 27147. Cambridge, MA: National Bureau of Economic Research, May. https://www.nber.org/papers/w27147.

Clemens, Jeffrey, and Michael R. Strain. 2023. "How Important Are Minimum Wage Increases in Increasing the Wages of Minimum Wage Workers?" *Contemporary Economic Policy* 41, no. 4 (October): 594–612. https://doi.org/10.1111/coep.12608.

Clinton, Bill. 1993. "Remarks by President Clinton, President Bush, President Carter, President Ford, and Vice President Gore in Signing of NAFTA Side Agreements." White House, Washington, DC, September 14. https://clintonwhitehouse6.archives.gov/1993/09/1993-09-14-remarks-by-clinton-and-former-presidents-on-nafta.html.

Deloitte. 2022. *The Global Semiconductor Talent Shortage.* London: Deloitte Development LLC. https://www2.deloitte.com/content/dam/Deloitte/us/Documents/technology-media-telecommunications/us-tmt-global-semiconductor-shortage-pov-v3.pdf.

Deming, David, Christopher Ong, and Lawrence Summers. 2024. "Technological Disruption in the US Labor Market." In *Strengthening America's Economic Dynamism,* edited by Melissa S. Kearney and Luke Pardue. Forthcoming. Washington, DC: Aspen Institute.

Fajgelbaum, Pablo D., Pinelopi K. Goldberg, Patrick J. Kennedy, and Amit K. Khandelwal. 2020. "The Return to Protectionism." *Quarterly Journal of Economics* 135, no. 1 (February): 1–55. https://doi.org/10.1093/qje/qjz036.

Feenstra, Robert C., Hong Ma, and Yuan Xu. 2019. "US Exports and Employment." *Journal of International Economics* 120 (September): 46–58. https://doi.org/10.1016/j.jinteco.2019.05.002.

Feenstra, Robert C., and Akira Sasahara. 2018. "The 'China Shock,' Exports and U.S. Employment: A Global Input–Output Analysis." *Review of International Economics* 26, no. 5 (November): 1053–83. https://doi.org/10.1111/roie.12370.

Flaaen, Aaron, and Justin Pierce. Forthcoming. "Disentangling the Effects of the 2018–2019 Tariffs on a Globally Connected U.S. Manufacturing Sector." *Review of Economics and Statistics.*

Gagnon, Joseph E. 2017. "The Unsustainable Trajectory of US International Debt." *Realtime Economics* (Peterson Institute for International Economics blog), March 29. https://www.piie.com/blogs/realtime-economic-issues-watch/unsustainable-trajectory-us-international-debt.

Gagnon, Joseph E., Steven Kamin, and John Kearns. 2021. "Economic Costs and Benefitsof Accelerated COVID-19 Vaccinations." Policy brief no. 21-11. Washington, DC: Peterson Institute for International Economics, May. https://www.piie.com/publications/policy-briefs/2021/economic-costs-and-benefits-accelerated-covid-19-vaccinations.

Gallo, Marcy E. 2021. *Defense Advanced Research Projects Agency: Overview and Issues for Congress.* Report no. R45088. Washington, DC: Congressional Research Service, August 19. https://crsreports.congress.gov/product/pdf/R/R45088/15.

Goldman Sachs. "Carbonomics: The Third American Energy Revolution." Accessed July 2, 2024. https://www.goldmansachs.com/intelligence/pages/carbonomics-the-third-american-energy-revolution.html.

Handley, Kyle, Fariha Kamal, and Ryan Monarch. Forthcoming. "Rising Import Tariffs, Falling Export Growth: When Modern Supply Chains Meet Old-Style Protectionism." *American Economic Journal: Applied Economics.*

Hanson, Gordon. "Local Labor Market Impacts of the Energy Transition: Prospects and Policies." In *Economic Policy in a More Uncertain World*, edited by Melissa S. Kearney and Amy Ganz, 156–99. Washington, DC: Aspen Economic Strategy Group, 2023.

Hobbs, Duncan, and Michael R. Strain 2024. "Do Reemployment Bonuses Increase Employment? Evidence from the Idaho Return to Work Bonus Program." Discussion paper series no. 16924. Bonn, Germany: IZA–Institute of Labor Economics, April 24. https://www.iza.org/publications/dp/16924/do-reemployment-bonuses-increase-employment-evidence-from-the-idaho-return-to-work-bonus-program.

Holzer, Harry J. 2023. "Can Workforce Development Help Us Reach Full Employment?" *Brookings Institution*, December 21. https://www.brookings.edu/articles/can-workplace-development-help-us-reach-full-employment/.

Hufbauer, Gary Clyde, and Euijin Jung. 2021. "Scoring 50 Years of US Industrial Policy, 1970–2020." Briefing no. 21-5. Washington, DC: Peterson Institute for International Economics, November. https://www.piie.com/publications/piie-briefings/2021/scoring-50-years-us-industrial-policy-1970-2020.

Hufbauer, Gary Clyde, and Sean Lowry. 2012. "US Tire Tariffs: Saving Few Jobs at High Cost." Policy brief no. PB12-9. Washington, DC: Peterson Institute for International Economics, April. https://www.piie.com/publications/policy-briefs/us-tire-tariffs-saving-few-jobs-high-cost.

Irwin, Douglas A. 2011. *Peddling Protectionism: Smoot-Hawley and the Great Depression.* Princeton, NJ: Princeton University Press.

Jaravel, Xavier, and Erick Sager. 2019. "What Are the Price Effects of Trade? Evidence from the US and Implications for Quantitative Trade Models." Discussion paper no. 1642. London: Centre for Economic Performance, August. https://cep.lse.ac.uk/pubs/download/dp1642.pdf.

Javorcik, Beata, Katherine Stapleton, Benjamin Kett, and Layla O'Kane. 2022. "Did the 2018 Trade War Improve Job Opportunities for US Workers?" Policy Research Working Paper no. 10249. Washington, DC: World Bank Group, December 1. http://documents.worldbank.org/curated/en/099421212012251677/IDU0500ae4fa0848304bab089c9089e7cdc8970e.

Kersten, Alexander, Gregory Arcuri, Gabrielle Athanasia, and Hideki Tomoshige. 2022. "A Look at the CHIPS-Related Portions of CHIPS+." Center for Strategic and International Studies, August 9. https://www.csis.org/analysis/look-chips-related-portions-chips.

Krugman, Paul. 1997. "What Should Trade Negotiators Negotiate About?" *Journal of Economic Literature* 35, no. 1 (March): 113–20. https://www.jstor.org/stable/2729695.

Lighthizer, Robert E. 2022. "The New American System: Trade for Workers in the 21st Century." *American Conservative,* August 29. https://www.theamericanconservative.com/the-new-american-system-trade-for-workers-in-the-21st-century/.

Obstfeld, Maurice, and Kenneth S. Rogoff. 2005. "Global Current Account Imbalances and Exchange Rate Adjustments." *Brookings Papers on Economic Activity* 36, no 1: 67–146. https://www.brookings.edu/wp-content/uploads/2005/01/2005a_bpea_obstfeld.pdf.

Organisation for Economic Cooperation and Development. 2024. "Trade in Value-Added." July 17. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html.

Pierce, Justin R., and Peter K. Schott. 2016. "The Surprisingly Swift Decline of US Manufacturing Employment." *American Economic Review* 106, no. 7 (July): 1632–62. https://doi.org/10.1257/aer.20131578.

Schanzenbach, Diane Whitmore, and Michael R. Strain. 2021. "Employment Effects of the Earned Income Tax Credit: Taking the Long View." *Tax Policy and the Economy* 35: 87–129. https://doi.org/10.1086/713494.

Seong, Jeongmin, Olivia White, Michael Birshan, Lola Woetzel, Camillo Lamanna, Jeffrey Condon, and Tiago Devesa. 2024. *Geopolitics and the Geometry of Global Trade*. New York: McKinsey Global Institute, January 17. https://www.mckinsey.com/mgi/our-research/geopolitics-and-the-geometry-of-global-trade.

Setser, Brad. 2024. "The Surprising Resilience of Globalization: An Examination of Claims of Economic Fragmentation." In *Strengthening America's Economic Dynamism,* edited by Melissa S. Kearney and Luke Pardue. Forthcoming. Washington, DC: Aspen Institute.

Strain, Michael R. 2014. "A Jobs Agenda for the Right." *National Affairs* 18 (Winter). https://www.nationalaffairs.com/publications/detail/a-jobs-agenda-for-the-right.

Strain, Michael R. 2019. "The Link between Wages and Productivity Is Strong." In *Expanding Economic Opportunity for More Americans*, edited by Melissa S. Kearney and Amy Ganz. Washington, DC: Aspen Economic Strategy Group, February 4. https://www.aspeninstitute.org/longform/expanding-economic-opportunity-for-more-americans/the-link-between-wages-and-productivity-is-strong/.

Strain, Michael R. 2020. *The American Dream Is Not Dead.* Conshohocken, PA: Templeton Press.

Strain, Michael R. 2024a. "Protectionism Is Running Amok in the US." *Financial Times*, March 18. https://www.aei.org/op-eds/protectionism-is-running-amok-in-the-us/.

Strain, Michael R. 2024b. "The Case for AI Optimism." *National Affairs 60* (Summer). https://nationalaffairs.com/publications/detail/the-case-for-ai-optimism.

Strain, Michael R. Forthcoming. "The American Dream Is Alive and Well (and the Problem of US Inequality Greatly Exaggerated)." *Journal of Applied Corporate Finance*. https://doi.org/10.1111/jacf.12601.

Sullivan, Jake. 2023. "Remarks by National Security Advisor Jake Sullivan on Renewing American Economic Leadership at the Brookings Institution." Brookings Institution, Washington, DC, April 27. https://www.whitehouse.gov/briefing-room/speeches-remarks/2023/04/27/remarks-by-national-security-advisor-jake-sullivan-on-renewing-american-economic-leadership-at-the-brookings-institution/.

Syverson, Chad. 2017. "Challenges to Mismeasurement Explanations for the US Productivity Slowdown." *Journal of Economic Perspectives* 31, no. 2 (Spring): 165–86. https://doi.org/10.1257/jep.31.2.165.

Tai, Katherine. 2021. "Opening Statement of Ambassador-Designate Katherine Tai before the Senate Finance Committee." Office of the US Trade Representative, Executive Office of the President, February 24. https://ustr.gov/about-us/policy-offices/press-office/press-releases/2021/february/opening-statement-ambassador-designate-katherine-tai-senate-finance-committee.

Thomas, Douglas. 2023. *Annual Report on the U.S. Manufacturing Economy*: 2023. NIST Advanced Manufacturing Series 600-13-upd1. Gaithersburg, MD: National Institute of Standards and Technology, November. https://doi.org/10.6028/NIST.AMS.600-13-upd1.

Trump, Donald J. 2017a. Inaugural address. White House, Washington, DC, January 20. https://trumpwhitehouse.archives.gov/briefings-statements/the-inaugural-address/.

Trump, Donald J. 2017b. "Remarks by President Trump on His Trip to Asia." White House, Washington, DC, November 15. https://trumpwhitehouse.archives.gov/briefings-statements/remarks-president-trump-trip-asia/.

Trump, Donald J. 2018. "Remarks by President Trump and Prime Minister Netanyahu of Israel Before Bilateral Meeting." White House, Washington, DC, March 5. https://trumpwhitehouse.archives.gov/briefings-statements/remarks-president-trump-prime-minister-netanyahu-israel-bilateral-meeting-2/.

Waugh, Michael E. 2019. "The Consumption Response to Trade Shocks: Evidence from the US-China Trade War." Working paper no. 26353. Cambridge, MA: National Bureau of Economic Research, revised December. https://doi.org/10.3386/w26353.

World Trade Organization. 2023. *Global Value Chain Development Report 2023*. Geneva, Switzerland: World Trade Organization. https://www.wto.org/english/res_e/booksp_e/gvc_dev_rep23_e.pdf.