

INTRODUCTION

The US has been losing the international competition for high-value industries and the good jobs, wealth, tax revenues, and national defense capabilities they provide.

From 1998 to 2010, 6 million US manufacturing jobs disappeared.¹ Many – 3.5 million between 1991 and 2019 alone – are estimated to have been lost due to imports.² Real wages for nonsupervisory workers have stagnated for 40 years in part because of such job losses.³ Consumers have benefited from the imports, but not enough to outweigh the lost industries and jobs.

The lost industries are not all low-tech. The US runs an annual \$200 billion-plus deficit in Advanced Technology Products made by the very industries in which *we* were the innovators and first movers.⁴ Competitor nations have turned American scientific and technological advances into new products they make and industries they dominate.

Our trade deficit in goods is the broadest measure of our deindustrialization. In 2023, it exceeded \$1 *trillion*, about 4 percent of GDP.⁵ Because these deficits go back decades, other nations have accumulated \$18 trillion of US assets net of American overseas assets, making us the world's largest net debtor.⁶ Foreign-owned stocks, corporate bonds, and government bonds are now a massive claim on our future private-sector earnings and tax revenues.⁷ GDP has been estimated to be as much as 20 percent less than if our trade had been balanced over the past five decades.⁸

America's trade surplus in services – \$288 billion in 2023 – is not large enough to compensate for our deficit in goods.⁹ Manufacturing has become a sick sector. In 2022, the share of manufactured goods sold in the US that is made there fell to 66 percent, a record low.¹⁰ Labor productivity in

manufacturing has been declining.¹¹ Arguments that manufacturing is healthy turn on measurement errors.¹²

Key military components now come from abroad, some from China and other adversaries, leaving the US exposed to supply cutoffs, sabotage, and spyware.¹³ The COVID-19 pandemic revealed the vulnerability of America's medical and other important supply chains.

A comprehensive and coherent industrial policy is required to solve these manifold, interrelated problems.

The US government has recently taken important first steps in this direction. It has imposed policies to revive manufacturing in semiconductors, clean energy, and EVs, and to bolster R&D and its commercialization in these and other key industries. Similar reforms should now be made across a much wider range of industries.

Crucially, for these reforms to be succeed, our trade policy must be replaced with one that comprehensively and systematically supports them. America's free trade policy, forged in a long-vanished era of global economic dominance, has failed in both theory and practice. Innovative economic modeling has shown how well-designed tariffs, to give only one example of industrial policy, could give us better jobs, higher incomes, and GDP growth.¹⁴

What Is Industrial Policy?

Industrial policy is the deliberate governmental support of *industries*, with such support falling into two categories. First are broad policies that assist all industries, such as exchange rate management and tax breaks for R&D. Second are policies that target *particular* industries or technologies, such as tariffs, subsidies, government procurement, export controls, and technological research done or funded by government.

Until very recently, industrial policy has been dismissed in the US as a recipe for ill-advised, inefficient interventions in free markets, both domestically and abroad. Domestically, it has been associated with failing industries, such as steel in the 1980s, lobbying for bailouts.¹⁵ It has been associated with companies, such as Lockheed in the 1970s and Chrysler in the 1980s, that appeared to fail the test of market competition and needed government help to survive.¹⁶ And it has been associated with purported boondoggles such as synthetic fuels and the breeder reactor.¹⁷

Abroad, industrial policy has been associated with governments propping up failing state-owned companies while mismanaging them. It has been blamed for commercially unviable lunges for technological sophistication such as the Anglo-French Concorde and the European computer industry. It has been blamed for expensive, failed attempts to transplant modern industry to developing nations.

But systematic, proactive industrial policy is in fact the norm for the rich, technologically advanced nations America competes with, especially in East Asia and Continental Europe. There it is not only believed in as theory – it is what governments actually do.¹⁸ Sometimes their policies are overt and sometimes they are obscured, but they definitely exist.

When properly implemented, these policies have worked. The most obvious evidence is that some high-wage nations, such as Germany and Japan, that employ them have done better at holding onto valuable industries and their jobs than the US (see Chapters 5 and 8).¹⁹ Meanwhile, China and other low-wage nations have used industrial policies to establish strong new positions in key industries (see Chapter 7).

Because these foreign successes have come, in part, from targeting industries and taking them away from the US, these policies require an American response.

The ongoing success in the US of a few high-value, high-wage industries, such as aircraft manufacturing (see Chapters 15 and 26), that *have* benefited from effective industrial policy shows that our government can design and implement it, and that the payoff is large. The recent emergence in the US of private-sector space launch, deliberately nurtured by industrial policy, shows that America can still create major new industries in this way (see Chapter 26).

Comprehensive, proactive industrial policy has substantial domestic precedents. During World War II, we implemented industrial policies that reached into every sector of our economy. The Cold War was fought using industrial policies to support science, technology, and the military industrial base. Further back in American history, it is possible to trace more than 200 years of diverse, changing, but often highly effective industrial policies (see Chapters 14–16).

Industrial policy is not a conservative versus liberal question, as it has credible arguments and a policy heritage in both parties.²⁰ In 2019, Senator Marco Rubio (R-FL) issued a report calling for proactive industrial policies to counter Beijing's Made-in-China 2025 industrial policy initiative.²¹ That same year, Senator Elizabeth Warren (D-MA) issued a manifesto, "A Plan for Economic Patriotism," calling for industrial policies and the centralization of economic policy in a new Department of Economic Development.²²

America's Neglect of Industrial Policy

America already has many de facto industrial policies. These include federal science funding, tax credits for R&D, subsidized loans for everything from exports to housing to college, and occasional bailouts for sectors and

firms. In addition, states and localities spend \$90 billion annually in grants, rebates, and foregone taxes as incentives for firms to remain or locate in their jurisdictions.²³

The US also has industry-specific industrial policies for defense, pharmaceuticals, space, green energy, agriculture, and – new with the Biden administration – computer chips, batteries, and EVs. However, almost all of these policies aim at noneconomic objectives, with economic benefits not the primary motivation in their formulation or adoption. Industrial policy programs such as Manufacturing USA and the Manufacturing Extension Partnership whose purpose *is* deliberately economic are effective, but far too small (see Chapters 21 and 22).

Since World War II, the US has not recognized, let alone acted upon, the fact that its industries' problems require a coherent, integrated, and continuing response at the highest levels of government. Instead, it has done three things. First, it has responded in a reactive and short-term fashion, imposing industrial policies only under the pressure of crisis and pulling back when crisis has passed (see Chapters 16 and 17). Second, it has coordinated only weakly, if at all, the relevant policies – for example, tariff policy, exchange rate management, the tax code, scientific research, governmental technology development, and workforce training. Third, while engaging in quite a lot of *de facto* industrial policy, it has until Biden denied engaging in industrial policy at all. The failure to acknowledge such measures *as* industrial policy has contributed to America's continuing misunderstanding of what it is and what it can accomplish.

In the decades after World War II, the US outperformed other major economies in every important industry, in large part because it was not ravaged by war. So, as the concrete of its postwar policies, assumptions, and institutions set, it did not seem to *need* much deliberate industrial policy. The conviction developed that the US was so strong economically that, in pursuit of geopolitical goals such as shoring up Cold War alliances, it could afford to allow its allies to chip away portions of American industry. And over subsequent decades, they did.

The US put its faith in the international institutional architecture it created. The Bretton Woods currency system, the International Monetary Fund, the World Bank, and the General Agreement on Tariffs and Trade were believed to reduce the risk of another war, cement the Free World against the Communist Bloc, and contribute to the prosperity of all participating nations. As America was the leading producer of advanced manufactured goods, its leaders thought the country had everything to gain and nothing to lose from progressively freer trade. So, they embraced an economic ideology that assumed the sufficiency of free markets, the win-win character of international trade, the

willingness of other nations to abide by free trade rules, and, later, the declining importance of manufacturing.

The evidence that this ideology and its implementing policies have failed has now been accumulating for decades.

The China Threat

Industrial policy is back on the agenda in large part because of China, the first combined military and economic threat America has faced in more than 200 years. Beijing engages in extremely proactive, systematic, and aggressive industrial policy (see Chapter 7) and its economy, second in size only to that of the US, was until recently growing more than 6 percent per year.²⁴

China's success is *prima facie* evidence that industrial policy can work and that near total reliance on free markets is not the only, or even the best, path to economic development. Its success has discredited the idea that the world will inevitably see the benefits of, and converge on, America's market-oriented economic ideology.²⁵

China has also dispelled the idea that trade is always a win-win game, because it has become clear that much of its growth has come at the expense of the US. An increasing number of Chinese industries are in acute rivalry with high-value American industries, and China's gains are our losses.

The US cannot remain a military superpower without being an industrial superpower. The supply chains for advanced American weapons now have large, dangerous gaps. Some are the result of Beijing's deliberate targeting of key technologies with the aim of not only taking over their production but also making the US dependent on Chinese output.²⁶

The Return of Industrial Policy

Over the past 15 years, industrial policy has been slowly filtering back into America's policy space.²⁷ Although not so characterized at the time, the 2008–10 federal rescue of the auto industry was a classic act of industrial policy. It was a success, though more needs to be done if the industry is to remain healthy (see Chapter 25).²⁸

In 2021 and 2022, Biden proposed and Congress enacted the Bipartisan Infrastructure Act (BIA), the CHIPS and Science Act (CHIPS), and the Inflation Reduction Act (IRA). These ambitious new programs, combined with their *explicitly pro-industrial policy* rationales, were a big step forward.

The \$550 billion BIA authorized upgrades to the nation's infrastructure.²⁹ The CHIPS Act authorized \$170 billion for government-

wide R&D and \$52 billion in subsidies for semiconductor R&D and manufacturing, plus tax credits and other incentives (see Chapter 18).³⁰ The IRA authorized \$370 billion in incentives to shift industry and consumers to clean energy.³¹

Economic nationalism is returning to the US. The IRA includes buy American requirements with only limited exemptions. The CHIPS Acts incentivizes US and foreign firms to build advanced chip factories *in the US* and prohibits participating firms from producing advanced semiconductors in China and other “countries of concern” for 10 years.³²

In a significant departure from past practice, the BIA, the IRA, and CHIPS explicitly endorsed and embodied a number of core industrial policy principles. First, that economic and technological leadership and secure supply chains in civilian industries, not just defense industries, are critical to national security. Second, that making things, not just inventing them, is required for prosperity. Third, that large-scale government investment is needed to foster commercialization of new technologies and support US manufacturing in high technology and other economically important industries.

But much remains to be done. Trade policy should be reconfigured to support US industrial policy and counter other countries’ efforts to thwart it (see Chapter 4). More funding should be allocated to flagship manufacturing programs, while others need refinement (see Chapters 21 and 22). Because the overvalued dollar is the single greatest headwind to reshoring industries, reducing imports, and making US exports more competitive, capital controls should be used to manage its value down to the level that balances America’s trade (see Chapter 4).

Finally, to prevent backsliding, the theoretical foundations of opposition to industrial policy should be skeptically reexamined. They should be replaced with a version of economics that takes into account important realities ignored by American mainstream economics and that can therefore guide sound industrial policy.

Mainstream Economics Doesn’t Understand Industrial Policy

Mainstream US economists have opposed industrial policy for decades.³³ During the Japanese challenge to American manufacturing in the 1970s and 1980s, interest in industrial policy surged. But, as Paul Krugman, who played a significant role in the Democratic Party’s decision *not* to embrace it in the early 1980s, later correctly wrote:³⁴

Economists have been extremely negative about the idea of industrial policy even in principle. The general presumption of most economic theory is that the best industrial policy is to let the market work – that

decentralized incentives of the marketplace will push resources to the places with the highest expected return, and that no second-guessing of market decisions is necessary or desirable.³⁵

The US will not be able to successfully implement a systematic industrial policy until this thinking is refuted and replaced by economic theory that shows how industrial policy can succeed. America also needs such a theory to understand the strategies other nations are using against us and effectively parry them.

Theories matter. Despite the dominance of purely practical considerations and interest group politics in the short run, nations' long-term, big-picture economic decisions generally depend upon them. These theories can be explicitly articulated or so widely accepted that they are not even noticed. As John Maynard Keynes once wrote:

The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed, the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist . . . But, soon or late, it is ideas, not vested interests, which are dangerous for good or evil.³⁶

The 2008 financial crisis dented the credibility of mainstream economics, most of whose practitioners failed to anticipate it or propose measures to avoid it. Public skepticism should expand from financial economics to other branches of the discipline that are getting things wrong – to the economics of trade, the economics of growth, and the economics of technology – as these are the keys to understanding and designing industrial policy.

A major problem with mainstream economics, once one gets past recitations of free-market theology and looks at the actual scholarship, is that it is only good at understanding things that are well suited to mathematical modeling, such as price setting in freely competitive markets.³⁷ It has weak insight into organization, management, corporate strategy, R&D, engineering, workforce development, the origins of technology, product design, policy-making by governments, and the strategies nations use to compete. None of these reduce to equations well, but they are central to how modern firms, governments, and thus economies function. Even some fields that *do* mathematize well, such as finance and international trade, are prone to oversimplifications that lead to false conclusions.³⁸

An Alternative but Credible Economics

This book takes current mainstream economics as its starting point and analyzes why it does not accurately describe how the world works. Our

analysis nevertheless relies on many of its well-accepted ideas.³⁹ In fact, many of our *unconventional* ideas are not explicitly deemed false by mainstream economics. Rather, they are poorly integrated into the overall picture, swept to the corners of public discourse, abandoned but never refuted. One scholar has described them as “an underground river, springing to the surface only every few decades,” often under the pressure of crisis.⁴⁰ Above all, their implications are rejected, ignored, or downplayed.

Mainstream economics, in a nutshell, holds that free markets are always, or with only a few exceptions, best. It concedes the appropriateness of nonmarket provision of public goods like pure science and national security, and social insurance programs like Medicare and Social Security. It accepts the efficacy of Keynesian countercyclical spending. But it holds that the *productive core* of the economy, where innovation, growth, and wealth are generated, is, and to be effective must be, a free market.

In contrast, the economics of this book holds that economic success requires, right at the very core of the economy, not only a) letting free markets work, but also b) *systematically exploiting gaps in free-market logic*.⁴¹ And because such exploitation, by definition, involves things markets *can't* do, government intervention is generally the only way to accomplish this.

This view is actually closer to how real-world businesses are run. Businesses necessarily make money by exploiting market imperfections because where markets are perfect, competition squeezes profits toward zero.⁴² Everybody wants perfect markets when they are the buyer but imperfect markets when they are the seller. The consumer-side view of economics and the producer-side view thus differ, and one way to understand the approach of this book is to grasp that mainstream economics is biased to contemplate almost entirely the former, while this book gives them more equal consideration.⁴³

A concise definition of industrial policy, as the term is used in this book, may be helpful: *Industrial policy is government interventions in the economy based on the following propositions.*

1. Economic activities differ in value.
2. A laissez faire policy will not maximize a nation's capture of the most valuable economic activities.
3. Government interventions can enable the capture of more.

Using government policies to overcome, and in many situations take advantage of, market shortcomings is how industrial policy can attract, grow, and retain high value – or, in the terminology we will introduce, “advantageous” – economic activities and the industries that host them.

What America Needs

The US does not need, and politically would not accept, a large new government agency with authority over all of its industrial policies.⁴⁴ But it does need a reasonably coherent *set of policies* involving all relevant government agencies and coordinated at the highest levels of government. Its main elements (detailed in Recommendations) should be:

1. Expansion of domestic programs designed to support manufacturing, especially in the creation and commercialization of innovation.
2. Controls on international capital flows to drive the dollar down to a value that produces balanced trade – that is, an average of surpluses and deficits close to zero.
3. Tariffs (and occasionally quotas and related policies) to protect specific industries of high economic value, especially in advanced manufacturing.
4. Tariffs (and ditto) to protect industries important for military reasons, for public health, or because they are strategic chokepoints for the whole economy, such as semiconductors.
5. Policies to deny economic and geopolitical adversaries key technologies developed by the US and its allies.

Industrial policy is often characterized as requiring that the government, rather than the marketplace, “pick winners,” a practice criticized as both inefficient and unfair. But for a developed nation like the US, almost all sound industrial policy would *not* involve picking winners, as it would not directly choose which firms make a profit. And in the few unavoidable cases, not picking winners would just allow a foreign government to move leadership in the sector to one of its own companies.

Concerns that an American industrial policy would be distorted and made ineffective by corruption and capture by special interests are legitimate. But these problems are likely to be no worse than in other major areas of economic policy. As elsewhere, rent-seeking will generate opposition because it is a known problem and a resented behavior.

What This Book Does Not Discuss

Economies include both traded sectors (cars, petroleum, movies) and non-traded sectors (restaurants, home-building, most healthcare services).⁴⁵ The latter are a big proportion of GDP, and living standards are a function of an economy’s productivity in all sectors, traded and non-traded. But because America does not generally need to respond to foreign threats in non-traded sectors, this book does not give them much space.⁴⁶

This book addresses the economics of both developed and developing nations. Although the lessons derived from the latter are not *directly* applicable to the US, America is in a state of economic rivalry with some developing nations and therefore, to marshal an effective response, needs to understand how they compete with us. Understanding the economics of developing nations also illuminates industrial policy realities, choices, and pitfalls that all nations face.

Around the world, much industrial policy has been about establishing basic “market-enabling” facilities, such as national road networks and banking systems, as these rarely develop without at least the passive support of the state.⁴⁷ We do not discuss these subjects much, despite their importance, because they have little relevance to contemporary US problems.

One problem whose causes and costs we describe, but for which we do not propose remedies, is the financialization of the US economy – that is, the “tail” of the financial side of the economy wagging the “dog” of the real side. Short-termism and the doctrine of shareholder primacy continue to work against long-term capital investment and innovation, creating a powerful headwind against effective industrial policy. The specifics of how to return the financial sector to its critical but limited role of supporting the real economy are beyond our scope, but we flag the problem because of its many interactions with industrial policy.

We also give little attention to education and workforce training, because they are thoroughly and competently discussed elsewhere.

The Preface includes a description of the book’s structure and organizational logic that is intended as a navigational aid to the reader.