

# Computer Chips vs. Potato Chips: The Case for a U.S. Strategic-Industry Policy

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With the rise of China, the United States needs more than a competitiveness strategy, it needs a policy specifically tailored to boost production and innovation capacity in strategically important industries—especially technologically sophisticated ones with dual-use capabilities.

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## KEY TAKEAWAYS

- In a fiercely competitive global economy, it is no longer assured that the United States will have needed domestic production and innovation capabilities, nor will it necessarily be able to securely buy them at will from other nations.
- U.S. economic and national security now depend on bolstering capacity in strategically important industries and technologies. A generic competitiveness policy will not suffice.
- Policymakers cannot ensure the “right boats” are lifted without a strategic-industry policy that identifies key industries and technologies, continually monitors U.S. and foreign capabilities, and implements policies to bolster targeted sectors.
- Strategic-industry policy should not entail favoring U.S. firms over allied nations’ firms that produce or do research in the United States. Nor does it mean picking industries in which the U.S. has few capabilities or picking individual firms as “winners.”
- It does entail identifying industries in which the U.S. must have adequate capabilities to be secure. It means analyzing the strengths and weaknesses of each industry and implementing the correct policy interventions to spur competitive advantage.
- It is time to end the stale argument about free markets versus industrial policy. We need both: market-based policy for most of the economy, and strategic industrial policy for select sectors.

## OVERVIEW

It is long past time for the federal government to have not just an industrial competitiveness strategy, but a coherent set of policies specifically tailored for strategically important industries. Overall economic growth policy—and even generic competitiveness policy—is not enough. With the rise of China and the increased dependence of national defense on commercial sectors, the United States needs a strategy, policies, and institutional capabilities to ensure it has adequate production and innovation capacity in key industries, especially technologically sophisticated ones. That means abandoning the post-war conceptual and institutional framework based on the view that market forces should be the principle driver of U.S. economic structure. Policymakers need to accept that while market forces should guide non-strategic industries, for strategic industries government needs explicit sector-based policies implemented through industry-led public-private partnerships.

## THE END OF HISTORY, AND THE FLAT WORLD THAT NEVER HAPPENED

In 1992, when asked about whether the United States should have an explicit semiconductor policy, Michael Boskin, chair of the White House Council of Economic Advisors, was supposed to have quipped, “Potato chips, computer chips—what’s the difference?” In other words, he believed there was no reason for government to concern itself with the sectoral composition of the economy; as long as real gross domestic product (GDP) was growing, all was well.

Boskin spoke for how most policymakers, economists, and other elites felt at the time—and how such people still feel today. It was, after all, just three years since the Berlin Wall had fallen, when expectations of a deep and transformative new stage of globalization were becoming widely accepted. As Thomas Freidman rhapsodized, we were living in a flat world.<sup>1</sup>

In this new, Ricardian world where every nation could finally specialize in its revealed comparative advantage (e.g., textiles for Britain, wine for Portugal), goods, services, and even workers would flow across the globe in just-in-time production systems, producing prosperity for all. It would be one massive, integrated production system, seamlessly linked together by computer networks, container ships, global finance, and multinational corporations, with governments largely consigned to enabling integration, and otherwise staying on the sidelines.

On top of this, the United States would remain the unquestioned global hegemon—to be challenged by no one—as the world would become more “Western” because, in the words of Francis Fukuyama, we were at “the end of history,” with liberal, market-based societies as the final stage of development.<sup>2</sup> This new globally integrated world would be filled with nations that respected the rule of law or were at least on the road to becoming democracies, and if they got out of line they would have to bow to American power. And, as Freidman told us, as long as every nation had a McDonald’s restaurant, war would be a thing of the past.<sup>3</sup>

It would no longer matter where things were made or whether a country made certain things; the only thing that would matter was that a country remained open to trade and globalization and didn’t distort its natural comparative advantage by enacting sure-to-be-politicized industrial policies wherein clueless bureaucrats and craven politicians thought they knew better than the wisdom of the market. This explains why, when asked how much of its manufacturing base

America could lose to foreign nations and still be okay, the head of a leading U.S. foreign policy think tank opined, “All of it.”<sup>4</sup>

If you believed that this was the world we were in, or at least rapidly evolving toward, you too would likely have told your president that it didn’t matter if the United States no longer made computer chips. America could just buy computer chips (and other advanced industry goods) from the cheapest seller—a win-win, since U.S. consumers were saving money and foreign producers were able to move up the development curve. And America would always be one step ahead, making and selling things that reflected our true comparative advantage in knowledge-based production, such as finance, higher education, and software.

Thirty years later, one thing is clear: That vision never came true, and it wasn’t because of the failure of the Doha round or the supposed idiocy of the U.S. working class (that failed to take International Econ in college) or even the election of Donald Trump—as many globalists might claim.

Rather, with the exception of the Anglosphere nations that bought into superficial readings of Adam Smith and David Ricardo, no other nation—least of all China—embraced this vision. Most understood that while autarky and import substitution might no longer make sense in a globalized world (if it ever did), their national interests still depended on them effectively competing in advanced industries—not just in services, but in making actual things.

Moreover, China had its own “end of history” thesis: The end of history would be the global development of communist authoritarianism. China saw itself as the rightful global hegemon, not the United States. And to achieve that vision, it needed to be the globally dominant technology economy, as reflected in plans such as Made in China 2025. And it was willing to do whatever it took to achieve those goals, including putting in place unfair policies to systematically hollow out the U.S. industrial base.<sup>5</sup>

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We now live in a world where the United States faces significant global adversaries, particularly China. A world where many nations are not aligned with the United States and see China as a viable economic partner. A world where even allies seek to gain their own competitive advantage in key advanced industries, many of which the United States still enjoys some capabilities in.

In other words, we live in a world where the United States is no longer assured of having adequate production and innovation capabilities domestically, or being able to securely buy them from other nations whenever it needs them. COVID-19 didn’t change this reality—a world in which the United States can no longer rely on global supply chains to automatically fulfill all domestic production gaps—but it did expose it for many to see.

This was and is a bitter pill to swallow, for the vision of a flat, integrated world is an extremely appealing one; almost utopian. This is one reason why so many U.S. elites struggle today to give up on it. If only we could work harder and stop backsliding, the thinking goes, we could achieve that vision. If only we could elect the right president, we could achieve that vision. If only we tried a bit harder at the World Trade Organization (WTO), we could achieve that vision.

The reality is the high watermark of global integration is over, and there is almost nothing that is realistically possible to do to reverse that. This is particularly true as long as China is controlled by the Communist Party, as it will continue to seek to dominate advanced industry production through unfair means and exert its power on the global stage. And even if that were not the case, in the absence of global government, nations will still always put their own interests ahead of global interests; and few nations, especially larger ones, will want to voluntarily accept positions of dependency.

As such, in this real world, there is a huge difference between computer chips and potato chips. The reason is simple: We can survive without the latter, but not the former. Only if you think that it doesn't matter whether the United States has the capability to make its own weapons systems and many of the critical technology systems underlying our economy and society (e.g., medical, transportation, energy, and others), then can you comfortably believe: Potato chips, computer chips—what's the difference?

## **THE NEED FOR STRATEGIC-INDUSTRY POLICY**

In today's new realpolitik world, no advanced nation can do without a strategic-industry policy, unless it wants to put its national and economic security in the hands of foreign powers.

As such, the most important economic question for the U.S. government is whether and to what degree it should seek domestic strength in key advanced industries. If policymakers answer that in the negative, then there is no need for a revised industrial strategy, or perhaps not even for a broader competitiveness policy.

This gets to a key point: There is a difference between economic policy writ large, competitiveness policy, and strategic-industry policy. (See table 1.) At the broadest level, economic policy is about ensuring steady growth of the U.S. economy. This can involve a wide array of policy tools, including education, a well-functioning intellectual property system, fiscal and monetary policy for full employment, a sensible tax system, and others. While some on the left appear to have rejected growth as a goal in favor of redistribution, most policymakers still embrace economic growth and the broad policies required to facilitate it. Overall, growth policy does not concern itself with particular industries, technologies, or capabilities. In fact, most economists see any sectoral-focused policies as downright harmful.

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At the next level is competitiveness policy, which focuses on ensuring the strength of U.S. traded sectors (industries that compete in global markets), but beyond that is industry- and technology-agnostic. Competitiveness policy is focused on maintaining strong terms of trade, even if the exporting industries are natural-resource-based or services and not complex and technology driven. In this framing, the United States should, relative to its imports, export enough to prevent its trade deficit from getting too large. If the way to do that is through pork bellies, tourism, and wastepaper exports, then that's fine (exports are exports).

While some neoclassical economists, such as Paul Krugman, still deny that nations compete economically with each other, increasingly, the center of gravity of elite opinion acknowledges

that the United States is in serious economic competition with the rest of the world, especially China, and endorses some kind of competitiveness policy. But many stop short of embracing a strategic-industry policy, instead favoring policies such as better and more trade agreements, a more globally competitive tax code, and broad investments in skills and research, all steps that are needed.

**Table 1: Typology of growth and competitiveness policies**

Type of Policy	Focus of Policy
Economic Growth	All Sectors
Competitiveness	Traded Sectors
Strategic Industries	Critically Important Traded Sectors

Unfortunately, in the world the United States finds itself in, competitiveness is not enough. The United States could eliminate its trade deficit by increasing wastepaper, agricultural, and oil exports. But that would do nothing to reduce key dependencies, especially in critical advanced technology sectors.

Even many who understand that competitiveness policy must have some focus on advanced industries remain committed to industry and technology agnosticism out of fear of committing the cardinal sin of “picking winners.” Note how the globalists at the Peterson Institute described industrial policy: “We define industrial policy as government intervention against market forces to promote a favored firm or industry.”<sup>6</sup> Heaven forbid! Going against market forces? This is clearly a step too far! According to this view, as long as the economy is relatively competitive and has some advanced industries that do well globally, the competitiveness challenge has been addressed.

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In a world of technologically strong allies, perhaps that generic competitiveness policy could be acceptable. As long as China does not invade Taiwan, the United States can remain dependent on Taiwan for much of its semiconductor production. (And, while it’s clearly worrying to contemplate, it does not appear that the U.S. government is seriously evaluating the former scenario, envisioning the consequences it would have for the U.S. economy and national security, or beginning to imagine needed contingency plans.) And as long as our European and Asian allies don’t cave in to Chinese pressures—which we see regularly through the practice of “wolf-warrior” diplomacy—they presumably will continue to sell to America whatever it needs.

But if we believe we don’t live in that world, but rather in a world where economic and national security depend on the United States having adequate capacity in particular industries and technologies, then a generic competitiveness policy will not suffice.

For example, a world in which the United States is dependent on foreign nations for semiconductors is a world in which the United States has significantly reduced degrees of freedom. Clearly, if China were to dominate global semiconductors, it could withhold key exports from the United States as a foreign policy tool, or in the case of armed conflict between the two

nations, China would be able to cripple the U.S. economy and significantly limit our ability to produce weapons for war. Moreover, if China were ever to lead in semiconductors, then any Chinese technology company using semiconductors, which is to say all of them, since semiconductors are the brains of every device from vehicles and airplanes to appliances and solar panels, would be positioned to enjoy first-mover advantage in such technologies.

There are a wide array of critical industries beyond such narrow weapons-based industries as armaments in which the United States must be able to maintain innovation and production leads. As the Department of Defense's (DOD's) Office of Industrial Policy points out, these include, among others, advanced materials, drones, autonomous systems, artificial intelligence (AI), quantum computing, biotechnology, energy storage systems, lasers, optical equipment, space technology, machine tools, shipbuilding, and advanced wireless systems.<sup>7</sup> Overall, strategic industries are in traded sectors where the ability to restore lost production would be time-consuming and technically difficult.

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### **Only a strategic-industry policy can ensure that the “right boats” are lifted.**

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Therefore, while a generic, non-industry-focused competitiveness policy might very well help many of these industries regain or maintain domestic competitiveness—assuming the competitiveness policy is adequately funded and effectively implemented—it would not necessarily help all, or even the majority, of the most-critical industries for American strength. Competitiveness policy raises the tide to lift boats, but it doesn't raise them all adequately. And the most important boats might still be at the bottom of the ocean. Only with a strategic-industry policy that identifies key industries and technologies required for U.S. security, continually monitors U.S. and foreign capabilities for innovation and production, and implements specific policies to ensure these sectors' domestic health can the federal government ensure that the “right boats” are lifted.

To be clear—and to respond to complaints from free-market globalists—this does not mean embracing autarky. Today's advanced economy is simply too complex for any nation, even one as big and technologically sophisticated as the United States, to be self-sufficient. Moreover, allies are still allies that can mostly be counted on in crunch time to support each other. And global trade, even with China, cannot and should not be stopped.

But it does mean that the United States cannot be indifferent to its industrial and technology mix, and that the magic of the invisible hand will not automatically produce an adequate outcome. In other words: Computer chips, potato chips—there is a huge difference.

To understand what “strategic-industry policy” entails, it's important to first note what it doesn't entail. It doesn't mean favoring U.S. firms exclusively over allied nations' firms that produce or perform research in the United States. It almost never means picking industries in which the United States has almost no capabilities and then trying to create those capabilities from scratch. And it doesn't mean picking some individual firms over others in the same sector or technology as “winners.”

First and foremost, it entails identifying industries in which the United States must have adequate capabilities to be globally secure. Second, it means analyzing the strengths and

weaknesses of both each industry in the United States and U.S. policies affecting those industries. Finally, it means identifying the correct policy interventions to spur competitive strengths, such as direct funding for production (as the CHIPS Act proposes), targeted incentives to attract investment to the United States, support for industry-led research and development (R&D), streamlining regulatory systems (including considering the effect of antitrust actions on the industry), developing focused education and skills programs, and other sectoral interventions.

## Box A: Sample Semiconductor Strategy

It is beyond the scope of this report to articulate a detailed strategy for all strategic U.S. sectors. But for illustrative purposes, it's worth outlining what a semiconductor strategy might entail. First, to be clear, there are many generic policies, such as a more generous R&D tax credit, that would help boost U.S. global market share in semiconductors. But those are competitiveness policies, not components of a sector-specific strategy. Any strategic-sector policy would focus on policies specific to the industry, including trade, technology, education and training, regulatory, and financial considerations.

**Trade:** There are a number of steps the federal government should take on trade policy for the industry. For example, the administration should expand the Information Technology Agreement to lower tariffs around the world on key information technology (IT) products, including semiconductors.<sup>8</sup> In addition, the United States should work with allies to bring a Chinese semiconductor subsidy case before the WTO. The White House also should coordinate with allies on a joint strategy to limit exports of certain high-end semiconductor equipment to China.

**Technology:** Congress should pass and fully fund the CHIPS Act. As part of that, ensure that funding goes in part to support not only product improvement, but also production process improvement.

**Regulation:** The White House should lead an interagency team to ensure that regulatory barriers do not unduly limit semiconductor innovation or inhibit timely construction of fabs.

**Skills:** Semiconductor companies in the United States face a shortage of skilled workers at all levels. As such, not only should programs focused on semiconductor industry skills be expanded, but there should be increased coordination and cooperation between industry and educational institutions, particularly higher education. Working with industry, government can help facilitate cooperation and fund programs.

**Incentives:** To ensure robust production and innovation domestically, government should adopt industry-focused incentives, including investment tax credits and grants for establishing semiconductor facilities. Both are included in the CHIPS Act.

**Coordination with allies:** Any effective domestic semiconductor strategy needs to ensure effective cooperation with allies, especially Korea, Taiwan, Japan, and Europe, on issues such as joint technology development and export controls.

**Institutional capacity:** To effectively establish and coordinate semiconductor policy, the federal government needs a dedicated team focused on semiconductors, ideally located in the Department of Commerce.

## IMPLICATIONS FOR OVERALL U.S. ECONOMIC POLICY AND ECONOMIC THINKING

Despite the widely held view that the government does not need to be concerned with industry structure, many of the Founders thought otherwise. It was a central task of many, led by Treasury Secretary Alexander Hamilton, to ensure that the United States did not remain a nation that was a “hewer of wood and drawer of water.” Hamilton’s 1791 *Report on Manufactures* introduced the infant-industry argument and why government needed to support nascent manufacturers in order to ensure that the new nation was not subservient to European powers. (See box B.) That is why for the next century or more, U.S. policy was focused on developing strategic-industry strength.

However, as America developed into an industrial powerhouse at the beginning of the 20th century, this focus on nation-building and strategic industries waned and even disappeared as it became clear that the United States now led in most industries. That became even clearer after World War II when the U.S. lead, especially in new science- and technology-based industries, become even larger. Moreover, because the galvanizing national security challenge of the period—the Soviet Union—was a military threat, not a strategic-industry threat, government technology policies were predominantly military- and space-focused. It also helped that the U.S. technology system was characterized by “spin-off” to the private sector from defense spending, rather than its current “spin-on” to defense from commercial sectors. This made it easy to hold the view that defense spending was the only tactic America needed to ensure strategic-industry leadership and advance key military capabilities (e.g., submarines, missiles, jet fighters, etc.).

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**It is time for a fundamentally new approach to U.S. economic policy, one that recognizes the need for two separate and distinct economic policy approaches—one for the non-strategic sector and one for the strategic sector.**

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This bifurcation between the broader national economy and the narrow military economy meant that economic policy was also bifurcated, with virtually all of the economy governed by free-market principles (albeit, supplemented by business cycle policies and a growing welfare state), while the narrow defense sector was to be government-led with much of the work performed by private defense contractors. The wellbeing of the broader industrial base, even the dual-use base, was seen as something that would take care of itself through market forces, capitalist incentives, and America’s inherent entrepreneurial spirit. It could and should thrive on its own without specific policies. The fact that the only competitors to the U.S. advanced-industry commercial base were allies, such as Europe and Japan, helped blunt any calls for strategic-industry policy.

But the world is now fundamentally different. Indeed, it is almost impossible to overstate the implications of this new development—the U.S. defense sector’s dependence on the broader commercial advanced-industry sector and the challenge to that sector from China—on how policymakers and scholars should conceptualize the role of government and markets. It is time for a fundamentally new approach to U.S. economic policy, one that recognizes the need for two separate and distinct economic approaches; one for the non-strategic sector and one for the strategic sector.



## Box B: Jefferson Becomes a Hamiltonian

The standard interpretation is that Thomas Jefferson and Alexander Hamilton had very divergent views on the economy. Not only was Jefferson an Antifederalist and Hamilton a Federalist, but Jefferson opposed Hamilton's efforts to have the federal government spur industrial development. In Jefferson's view, the future nation would remain pastoral and agrarian, in part because this form of social organization spurred men to be independent, a critical requirement for the maintenance of the nascent republic.

But while Jefferson held strong views, he was not an ideologue. He was willing, to paraphrase John Maynard Keynes, to change his mind when the facts changed. In this case the facts related to the War of 1812, when it became clear to Jefferson and virtually all American leaders that the nation could no longer afford to be dependent on European powers for vital goods. As historian Charles Morris wrote, "The war resolved long-standing division over the importance of industry to the country's safety and success."<sup>9</sup> Jefferson expressed his changed view in a January 1816 letter to Benjamin Austin:<sup>10</sup>

*You tell me I am quoted by those who wish to continue our dependance on England for manufactures. There was a time when I might have been so quoted with more candor, but within the 30 years which have since elapsed, how are circumstances changed! We were then in peace. Our independant place among nations was acknoleged. A commerce which offered the raw material in exchange for the same material after receiving the last touch of industry was worthy of welcome to all nations. It was expected that those especially to whom manufacturing industry was important would cherish the friendship of such customers by every favor, by every inducement, and particularly cultivate their peace by every act of justice & friendship. Under this prospect the question seemed legitimate, whether, with such an immensity of unimproved land, courting the hand of husbandry, the industry of agriculture, or that of manufactures, would add most to the national wealth?*

Here Jefferson's views were in accord with many in the 1990s and 2000s who saw China in such a benevolent light when it seemed to be moving toward the West and that the United States could "cultivate their piece by every act of justice and friendship." Jefferson went on to write:

*But who in 1785 could foresee the rapid depravity which was to render the close of that century the disgrace of the history of man? Who could have imagined that the two most distinguished in the rank of nations, for science and civilisation, would have suddenly descended from that honorable eminence and setting at defiance all those moral laws established by the author of nature between nation and nation as between man and man, would cover earth and sea with robberies & piracies, merely because strong enough to do it with temporal impunity, & that under this disbandment of nations from social order, we should have been despoiled of a thousand ships, and have thousands of our citizens reduced to Algerine slavery. Yet all this has taken place. One of these nations interdicted to our vessels all harbors of the globe without having first proceeded to some one of hers, there paid a tribute proportioned to the cargo, and obtained her licence to proceed to the port of destination. The other declared them to be lawful prize if they had touched at the port, or been visited by a ship of the enemy nation. Thus were we completely excluded from the ocean. Compare this state of things with that of [17]85.*

Here Jefferson was pointing out that the world of 1785 was quite different than the one of 1816. The French revolution created chaos and disorder. Barbary pirates threatened U.S. ships and sailors. And a few years later, America was at war with Great Britain in response to years of unfair treatment at sea. Likewise, in our present time, the last decade has made it clear that China did not move toward the West and that under Xi Jinping, it has been embracing an authoritarian, mercantilist global hegemony. Jefferson went on to write:

*We have experienced what we did not then believe, that there exists both profligacy and power enough to exclude us from the field of interchange with other nations. That to be independant for the comforts of life we must fabricate them ourselves. We must now place the manufacturer by the side of the agriculturist. The former question is suppressed; or rather assumes a new form: shall we make our own comforts, or go without them, at the will of a foreign nation? He therefore who is now against domestic manufacture must be for reducing us either to dependance on that foreign nation, or to be clothed in skins, & to live like wild beasts in dens & caverns. I am not one of these. **Experience has taught me that manufactures are now as necessary to our independance as to our comfort:** [emphasis added] and if those who quote me as of a different opinion will keep pace with me in purchasing nothing foreign where an equivalent of domestic fabric can be obtained, without regard to difference of price, it will not be our fault if we do not soon have a supply at home equal to our demand, and wrest that weapon of distress from the hand which has wielded it... For in so complicated a science as political economy, no one axiom can be laid down as wise and expedient for all times and circumstances, & for their contraries inattention to this is what has called for this explanation, which reflection would have rendered unnecessary with the candid, while nothing will do it with those who use the former opinion only as a stalking horse to cover their disloyal propensities to keep us in eternal vassalage to a foreign & unfriendly people.*

In other words, Jefferson was saying that, given the new developments in the world that threatened the Republic's security and independence, attitudes toward policy must also change: The nation must now focus on strategic industries, like shipbuilding, cannon-making, and related manufacturing. In this sense, the key question for today's Jeffersonians—those who would simply leave U.S. industrial composition up to the market—is: Will they adjust their views to the new realities, as Thomas Jefferson did 200 years ago, and accept the need for a strategic-industry policy?

If we continue to stick with a commitment to market principles, at least when it comes to the strategic sectors of the U.S. economy, then the United States runs the very real risk of jeopardizing national and economic security.

This means it's time to conceive of U.S. economic policy as consisting of two coexisting systems: a more free-market one for non-traded and non-strategic traded sectors (such as pulp and paper, fisheries, agriculture, etc.), and a strategic one for critical sectors. (See table 2.) This new mixed economic policy system means continuing to apply the important lessons and principles of conventional economics to most of the U.S. economy (e.g., limited government intervention, reliance on the private sector and price signals, light-touch regulation, and promotion of competition). But it also means applying new lessons and principles related to strategic economic policy to the smaller, but critical part of the economy comprised of strategic sectors. In

these sectors, a principal factor for deciding for or against any policy intervention (tax, spending, regulatory, antitrust, trade, or procurement) would be its impact on U.S. capabilities in the particular strategic industry.

This means ending the unproductive and stale argument about free markets vs. industrial policy. We need both: market-based policy for most of the economy; strategic industrial policy for particular sectors. It also means that the discipline of economics, while usually well suited to shaping policy in the non-strategic part of the economy, is ill-suited to shaping policy in the strategic part. Conventional economics is focused on maximizing allocation efficiency—allocating resources in such a way that maximizes the net benefit attained through their use and the quantity of goods produced. But strategic-industry economics is focused on allocating resources in ways that the free market might not do, because the free market is largely indifferent to national and economic security. Conventional economics is focused principally on the price mechanism and ensuring prices are not distorted. Strategic economics is focused more on the “guidance” mechanism, where public policy guides investment decisions in strategic industries.

**Table 2: Policy framework for America’s new dual economy**

	<b>Non-Strategic Sectors</b>	<b>Strategic Sectors</b>
<b>Industry examples</b>	Banks, retail, utilities, agriculture	Aerospace, semiconductors, biopharmaceuticals, quantum computing
<b>Overarching policy approach</b>	Free-market economics	Industry and Innovation Policy
<b>Types of policies</b>	Supporting effective business climate and generic factor inputs (e.g., science, education, etc.)	Sector-specific and targeted policies, including tax incentives, direct industry funding, trade provisions, regulatory provisions (including antitrust) and others
<b>Guiding profession</b>	Economists	Technology policy analysts, business scholars, industry analysts
<b>Lead agencies</b>	Treasury, the Fed, and CEA	Commerce and NSC
<b>Lead committees</b>	Ways & Means, Finance and Commerce	New Joint Strategic Industry Committee

Besides relying on disciplines other than economics to guide strategic industry policy, government also needs to build capabilities to conduct strategic-industry research and formulate policy—capabilities that were largely put in place in the immediate post-war era for the overall economy. This means recognizing that government needs a new talent base: Almost all economists are trained to support policy in the non-strategic part of the economy and most have little training or orientation to contribute to thinking and policy for the strategic component. In fact, because of that, most denounce the latter. It means ending the monopoly Treasury and the Council of Economic Advisors have on economic policy and the Federal Trade Commission and Justice Department have on antitrust and regulatory policy. Congress and the administration need to beef up the capabilities of the Commerce Department (or establish a new National Advanced Technology agency) and National Security Council, to ensure, at minimum, that strategic-industry concerns receive a fair hearing in other agencies and in the interagency process.<sup>11</sup> At the same time, just as the 1946 Full Employment Act created the Joint Economic

Committee, Congress needs to create a Joint Strategic-Industry Committee to oversee and coordinate congressional action vis-à-vis strategic industries.

## **CRITICISMS OF STRATEGIC-INDUSTRY POLICY**

There are several criticisms that are usually made of the assertion that the United States needs a strategic-industry policy.

### **Criticism 1: Yes, there are strategic industries, especially for defense, but DOD can manage the defense industrial base.**

To be sure, while some products that go into U.S. weapons systems are designed and built solely by specialized defense contractors, many others are derived from a strong advanced dual-use technology production system. As DOD's Office of Industrial Policy wrote with respect to China, military-civilian fusion "means there is not a clear line between the PRC's civilian and military economies."<sup>12</sup>

This is also true in America, where most weapons systems rely at least somewhat on dual-use U.S. commercial providers. For example, DOD's trusted foundries produce only a fraction of the semiconductors needed for weapons systems (largely those that are designed by DOD itself or their contractors). But the vast majority of computer chips are bought straight from the commercial market. As the Office of Industrial Policy writes: "Support for a vibrant domestic manufacturing sector, a solid defense industrial base, and resilient supply chains is a national priority."<sup>13</sup> A strong commercial sector is critical to getting the scale economies needed to support innovation and low costs. Moreover, emerging technologies, including advanced materials, AI, clean energy, biotechnology, hypersonic and directed-energy technologies, metamaterials, quantum technologies, robotics, semiconductors (including beyond Complementary Metal Oxide Semiconductor [CMOS] technology), and advanced computing are needed for the third offset, and will rely to a significant extent on commercial sector capabilities.

### **Criticism 2: Strategic-industry policy means picking winners and losers.**

This criticism never really says why this is bad, implying that everyone knows government should not do this kind of thing.

But let's be clear: Even the most heavy-handed industrial policy proposals never involve picking losers—they usually don't even involve picking winners, if that is defined as trying to identify and help the firm(s) that will best succeed. Given that just 4 percent of venture deals end up earning 10 or more times the cost of the original investments, and 65 percent lose money, it's clear that picking winning firms is difficult.<sup>14</sup>

The goal is not to identify and support the firms that will see the biggest equity appreciation, it's to identify and support the industries and technologies that are critical to the nation's military and economic functioning. Moreover, good strategic-industry policy does not involve picking specific firms as national champions (unless those firms are the only players in their respective critical industries) or narrow technologies to support (e.g., lithium-ion batteries) in large part because of the risk of picking the wrong firms or specific technologies. Rather, it focuses on key industries and technologies (e.g., semiconductors and AI).

### **Critique 3: Industrial policy has largely failed in the past, so it will fail in the future.**

Painting the history of industrial policy as a failure clearly undercuts support for it. But virtually all critiques of past industrial policy come from organizations or scholars committed to finding that industrial policy has not worked, as opposed to neutral scholars. As such, they make a number of methodological and logical errors.

One iconic study often referred to is Linda Cohen and Roger G. Noll's 1991 book *The Technology Pork Barrel*.<sup>15</sup> It and related studies make several errors. First, they see almost any rate of project failure as an indictment of industrial policy. Yet, the whole point of government involvement is to take risks the private sector won't. If government projects never fail, then they are being too cautious.

Second, many of the critiques, such as the "Pork Barrel," base their assertion that all government projects fail on an analysis of certain failed projects, not a random selection of all projects.

Third, the critics imply that policy and organizational learning is zero. Yet, as innovation economists Richard Lipsey and Ken Carlaw have documented, not only is there a long history of industrial policy success, particularly tech-related policies, but lessons from success and failures have been distilled and many governments incorporate them into program design and execution.<sup>16</sup>

Fourth, some studies use dubious measures of success, such as jobs saved. In many cases, the result should actually be fewer, not more, jobs if the industry being helped is boosting labor productivity.<sup>17</sup>

Fifth, some dismiss the concept of essential industries, arguing that it can be abused, such as when one study suggested that brown cows in Switzerland could be identified as an essential industry.<sup>18</sup>

Sixth, critics assert that measures such as countervailing duties against unfair foreign subsidies for certain industries (e.g., steel) did not make U.S. industry more competitive. But that lack of increase could very well be because the duties imposed were not high enough or in place early enough to effectively counter unfair subsidies. And in some cases, such as with solar companies devastated by massive Chinese subsidies in the 2000s, countervailing duties arrived too late to save most of the industry. Or they criticize measures that were not really industrial policies at all, such as when a Peterson institute report claims that solar tax credits failed to advance the international competitiveness of the solar panel manufacturing industry.<sup>19</sup> In reality, the reason they didn't advance is, unlike in China, U.S. credits applied to both imported and domestic panels.

Finally, the critiques often employ selective methodologies to identify the failures. A recent Peterson Institute study rightly notes the Department of Energy's (DOE's) funding of the Solyndra Corporation as a failure. But it also notes that the overall loss rate of the DOE Loan Program Office (which funded Solyndra) is under 3 percent (a very good rate), noting the goal is for the government to take some higher risks. Nonetheless, Solyndra is emblematic of pervasive failure.

#### **Critique 4: A strategic-industry policy will be politicized.**

According to this critique, the whole enterprise is so politicized that most funding will be wasted. At one level, this is a strange critique because all government policy is politicized; it comes from our democratic political process. But what it really means is that, somehow, narrow political interests will distort policy and it will not be effective. But again, this fails to account for the fact that many strategic-industry programs, such as the former Advanced Technology Program operated by the National Institute of Standards and Technology or the current Manufacturing USA program, are not politicized and are run by professionals.

Perhaps a more relevant critique is that, once it becomes legitimate to identify industries as strategic, every industry will lobby for that status—e.g., “the beer industry is strategic!” If these neoclassical critics of strategic-industry policy really want to make a contribution, then they should focus on identifying the right and wrong aspects of policy and program design and push Congress and the administration to implement policy the right way.

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## **CONCLUSION**

We should live under no illusions. China is clear about what industries and technologies it wants to dominate globally. Too many leaders in America still live in the “potato chip, computer chip” world, seeing any strategic targeting as anathema to the memory of Adam Smith. In that world, we risk fighting a China equipped with computer chips against an America with potato chips.

As such, if Congress and the Biden administration do not implement an explicit strategic-industry policy to ensure U.S. superiority in key technologies and industries, the United States will lose significant degrees of freedom globally, as well as see its relative living standards fall.

It’s time to put an end to the “know-nothingness” in the debate around strategic-industry policy and once and for all acknowledge that the United States cannot be indifferent to the economy’s composition when it comes to industry and technology. Economists need to either get onboard and actually start studying industries and technologies, as some have done through the Industry Studies Program—and as nearly all of America’s leading economic competitors regularly do—or get out of the way and at least acknowledge that perhaps they don’t have all the answers and that there is a role for sector-based economic analysis and policy.<sup>20</sup>

## About the Author

Robert D. Atkinson (@RobAtkinsonITIF) is the founder and president of ITIF. Atkinson's books include *Big Is Beautiful: Debunking the Myth of Small Business* (MIT, 2018), *Innovation Economics: The Race for Global Advantage* (Yale, 2012), *Supply-Side Follies: Why Conservative Economics Fails, Liberal Economics Falts, and Innovation Economics Is the Answer* (Rowman Littlefield, 2007), and *The Past and Future of America's Economy: Long Waves of Innovation That Power Cycles of Growth* (Edward Elgar, 2005). Atkinson holds a Ph.D. in city and regional planning from the University of North Carolina, Chapel Hill.

## About ITIF

The Information Technology and Innovation Foundation (ITIF) is an independent, nonprofit, nonpartisan research and educational institute focusing on the intersection of technological innovation and public policy. Recognized by its peers in the think tank community as the global center of excellence for science and technology policy, ITIF's mission is to formulate and promote policy solutions that accelerate innovation and boost productivity to spur growth, opportunity, and progress.

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## ENDNOTES

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