US Industrial Policy in Historical Context: Origins, Progress, Challenges

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Abstract

The CHIPS and Science Act and the Inflation Reduction Act of 2022 signaled a renewed political commitment to industrial policy in the United States, after decades of bipartisan skepticism toward state-led economic intervention. This paper places the recent revival in historical perspective by assembling a comprehensive dataset on federal US industrial policy spanning 1962 to 2024. We integrate on-budget spending, off-budget tax expenditures, and federal financial instruments to measure industrial policy consistently across sectors and time. Over time, US industrial policy shifted from visible direct subsidies toward less visible tax expenditures and indirect tools, which received less political attention despite being of comparable economic size. We also document the importance of federal credit programs, as well as high-level changes in trade protection. We compare US expenditures to those of other countries; when measured comprehensively, US expenditures as a share of GDP remain below those of several European economies and likely below those of China. Recent US legislative actions represent a renewed commitment to industrial policy rather than a sharp break with the past.

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I. INTRODUCTION

In August 2022, President Biden signed the CHIPS and Science Act, committing $52 billion in direct subsidies to semiconductor manufacturing—the largest direct federal subsidy to a single industry in American history. Two months later, the Inflation Reduction Act (IRA) added an estimated $369 billion in clean energy tax credits and related spending commitments.[1] After decades of apparent bipartisan consensus that the United States should not engage in industrial policy, these laws were widely viewed as marking its historic "return". But the United States never truly abandoned industrial policy; it just changed its objectives and instruments over time.

In this paper, we use a rich collection of datasets to characterize the role of industrial policy in the US economy over time: documenting how it has actually operated, and assessing its scale and channels. We find that federal support for private investment and innovation has remained substantial since the 1960s; under our broad definition (encompassing R&D, energy, and sectorally directed tax provisions) industrial policy has typically amounted to around 0.7–1.6% of GDP, and has reached 1.0–2.6% of GDP when defense R&D is included. The key change has not been in the existence of industrial policy, but in the instruments used and their visibility. The on-budget spending that dominated the Cold War era gave way to a more diffuse portfolio of tax-code provisions that attracted less public attention. But when measured comprehensively, industrial-policy spending remained at substantial levels.

As noted by Stanley Surrey, spending through the tax code avoids the rigorous scrutiny applied to direct appropriations (Surrey, 1973).[2] It also differs procedurally. In addition, as Robinson (2011) argues, these tax-based interventions generate concentrated benefits for organized business interests while dispersing costs among taxpayers, who rarely perceive the lost revenue. These dynamics keep US industrial policy substantial yet understated in public debate.

The paper makes three primary contributions. First, we construct a unified empirical account of US industrial policy spending from 1962 to 2024, integrating data from Office of Management and Budget (OMB) tables, Joint Committee on Taxation tax expenditure reports, and agency financial spending. We employ a four-tier definitional framework—narrow, broad, broad + defense, and broad + defense + financial instruments—to accommodate the inherent ambiguity in what counts as "industrial policy." This allows us to document the shift from on-budget to off-budget mechanisms, quantifying the increase over time in tax expenditures relative to direct appropriations. Second, we place the US experience in comparative perspective, examining the European Union and China to assess whether the US industrial policy posture is as exceptional as commonly believed. Finally, we review the history of US trade policy as it relates to industrial policy.

In line with conventional thinking, the 1960s were the peak years of targeted industrial policy under our broad definition, with broad + defense spending averaging 2.55 percent of GDP. At the same time, it is important to recognize the large expansion of general investment incentives in the 1980s—specifically, the Investment Tax Credit (ITC) and accelerated depreciation, which we track separately from our headline definitions. These capital subsidies exceeded 2 percent of GDP at their peak in fiscal year 1986 (FY1986), making the Reagan era the high point of combined federal support for capital formation. The Tax Reform Act of 1986 then eliminated the ITC and scaled back depreciation allowances, removing the largest instruments from the tax code. Recent laws such as the CHIPS Act and the IRA mark a shift toward targeted sectoral interventions, specifically in semiconductors and clean energy. In FY2024, broad + defense spending was approximately 1.04 percent of GDP and about 1.30 percent when financial instruments are included. In comparative perspective, the United States remains below European levels when industrial policy is measured comprehensively. OECD-comparable estimates indicate support of approximately 3.65 percent across select OECD and European economies. We note that this measurement framework focuses on fiscal instruments—direct spending, tax expenditures, and federal credit programs—and does not capture trade policy interventions such as tariffs, voluntary export restraints, and procurement preferences, which have historically been important instruments of industrial policy. We discuss these additional channels in Section IV.

Our historical analysis traces the evolution of US industrial policy, reflecting shifts from Cold War-era technological competition and innovation-spillover rationales to recent concerns about supply-chain resilience, geopolitical rivalry, and the clean-energy transition. It also bears directly on the effectiveness, transparency, and design of these policies. In our conclusion, we identify priorities for future empirical research to better understand the long-run economic impacts of modern industrial policy interventions. Our work complements recent efforts to characterize the extent of industrial policy across countries, for instance by Juhász, Lane, Oehlsen, and Perez (2025) and Criscuolo, Lalanne, and Díaz (2022), by focusing on the longer historical experience of a single, important country.

Section II first develops a unified framework for defining and measuring industrial policy, integrating direct spending, tax expenditures, and federal financial instruments. It then traces the historical evolution of US industrial policy from its Cold War foundations and post-Cold War retrenchment, to the recent legislative expansion. Section III situates the US experience in a comparative perspective relative to Europe and China. Section IV places trade policy in the context of industrial policy and it traces the shift from tariff to non-tariff barriers. Section V concludes with implications for policy design and directions for future research.

II. US INDUSTRIAL POLICY: 1962–2024

II.1 Defining and Measuring Industrial Policy

II.1.1 The Definitional Challenge

We define industrial policy as deliberate government action to reshape the structure of the economy in pursuit of public goals that markets alone would not deliver. At its narrowest, industrial policy refers to direct government subsidies aimed at developing specific industries, activities, or technologies deemed strategic. In its broadest sense, virtually any government action that affects the sectoral composition of economic activity can qualify, including exchange rate management and directed credit, trade policy, infrastructure investment, and basic research funding. Indeed, every country has an implicit industrial policy: the design of the legal system, infrastructure, and education system shapes the economy. In this paper, we focus more narrowly, especially on expenditure policies directed at impacting the structure of production.

The academic literature reflects this definitional breadth and the corresponding ambiguity. Some emphasize targeted sectoral interventions. For example, Pack and Saggi (2006) define industrial policy as "any type of selective intervention or government policy" aiming to redirect production "toward sectors that are expected to offer better prospects for economic growth." Others adopt a more process-oriented view. Rodrik (2004, 2007) characterizes industrial policy as a process of strategic collaboration between the public and private sectors to identify and overcome obstacles to growth. As set out by Hausmann and Rodrik (2006), industrial policy might be framed as a response to information externalities and coordination failures that impede "self-discovery"—the process through which economies identify their comparative advantage. In a similar spirit, Stiglitz (2016) emphasizes the role of industrial policy in addressing the widespread failures of the market associated with learning, coordination, and structural transformation, arguing that government policy can help shift resources to sectors that generate high social returns in the presence of market failures. Capturing gains from industrial policy may require them to be properly governed and designed to be competition-friendly. Aghion, Cai, Dewatripont, Du, Harrison, and Legros (2015) demonstrate that sectoral industrial policies can enhance innovation and productivity by reducing excessive concentration and mitigating "monopoly replacement" effects, thereby reinforcing rather than undermining market competition.

To accommodate some of the varying conceptions of industrial policy, we adopt a unified framework that allows us to consider different definitions of industrial policy. Table 1 reports US industrial policy spending in FY2024 under the alternative definitions described below, both in nominal values and as a share of GDP.[3]

TABLE 1: INDUSTRIAL POLICY DEFINITIONS (FY2024)

Definition	FY2024 Amount	% of GDP
Narrow	$132.9 billion	0.46%
+Defense	$226.4 billion	0.78%
Broad	$207.4 billion	0.72%
+Defense	$300.9 billion	1.04%
+Defense+Finance	$375.1 billion	1.30%

Notes: Definitions are additive, except for the second row, which shows the separate Narrow+Defense definition. Narrow = Civilian R&D (OMB 9.8) + core tax credits (IRC 41, 174, 45X, 48D). Broad = Narrow + Energy + SciTech (OMB 3.2) + targeted tax provisions (energy, vehicle, and domestic production credits, including IRC §45, §45Q, §45V, §48C, §30D, §199, and §250). General investment incentives—the Investment Tax Credit (IRC §48), accelerated depreciation (ACRS, MACRS, bonus depreciation), Section 179 expensing, and the qualified business income deduction (IRC §199A)—are tracked separately; see Appendix for the full concordance. +Defense adds DoD RDT&E (OMB 9.8). +Defense+Finance adds federal credit programs (DoE LPO, EXIM, SBA, USDA), reported on a face-value commitment basis, rather than FCRA subsidy-cost equivalents (see Appendix).

The **narrow** definition captures policies primarily justified by innovation externalities, related competitiveness rationales, and other focused objectives. At its core are provisions with explicit innovation and industrial capacity rationales grounded in the R&D spillover literature and the strategic production debates that now surround semiconductors and advanced manufacturing (Griliches, 1992; Rao, 2016; Fazio, Guzman, and Stern, 2020; Fieldhouse and Mertens, 2024). The R&D tax credit (Internal Revenue Code (IRC) Section §41), created in 1981, directly subsidizes private research expenditures based on the argument that social returns to R&D exceed private returns. Similarly, R&D expensing (IRC §174) allows immediate deduction of research costs, providing an implicit subsidy through the time value of money.[4] Recent provisions that provide explicit subsidies to research expenditures, including the advanced manufacturing production credit (IRC §45X), introduced by the IRA, and the semiconductor investment credit (IRC §48D), introduced by the CHIPS and Science Act, are included in the narrow tier. These provisions support production rather than research, but target technology-intensive sectors whose current policy justification rests on strategic domestic capacity, learning and capability building.

The **narrow + defense** definition extends the narrow category to include military-related technology spending that, while formally justified on national security grounds, also functions as industrial policy by shaping private-sector technological development. This includes Department of Defense (DoD) Research, Development, Test and Evaluation (RDT&E) outlays ($93 billion in FY2024), including work performed through Federally Funded Research and Development Centers (FFRDCs) such as Lincoln Laboratory. It does not include Department of Energy (DoE) weapons laboratories (e.g., Los Alamos, Sandia, Lawrence Livermore), which are funded through the National Nuclear Security Administration (NNSA) budget. Historically, defense R&D has been the single largest channel of federal technology support, generating substantial spillovers to civilian applications, including the internet (ARPANET), GPS, and key advances in semiconductor manufacturing.

The **broad** definition incorporates sectorally targeted tax provisions beyond the narrow R&D and advanced manufacturing instruments. These include the energy and climate-related tax credits created or expanded under the Inflation Reduction Act of 2022—the production tax credit for renewable electricity (IRC 45), carbon capture credits (IRC §45Q), clean hydrogen (IRC §45V), clean energy property credits (IRC §48C), and clean vehicle credits (IRC §30D). It also includes the Domestic Production Activities Deduction (IRC §199, in effect 2005–2017), which allowed firms to deduct nine percent of income from qualifying domestic production, and the Foreign-Derived Intangible Income deduction (IRC §250), which taxes export-linked intangible income at a reduced rate. These policies change the sectoral composition of economic activity by accelerating investment, production, and technological adoption in targeted industries.[5]

Our baseline broad definition excludes general investment incentives—the Investment Tax Credit (IRC §48, active 1962–1986), accelerated depreciation (Accelerated Cost Recovery System (ACRS) in the 1980s, Modified ACRS (MACRS)/bonus depreciation since 2002, IRC §168/168k), Section §179 expensing, and the qualified business income deduction (IRC §199A) which we track separately. Although these provisions have historically been substantial, they operate as economy-wide capital subsidies rather than targeted interventions. The ITC, for example, was originally conceived by the Kennedy administration's Council of Economic Advisers as a macroeconomic growth tool to encourage capital formation, not as a targeted intervention to promote specific industries or activities.[6] Including these general investment incentives would raise the FY2024 broad measure from 0.72% to approximately 1.06% of GDP; the Appendix reports the inclusive series for comparison. The distinction between targeted and general instruments is a key design choice in our framework: the broad definition captures policies with explicit sectoral or technology-specific intent, while the general investment incentives represent a broader category of capital subsidization for which a characterization as industrial policy is more contested.[7]

The **broad + defense** definition extends the broad category by incorporating defense-related technology spending, with motivations that include climate transition, industrial restructuring, and national security objectives. In this definition, military R&D operates alongside climate and industrial policy tools to sustain domestic technological capability and reduce strategic dependence in sectors viewed as critical to economic and security outcomes. Unlike the narrow + defense category, where defense spending primarily complements innovation policy, the broad + defense definition reflects a more integrated policy perspective in which technological development, industrial capacity, supply-chain resilience, and geopolitical risk management are jointly targeted.

The **broad + defense + finance** definition incorporates not only civilian and defense-related R&D, energy and manufacturing tax expenditures, and direct appropriations, but also federal credit programs—such as the Department of Energy (DoE) Loan Programs Office (LPO), the Export-Import Bank, Small Business Administration (SBA) loan guarantees, and US Department of Agriculture (USDA) credit facilities—that deploy subsidized loans, guarantees, and equity-like instruments to shape industrial structure. This measure aligns more closely with the OECD Quantifying Industrial Strategies (QuIS) framework (Criscuolo, Lalanne, and Díaz, 2022), recognizing that government-backed finance operates as a distinct and quantitatively significant channel of industrial policy.[8] We note, however, that consistent data on federal financial instruments are only available beginning in 1996; thus, our broad + defense + finance series is constructed from 1996 onward. There is one more problem with this series: while earlier numbers represented government subsidies, the credit numbers refer to credit allocations, the subsidy value of which is typically hard to ascertain. In some cases, it may be small; in other cases, large.

We exclude state and local business incentives from our measures of federal industrial policy. Nevertheless, these incentives represent a substantial component of policy support to firms. Estimates by Slattery and Zidar (2020) suggest that state and local governments provide at least $30 billion annually in business incentives (roughly 0.1–0.2 percent of GDP), while Bartik (2019) estimates between $45 and $60 billion per year. In recent years, these incentives have become increasingly concentrated in large manufacturing "megadeals," such as the subsidies offered to semiconductor and electric vehicle manufacturers including TSMC in Arizona and Hyundai in Georgia. Evidence summarized by Slattery and Zidar (2020) indicates that the average discretionary subsidy package amounts to about $178 million for roughly 1,500 promised jobs. Incorporating these state and local incentives would therefore raise our estimate of comprehensive US industrial policy support by approximately 0.15–0.25 percent of GDP, illustrating that a significant portion of industrial policy in the US operates through decentralized subnational governments rather than the federal budget.

II.1.2 On-Budget versus Off-Budget Spending

A critical distinction in our measurement framework is between on-budget spending and off-budget tax expenditures. On-budget industrial policy appears in appropriations legislation and OMB budget tables in the form of direct grants, contracts, and program spending for R&D, manufacturing support, and infrastructure. Off-budget industrial policy operates through the tax code, appearing as "tax expenditures".[9]

The Congressional Budget Act of 1974 institutionalized tax-expenditure analysis, requiring annual reports from the Joint Committee on Taxation (JCT). These reports estimate the revenue cost of each "tax expenditure" which is defined as deviations from a normative tax baseline. For our purposes, we sum the estimated costs of industrial-policy-related provisions to construct the off-budget component of industrial-policy spending.

Two methodological considerations arise when integrating these data sources: First, behavioral assumptions affect estimates. JCT tax-expenditure estimates do not model how taxpayers respond to incentives; the "true" cost depends on counterfactual behavior that cannot be observed. Second, definitional baselines matter. What counts as a "tax expenditure" depends on what counts as "normal" taxation—a contested question. We follow JCT conventions while acknowledging these limitations.[10]

II.1.3 *Data Sources and Coverage*

Our analysis integrates multiple data sources:

- **Office of Management and Budget (OMB) Historical Tables**: Direct federal R&D spending by agency (Table 9.8) and outlays by function (Table 3.2), covering 1962–2024. The OMB maintains a detailed set of historical spending data, with varying start dates and levels of detail by type of spending.
- **Joint Committee on Taxation (JCT) Tax Expenditure Reports**: Annual estimates of revenue costs for each IRC provision, covering 1967–2029 (with projections). Data was downloaded from the JCT website and extracted manually from yearly tax expenditure reports, with the earliest report published in 1972 covering from 1967-1971, and the latest published in 2025, with projections out to 2029.[11]
- **Financial Data:** We compiled yearly totals for loan authorizations from sources including the Export-Import Bank of the United States (EXIM), Department of Energy Loan Programs Office (DoE LPO, now DoE Office of Energy Dominance Financing), Small Business Association (SBA) 7(a) and 504 loans, and US Department of Agriculture (USDA) Business and Industry (BI) loan guarantees and Export Credit Guarantee loans (GSM-102). EXIM, SBA, and USDA publish yearly spending figures back to 1996, 1992, and 1991 respectively, and the DoE LPO began issuing loans in 2009. We start our series in 1996. The DoE does not have a cleanly compiled source for yearly spending, so loans and loan guarantees were collected by hand from DoE reports and project sites.

Coverage varies by series. Greater detail regarding sources used and how totals are calculated can be found in the Appendix.

II.1.4 *International Measurement Challenges*

International comparisons face even greater measurement challenges. The European Union publishes state aid statistics, but these exclude structural funds, national R&D programs not requiring notification, and tax expenditures, likely understating total industrial policy spending. China publishes limited data on industrial subsidies; estimates from the Center for Strategic and International Studies (CSIS) range from \$248 billion to \$407 billion annually, with wide uncertainty.

Our international comparisons come with caveats. When measured on a comparable basis under the OECD's Quantifying Industrial Strategies (QuIS) framework—that is, summing grants, tax expenditures, and financial instruments on a common definition—the US appears to fall below European norms. China remains difficult to benchmark, but published estimates of around 1.7 % of GDP almost certainly understate true support by excluding local government financing vehicles (LGFVs), policy bank lending and implicit credit guarantees. Section III.2 provides details.

II.2 The Policy Arc

II.2.1 The Cold War innovation state (1962–1969)

The basic architecture of federal support for technological development was already in place in the early 1960s. Industrial policy operated on a substantial scale, driven primarily by defense R&D, space spending, and federally funded science. This expansion was set against mounting fears of a widening "gap" with the Soviet Union following the launch of Sputnik in 1957. The US response included the establishment of the Advanced Research Projects Agency (ARPA), later renamed the Defense Advanced Research Projects Agency (DARPA), as well as the creation of NASA, both founded in 1958. Across definitions, Table 2 shows that the decade ranks as the most interventionist in the postwar era: narrow industrial policy averaged 0.88% of GDP, the highest of any decade. The broad + defense measure reached 2.55%, with defense R&D alone accounting for roughly 0.95% of GDP; these magnitudes exceed all subsequent decades.

Figure 1 illustrates that industrial policy narrowly defined peaked in the late 1960s, consistent with the surge in NASA funding that culminated in 1967. Using the broad definition of industrial policy, Figure 2 shows that the 1960s represent the highest level in the historical series, peaking at nearly 2% of GDP in 1966, driven by the confluence of space, science, and energy spending. Once defense R&D is added, the 1960s peak is higher, indeed the dominant driver was the military-technology complex. Military R&D and procurement were the federal government's primary instruments, channeling resources to firms, universities, and laboratories (Fieldhouse and Mertens, 2023). Table 2 shows that defense R&D peaked at roughly 0.95% of GDP in the 1960s,

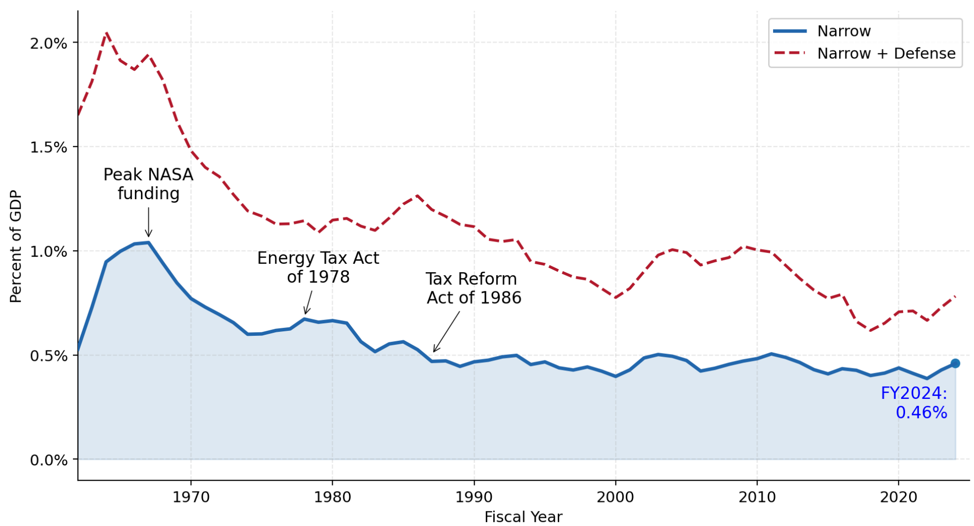
TABLE 2: INDUSTRIAL POLICY SPENDING BY DECADE (% OF GDP)

Decade	Narrow	Broad	+Defense	+Defense+Finance	DoD RDT&E	Finance
1960s	0.88%	1.60%	2.55%	2.55%	0.95%	–
1970s	0.66%	1.13%	1.70%	1.70%	0.57%	–
1980s	0.54%	0.98%	1.60%	1.60%	0.62%	–
1990s	0.46%	0.75%	1.25%	1.38%	0.50%	0.14%
2000s	0.46%	0.68%	1.15%	1.43%	0.48%	0.28%
2010s	0.45%	0.77%	1.13%	1.43%	0.36%	0.30%
2020-2024	0.42%	0.67%	0.96%	1.18%	0.29%	0.22%

Notes: Decade averages are arithmetic means over available fiscal years. Definitions are additive (see Table 1). The Broad definition excludes general investment incentives (ITC, accelerated depreciation, bonus depreciation, Section 179, and IRC 199A), which are tracked separately. Finance data are available from 1996. 1990s finance average covers 1996–99 only. The 2020–24 average above compares to FY2024: Narrow 0.46%, Broad 0.72%, +Defense 1.04%, +Def+Finance 1.30%.

DoD RDT&E includes Department of Defense Research, Development, Test and Evaluation appropriations but excludes DoE weapons labs, FFRDCs, and procurement with R&D components. More details on data sources for industrial policy measurements, including the additional finance definition, can be found in the Appendix.

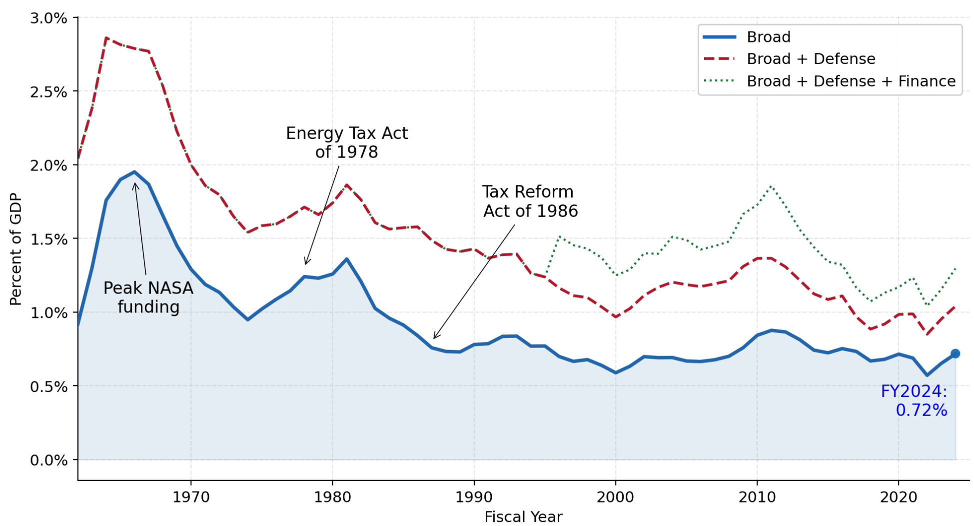
FIGURE 1: INDUSTRIAL POLICY (NARROW) AS SHARE OF GDP, 1962–2024



Notes: The labels represent the peak of NASA funding in 1967, the passage of the Energy Tax Act in 1978, the Tax Reform Act of 1986 (effective in 1987), and the percent of GDP value of the narrow definition of industrial policy in FY2024 of 0.46%. Data are the nominal value of the industrial policy definition over the nominal GDP in a given year. FY2020 spike reflects COVID-era emergency provisions. FY2024 (0.46%) roughly matches pre-pandemic levels. More details on the definition of "Narrow" category and data sources for industrial policy measurements can be found in Section II.1 and the Appendix.

Alt text: Line chart of US narrow-definition industrial policy as a share of GDP, 1962–2024, plotting two series: the narrow measure and narrow plus defense R&D. Both peak in the late 1960s—about 1% and 2% of GDP respectively—then decline through the 1970s and 1980s and flatten near 0.45% (narrow) and 0.8% (with defense) from the 1990s onward, with a brief spike around 2020. Annotations mark peak NASA funding (1967), the Energy Tax Act (1978), and the Tax Reform Act (1986).

FIGURE 2: INDUSTRIAL POLICY (BROAD) AS SHARE OF GDP, 1962–2024



Notes: The labels represent the peak of NASA funding in 1967, the passage of the Energy Tax Act in 1978, the Tax Reform Act of 1986 (effective in 1987), and the percent of GDP value of the broad definition of industrial policy in FY2024 of 0.72%. The broad definition excludes general investment incentives (ITC, accelerated depreciation), which are tracked separately; see Figure A.1 in the Appendix for an inclusive series. Data are the nominal value of the industrial policy definition over the nominal GDP in a given year. More details on the definition of "Broad" category and data sources for industrial policy measurements can be found in Section II.1 and in the Appendix.

Alt text: Line chart of US broad-definition industrial policy as a share of GDP, 1962–2024, with three series: broad, broad plus defense, and broad plus defense plus financial instruments (the last beginning in 1996). All peak in the mid-1960s—broad near 2% and broad-plus-defense near 2.85% of GDP—fall to the 1990s, then hold roughly flat, ending at 0.72% (broad) and about 1.3% (broad plus defense plus finance) in FY2024.

far above the 2020–24 average of 0.29%. This reflected Cold War competition and a widely held belief that technological leadership was essential to national power, while also generating major civilian application spillovers in electronics, computing, aerospace, and materials.

The NASA-led Apollo Initiative mobilized national supply chains and created a guaranteed demand for advanced components, effectively acting as a large-scale industrial policy targeting a frontier sector. The congressional interest in funding NASA declined rapidly after the moon landing took place in 1969.

Extensive civilian science funding reinforced this push: federal agencies financed university laboratories, basic research, and early-stage technologies through direct appropriations. The rapid expansion of NIH and NSF appropriations in the 1960s financed university laboratories and basic research through direct federal grants. Unlike later decades, these interventions relied overwhelmingly on visible, on-budget tools rather than tax incentives.

Federal procurement itself is an important structural policy instrument. The Department of Defense and NASA procurement of integrated circuits in the early 1960s guaranteed markets for nascent semiconductor firms, accelerated cost savings through scale and learning effects, and catalyzed the emergence of the modern electronics industry. Large government contracts reduced private risk, ensured markets for emerging technologies, and shaped industrial development by determining which sectors expanded most rapidly.

The Investment Tax Credit (ITC) was introduced in 1962. It was not originally conceived as an industrial policy instrument. The ITC emerged from the macroeconomic framework of the Kennedy administration's Council of Economic Advisers who viewed it as a tool to shift resources from consumption toward capital formation, with the goal of increasing economic growth.[12] As the ITC was a general investment subsidy applying to all qualifying equipment purchases, not a sectorally targeted intervention, we track it separately from our headline broad definition (see Section II.1). However, the ITC would grow to become at one time perhaps the single largest tax-code instrument affecting industrial structure. It was repealed in 1969, reinstated in 1971, and raised from 7 to 10 percent under the Tax Reduction Act of 1975 largely in response to the recession and stagflation following the first oil shock of 1973, with further energy-related tax incentives introduced after the second oil shock of 1979.

Our dataset for this period relies primarily on OMB historical tables on R&D and federal outlays beginning in FY1962, which capture direct spending channels. Although policymakers framed the intervention in geopolitical and scientific language, the logic aligns with modern innovation economics; large public investments generated knowledge spillovers, coordination benefits, and technological platforms that markets alone would not have provided.

II.2.2 Supply shocks and transition (1970–1979)

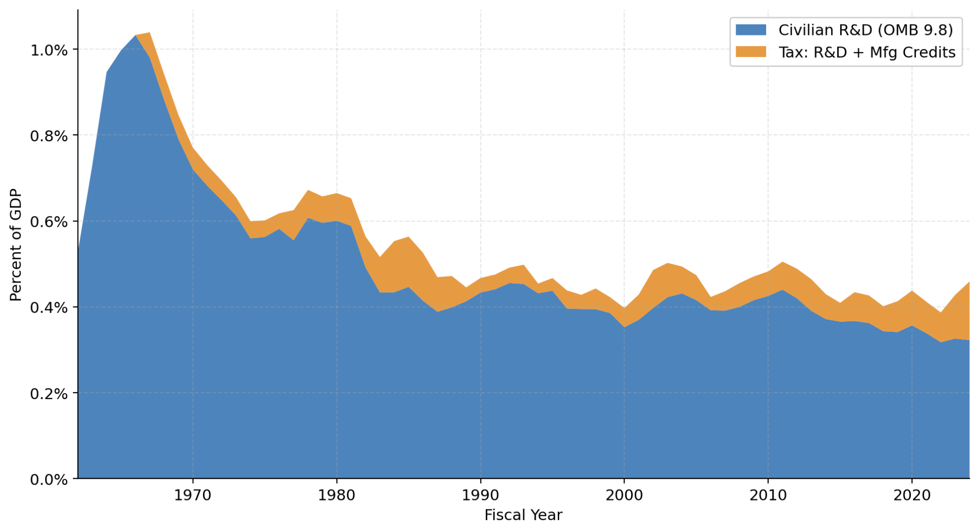
The 1970s bridged the Cold War innovation state and the tax-expenditure expansion of the early 1980s. Although not typically characterized as a peak intervention era, the decade was important because it marked the structural shift from procurement-centered industrial policy toward a mixed regime combining direct spending and tax incentives. In the 1970s, federal involvement remained substantial. As shown in Table 2, narrow industrial policy averaged about 0.66% of GDP, the broad + defense measure about 1.70%, with defense R&D accounting for roughly 0.57%. These levels were below the 1960s peak, but remained historically large relative to most later decades.

Industrial policy spending initially declined before expanding sharply by the late 1970s (Figure 2). The early-decade dip was driven primarily by a contraction in on-budget instruments, especially civilian R&D and science funding which reflected the unwinding of extraordinary 1960s commitments, including space-race initiatives and peak defense-linked research spending.(Figures 1 and 3)

Beginning in the mid-1970s, however, the composition of spending shifted markedly. As Figure 4 shows, energy outlays and tax-based investment and energy credits increased rapidly. This turning point coincided with the oil shocks of 1973–1974 and 1979, which elevated the priorities of energy security, domestic production, and capital formation. The federal response combined direct energy spending with growing reliance on tax incentives. These instruments proved politically attractive because they operated off-budget and could be framed as tax relief rather than spending.

More broadly, defense-driven technological policy was scaled back in the 1970s as Vietnam-era spending decreased, but left intact the central industrial role of the defense sector. Congress increasingly relied on targeted investment incentives and sector-specific tax provisions to influence the industrial structure. Following the stagflation of the 1970s and the energy price shock, policy objectives shifted toward productivity recovery, structural adjustment, and competitiveness, broadening the rationale beyond Cold War technological leadership.

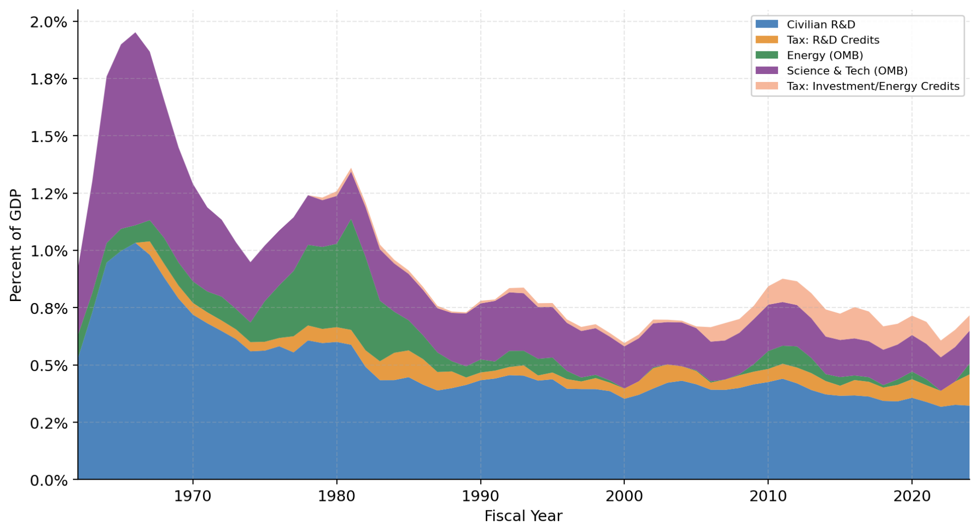
FIGURE 3: INDUSTRIAL POLICY (NARROW) AS SHARE OF GDP, 1962–2024



Notes: Figure shows the compositional breakdown of the narrow industrial policy definition between direct outlays and tax expenditures. The blue line shows civilian R&D expenditures as a percent of GDP and the orange line shows the percent of GDP added by tax expenditures (R&D and manufacturing credits). Data are the nominal value of the industrial policy item over the nominal GDP in a given year. More details on the definition of "Narrow" category and data sources for industrial policy measurements can be found in the Appendix.

Alt text: Stacked area chart decomposing US narrow-definition industrial policy as a share of GDP, 1962–2024, into civilian R&D outlays (the large lower band) and R&D-plus-manufacturing tax credits (a thin upper band). Civilian R&D dominates and drives the late-1960s peak above 1% of GDP, declining to roughly 0.35% by the 2000s; the tax-credit band stays small but grows after the 1980s, lifting the total near 0.45% by 2024.

FIGURE 4: INDUSTRIAL POLICY (BROAD) AS SHARE OF GDP, 1962–2024



Notes: Figure shows the compositional breakdown of the broad industrial policy definition between various direct outlays and tax expenditures. FY2024 broad industrial policy is 0.72% of GDP. The broad definition excludes general investment incentives (ITC, accelerated depreciation, bonus depreciation, Section 179, IRC 199A), which are tracked separately; see Figure A.1 in the Appendix. Data are the nominal value of the industrial policy item over the nominal GDP in a given year. Category "Tax: R&D Credits" includes the tax expenditures in the narrow category, and the category "Tax: Energy/Manufacturing Credits" includes the targeted tax expenditures in the broad category. More details on the definition of "Broad" category and data sources for industrial policy measurements can be found in the Appendix.

Alt text: Stacked area chart decomposing US broad-definition industrial policy as a share of GDP, 1962–2024, into five bands: civilian R&D, R&D tax credits, energy outlays, science-and-technology outlays, and energy/investment tax credits. The mid-1960s peak near 2% of GDP is driven mainly by science-and-technology and civilian R&D spending; energy outlays and credits swell in the late 1970s; the total settles around 0.72% by 2024 as tax credits grow relative to direct outlays.

By the end of the decade, broad industrial policy spending was rising steadily, approaching approximately 1.3% of GDP around 1978–1980, as shown in Figures 2 and 4. When general investment incentives (ITC and accelerated depreciation) are included, the broader measure approached approximately 2% of GDP around 1979–1980, foreshadowing the massive expansion of these instruments in the early 1980s. The 1970s thus bridged two regimes: tax-based tools rose and the rationale shifted from geopolitical technological competition toward structural transformation.

II.2.3 The Reagan era (1980–1989)

Under our broad definition, the 1980s saw a decline in industrial policy as a share of GDP: the decade average fell to 0.98% from the 1960s peak of 1.60% (Table 2). Including defense, the measure averaged 1.60%, also below the 1960s level of 2.55%. However, this headline picture masks the expansion of general investment incentives in the 1980s, instruments that we track separately from our headline definitions.

Two instruments drove this expansion of general investment subsidies. First, the Investment Tax Credit (ITC) provided a percentage credit against tax liability for qualified investment in equipment and machinery. Expanded in 1981, the ITC cost more than $40 billion annually at its peak, equivalent to roughly 1.3% of GDP. Although the ITC was a general, non-discriminatory credit applying to all qualifying equipment, it disproportionately benefited capital-intensive manufacturing sectors, though no rationale was provided for why such sectors should receive favorable treatment.

Second, the Accelerated Cost Recovery System (ACRS), enacted in the Economic Recovery Tax Act of 1981, shortened depreciation schedules for business assets. ACRS functioned as a timing-based subsidy, accelerating deductions and reducing the effective tax rate on new investment. Combined with the ITC, ACRS made the effective tax rate on equipment investment negative for many firms. Together, the ITC and ACRS peaked at approximately 2.1% of GDP in FY1986, far exceeding the broad industrial policy instruments of the same era.

In addition, defense R&D spending surged, with an intensification of the Cold War. Direct federal R&D obligations increased from $35 billion in FY1980 to $68 billion by FY1989, with defense accounting for the majority of the increase. This included the Strategic Defense Initiative ("Star

Wars"), while DARPA continued its role as a seedbed for commercial technologies from semiconductors to networking.

If general investment incentives are included alongside our headline broad definition, the first half of the 1980s emerges as the peak of combined federal support for capital formation. The economic rationale drew on innovation economics, even if the term was not used. In a comprehensive survey, Griliches (1992) documented substantial evidence for R&D spillovers, the gap between social and private returns that justifies public subsidy. The Reagan administration framed industrial policy not as government direction of the economy but as "competitiveness" enhancement—a response to Japan's perceived threat to US technological leadership.

The political economy of the 1980s facilitated expansive investment subsidization: tax cuts were framed as "returning money to the private sector," rather than "government spending through the tax code." The Reagan coalition united business interests seeking investment incentives with deficit hawks who accepted lower revenue as preferable to higher spending. The Cold War provided national security justification for defense R&D that would have been harder to defend on purely economic grounds.

For all its free-market rhetoric, the administration also presided over the era's largest trade interventions: "voluntary" restraints on Japanese automobiles (1981), on steel (1982 and 1984), and on machine tools and semiconductors (1986) sheltered import-competing industries even as the tax code subsidized their capital formation. None of these interventions appeared in the budget; we return to these episodes in Section IV.

However, this level of spending could not continue. There were growing deficits. The Tax Reform Act of 1986 (TRA86), enacted in Reagan's second term, eliminated the Investment Tax Credit effective January 1, 1986. The ITC's repeal was part of a grand bargain: to broadeni the tax base to finance lower rates, achieving "revenue neutrality," and at the same time to simplify the code. The economic logic was that the combination of ITC, ACRS, and tax shelters had created severe distortions favoring certain investments regardless of economic merit. The reform's consequence was to remove the largest single tax-code instrument affecting capital formation: combined general investment incentives fell from approximately 2.1% of GDP in FY1986 to 1.1% in FY1987, a reduction of nearly one percentage point in a single year.

II.2.4 The "End of History" (1990–1999)

The 1990s marked a continuation of the decline in targeted industrial policy that began after the 1960s peak. Under the broad definition, decade-average spending fell from 0.98% of GDP in the 1980s to 0.75% in the 1990s (Table 2). Including defense, the measure dropped from 1.60% to 1.25%. By the end of the 1990s, the combination of tax reform, deficit politics, the end of the Cold War, and ideological shifts had altered how industrial policy worked.

In contrast to the ITC, the R&D tax credit had survived, albeit somewhat precariously. Created in 1981 as a temporary provision, the credit was repeatedly extended in one- or two-year increments, creating uncertainty that undermined its intended incentive effects. The status reflected ambivalence—enthusiasm for subsidizing innovation collided with the credit's revenue cost under budget-scoring rules and with persistent doubts about how much marginal research it induced—and not until 2015 would the credit become permanent.

Deficit reduction dominated fiscal policy in the 1990s. The 1990 Budget Enforcement Act and 1993 Omnibus Budget Reconciliation Act imposed caps and pay-as-you-go requirements that constrained both spending and tax expenditure creation. The end of the Cold War removed national security rationales for defense R&D and the "Washington Consensus" achieved peak consensus. "Picking winners" became an epithet. A famous quip attributed to Michael Boskin, an advisor to George H. W. Bush, encapsulated a common view: "it doesn't matter whether a country makes computer chips or potato chips". Japan's "lost decade" beginning in 1991 tended to discredit the MITI model.

Yet the decade had opened with the opposite anxiety. Fear of Japan peaked around 1990, and managed trade was the first response: the 1986 semiconductor agreement was renewed in 1991, and the Clinton administration pressed the 1993 Framework talks with Tokyo and a 1995 auto accord. The early Clinton years also experimented openly with technology policy, expanding the Advanced Technology Program and creating the dual-use Technology Reinvestment Project in 1993, before deficit politics and, after 1994, a Republican Congress cut them back.

The Uruguay Round of GATT negotiations, concluded in 1993-94 with the creation of the World Trade Organization (WTO), imposed new disciplines on industrial subsidies. The Agreement on Subsidies and Countervailing Measures prohibited export subsidies and made other subsidies causing adverse effects to trading partners actionable, in the sense that countries could challenge them in WTO courts and could take countervailing measures. While tax incentives for domestic R&D largely escaped WTO scrutiny, the agreement signaled international norms against explicit industrial targeting.

II.2.5 A quiet decade, then recession (2000s)

The 2000s continued the pattern of the 1990s, with broad IP spending averaging about 0.68% of GDP (Table 2). This period did not see major industrial policy initiatives; instead, incremental changes accumulated against a backdrop of tax cuts, two wars, and a financial crisis. In the last years of the decade, there was an uptick in financial credit programs that continued into the early years of the 2010s, driven by the 2008 financial crisis and the establishment of the Department of Energy Loan Programs Office (DoE LPO).

Two additional developments merit note. First, bonus depreciation emerged as a countercyclical tool. Enacted temporarily in 2002 and 2003, bonus depreciation allowed immediate expensing of a percentage of equipment costs—50% initially. Unlike the ITC repealed in 1986, bonus depreciation was explicitly framed as a cyclical stimulus, tied to recession rather than long-term competitiveness.

Second, the Domestic Production Activities Deduction (DPAD, IRC Section 199) was enacted in the American Jobs Creation Act of 2004. The DPAD provided a deduction for income from domestic manufacturing, film production, and certain other activities (Ohrn, 2019). Framed as a response to WTO findings against export subsidies, the DPAD cost approximately $30 billion annually at its peak—substantial in aggregate but modest for any given firm precisely because it flowed to all manufacturers rather than targeted sectors: roughly a three-percentage-point cut in the effective rate on qualifying income.

China's WTO accession in 2001 transformed trade policy debates, but not US industrial policy as measured here. The focus of competition with China at that point was currency manipulation, intellectual property, and market access, not matching Chinese industrial subsidies. It was directed more at stopping China's industrial policy, not promoting that of the US.

II.2.6 The trough (2010s)

Industrial policy remained at historically low levels through the 2010s. The decade-average broad measure was about 0.76% of GDP and narrow was about 0.45% (Table 2) in this period. The Great

Recession and its aftermath dominated fiscal policy and debate. The American Recovery and Reinvestment Act of 2009 (ARRA) included substantial provisions for R&D and clean energy, but these were temporary stimulus measures rather than permanent policy changes. The 2011 Budget Control Act imposed sequestration—automatic spending cuts—which reduced defense and non-defense R&D in subsequent years. Federal R&D as a share of GDP fell to its lowest level since the 1960s (Table 2). At the same time, industrial-policy spending through financial instruments reached a peak in 2011, a carryover from the 2008 financial crisis and some of the largest DoE LPO spending prior to the Inflation Reduction Act in 2022.

On the tax side, the R&D credit's long journey toward permanence concluded with the Protecting Americans from Tax Hikes (PATH) Act of 2015. After three decades of temporary extensions, the credit finally became a permanent feature of the tax code: the innovation spillover rationale had achieved sufficient bipartisan acceptance.

The political landscape worked against industrial policy. The Tea Party movement made new spending initiatives politically toxic. The failure of the solar panel manufacturer Solyndra, which declared bankruptcy in 2011 after receiving $535 million in federal loan guarantees, became a symbol of government overreach. "Solyndra," alongside the familiar critique of "picking winners," were rhetorical weapons deployed against subsequent industrial policy proposals.[13]

International developments made American inaction increasingly anomalous. Germany launched Industrie 4.0 in 2013. China announced Made in China 2025 in 2015, targeting ten strategic sectors with $300 billion in subsidies. The European Commission relaxed some state aid constraints. The United States debated budget sequestration.

II.2.7 COVID and new industrial policy (2020–2024)

The COVID-19 pandemic spurred perhaps the largest change in industrial-policy thinking since the 1980s. The shortage of personal protective equipment, ventilators, and eventually semiconductors demonstrated the risks of concentrated production in potentially hostile nations. "Reshoring" and "supply-chain resilience" became central to the policy debate.

The CHIPS and Science Act (August 2022) committed $52 billion in direct subsidies to semiconductor manufacturing, plus expanded R&D funding. A new tax credit (IRC Section 48D) provides 25% investment credit for semiconductor fabrication facilities. The legislation explicitly aims to reverse the decline in US semiconductor manufacturing share from 37% in 1990 to 12% in 2020.[14]

The Inflation Reduction Act (IRA), enacted in August 2022, added anywhere from approximately \$369 billion to \$1.97 trillion[15] in clean energy tax credits over ten years. New and expanded credits include IRC 45X (Advanced Manufacturing Production Credit), IRC §45V (Clean Hydrogen), IRC §48C (Advanced Energy Projects), and IRC §30D (Clean Vehicles with domestic content requirements).[16]

The intellectual case for the revival of industrial policy has drawn on innovation-spillover arguments and, critically, national security concerns. China's semiconductor ambitions, particularly the progress of the largest Chinese-based integrated circuit foundry, Semiconductor Manufacturing International Corporation (SMIC), toward advanced node manufacturing, have been widely viewed as posing a challenge to US technological leadership (Ryu, 2025; Foreign Policy, 2021).

The so-called One Big Beautiful Bill Act (OBBBA), enacted in July 2025, marked a sharp shift. Whereas the IRA relied heavily on sector-specific tax credits to accelerate the clean energy transition, the OBBBA moved back toward a broad, horizontal approach. The legislation made 100% bonus depreciation (§168k) permanent, restored immediate expensing of research and experimentation costs (§174), doubled the limit on immediate expensing of equipment investment by smaller firms (§179), and made the qualified business income deduction for pass-through businesses (§199A) permanent,[17] while phasing out several IRA-era clean technology credits such as §45V and §45X after 2027 and terminating the electric vehicle credit (§30D).[18]

In fiscal terms, the IRA allocated roughly \$369 billion over a decade in targeted climate and industrial incentives (with later projections rising as high as \$1.97tn), whereas the OBBBA has generated larger ongoing tax expenditures, projected to exceed \$100 billion annually by the late 2020s, through the broad-based depreciation and pass-through provisions mentioned above. Since these general investment incentives are tracked separately from our headline broad definition, the OBBBA's primary fiscal impact does not appear in our headline industrial-policy measures but is reflected in the inclusive broad + defense + finance series reported in the Appendix. This rapid policy reversal reflects not only changing macroeconomic and fiscal priorities after the pandemic stimulus period, but also deeper political economy dynamics: targeted sectoral subsidies tend to create visible winners and can mobilize concentrated opposition—in the IRA's case, clean-energy support stood in natural opposition to incumbent fossil-fuel interests—making them vulnerable to subsequent legislative rollback, whereas horizontal tax provisions provide diffuse benefits across industries and constituencies, generating broader political coalitions for permanence, especially when they are large. The US pivot from targeted green credits to permanent broad-based depreciation, within three years, thus illustrates both the political fragility of targeted industrial policy and the institutional durability of horizontal tax instruments within the American fiscal system.[19]

II.3 Defense as Industrial Policy: The National Security Rationale

In the post-war period, defense spending has served as perhaps America's primary channel for industrial policy. The United States has maintained a massive technology policy apparatus continuously since World War II, channeled through defense in a way that has avoided the political stigma of "industrial policy." Although officially justified on national security grounds, Department of Defense R&D, procurement, and technology programs have systematically subsidized private-sector innovation in ways that parallel explicit industrial policies.

The Department of Defense Research, Development, Test and Evaluation (RDT&E) appropriations alone totaled $93 billion in FY2024. Related spending includes: the 42 FFRDCs, including MIT Lincoln Laboratory and the national laboratories, which together received $24 billion in FY2023; DARPA, with a $4 billion annual budget, which has seeded technologies from the internet to GPS to autonomous vehicles; and DoE national laboratories conducting research extending beyond nuclear weapons into materials science, computing, and manufacturing.

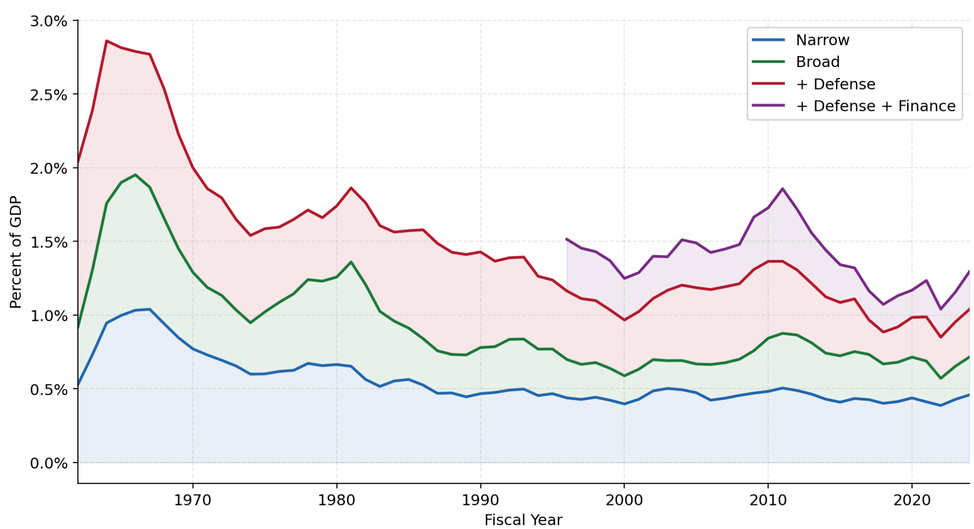
The defense framework shields industrial policy from political opposition. Visibility of spending is sometimes limited by security classifications and defense contracts are deliberately distributed across congressional districts. That continuity has paid off: many of the most consequential technologies of the past half-century emerged from defense-funded research: semiconductors (the military purchased 100% of integrated circuits in 1962 (Mowery and Rosenberg, 1999)), the internet (ARPANET), GPS, and commercial aviation.

II.4 The Visibility of Industrial Policy

II.4.1 On- and off-budget

Stanley Surrey's formalization of "tax expenditure" analysis began from a simple observation: economically equivalent policies receive politically asymmetric treatment depending on their form. While a $10 billion direct grant to manufacturers appears in appropriations legislation, a $10 billion tax credit for the same manufacturers appears as a "tax cut," and may receive less attention. The economic effects are similar; the political dynamics differ radically. Figures 3 and 4 trace the shift toward less visible policy instruments—the growing share of tax expenditures relative to direct appropriations—while Figure 5 shows how each successively broader definition adds further layers of support.

FIGURE 5: INDUSTRIAL POLICY BY DEFINITION AS SHARE OF GDP, 1962–2024



Notes: Figure shows the percentage of each definition of industrial policy of GDP, stacked to show relationship between each definition. Data are the nominal value of the industrial policy definition over the nominal GDP in a given year. More details on each definition of industrial policy categories and data sources for industrial policy measurements can be found in Section II.1 and the Appendix.

Alt text: Stacked area chart showing the four nested definitions of US industrial policy as a share of GDP, 1962–2024: narrow, broad, broad plus defense, and broad plus defense plus finance. The bands widen toward the top, illustrating how each broader definition adds spending. All peak in the mid-1960s (the broadest near 2.85% of GDP) and decline thereafter; the defense layer shrinks most over time, and the finance layer (from 1996) adds a visible top band after 2009.

Surrey warned that this asymmetry would bias policy toward tax expenditures and away from direct spending (Surrey, 1973). Tax expenditures would accumulate without the pruning that direct programs receive. Oversight would suffer because congressional tax committees lack the expertise and staffing to evaluate provisions scattered across the Internal Revenue Code. And transparency would decline because tax expenditures appear as "tax relief".

Indeed, tax expenditures for industrial policy purposes have grown relative to direct appropriations. The oversight mechanisms Surrey advocated—regular tax expenditure budgets, sunset provisions, programmatic evaluation—exist but have not constrained growth. Finally, the political dynamics favor continued expansion: business constituencies lobby for new preferences while taxpayers remain largely unaware of the revenue foregone.

II.4.2 Political Economy of Visibility

Why have tax expenditures dominated despite their governance deficiencies? The framework set out by Robinson (2011), building on the logic of collective action (Olson, 1965), identifies concentrated benefits and diffuse costs as the key determinant of the sustainability of the policy. Tax expenditure benefits flow to identifiable corporate beneficiaries who mobilize politically, while costs disperse across all taxpayers who lack both awareness and organization.

Several mechanisms reinforce the dominance of tax expenditures. Firms claim tax credits directly on their tax returns, bypassing bureaucratic frictions. Tax expenditures also operate on autopilot, avoiding annual appropriations battles (though not all fiscal discipline: pay-as-you-go rules and recurrent deficit politics still bind at enactment, as the R&D credit's three decades of temporary extensions attest). Politically, these measures benefit from being framed as "tax cuts" rather than "spending," allowing lawmakers to heavily subsidize industry while still claiming to oppose big government. Finally, tax provisions enjoy the structural advantage of falling under the jurisdiction of highly influential, traditionally business-friendly tax committees—like House Ways and Means and Senate Finance—rather than facing the competing priorities of general appropriations committees. These advantages come at a price, evident in the IRA: because credits are open-ended entitlements, their ultimate cost depends on take-up and cannot be known in advance—which is how a bill scored at $369 billion came to carry estimates approaching $2 trillion.

Outlays and tax expenditures do not exhaust the instruments of industrial policy. Trade protection and government credit have been central non-budgetary tools—most prominently under Reagan and again under Trump—and they share the property emphasized in this section: neither appears as an appropriation. We quantify federal credit in Section III.1 and take up trade policy at length in Section IV.

III. AMERICAN INDUSTRIAL POLICY IN INTERNATIONAL CONTEXT

We now examine how the American industrial policy instruments we have discussed compare with those used in Europe and China, where intervention often takes more visible forms such as direct subsidies and notified state aid, alongside policy bank lending and local government financing vehicles.

III.1 Expanding the Measurement: Federal Credit Programs

Most of our analysis so far has focused on tax expenditures and direct spending. But the OECD's Quantifying Industrial Strategies (QuIS) project shows that financial instruments (i.e., loans, loan guarantees, and venture capital) constitute a substantial additional channel for industrial support (OECD, 2025). Across 11 initial OECD countries, grants and tax expenditures average 1.53% of GDP, while financial instruments add an additional 2.12% of GDP, bringing total industrial support to approximately 3.65% of GDP. Financial instruments are thus larger than the grants and tax provisions that receive the most analytical attention.

Credit was the principal instrument of East Asian industrial policy, and it often worked through preferential access rather than measurable subsidy (Amsden, 1989; Wade, 1990; World Bank, 1993; Stiglitz and Uy, 1996); this is one reason we report commitments rather than subsidy costs. Against that benchmark, what distinguishes the United States is not the absence of government credit but its allocation—overwhelmingly to housing and households rather than to industry.

TABLE 3: US FINANCIAL INSTRUMENTS FOR INDUSTRIAL POLICY (FY2024)

Program	Commitments	% GDP	Description
DOE Loan Programs Office	$22,336M	0.077%	Clean energy and advanced vehicle manufacturing
Export-Import Bank	$8,391M	0.029%	Export financing (loans, guarantees, insurance)
SBA 7(a) + 504	$37,789M	0.131%	Small business loan guarantees
USDA Credit Programs	$5,677M	0.020%	Ag export credit (GSM-102) + rural business (B&I)
Total	**$74,192M**	**0.256%**	

Sources: DoE LPO reports, EXIM Bank Annual Reports, SBA Activity Reports, USDA FAS/Rural Development. Data are nominal values of each financial instrument over nominal GDP in FY2024.

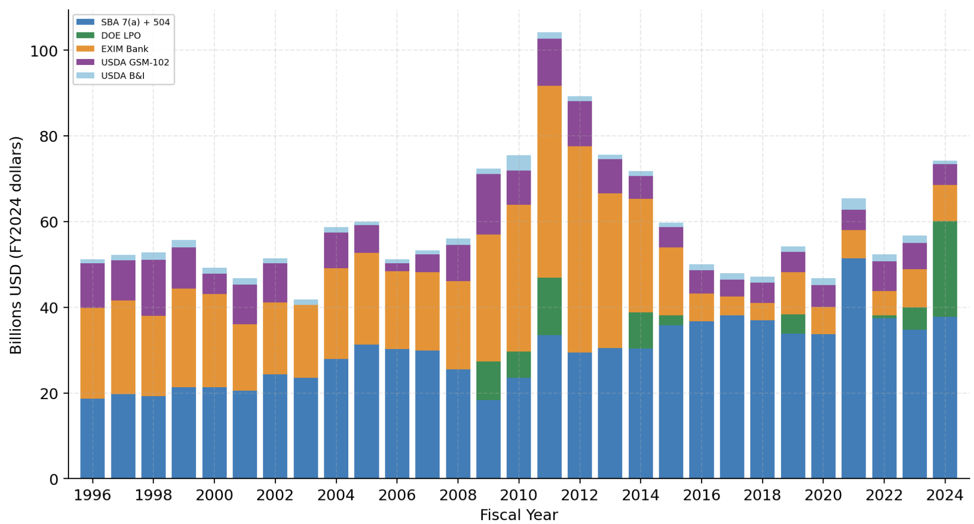
To increase comparability with the QuIS figures for other countries, we construct a measure of US federal financial instruments that operate alongside tax expenditures and direct spending as tools of industrial policy. This measure is presented in Table 3. In FY2024, total commitments across major credit and loan guarantee programs amount to $74.2 billion, or roughly 0.26 percent of GDP. The largest component is the Small Business Administration's 7(a) and 504 loan programs, totaling $37.8 billion (0.13 percent of GDP)—general small-business finance, only a fraction of which is industrial policy in any targeted sense—followed by the Department of Energy's Loan Programs Office at $22 billion (0.08 percent of GDP), which supports clean energy and advanced vehicle manufacturing. The Export-Import Bank and USDA credit programs contribute smaller amounts through export financing and agricultural and rural business credit. These programs represent substantial government-backed commitments that shape capital allocation and support targeted sectors of the economy.[20] They are nonetheless dwarfed by federal credit support for housing: FHA and VA guarantees and the government-sponsored enterprises stand behind trillions of dollars of mortgage debt, and the tax code further subsidizes owner-occupied housing. That support channels capital toward real estate rather than industry—the anti-industrial policy described in Section II.1.

Adding financial instruments to our baseline measures yields revised totals. Specifically, US financial instruments (0.26% GDP) remain well below the OECD QuIS average (2.12% GDP), suggesting that American reliance on federal financial instruments is lower than international norms. The gap may reflect deep US capital markets (including a strong venture capital industry and abundant financial capital), political constraints (such as post-Solyndra controversy), and historical preference for tax-based over credit-based industrial policy. That preference is specific to *industrial* credit: through mortgage guarantees, student lending, and deposit insurance, the federal government pervades American finance—just not explicitly in the form of credit subsidies for industry.

Measure	Tax + Grants Only	+ Financial Instruments
Broad IP (FY2024)	0.72% GDP	**0.98% GDP**
Broad + Defense	1.04% GDP	**1.30% GDP**

Figure 6 reveals distinct phases in the evolution of federal financial instruments. The period from 2009 to 2011 saw a sharp post-crisis expansion, driven by ARRA-related activity and growth

FIGURE 6: US FINANCIAL INSTRUMENTS BY PROGRAM (FY1996–2024)



Notes: DoE LPO expanded under Biden-era legislation after near-dormancy from 2012–2021 following Solyndra controversy. The SBA is not typically characterized as industrial policy, but subsidizes capital formation in manufacturing and technology firms. Data are nominal values of each financial instrument over nominal GDP in FY2024.
Sources: DoE LPO reports, EXIM Bank Annual Reports, SBA Activity Reports, USDA FAS/Rural Development.

Alt text: Stacked bar chart of US federal financial instruments for industrial policy by program, fiscal years 1996–2024, in constant dollars. Each bar stacks five programs: SBA 7(a)/504 loans, the DOE Loan Programs Office, the Export-Import Bank, and USDA GSM-102 and Business & Industry credit. Total commitments rise to a peak above $100 billion around 2011, contract during 2015–2022, and rebound by 2024, with the DOE Loan Programs Office band expanding sharply in the most recent years.

in Export-Import Bank authorizations. This was followed by a contraction from 2015 to 2022, as the Department of Energy's Loan Programs Office sharply curtailed new lending and the Export-Import Bank temporarily lost its board quorum (2015–2019), leaving it unable to approve transactions above $10 million. Since 2023, commitments have rebounded, led by the reactivation and scaling up of the DoE Loan Programs Office under the Inflation Reduction Act and the CHIPS Act.[21]

III.2 International Comparisons

The US reliance on tax expenditures distinguishes it from both European and Chinese industrial policy. European state aid operates through direct grants and subsidies subject to Commission notification and approval. China's industrial policy similarly emphasizes direct channels: state-owned enterprise support, government guidance funds, and explicit subsidy programs.

The OECD's tracking of R&D tax incentives documents a global trend toward tax-based support, with the US as a pioneer but no longer an outlier. Most OECD countries now offer some form of R&D tax credit or super-deduction (OECD, 2024). But the US approach remains distinctive in its breadth.

III.2.1 Comparative Overview

On headline measures of civilian grants and tax expenditures (excluding defense), the US (0.46–0.72% of GDP, spanning our narrow to broad definitions) spends between a third and a half of OECD QuIS project estimates (Table 4). OECD QuIS covers eleven OECD countries, including eight EU member states, and estimates support of 1.53% in 2022 (OECD, 2025). However, there are some key definitional differences between sources. The OECD data does not include support for the production of energy, only measures that reduce the cost of energy for businesses, while US financial data does not include regional instruments as defined by the OECD (instruments designed to support businesses in specific geographic regions), which would be most similar to state and local policies in the US.

Adding financial instruments widens the gap. The QuIS project finds that financial instruments (loans, loan guarantees, venture capital) add a further 2.12% in 2022, bringing total industrial support to approximately 3.65% of GDP. The US deploys only 0.26% of GDP through federal

TABLE 4: INDUSTRIAL POLICY COMPARISON: US, EU, CHINA

Metric	US (FY2024)	OECD QuIS-11 (2022)	China (2019–24)
Grants + tax expenditures (civilian)	0.46–0.72%	1.53%[a]	1.73%+[b]
Defense R&D	0.33%	n.a.	n.a.
Financial instruments	0.26%	2.12%[a,c]	Unknown (large)
Total (comprehensive)	**∼1.30%**	**3.65%**[a]	**3–5%+ (est.)**
Primary mechanism	Tax expenditures	State aid + credit	Direct + LGFVs
Flagship programs	CHIPS; IRA	NGEU; IPCEI	MIC2025

[a] OECD Quantifying Industrial Strategies (QuIS) average across eleven countries (Canada, Denmark, France, Germany, Ireland, Israel, Italy, Netherlands, Slovenia, Sweden, UK), not an EU-specific figure (OECD, 2025). Includes grants, tax expenditures, and financial instruments but excludes defense R&D.

Notes: European Commission State Aid Scoreboard (notified aid only; excludes structural funds, non-notified national R&D programs, and most tax expenditures) reports approximately 1.4% of EU GDP in 2022 and 0.94% in 2024—broadly consistent with the QuIS grants-plus-tax-expenditures figure, given that QuIS adds tax expenditures the Scoreboard largely omits.

[b] DiPippo, Mazzocco, and Kennedy (2022) (CSIS) report 1.73% of GDP for 2019, covering direct civilian subsidies and below-market credit from state-owned and policy banks. This estimate excludes defense R&D, LGFV financing flows, Government Guidance Funds, and provincial/local incentives; including these channels could plausibly raise the figure to 3–5%+ of GDP, but existing data do not support a precise point estimate.

[c] The 2.12% financial-instruments figure is elevated by a single 2022 German energy-crisis loan scheme (KfW Sonderfinanzierungen Energiesektor, ∼1.4% of German GDP that year). Excluding it, the QuIS-11 financial-instruments average is closer to 2.0%—essentially unchanged from 2019 (OECD, 2025).

Notes: Flagship programs include: Creating Helpful Incentives to Produce Semiconductors (CHIPS); Inflation Reduction Act (IRA); NextGenerationEU (NGEU); Important Projects of Common European Interest (IPCEI); Made in China 2025 (MIC25)

Comparability caveat: No row is directly comparable across columns. US includes defense R&D in comprehensive total; EU/OECD and China figures exclude it. The OECD QuIS figures partially capture multi-level government spending but exclude regulatory and single-market industrial policy (CAP, common external tariff, IPCEI); China's published figures severely understate it. US excludes state/local incentives (∼0.15–0.25% GDP).

credit channels, well below this benchmark. The gap is driven almost entirely by lower American reliance on government credit programs.

China almost certainly exceeds both the US and EU. The Center for Strategic and International Studies (CSIS) estimate of around 1.73% of GDP covers only direct civilian subsidies and below-market lending from state-owned and policy banks, but excludes defense R&D, local government financing vehicles, Government Guidance Funds, and provincial incentives. Including these channels would raise the figure substantially. Because none of the three columns in Table 4 measures the same thing—EU state aid excludes tax expenditures that dominate US policy; China's published figures exclude off-budget channels that dominate Chinese policy—the table should be read as indicative of broad magnitudes rather than precise rankings.

Comparative analysis confronts severe measurement problems. EU/OECD statistics employ different definitions as to what counts for both grants and tax expenditures and financial instruments. China publishes limited subsidy data; Center for Strategic and International Studies (CSIS) estimates range from $248 to $407 billion annually, with wide uncertainty reflecting fiscal opacity (DiPippo, Mazzocco, and Kennedy, 2022).[22] We report international comparisons with caveats; rankings are indicative.

III.2.2 The European Union

European industrial policy operates under distinctive constraints. The Treaty on the Functioning of the European Union (Article 107) prohibits state aid that distorts competition within the Single Market. National governments must notify the European Commission of proposed support measures, which the Commission evaluates against competition principles.

Recent developments have loosened constraints. The Temporary Framework for COVID-19 response permitted extensive emergency support. The Important Projects of Common European Interest (IPCEI) exception further expanded policy space by allowing multinational industrial programs in strategic sectors such as batteries, microelectronics, and hydrogen. The Net-Zero Industry Act (2024) streamlines permitting and provides some funding for clean technology manufacturing.

Yet European industrial policy through direct state aid remains modest in headline terms. The NextGenerationEU, the €800 billion recovery fund, includes substantial investment components but spreads across 27 member states over multiple years. However, when financial instruments (loans, guarantees, equity) are included following OECD QuIS methodology, European countries average significantly higher support than US levels.

The European Commission State Aid Scoreboard, which includes notified aid only and excludes structural funds, non-notified national R&D programs, and most tax expenditures, reports a total of 0.94% of EU GDP dedicated to state aid expenditures.[23]

III.2.3 China

China's industrial policy operates at a large scale. Made in China 2025 (MIC2025), announced in 2015, targets ten strategic sectors, including information technology, aerospace, advanced rail, new-energy vehicles, new materials, pharmaceuticals, agricultural machinery, maritime equipment, and high-end robotics, with explicit market share goals and extensive subsidy support.

Quantifying Chinese industrial policy is challenging given limited transparency. CSIS estimates annual *direct subsidies* between $248 billion and $407 billion—roughly 1.7% of GDP at the midpoint (DiPippo, Mazzocco, and Kennedy, 2022). However, this figure almost certainly understates total support by excluding several major channels:

Local Government Financing Vehicles (LGFVs): These off-balance-sheet entities finance infrastructure and industrial development with implicit government guarantees. The stock of outstanding LGFV debt reached 55–65 trillion yuan ($7.5–9 trillion) by 2024, with net issuance in the range of 4-7 trillion yuan per year between 2018-2023, or 3-5% of Chinese GDP. While not all LGFV activity constitutes industrial policy, a substantial portion finances manufacturing zones, technology parks, and strategic industry support.

Policy Bank Lending: China Development Bank and Export-Import Bank of China provide below-market lending domestically and internationally. These institutions function as industrial-policy instruments, directing capital to priority sectors at subsidized rates.

Provincial and Local Incentives: Sub-national governments compete aggressively for manufacturing investment through land subsidies, tax holidays, utility discounts, and direct grants, which is largely not reflected in national statistics.

Government Guidance Funds (GGFs) represent a distinctive Chinese mechanism. These quasi-public venture capital vehicles channel state resources into targeted sectors while maintaining private-sector characteristics. CSIS estimates GGFs raised $627 billion cumulatively through 2024, with investments concentrated in semiconductors, artificial intelligence, and electric vehicles.

If LGFV financing, Government Guidance Fund deployment, and local incentives were included, Chinese industrial policy would plausibly reach numbers substantially above both US and EU levels.

IV. TRADE POLICY AS INDUSTRIAL POLICY

Our fiscal measures capture only part of US industrial policy. Ju, Li, and Wei (2026) use large language models to identify industrial policy provisions in Congressional legislation and Presidential Orders and find roughly three times as many interventions as catalogued by the Global Trade Alert database between 2008 and 2022 (Evenett and Fritz, 2022). Many important instruments—including tariffs, procurement preferences, and export controls—operate outside the budget process and therefore do not appear in appropriations or tax expenditure data. Yet they pursue the same objective as fiscal industrial policy tools: shaping the composition of domestic production.

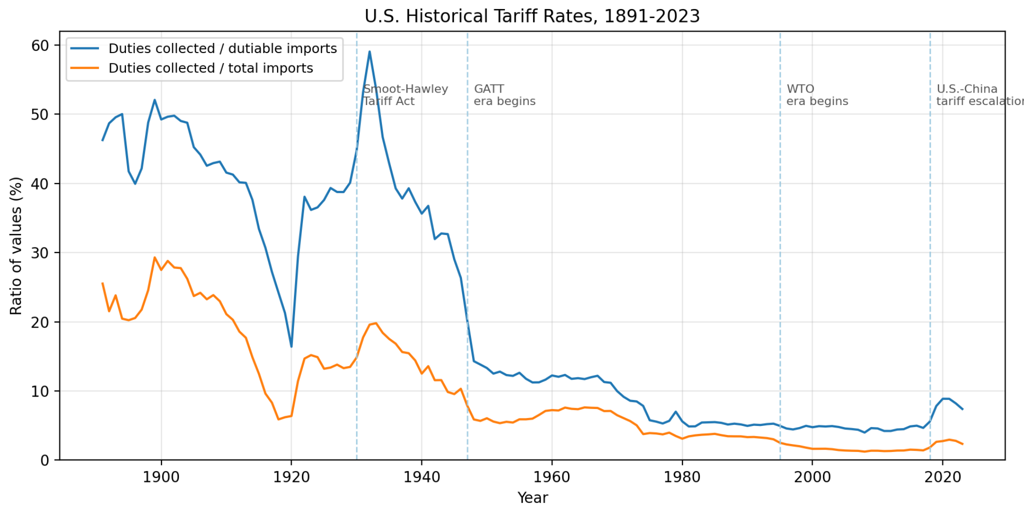
Following Stiglitz (2016) and Juhász, Lane, and Rodrik (2024), a broader view of industrial policy encompasses three layers. The first consists of the fiscal instruments measured earlier in this paper. The second includes tariffs, local-content requirements, procurement preferences, export controls, and other tools that alter relative prices without appearing in fiscal accounts. The third comprises implicit subsidies delivered through regulatory and financial channels, such as selective antitrust enforcement, foreign investment limitations, asymmetric regulation, directed credit, and exchange-rate management.

Thus, tariffs and non-tariff barriers (NTBs) can both be considered industrial policy instruments. A tariff that shelters a targeted industry and a tax credit conditioned on domestic content both shift relative prices to influence the sectoral composition of production. This functional definition aligns with the recent revival of industrial policy research (Juhász, Lane, and Rodrik, 2024; Stiglitz, 2016) and a growing literature quantifying the effects of non-tariff measures on trade, welfare, and labor markets (Dhingra, Freeman, and Huang, 2023; Leonardi and Meschi, 2026; Chen, Hsieh, and Song, 2022).

IV.1 The long arc: substitution, then co-movement

The aggregate tariff series (Figure 7) and the case-level NTB stock[24] (Figure 8) are useful to consider at the same time. They suggest a similar story to the substitution of tax expenditure for on-budget spending outlined above. From 1971 to 2017, protection migrated from tariffs, which trade-round commitments held down, into non-tariff channels: first quantitative restraints—chiefly "voluntary" export restraints (VERs) negotiated with exporting governments—and then contingent trade defense, the case-by-case imposition of anti-dumping and countervailing duties.[25] That is, as bound tariffs fell economy-wide, protection re-emerged through non-tariff channels, while within any cross-section the most protected industries tend to carry both instruments at once. Around 2018, the aggregate relationship changed: tariffs returned to the foreground at the same time that NTBs expand, and the NTB mix shifted from reactive trade defense toward proactive subsidies, local-content rules, and investment screening. Tariffs and NTBs now move together rather than as substitutes.

FIGURE 7: US HISTORICAL TARIFF RATES, 1891–2023



Notes: Duties collected as a share of dutiable imports (blue) and of total imports (orange), with regime breaks marked.
Sources: USITC historical schedules

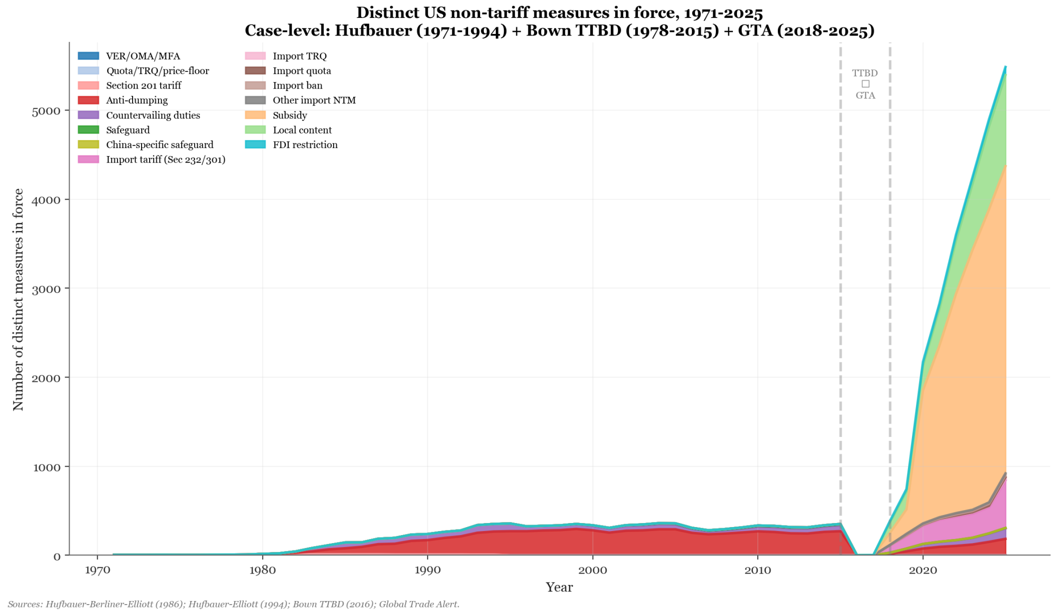
Alt text: Line chart of US tariff rates from 1891 to 2023, plotting duties collected as a share of dutiable imports and as a share of total imports. Both fall over the long run from high late-19th-century levels; the dutiable-imports line peaks near 60% around the 1930 Smoot–Hawley Act, then declines steeply through the GATT era to low single digits by the 1990s–2010s before turning up after 2018. Vertical lines mark Smoot–Hawley, the start of GATT, the WTO, and US–China tariff escalation.

IV.1.1 From Protection to Liberalization, 1891–1995

US tariff policy in the late 19th century was defined by high rates to raise revenue and protect domestic industries. The McKinley Tariff Act of 1890 raised rates close to 50%, the highest to that point, and introduced reciprocity. In the post-Civil War years, tariffs were vital to protect the domestic steel industry from cheaper European imports. The Payne-Aldrich Tariff of 1909 kept rates high and split the Republican party, contributing to the election of Woodrow Wilson, whose Underwood Tariff Act of 1913 lowered average rates to around 27% and paired the reduction with the newly enacted federal income tax, shifting the primary revenue source away from tariffs.

This trend reversed sharply after World War I. Agricultural overproduction (as global production came back online) led to the Emergency Tariff of 1921 and the Fordney-McCumber Tariff of 1922, raising average rates back to around 38%. The Smoot-Hawley Tariff Act of 1930 pushed rates on dutiable imports to nearly 60%, provoking retaliatory tariffs from trading partners and contributing to a collapse in global trade. In response, the Reciprocal Trade Agreements Act of

FIGURE 8: DISTINCT US NON-TARIFF MEASURES IN FORCE, 1971–2025, BY INSTRUMENT FAMILY



Notes: The 2016–2017 trough reflects coverage gaps in the underlying sources.
Sources: Hufbauer, Berliner, and Elliott (1986), Hufbauer and Elliott (1994), Bown (2016), Global Trade Alert Database (Evenett and Fritz, 2022)

Alt text: Stacked area chart of the number of distinct US non-tariff measures in force by instrument family, 1971–2025. The total stays modest—a few hundred measures, mostly anti-dumping and countervailing-duty cases—from the 1980s through about 2015, then rises sharply, roughly fifteenfold, to about 5,500 by 2025, with the increase dominated by subsidies and local-content measures. A short dip around 2016–2017 reflects gaps in the underlying data sources.

1934 gave the executive branch authority to negotiate reductions bilaterally, gradually lowering rates from their Smoot-Hawley peak and marking a turning point toward liberalization.

Following World War II, the United States became a leading architect of the General Agreement on Tariffs and Trade (GATT), signed in 1947, which established a multilateral framework for reducing tariffs. Successive rounds progressively lowered tariffs on industrial goods: the Kennedy Round (1967) cut average industrial tariffs by roughly 35%, the Tokyo Round (1979) brought them to around 4.7%. NAFTA (1994) phased out most tariffs among the US, Canada, and Mexico. Figure 7 shows the postwar tariff descent clearly: the sharpest drop in the duties-to-dutiable ratio came in the late 1940s, driven both by the founding GATT rounds and by wartime inflation; the Kennedy and Tokyo Rounds then completed the decline, cutting average duties into single digits so that by the early 1990s the rate sat near five to six percent.

With tariffs bound by multilateral commitment, protection moved into quantitative restraints negotiated bilaterally and often described as voluntary (the pattern Irwin (2017) traces through

TABLE 5: Selected US voluntary export restraints and quotas, 1971–1994

Program	Years	Instrument	AVE (%)
Japan auto VER	1981–1994	VER	11.0
Steel VRA (1984 round)	1984–1992	VER	30.0
Multi-Fiber Arrangement (apparel)	1974–1994	Quota	48.0
Multi-Fiber Arrangement (textiles)	1974–1994	Quota	23.4
Machine-tool VRAs	1986–1993	VER	46.6
Color-TV OMA	1977–1980	OMA	15.0
Sugar quota / TRQ	1934–	TRQ	30–66
Oil-import quota	1959–1973	Quota	96.0

Notes. Ad-valorem equivalents from Hufbauer, Berliner, and Elliott (1986) Table 1.1 and Hufbauer and Elliott (1994) Table 1.2; basis years vary (1973–1990). These are self-selected high-protection cases, not a representative protection level.

the longer history of US trade policy). Because the restraints were nominally voluntary undertakings by the exporting country, they sat outside the GATT's prohibition on import quotas—grey-area measures that survived until the Uruguay Round's Safeguards Agreement banned them. Hufbauer catalogues major episodes: the Japan auto VER (1981–1994), the steel restraint arrangements, the Multi-Fiber Arrangement (1974–1994), the 1986 US–Japan semiconductor agreement, the machine-tool restraints, and the agricultural quotas (Hufbauer, Berliner, and Elliott, 1986; Hufbauer and Elliott, 1994). Only about ten major programs were in force in any year (Figure 8), but each covered large shares of imports of the affected product at ad-valorem equivalents well above the prevailing tariff (Table 5).

IV.1.2 WTO discipline, 1995–2017

Tariffs held near the floor (Figure 7); the pair-level data put the applied rate on China at 3.7 percent by 2017, down from 6.1 percent in 1988. By the end of the century the average US tariff rate had fallen to roughly 1.5% on an all-imports basis, a small fraction of its early 20th-century peak. The WTO, established in 1995, further institutionalized low-tariff, rules-based trade. The Uruguay Round banned VERs in 1994, and trade defense migrated into the anti-dumping and countervailing-duty channels. The in-force stock of contingent cases (the broad plateau in Figure 8) rose from a low base around 1980 to about 350 by 1990 and then held between roughly 280 and 360 through 2015, overwhelmingly anti-dumping (70 percent of cases in 1990, 77 to 83 percent thereafter).[26] With tariffs at the floor, the non-tariff layer had by then become pervasive: Leibovici and Dunn (2023) find that more than three-quarters of US imports by value were covered by at least one non-tariff measure in 2014. The migration shows up in disputes as well as in measures; Santana and Jackson (2012) report that by 2011 only about 8 percent of WTO disputes over trade in goods turned on tariffs, the rest on non-tariff instruments, with anti-dumping and subsidies the largest categories.

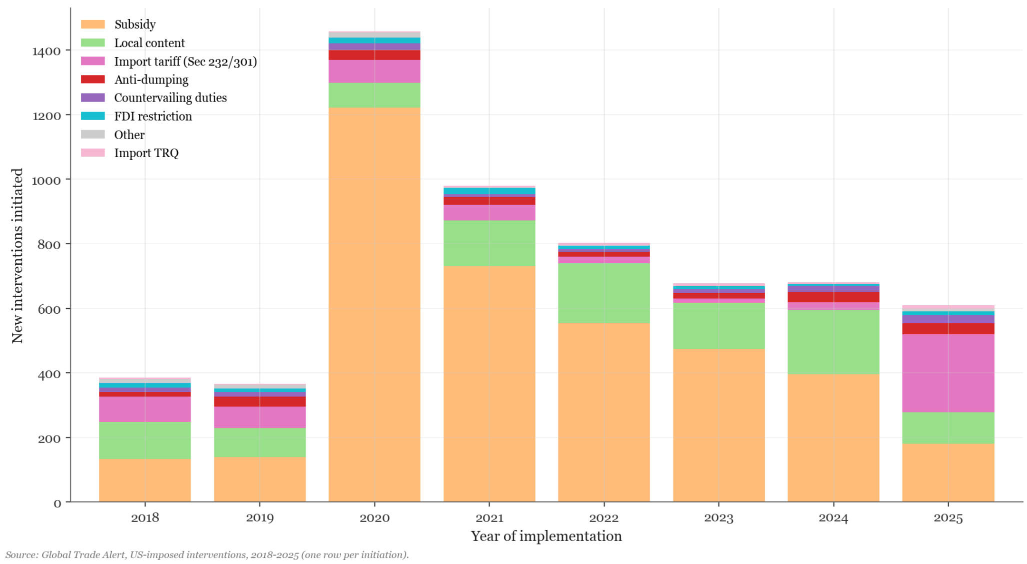
IV.1.3 The new industrial policy, 2018–2025

The local labor-market damage from the post-2001 surge in Chinese imports (Autor, Dorn, and Hanson, 2013) eroded the consensus for liberalization; trade policy was reframed as national-security policy, reopening the Section 232 and 301 authorities (national-security tariffs under the Trade Expansion Act of 1962 and unilateral retaliation against unfair foreign practices under the Trade Act of 1974, respectively); and pandemic supply-chain disruptions turned the security argument into an industrial one, to which the IRA and CHIPS Act gave a fiscal instrument. The 2018–2020 surge in trade restrictions reflected Trump-era protectionism; the Biden administration maintained most tariffs while adding further technology export controls targeting China;[27] and the One Big Beautiful Bill Act (OBBBA, signed July 2025) further extended tariff authority. Trade policy, like tax-based industrial policy, appears to exhibit ratchet effects: crisis-era measures persist.

Thus, on the tariff side, import tariffs regained prominence for the first time in the postwar era. New Section 232 and Section 301 cases arrived in 2018; in 2025, the second Trump administration imposed new "reciprocal" tariffs on most US trading partners, with baseline rates around 10% and significantly higher rates on goods from specific countries, and suspended the *de minimis* exemption. The aggregate USITC series shows that duties on dutiable imports rose from 4.7 percent in 2017 to a peak of 8.9 percent in 2021, the steepest sustained increase since the 1930s, easing to 7.4 percent by 2023 before the ramp-up of the second Trump administration.

On the non-tariff side, the case-level count rose from about 350 in 2015 to about 5,500 in 2025, roughly fifteenfold, and the composition inverted (Figure 9).[28] Of the 6,140 Global Trade Alert interventions over 2018–2025, 63 percent are subsidies and 17 percent local-content provisions, against 6 percent anti-dumping, countervailing-duty, and safeguard cases. The named programs—the IRA's clean-energy and manufacturing credits, the CHIPS Act, expanded Buy American rules, the Connected Vehicles Rule, and broadened investment screening—are proactive

FIGURE 9: NEW US TRADE-POLICY INTERVENTIONS BY YEAR AND INSTRUMENT FAMILY, 2018–2025



Notes: The 2020 bar is inflated by pandemic-era state relief programs; the 2025 bar shows tariffs surging.
Sources: Global Trade Alert (Evenett and Fritz, 2022), US-imposed, one row per initiation.

Alt text: Stacked bar chart of newly initiated US trade-policy interventions per year, 2018–2025, by instrument family. Each annual bar stacks subsidies, local-content rules, import tariffs, anti-dumping and countervailing duties, FDI restrictions, and other measures. Subsidies form the largest share in most years; the 2020 bar is unusually tall owing to pandemic-era relief programs, and the 2025 bar shows a marked rise in import tariffs.

instruments meant to reshape domestic production, with import effects following, rather than reactions to specific import surges.[29]

Thus, in the recent period, tariffs and NTBs no longer move as substitutes; aggregate tariffs have risen in the same years the NTB stock expands, reversing the negative relationship of 1971–2015. This likely reflects a more coordinated push towards a reshoring objective, and descriptive evidence indicates that the two instruments concentrate on the same named strategic sectors.

V. CONCLUSION

The widely held view that industrial policy disappeared in the United States after the Cold War is historically inaccurate. Instead, federal intervention aimed at shaping investment, innovation, and industrial structure has remained persistent for decades, with industrial policy under our broad definition typically ranging between 0.7 and 1.6 percent of GDP and reaching 1.0-2.6 percent when defense R&D is included. (Of course, some of this simply went to "undistort" anti-industrial policies distorting the economy towards real estate and finance.) Broad-definition spending stayed within a 0.7-1.6% band for six decades; what moved was its delivery from appropriations into the tax code. Visible on-budget appropriations gradually gave way to tax expenditures and other indirect mechanisms that attracted less political attention despite being of comparable economic magnitude.

The 1960s Cold War innovation state represented the peak of targeted industrial policy as a share of GDP, with broad + defense spending averaging 2.55 percent of GDP—a level not approached in any subsequent decade. The Reagan era witnessed an extraordinary expansion of general investment incentives including the Investment Tax Credit and accelerated depreciation that represented the largest combined federal support for capital formation in the postwar era. Subsequent decades saw a sustained shift toward off-budget tools, especially R&D credits and sector-specific energy provisions, which embedded industrial policy within the tax code. Finally, the legislative initiatives of the 2020s, including the CHIPS and Science Act and the Inflation Reduction Act, represent a partial return to more visible sectoral interventions, particularly in semiconductors and clean energy, while the OBBBA's restoration of broad-based depreciation provisions illustrates the enduring political durability of general investment incentives.

International comparisons further clarify the US position. When measured comprehensively to include grants, tax expenditures, defense R&D, and federal credit programs, US industrial policy spending appears comparable to, although generally below, that of many European economies and below that of China. The distinctive feature of the US system is not the absence of industrial policy but its composition: the US relies more heavily on tax expenditures—both targeted sectoral provisions and general investment incentives (which perhaps should not even be considered as part of industrial policy)—and less on government credit programs than most other advanced economies. This institutional structure shapes both the transparency and the political economy of intervention, allowing substantial support for industry—whether through the tax code or, as with the Export-Import Bank and other credit guarantees, through commitments whose costs surface only later—to operate outside traditional budgetary scrutiny.

Our review of the history of US trade policy points to a similar pattern: across the postwar period the instruments of protection shifted from tariffs to non-tariff measures, but since 2018 tariffs and non-tariff barriers have risen together rather than substituting for one another—a regime change toward coordinated, security-driven trade intervention, though the Trump tariffs seem poorly designed to achieve any national goal, industrial policy or otherwise.

The historical record yields several implications for policy design: instrument choice, transparency, and policy durability remain central challenges. Tax-based incentives offer political durability and administrative simplicity, but they also reduce oversight and make budgeting more difficult. Conversely, direct subsidies provide clearer targeting but may be subject to greater volatility in political support. Recent US legislation illustrates how policy design shapes these dynamics. The CHIPS and Science Act allocates subsidies through a discretionary application process in which federal agencies evaluate and select recipients, allowing policymakers to target specific firms and projects. By contrast, the IRA relies primarily on tax credits that operate automatically for qualifying activities, inviting firms to self-select into the program by undertaking eligible investments. While this approach reduces administrative discretion and may broaden participation, it can also generate large fiscal costs because tax-based incentives are open-ended and expand automatically with investment levels.

The renewed attention to industrial policy in the United States reflects broader structural changes in the global economy, including geopolitical competition, supply-chain vulnerabilities, and the requirements of the clean-energy transition—and importantly, the realization that markets on their own won't suffice. Whether recent policy initiatives succeed in achieving fully their objective will depend not only on the scale of intervention but also on the effectiveness of policy design, the credibility and stability of incentives, and the capacity of institutions to monitor outcomes and adapt over time.

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NOTES

[1]The Congressional Budget Office scored the bill at $369 billion (Congressional Budget Office, 2022). Later projections ranged from $0.8tn to $1.97tn over a decade, because most of the credits were uncapped by the statute.

[2]Surrey coined the concept of ‘tax expenditures’; the 1968 Treasury Annual Report includes the report ’The Tax Expenditure Budget: A Conceptual Analysis” (United States Department of the Treasury, 1968).

[3]We adopt a narrower scope than the conceptual definitions above suggest: we measure direct federal outlays, federal tax expenditures, and federal credit programs. We also present some components of trade policy. But we do not measure regulatory preferences, procurement-as-industrial-policy, state and local incentives, household-directed credit (Fannie Mae, Freddie Mac, FHA), or implicit subsidies that operate through channels such as financial repression, exchange-rate management, or selective regulatory enforcement. Each of these is plausibly a component of US industrial policy. Our headline numbers should therefore be read as a lower bound.

[4]The differential narrowed after 2017: the Tax Cuts and Jobs Act extended immediate expensing (100% bonus depreciation) to most equipment investment, even as it scheduled §174 research costs for five-year amortization from 2022 (a change reversed in 2025).

[5]Our baseline definitions exclude federal transportation spending (e.g., highways and general transportation programs), consistent with OECD’s definition (Criscuolo, Lalanne, and Díaz, 2022). However, transportation might be considered as “industrial policy” under very broad interpretations. Doing so substantially increases measured IP spending. In FY2024, federal transportation outlays were approximately 0.94 percentage points of GDP; in FY2020, they are approximately 1.36 percentage points of GDP (using a real-GDP denominator).

[6]Subsequent adoption of the ITC in the industrial policy literature reflects its substantial effects on investment in capital-intensive sectors (Hart, 2024), but the credit’s design was non-discriminatory across qualifying equipment.

[7]Some of the largest standing federal interventions tilt the allocation of capital *away* from industry: the mortgage-interest deduction, federal mortgage guarantees, and related supports for housing and finance amount, in effect, to an *anti-industrial* policy. Part of measured industrial policy thus merely offsets distortions created elsewhere in the fiscal system. We return to this in the Conclusion.

[8]Federal credit programs in our series are reported on a face-value commitment basis (loan principal plus the notional amount of guarantees), not on a Federal Credit Reform Act (FCRA) subsidy-cost basis. However, the true budgetary cost of these programs (the present value of expected losses) is typically a small fraction of the notional. Our choice here is to permit comparability to the OECD QuIS analysis.

[9]The tax expenditure concept originated with Stanley Surrey’s tenure as Assistant Secretary of the Treasury for Tax Policy under Presidents Kennedy and Johnson. Surrey observed that many provisions in the tax code functioned identically to direct spending programs, but escaped budgetary scrutiny. A tax credit for R&D that reduces taxes collected by $1,000, Surrey argued, is economically equivalent to a tax-exempt $1,000 direct grant—both reduce the after-tax cost of the activity by the same amount. However, the credit appears as a tax reduction while the grant appears as spending, creating an asymmetric political treatment (Surrey, 1973; Surrey and McDaniel, 1985).

[10]Individual JCT tax-expenditure estimates are not, strictly speaking, additive: each is calculated independently assuming all other tax provisions remain in place, so summing them ignores interaction effects. We sum the relevant provisions; the resulting series represents an approximation.

[11]We also cross-reference the National Priorities Project (NPP) Database for validation and to fill in one data gap. The NPP contains digitized historical tax-expenditure data from OMB documents, covering 1974-2019.

[12]The CEA was chaired by Walter Heller and included James Tobin as a member, with Robert Solow and Kenneth Arrow among its staff economists.

[13]Tesla, which received a $465 million DoE loan at the same time, has a market valuation at the time of writing of more than $1.5 trillion, or around 75% of the assets under management of the Norwegian Sovereign Wealth Fund.

[14]The rationale was itself debated: skeptics asked whether private returns to fabrication capacity were genuinely too low to attract finance, noting that leading incumbents had distributed tens of billions of dollars in dividends and share repurchases over the preceding decade; if there was a capital shortage, it was at least partly self-inflicted.

[15]Estimates on the size of the bill vary across sources. Early figures included the Congressional Budget Office bill score of $369 billion (Congressional Budget Office, 2022) and a Goldman Sachs estimate of $1 trillion (Wall Street Journal, 2023). More recent estimates include $1.16 Trillion from a Treasury expenditures report and $1.97 trillion estimate from the Cato Institute (Fisher and Loucks, 2025).

[16]The IRA also expanded Department of Energy Loan Programs Office (DoE LPO) authority ($11.7B credit subsidy for the Title 17 program, supporting roughly $290B in lendable capacity, plus $5B for the new §1706 Energy Infrastructure Reinvestment program backing approximately $250B in commitments).

[17]The §199A deduction’s benefits accrue disproportionately to pass-through owners in sectors such as real estate and finance—as much an *anti*-industrial policy, in the sense of Section II.1, as an industrial one.

[18]The IRA-expanded DoE LPO authority was not repealed by legislation, but new originations were paused under the Trump administration.

[19]Horizontal tax instruments like bonus depreciation, §199A, and the R&D expensing rules concentrate benefits among established sectors: manufacturing (claiming roughly 20% of bonus depreciation), real estate (15%), wholesale and retail trade (14%), and the information and technology sectors (10–13%, with data centers and AI infrastructure builders prominent). These beneficiaries have the political durability that comes with both concentrated benefits and an ideological framing of "tax cuts to support investment." The targeted green credits in the IRA concentrated benefits instead among newer industries: renewable developers, EV manufacturers, hydrogen producers, and battery/clean-technology firms, some of which are foreign-affiliated. The OBBBA made these horizontal instruments permanent, while the targeted credits were rolled back. Designing durable industrial policy requires an explicit political-economy strategy, not just good industrial-policy theory.

[20]The choice of measurement basis matters for financial-instrument industrial policy. For DoE LPO alone, defensible measures span roughly a 50-fold range: the FCRA credit-subsidy cost appropriated by the IRA (about $11.7B for Title 17 and $5B for §1706) is the smallest; new annual conditional commitments (the $22B shown in Table 3) is intermediate; the outstanding portfolio balance is approximately $40–50B; and total authorized lending capacity post-IRA is approximately $540B (Title 17 plus §1706 plus ATVM plus tribal authority). We report notional commitments in Table 3 for comparability with the OECD QuIS framework.

[21]The EXIM episode complicates a pure concentrated-benefits account of durability. EXIM's principal beneficiaries (Boeing, GE, Caterpillar) were concentrated and politically organized, yet they were unable to prevent a four-year shutdown. What distinguished this case was perhaps ideological framing: whereas bonus depreciation is "tax relief to support investment," EXIM was portrayed as "corporate welfare." Durability of fiscal industrial policy may require both concentrated beneficiaries and a protected ideological framing.

[22]DiPippo, Mazzocco, and Kennedy (2022) focus on comparing Chinese industrial policy spending to other large economies, including Brazil, France, Germany, Japan, South Korea, Taiwan, and the US. By their definition, the US industrial policy is around 0.39% of GDP in 2019, lower than our estimates. They then place China as the largest spender at 1.73%, followed by South Korea at 0.67%, France at 0.55% and Japan at 0.50%. Differences from our comparison can largely be attributed to measurement and definitional differences.

[23]European Commission State Aid Scoreboard can be accessed at `https://competition-policy.ec.europa.eu/state-aid/scoreboard/scoreboard-state-aid-data_en`. Accessed March 17, 2026.

[24]The vertical axis measures the number of measures undertaken, not the magnitude of the distortion.

[25]In the industry cross-section, the relationship is complementary rather than substitutive: Ray (1981) showed that US tariff and non-tariff protection are jointly determined and positively correlated across industries, with non-tariff barriers supplementing tariffs in the same already-protected sectors. The substitution we document operates in the aggregate time series, not within the cross-section.

[26]The early-1980s ramp-up partly reflects the 1978 start of Bown (2016)'s coverage; the level around 1980 should not be read as a complete count of active contingent protection.

[27]Export controls are themselves a long-standing instrument, from the Cold War-era CoCom regime through the Export Administration Act and its successors; the pandemic briefly added a public-health variant, with 2020 restrictions on exports of personal protective equipment. The 2022 rules extended the same instrument to advanced semiconductors and the equipment to produce them.

[28]The comparison between 2015 and 2025 is not quite like-for-like. The 350 number (from Bown (2016)) is a stock of contingent cases in force in 2015, whereas the Global Trade Alert figures are based on flows of new interventions (Evenett and Fritz, 2022). But, over 2018–2025 the Global Trade Alert records only 346 new anti-dumping, countervailing-duty, and safeguard interventions, against 4,911 new subsidy and local-content interventions.

[29]We do not suggest that subsidies and local content were absent before 2018, just that their scale increased.

APPENDIX

DATA SOURCES AND METHODOLOGY

Tax Expenditure Data

Sources: We construct provision-level tax expenditure estimates for 26 IRC provisions from FY1967 to FY2029 by combining four sources in order of priority:

1. Joint Committee on Taxation (JCT) reports (FY1967–2028)
2. Manual extractions from JCT and Treasury historical reports (FY1967–1986)
3. National Priorities Project (NPP) database (FY1974–2019)

For each provision-year observation, we select the highest-priority non-missing value. All estimates use the "revenue loss" method, which calculates the reduction in tax liability relative to a normative tax baseline. Provisions are classified into three tax tiers—*narrow* (core R&D incentives), *broad* (targeted energy, manufacturing, and domestic production incentives), and *general investment* (economy-wide capital subsidies including the ITC, accelerated depreciation, bonus depreciation, Section 179, and IRC 199A)—with a separate *supplementary* category for provisions tracked but excluded from all headline totals. The general investment tier is tracked separately from the headline broad definition; see the concordance table below.

Data cleaning: Where the NPP database reports sub-components alongside aggregate totals for the same provision, we retain only the aggregate (maximum value per provision-year). We exclude provisions targeting housing (IRC 168 rental/buildings), employee stock ownership (IRC 48 ESOP), and residential energy (IRC 25C/25D). Observations exceeding ten times their expected range are capped to correct extraction errors. No JCT or Treasury report was published for FY1973; we interpolate values for five provisions (IRC 48, 174, 613, 263c, and ACRS/ADR) from reports JCS-20-73 and JCS-11-75.

Forward projections (FY2025–2029): Projections incorporate the One Big Beautiful Bill Act (OBBBA, signed July 4, 2025) using JCT cost estimates from JCX-45-25 (December 3, 2025). Key provisions: restoration of permanent 100% bonus depreciation (IRC 168k), restoration of domestic R&E expensing (IRC 174), permanent extension of Section 199A, and partial rollback of IRA clean energy credits. On net, related tax expenditures rise from approximately $99B (FY2028, pre-OBBBA baseline) to approximately $261B (post-OBBBA).

Pre-1980 estimates carry greater uncertainty due to fewer source reports and inconsistent provision definitions between JCT and Treasury.

On-Budget Spending Data

Source: Office of Management and Budget (OMB) Historical Tables

- Table 9.8: Outlays for the Conduct of R&D, FY1949–2024
- Table 3.2: Outlays by Function and Subfunction, FY1962–2024

From Table 9.8, we separate civilian R&D (total minus Department of Defense) from DoD RDT&E. From Table 3.2, we extract Energy (function 270) and General Science, Space, and Technology (function 250), which enter the Broad definition layer as on-budget spending beyond R&D.

Exclusions. Commerce (function 370) is excluded because it is dominated by crisis-era programs—TARP ($170B in FY2009) and PPP ($608B in FY2020)—that are not industrial policy. Outside crisis years, Commerce spending is approximately $5–15B (under 0.05% of GDP). Transportation (function 400) is tracked as supplementary but excluded from the four primary layers.

Definition Concordance

TABLE A.1: DEFINITION LAYER CONCORDANCE

Layer	Components
Narrow	Civilian R&D (OMB 9.8) + IRC 41 (R&D credit), IRC 174 (R&D expensing), IRC 45X (advanced manufacturing PTC), IRC 48D (semiconductor investment credit)
Broad	Narrow + Energy (OMB 270) + Science/Space/Technology (OMB 250) + IRC 48 energy (energy ITC, post-1979 sectoral form), IRC 45/45Q/45V (energy production credits), IRC 48C (energy investment credit), IRC 30D (EV credit), IRC 29/45K (nonconventional fuels), IRC 199/250 (domestic production/FDII)
+Defense	Broad + DoD RDT&E (OMB 9.8)
+Defense+Finance	+Defense + DoE Loan Programs Office, Export-Import Bank, SBA 7(a)/504, USDA GSM-102/B&I
General Investment	IRC 48 (general investment tax credit, pre-1979 form), IRC 168/168k/ACRS (accelerated depreciation/bonus depreciation), IRC 179 (expensing), IRC 199A (qualified business income deduction). Tracked separately from headline definitions; see Section II.1 and Figure A.1
Supplementary	Transportation (OMB 400) + IRC 613 (percentage depletion), IRC 263(c) (intangible drilling costs), IRC 42 (LIHTC), IRC 45C (clinical testing)

Each layer is additive: +Defense includes everything in Broad, which includes everything in Narrow.

A note on §45X and §48D. The Narrow tier is theoretically motivated by the innovation-externality rationale (Griliches, 1992; Bloom, Schankerman, and Van Reenen, 2013); the Broad tier captures sectoral and supply-chain targeting. §45X (Advanced Manufacturing Production Credit) and §48D (Semiconductor Investment Credit) could also have been classified in Broad rather than Narrow: their justification is supply-chain resilience and national security rather than knowledge spillovers per se. We retain them in Narrow because they were structured alongside §41 and §174 as the integrated tax-credit architecture of the CHIPS and IRA legislation, and treating them together preserves the readability of post-2022 figures. Reclassifying §45X and §48D into Broad would shift roughly 0.1 percentage point of GDP from Narrow to Broad in FY2024 without altering the Comprehensive total.

Federal Credit Programs

We track four federal credit programs whose primary mission includes industrial, export, or technology finance:

- **Department of Energy (DoE) Loan Programs Office (LPO):** Title XVII (Sections 1703/1705) innovative energy loans and Advanced Technology Vehicles Manufacturing (ATVM) loans. Coverage: FY2009–2024.
- **Export-Import Bank (EXIM):** Export credit guarantees and direct loans from Annual Management Reports and Congressional Budget Justifications. Coverage: FY1996–2024.
- **Small Business Administration (SBA):** 7(a) and 504 loan programs. Federal exposure is calculated as 7(a) approved volume $\times$ 75% guarantee rate + 504 approved volume $\times$ 40% federal share. Coverage: FY1991–2024.
- **US Department of Agriculture (USDA):** Foreign Agricultural Service GSM-102 export credit guarantees and Rural Development Business & Industry guaranteed loans. Coverage: FY1992–2024.

Measurement: We report **notional amounts** (face value of loans and guarantees), consistent with the OECD QuIS methodology (Criscuolo, Lalanne, and Díaz, 2022). This differs from the **subsidy cost** approach used in federal credit budgeting under FCRA, which estimates the net present value of expected government losses. Notional amounts are appropriate for measuring the scale of government involvement in credit markets and for cross-country comparison; they overstate fiscal cost relative to subsidy-cost measures.

Exclusions: Development Finance Corporation ($12.1B in FY2024; primarily international development), MARAD Title XI ($\sim$$1.3B; immaterial), HUD Section 108 (urban development), and Treasury CDFI Fund (community development).

Patent Data

Source: USPTO PatentsView bulk data files, covering 8.2 million utility patents granted between 1976 and 2024. We assign each patent its primary Cooperative Patent Classification (CPC) code from the retrospective classification file, which applies the current CPC scheme consistently to all patents regardless of grant year. Patents are mapped to IP-relevant sectors using CPC subclass prefixes (e.g., H01L for semiconductors, B64 for aerospace).

Verification: Aggregate patent counts match USPTO published annual statistics within 0–24 patents for 1980–2021. PatentsView undercounts relative to USPTO for 2022 ($\sim$2.9%) and 2023 ($\sim$14.4%); 2024 data are preliminary.

Value Added and Employment Data

Value added: Real value added growth by manufacturing subsector is computed from BEA Chain-Type Quantity Indexes (Table 8, 2017=100), covering 1997–2024. Subsectors are classified by IP intensity based on cumulative tax expenditure receipt and defense R&D allocation: *high* (Computer/Electronics, NAICS 334; Chemicals including Pharmaceuticals, 325; Aerospace, 3364OT), *medium* (Motor Vehicles, 3361MV), *low* (Primary Metals, 331), and *very low* (Textiles, 313TT; Apparel, 315AL).

Employment: Manufacturing employment by NAICS subsector from the Bureau of Labor Statistics Current Employment Statistics (CES) survey, 1997–2024 (annual averages of monthly seasonally adjusted series). Sectors match those used for value added.

International Comparison Sources

- **European Union:** European Commission State Aid Scoreboard
- **China:** DiPippo, Mazzocco, and Kennedy (2022) (CSIS "Red Ink" report)
- **OECD:** Quantifying Industrial Strategies (QuIS) project (Criscuolo, Lalanne, and Díaz, 2022)
- **IMF:** World Economic Outlook, Chapter 3 (International Monetary Fund, 2025)

Definitional differences limit direct cross-country comparison. US figures capture federal tax expenditures and appropriations; EU figures capture notified state aid; Chinese figures aggregate programs with varying transparency. The OECD QuIS project provides the most methodologically consistent cross-country framework.

Normalization and Projections

Nominal GDP and the GDP deflator are from FRED (quarterly series), averaged to fiscal year convention (Q4 of the prior calendar year through Q3 of the current calendar year). All real values are expressed in FY2024 dollars. Shares of GDP are computed as nominal spending divided by nominal GDP. GDP projections for FY2025–2029 use the CBO January 2025 baseline ($\sim$4.5% nominal growth per year).

Broad Definition Including General Investment Incentives

As discussed in Section II.1, our headline broad definition excludes general investment incentives (the Investment Tax Credit, accelerated depreciation, bonus depreciation, Section 179 expensing, and the qualified business income deduction). Figure A.1 shows the compositional breakdown of the broad definition when these instruments are included. Including general investment incentives raises the FY2024 broad measure from 0.72% to approximately 1.06% of GDP. The most dramatic historical effect appears in the 1980s, when the ITC and ACRS together exceeded 2% of GDP at their peak in FY1986, before collapsing after the Tax Reform Act of 1986.

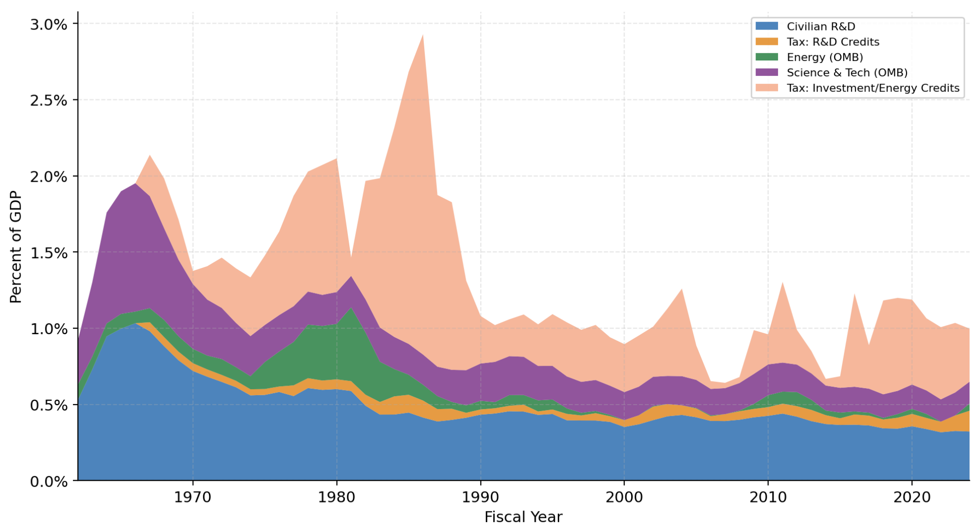
Decomposition of the Narrow Tax Band: §41/§174 versus §45X/§48D

Section II.1 flags an ongoing classification choice: the Narrow tax tier in our headline series sums four IRC provisions (§41 R&D credit, §174 R&D expensing, §45X advanced manufacturing PTC, §48D semiconductor investment credit). The first two are justified by the innovation-externality reasoning; the latter two are justified by sectoral and national-security considerations. Figure A.2 reproduces the standard composition of the Broad definition (Figure 4) with the Narrow tax band split into these two subgroups. The decomposition shows that essentially all of the post-2022 increase in the Narrow tax band is driven by §45X and §48D rather than by §41 and §174.

Sectoral Incidence of §168(k) Bonus Depreciation, 2018–2022

The data in Table A.2 highlights that bonus depreciation is statutorily horizontal but practically concentrated: roughly one-third of all claimed amounts flow to manufacturing and the technology sectors combined, and another 15 percent to real estate. Oil and gas are a relatively small share of the total. The provision was made permanent at 100% by OBBBA in July 2025, scored by JCT at approximately $363 billion over the FY2025–2034 window. The decision to track §168(k)

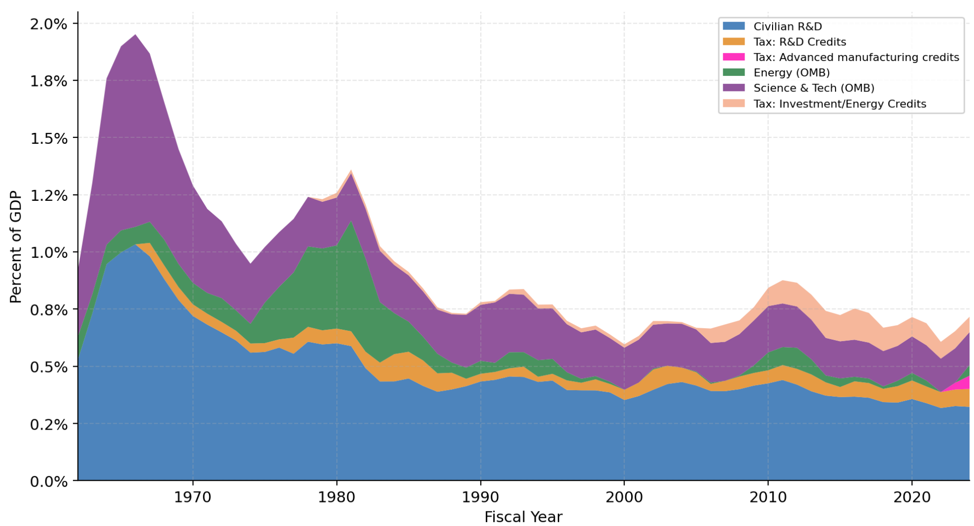
FIGURE A.1: INDUSTRIAL POLICY (BROAD INCLUDING GENERAL INVESTMENT INCENTIVES) AS SHARE OF GDP, 1962–2024



Notes: Figure shows the compositional breakdown of the broad industrial policy definition *including* general investment incentives (ITC, accelerated depreciation, bonus depreciation, Section 179, IRC 199A). Compare to Figure 4, which shows the headline broad definition excluding these instruments. Data are the nominal value of the industrial policy item over the nominal GDP in a given year.

Alt text: Stacked area chart decomposing US broad-definition industrial policy *including* general investment incentives as a share of GDP, 1962–2024. It adds the investment tax credit and accelerated/bonus depreciation to the bands shown in the headline broad figure. These general incentives produce a pronounced spike peaking near 2.9% of GDP in fiscal 1986, which collapses after the Tax Reform Act of 1986; the inclusive total ends near 1.06% in 2024.

FIGURE A.2: COMPOSITION OF BROAD INDUSTRIAL POLICY WITH NARROW TAX BAND DECOMPOSED, 1962–2024



Notes: Same Broad-definition composition as Figure 4, with the "Tax: R&D credits" band split into "Tax: R&D credits (§41, §174)" and "Tax: Advanced manufacturing credits (§45X, §48D)." Essentially all of the post-2022 increase in the Narrow tax band is driven by §45X and §48D, which were created or expanded by the CHIPS and Science Act and the Inflation Reduction Act in August 2022.

Alt text: Stacked area chart replicating the broad-definition composition, 1962–2024, but splitting the narrow R&D tax-credit band into two parts: the §41 and §174 R&D credits, and the §45X and §48D advanced-manufacturing and semiconductor credits. The figure shows that essentially all of the post-2022 increase in the narrow tax band comes from the §45X and §48D credits created by the CHIPS Act and the Inflation Reduction Act.

TABLE A.2: SECTORAL ALLOCATION OF §168(K) BONUS DEPRECIATION CLAIMED (CUMULATIVE 2018–2022)

Sector	% of total claimed	2022 $B
Manufacturing (NAICS 31–33)	20.3%	—
Real estate & rental/leasing (53)	15.2%	—
Wholesale & retail trade (42, 44–45)	14.5%	—
Information (51)	10.8%	136
Transportation & warehousing (48–49)	7.6%	—
Finance and insurance (52)	4.3%	—
Mining incl. oil and gas (21)	3.8%	—
Construction (23)	3.6%	—
Utilities (22)	3.1%	17
Memo: JCT specifically requested industry groupings (2022 only)		
Technology (semiconductors, software, computer mfg, data centers, telecom)	13.1%	152
Oil and gas	2.6%	30
Defense (large DoD contractors)	1.5%	18
Pharmaceutical	0.8%	10

Source: Joint Committee on Taxation response to Senate inquiry on bonus depreciation, October 28, 2025. Cumulative claim totals across all entity types (C-corps, S-corps, partnerships, sole proprietorships) for tax years 2018–2022 total approximately $4,766 billion in claimed bonus depreciation. Sectoral shares in the top panel are cumulative 2018–2022; the memo panel reports JCT's specifically requested industry groupings for tax year 2022 alone. The Information sector grew fastest, from approximately $82B (2018) to $136B (2022), reflecting the data center and cloud-infrastructure buildout. Utilities are eligible by statute but realize a limited share of bonus depreciation's economic benefit because regulated-utility normalization rules require flow-through of tax benefits to ratepayers.

separately from our headline definitions is a methodological choice for cross-country comparability with the OECD QuIS framework, which treats sector-neutral provisions as outside the industrial-policy scope. The sectoral-incidence pattern in Table A.2 suggests that this is conservative: a substantial share of post-2017 bonus-depreciation expenditure has flowed to the same sectors that explicit industrial-policy targeting addresses (advanced manufacturing, data-center and semiconductor infrastructure, capital-intensive real estate associated with logistics).