HIIA STUDIES

INDUSTRIAL POLICIES IN THE UNITED STATES: THEIR REVIVAL AND WHAT TO EXPECT

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Abstract

After decades of primarily adhering to free market ideas, in recent years industrial policies have returned to the toolkit of U.S. policy making. This is primarily the combined result of China's economic rise, widely perceived deindustrialization in the U.S., the rise of climate change as a credible threat to the current way of life, and Covid-19's recent demonstration of the value of reliable domestic supply chains in certain crucial industries. The 2024 U.S. presidential campaign indicates that this shifting towards greater government activism in the economy is set to continue regardless of who wins. In such an environment, European countries and the European Union will face increased pressure to tailor their own industrial policies, but it is crucial to keep in mind not only the benefits, but also the dangers of such policies, and carefully tailor them to mitigate possible pitfalls such as market distortions, the inefficient allocation of resources, or wasteful use of taxpayer funds.

Tags: United States, industrial policy, manufacturing, Donald Trump, Joe Biden, Kamala Harris

Content

> Computer chips, potato chips, what's the difference?
>
> *Michael Boskin, Chair of the Council of Economic Advisers under President H.W. Bush, 1992*

> [T]he theft of American prosperity will end. We're going to defend our industry and create a level playing field for the American worker - finally.
>
> *President Donald Trump, 2018*

> The markets will always reach the most efficient economic outcome, but sometimes the most efficient outcome is at odds with the common good.
>
> *Senator Marco Rubio, 2020*

> [T]here used to be an argument that you can't have industrial policy dictated by the government. Well, guess what?
>
> *President Joe Biden, 2023*

Introduction

After decades of primarily adhering to free market ideas and rejecting industrial policies as 'picking winners and losers', in recent years more active government role in prioritising and promoting certain industries has returned to the toolkit of mainstream American policy making. Similarly, while 'Infrastructure Week' has been a running joke for years in U.S. politics, more recently multiple bipartisan breakthroughs have been achieved in this area. The protection of domestic industries and jobs was brought into the mainstream of American politics by the 2016 Trump campaign, and in 2022 three bipartisan acts (the CHIPS and Science Act, the Inflation Reduction Act, and the Bipartisan Infrastructure Law) channelled over $2 trillion into the build-up of certain industries and elements of infrastructure.

Adherents of so-called 'industrial policies', usually defined as the government promoting specific industries that has been identified as critical for national security of economic competitiveness (e.g., Siripurapu and Berman 2023), attribute several benefits to such an approach. These include advancements in cutting-edge technologies and industries, the safe domestic sourcing of equipment necessary for national security or other fundamental aspects of society's functioning, and various societal advantages otherwise not served by purely market-based and profit-oriented business decision-making. Critiques, however, argue that industrial policies and large-scale government-funded infrastructure expansion can lead to growing debt, high inflation, increased global protectionism, and frictions with hurt allies.

Against this background, this paper aims to explore what reasons led to industrial policies' return to U.S. economic statecraft, what their impact on the U.S. economy and external partners, including Europe; what the 2024 U.S. presidential election could bring in terms of industrial and trade policies; and how Europe could and should respond to these developments.

To this end, the paper first provides a very brief overlook of industrial policies' conceptual debates and history in the world and the United States. It then takes a look at some signs around the 2010s that indicated a possible turn towards economic populism, less free trade, and more industrial policy before and under the Trump Administration. This is followed by the outlining of some key laws passed during the Biden Administration that could be interpreted as a full-fledged return of industrial policy into the toolkit of U.S. economic statecraft. The paper then tries to gauge what, based on the 2024 U.S. presidential campaign, could be expected in the future as far as industrial policies would go under a hypothetical Harris or second Trump administration. In the ultimate section the paper looks into U.S. industrial policies' impact on the global economy, with a specific emphasis on their impact on Europe and the European Union's reaction to them.

This topic is highly relevant for Hungarian policy makers for multiple reasons. Firstly, the rise of U.S. industrial policies and protectionism risk causing economic damage to, and provoke some forms of retaliations from the European Union, which by nature would profoundly affect Hungary's international economic environment. On the other hand, robust economic growth in the United States could increase growth rates in Europe and in Hungary and create trade and investment opportunities on the other side of the Atlantic. Finally, understanding industrial, infrastructural, and trade policies in the U.S. could inform policy formulation and decision-making in Europe, and it is in Hungary's eminent interest to exercise its influence in these processes in an informed and well though through manner.

Defining Industrial Policies, and on their Advantages and Disadvantages

The definitions of 'industrial policies' are many, and some of them strongly imply their users' general stance on such policies and on government activism in the economy in general - matters of intense debate in academia and policy making circles. Some definitions highlight industrial policies' supposedly arbitrary character, describing them as 'government action that encourages or directly subsidises the expansion of certain economic sectors over others' (Hillman and Manak 2023: 1) or as the government putting a thumb on the scale [instead of] assuming that market outcomes [will] produce the maximum benefit' (Alden in: Siripurapu and Berman 2023). *Why* specifically governments would result to such actions is left out from these definitions, as if this were irrelevant when industrial policies' merits are judged.

Other definitions offer more insight into the possible motivations for industrial policies (albeit sometimes at the expense of clearly delineating definitions and lists of examples). Industrial policies can be seen as 'the public' taking (part of) the risk off the shoulders of private actors, and in turn also guiding where investments should go to serve some specified public interest. In line with this latter approach, for the purpose of this paper 'industrial policies' will be defined as 'promoting specific industries that the government has identified as critical for national security or economic competitiveness' (Siripurapu and Berman 2023).

Sectorally speaking, the term 'industrial policy' has most commonly been used in relation to areas that are either crucial for the development of others (such as iron and steel, automotive, or shipbuilding); rely on niche strategic technologies that are crucial for national defence (e.g., aerospace manufacturing, space activities, arms industry); are absolutely critical for everyday life in modern civilisation (e.g., medical masks and vaccines during the 2020-2021 Covid-19 pandemic). Other contemporary examples include the manufacturing of semiconductors, electric vehicles, or equipment related to renewable energy production.

Most intended purposes of industrial policies can be grouped into three broad categories. The first includes the boosting of national economic development or competitiveness, moving up the economic development ladder, or industrialising underdeveloped countries. The second is the protection of national security by promoting and locally developing strategically crucial sectors. The third is furthering geopolitical ends by gaining superiority in such strategic sectors, dominating global trade, and making other countries dependent.

Based on how they are targeted, industrial policies can fall into four broad categories (Shih 2023). *Horizontal policies*, such as R&D tax credits apply to all firms regardless of their exact activities or locations. *Vertical* or *targeted policies* apply for a specific firm or sector. Examples include grants and tax credits for renewable energy production or semiconductor manufacturing. *Supply-side policies* mainly focus on reducing the cost of R&D and production in certain locations or with the use of particular materials or technologies. *Demand-side* policies in turn affect the domestic consumption of certain products or services, such as electric vehicles or renewable power. In practice, many policies are mixes of these categories, designed as a result of political compromises aiming for drawing support from a wide spectrum of constituencies.

The balance of industrial policies' advantages and disadvantages is a highly contested matter, being a key subject in the broader debate about the desirable role of governments and free markets in economic management. To its proponents, industrial policy is a natural expression of governments' responsibility to structure national economies, set priorities, and direct investment in a way that furthers national interest and serves certain national goals (Siripurapu and Berman 2023). Even putting aside mostly outdated arguments about states' superior ability to centrally plan investment and production, some argue that under certain circumstances governments may still well be in position to select certain sectors that are of particular importance for national development and promote these sectors' development in a reasonably efficient manner.

Free market mechanisms, such arguments go, may yield higher growth rates under existing paradigms and sectoral configurations, but are often blind to opportunities to 'break out' from existing roles in the international economic co-operation, or insufficient in amassing the necessary resources for certain developments that are crucial for certain national interests which cannot be expressed merely in the language of economic efficiency. Such considerations may include the domestic production of certain products that are critical for citizens' well-being or national security. Such products may be more efficiently produced in international division of labour, but dependence on external actors in their sourcing would put the country at undue risk. Examples include military hardware or, as highlighted by the 2020 Covid-19 pandemic, medical equipment.

Special considerations could also be given to certain societal benefits that are not factored into the decision-making of commercial enterprises. Such a benefit is the manufacturing sector's particular ability to provide relatively well-paid and stable jobs for relatively less educated male workers (something high and lower-end services or the agriculture cannot provide, at least not on scale); or its sustaining of a broader adjacent 'industrial commons' (Pisano and Shih 2012), and more broadly a wide ecosystem of researchers, specialists, suppliers, and industrial communities (and hence having relatively great 'multiplier' effects in employment, well-being, and innovation; Cass 2019)

Furthermore, even more pro free market commentators may concede that special protection for certain industries may be necessary in an international environment where other actors already engage in providing unfair advantages to their own enterprises. In such cases, sticking to free trade policies may put a country's own enterprises at unfair disadvantage, and enacting industrial policies may be a regrettable but nevertheless necessary course of action. Free trade may be the most efficient mechanism to organise the international division of labour, but it is also one that bad-faith actors can easily abuse - and in low-trust environments states feel the need to revert to less efficient but also less risky policies.

Against these arguments for industrial policies, most economists generally agree that policies aimed at influencing levels and composition of economic output and the sectoral structure of national economies tend to impose unnecessary costs on the economy as a whole, and create significant inefficiencies in resource allocation, and market distortions. This can especially be the case if policies are designed carelessly, are poorly implemented by an incompetent bureaucracy, or are captured by powerful economic and political interest group. A lack of fiscal discipline and the uncontrolled pouring of money into certain sectors or segments of the infrastructure can lead to price hikes, and protectionist measures can provoke foreign retaliation (Schwarzenberg 2024: 1; Manak 2024; Rockwell 2023). In the specific case of the United States, some policy analysts suggest that the country should lean into what it already is 'great at', namely, into relatively low levels of taxation and regulation, an extensive network of international trade agreements, and the attraction of highly skilled labour force (Lincicome and Zhu 2019).

In the political sphere, industrial policies are often criticised both on the left and the right of the ideological divide. On the right-to-centre side, counterarguments mostly follow the criticism of classical liberal economists: industrial policies are seen as the government unduly picking winners and losers instead of leaving this to market mechanisms, and as the wasting of precious taxpayer money. On the left-to-centre side, industrial policies are often labelled as 'corporate welfare', often aimed at already highly profitable industries at the expense of welfare programmes targeting vulnerable populations (see the opposition of Senator Bernie Sanders to the 2022 CHIPS Act; Whalen 2022).

Most mainstream proponents of industrial policies do not deny the relevance of such warnings and concerns. Some conceptually concede that state bureaucracy's ability to formulate and implement policies may be very imperfect, but assert that when good policies are done poorly, the benefits still outweigh the harm (Cass 2019). Most do not downplay concerns even to this degree, and readily agree that avoiding pitfalls related to poor policy making capacities (such as wasting public resources, stifling true innovation, creating inefficiencies, and contributing to the concentration of corporate power) is crucial for successful industrial policies (Hillman and Manak 2023). To this end, cautious advocates suggest, industrial policies should target industry areas that are at the higher end of the value chain (thus bringing more value domestically), compete in international markets (therefore being less at risk of falling behind in their quality and productivity when pampered by protectionist policies), have both civilian and military applications (this way contributing to both the national economy and national defence), and would be difficult to revive should they leave a country's shore (that is, scarce state resources should be focusing on avoiding hard-to-recover potential losses).

Industrial Policies Around the World and Throughout History

In one form or another, industrial policies have been employed by governments around the worlds since the advent of modern understanding of trade and economics.

Europe has a long tradition of industrial policies since Early Modern period. Wool manufacturing in England – later a main driver of the First Industrial Revolution – benefited from a combination of tariffs and trade restrictions since as early as the 14th century (Ha-Joon Chang 2002, in: Siripurapu and Berman 2023). While focusing more on monetary reserve accumulation rather than specific industries, 15-18th century European mercantilism arguably served as an intellectual precursor to 19th century industrial policies. France has a particularly strong tradition of state-owned enterprises in strategic sectors, which even today include industry giants like the automaker Renault or the aerospace manufacturer Airbus (the latter a joint effort of the French, the German, the British, and the Spanish governments). European governments traditionally also play a significant role in funding scientific research. Germany has a large network of public-private research institutes that channel innovation into commercial application, and Berlin's Industry 4.0 initiative introduced state subsidies and other policies to boost the country's high-tech manufacturing sector (Savage 2019, in: Siripurapu and Berman 2023).

While curbing protectionist measures between its member states, the European Union and its various predecessors have played some role in protecting and promoting European companies and industries vis-à-vis overseas competitors. In the 1980s, following trends starting out in the United States and the United Kingdom, industrial policies somewhat fell out of fashion in Continental Western Europe as well; nevertheless, like in the U.S., they have never gone away entirely. More recently, mostly as a reaction to Chinese and U.S. industrial policies, the EU has launched its own set of industrial policies aiming for achieving climate neutrality and digital leadership (European Commission 2024). The European Chips Act, specifically designed for the semi-conductor industry, is perhaps the biggest item in the EU's industrial policy toolkit.

In Asia, it is generally accepted that industrial policies played a key role in the 'Asian Miracle', that is, the spectacular post-World War II economic rise of first Japan, and then the 'Four Asian Tigers' of South Korea, Taiwan, Hong Kong, and Singapore. Japan itself has already had its industrial policy traditions, dating back to the *Shokusan Kougyou* ('industrial promotion') policies of the Meiji Restauration, centred around a close co-operation between business ventures and a professional civil service but chiefly relying on the dynamism of the former. After its defeat in WWII, the Japanese government promoted the development of export-led industries, such as steel production, automotive manufacturing, and semiconductors, relying on a mix of subsidies and direct and indirect trade restrictions. Once again, while benefiting from government policies and protection, these enterprise groups (*keiretsus*) were expected to perform well on their own right in the global market - indeed, a significant portion of the credit for Japan's emergence goes to the country's advanced entrepreneurial culture and the population's saving habits (Sakoh 1984, in: Siripurapu and Berman 2023). In large part following in Japan's steps, South Korea modernised its economy in the 1960s and 1970s using industrial policies that favoured a handful of domestically privileged but internationally competitive conglomerates (*chaebols*) in industries such as steel production, shipbuilding, electronics, and automotive manufacturing (Park 2003, in: Siripurapu and Berman 2023). Taiwan's semiconductor industry, now the single largest nod in the global semiconductor supply chain network, also benefited heavily from the government's funding of research and recruitment of engineers trained in U.S. institutions (Windham 2003, in: Siripurapu and Berman 2023).

Probably the single most significant shaper of contemporary industrial policies around the world is the People's Republic of China. Throughout the 1970s, 1980s, and 1990s Mainland China transitioned from a dominantly centrally planned economy to a mixed model combining elements of central planning and market mechanisms but maintaining a high level of overall government control and direction. Industrial policies have been a notable feature of China's post-reform political economy. According to varying estimates China has been spending about 1.7 to 4.9% of its

GDP on industry promotion through low-interest credits, grants, and tax breaks (Chen 2022, DiPippo et al. 2022, Makronóm Intézet 2023). Announced in 2015 and originally inspired by Germany's Industry 4.0 strategy, the Made in China 2025 strategy has been devised to achieve national technological self-reliance in areas such as electric vehicles, artificial intelligence, and semiconductors.

The exact role of industrial policy in the economic miracles of Japan, the Four Asian Tigers, and Mainland China is not uncontested. Some argue that other factors, such as involvement in international trade, played a more crucial role, and that industrial policies themselves have planted the seeds of later economic difficulties leading to slowdown and the emerging of bubbles. There are, however, even more obvious examples of industrial policies not delivering on their promise of rapid economic development.

In Latin America, where most countries' main role in the international economy is limited to the export of low value added mining and agricultural commodities, several governments in the post-WWII era attempted to prompt rapid development via import substitution industrialisation, implementing heavy trade restrictions and subsidising domestic industries. Such attempts were often undermined by corruption, inefficiency, and a rampant lack of fiscal prudence. Argentina, for instance, has declined from one of the world's richest countries at the eve of WWI to a middle income one today despite several waves of industrial policies (Spruk 2019).

In India, post-Independence attempts for state-led, socialistic, and markedly inward-looking economic development resulted in decades of relatively low average growth rates (sometimes dubbed the 'Hindu rate of growth'), and the emergence of the all-powerful 'Licence Raj' - a labyrinth-like system of obscure regulations licence requirements imposed at investors that stifled much of the country's entrepreneurial dynamism. The country entered a period of relatively high growth rates only in the wake of the 1990s' liberalisation reforms (Virmani 2004). More recently the country's government once again is aiming for steering investment into a set of key strategic industries, such as high value-added manufacturing, this time in order to turn India into an export-led manufacturing powerhouse (Shukla 2024).

Industrial Policy Traditions in the United States

Industrial policies can be traced back to the early independent years of the United States – a time when the country was overwhelmingly agricultural in character, heavily dependent on the imports of manufactured products (mainly from Great Britain), and vulnerable to disruption of its trade alongside the Atlantic coast or the Mississippi. In 1791, as the country's first Secretary of Treasury, Alexander Hamilton in his *Report on the Subject of Manufactures* made the case that protectionist tariffs, 'bounties' (in today's terms subsidies) for infant industries, and extensive 'internal improvements' (read: public works, infrastructure investments) would be essential for the young nation to develop its own industries and reduce dependence on European powers. In the early 19th century Kentucky Senator Henry Clay's 'American System' economic plan also proposed high protective tariffs and government-funded infrastructure development alongside the creation of a national bank and well-planned westward expansion (Sitaraman, in: Siripurapu and Berman 2023).

In the 1930s Franklin D. Roosevelt's New Deal policy massively expanded the Federal Government's role in national economic policy making, including by regulating wages and prices across a set of industries, aiming not only at economic recovery in the wake of the Great Recession but also at increasing the efficiency of large firms in key U.S. industries (Wade 2014: 387). Leading up to and during World War II, and then during the Cold War the so-called '(government-)military-industrial complex' become a crucial terrain for selective industrial policies, often taking the form of government-funded laboratories. Primarily driven by the Space Race and the Cold War arms race with the Soviet Union, these institutes delivered several breakthroughs in basic research and inventions of both military and civilian application such as nuclear power, jet engines, spaceflight, satellite communications, computing, or laser technology. Like the Transcontinental Railroad under Lincoln in the 1860s, the National Highway System in the 1950-60s was built with federal funding to connect distant parts of the country (Wage 2014: 387–388).

Despite these traditions, the U.S. has been relying on industrial policy to a relatively more limited degree than other developed countries, and usually turned to such recipes in response to perceived external threats (Alden, in: Siripurapu and Berman 2023) Large expansions in this system were often reactions to competitors gaining a perceived edge in the space and arms race – such as NASA's expansion in the 1960s or the establishment of the Defense Advanced Research Projects Agency (DARPA) in reaction to the Soviet Union's launch of Sputnik, or in the 1980s the founding of government-backed consortium of fourteen U.S. companies, Sematech, in response to Japan's breakthrough in the semiconductor industry. Still, usually justifying its existence primarily with national defence military considerations, these forms of industrial policy dodged some ideological criticism of market fundamentalists who granted that government should play a role at least in national defence and (to a lesser degree) in maintaining physical infrastructure (Negoita, in: Wade 2014: 388).

This situation started to change significantly in the 1980s when under the Reagan Administration general scepticism for the government's role in the economy and a fundamentalist faith in market mechanisms got bolstered in the public narrative (Wade 2014: 388). By the 1990s the 'Washington Consensus' firmly emerged as a standard set of economic policy recommendations, inspired by developments in American economic thought though mostly applied for smaller economies facing crisis. These policies included fiscal discipline, trade liberalisation, privatisation, deregulation, and restructuring public spending from subsidies towards healthcare and education (Irwin 2020).

To be sure, America's expensive military-industrial complex remained intact and military spending, and therefore overall public expenditures kept rising. In fact, after steady decline throughout the late 1960s and the 1970s, the Federal Government's funding of research and development (R&D) as a percentage of gross domestic product (GDP) increased slightly between 1980 and 1987 (from 1.1% to 1.2%), though by President Reagan's stepping down in 1989 it was back at 1.1% (National Center for Science and Engineering Statistics, in: Siripurapu and Berman 2023). This coincided with a time when some experts and policy makers were pushing to strengthen the channels of technology transfer between the military realm and civilian industrial application, in order to improve American companies' position against increasingly competitive Japanese and West German rivals (Wade 2014: 388–389).

Still, the Federal Government's role in scientific research and innovation has decreased, by far outpaced by the business sector's funding of R&D (first surpassing federal funding in 1980 and doing so ever since). Some also argue that the Reagan Administration's market fundamentalist views also hindered military technologies' spillover to civilian use (Wade 2014: 388–389). This trend did not go without criticism. In 1982 Robert Reich called for the revival of industrial policies in a Harvard Business Review article using a language strikingly similar to current days' articles to the same effect.

'Reaganite' or so inspired market-oriented policies continued well into the H.W. Bush, Clinton, and W. Bush Administration. Michael Boskin, Chair of H.W. Bush's Council of Economic Advisers famously asked, *'[c]omputer chips, potato chips, what's the difference?'* Still, even the 2000s saw some new acts and legislation resembling to industrial policy in the United States. Examples include the 2009 creation of ARPA-Energy, a DARPA-like agency of the Department of Energy aimed at developing new energy technologies, or President Barack Obama's 2016 *Manufacturing USA* initiative that has established over a dozen public-private research institutes around the country to promote advanced manufacturing processes (Siripurapu and Berman 2023). Government investment in high-profile failures like the Synthetic Fuels Corporation (1980) or the solar panel manufacturer Solyndra (2005) provided industrial policies' opponents with case studies to point to (Shih 2023).

Overall, the American experience with industrial policies is mixed. Hufbauer and Jung (2021: 95-96) scored 18 historical cases of industrial policy in the U.S. (including trade measures, targeted subsidies, and public and private R&D initiatives) in three dimensions: their effect on U.S. competitiveness in global and national markets; whether the annual cost per jobs saved or created was no more than the prevailing average wage; and whether support advanced the technological frontier. In their assessment, the history of American industrial policies provides ample examples of both total failures (such as trade barriers protecting steel and apparel industries) but also highly successful cases (e.g., DARPA's activities or more recently Operation Warp Speed).

China, Deindustrialisation, and the 2010s: Drifting Back to Industrial Policies

By the mid-2010s American policy makers on both the Republican and Democratic side were showing renewed interest in industrial policies (Schwarzenberg 2024; Feingold and Torkington 2024; Siripurapu and Berman 2023, etc.). The 2015-2016 presidential electoral season underlined significant popular discontent with the pro-market economic centrism of both parties' mainstream establishments. In the Democratic Party, self-styled 'democratic socialist' Bernie Sanders gave a tough primary fight to establishment candidate Hillary Clinton. On the Republican side, Donald Trump broke with several tenets of Conservative economic policy prescriptions, humiliated a large and ideologically diverse field of primary opponents, and narrowly won the White House against his economically more mainstream Democratic opponent. By the early 2020s both parties have officially subscribed to different but to a significant degree overlapping sets of industrial policies.

This shift was driven by four, partly interrelated, international and domestic economic and political developments or crises: (1) the rise of China, (2) growing domestic inequalities and the hollowing-out of the American 'Rust Belt', (3) the emergence of climate change as a widely perceived threat, and (4) the 2020-2021 Covid-19 pandemic.

In U.S. contemporary politics, the first two points - China's rise and American 'deindustrialisation' - are strongly interrelated, forming a combustive mix of economic and nationalistic resentment that is to a degree resilient to fact-based inquiries, and that in slightly varying forms motivate both large parties' economic policies and electoral strategies. The notion of the United States having undergone deindustrialisation is by no means uncontested. Those denying this notion (e.g., Grabow 2023 or Lilcicome and Zhu 2019) point out that at 15% of the global output the U.S. is still a major manufacturing powerhouse, ranked just behind China and still adding more value than Germany, Japan, and South Korea together (World Bank 2024). While acknowledging that certain low-tech, low-value-added, labour intensive sectors are no longer primarily located on U.S. soil, they assert that other, high-end sectors flourish, and the U.S. is still a leader in areas like automotive and aerospace manufacturing. While manufacturing's share in the American GDP indeed decreased over recent decades, this trend is similar in other advanced economies.

Those who in contrast see American deindustrialization as a major problem (e.g., Atkinson 2024). reply that relative to the size of its economy the U.S. is a manufacturing underperformer: its manufacturing output being only 13% larger than the combined output of Germany, Japan, and South Korea (despite its GDP being 80% larger), its manufacturing sector grew only 12% from 2005 to 2022 compared to a 34% growth in GDP at the same time, and manufacturing's share of employment in the U.S. (10.5% in 2018) lags far behind powerhouses like Germany (19%) or South Korea, China, and Japan (16.9% each; data from West and Lansang 2018).

Notwithstanding the overall economic gains of recent decades, is increasingly difficult to deny that significant segments of the American working class and industrial communities have become net losers of economic transformation (Probst 2023). In the period between 1983 and 2008 the U.S. economy roughly doubled its import of goods, and U.S.-based multinational companies roughly tripled their employment in lower-income countries, while manufacturing employment in the U.S. decreased from 22 million to 16 million (Ebenstein, Harrison and McMillan 2015: 1). Manufacturing employment bottomed below 12 million after the 2008-2009 Great Recession and has been continually growing ever since (except for a similar bottom during the Covid-19 pandemic) - but only has reached 13 million by 2024 (Probst 2023). While worker productivity has been rising roughly at the same long-term rate since the late 1940s, hourly compensation flattened were slightly declining throughout the 1970s and 1980s, and only rose moderately throughout the 2000s. Between 1980 and 2013 the cumulative growth of annual pay in the top 1% of earners has been 138%, while for the bottom 90% it has been mere 15%. Around the mid-2000s a middle-class person earned almost $18,000 less annually than if income inequality has not been growing since 1979. Real hourly wages for low-income earners have actually declined by 5% in the same period (Mishel et al. 2015). Even if the top half of the earning distribution were a net winner, the absolute number and high relative portion of those left behind was always going to have serious political consequences.

China’s economic, military, and technological rise has fundamentally altered the strategic calculus, and gave rise to fears about the loss of U.S. supremacy first in the Asia-Pacific and potentially even globally. This, after some decades of unipolar privilege, has brought back the logic of great power politics and security competition as key drives of U.S. foreign and national security policy making (Kroenig 2022, Jones 2020, Mearsheimer 2014). For long time strongly related to national security considerations, industrial policies aimed at sectors crucial for U.S. national security and technological supremacy became more attractive relatively suddenly.

Crucially, however, China’s economic rise has also been deeply felt by American consumers and workers, supplementing traditional national security considerations with a compelling economic case for industrial policies. It has not only fundamentally altered the strategic calculus in the Asia-Pacific region, but also led to considerable economic interdependence between China and the United States, the latter running an exponentially growing trade deficits vis-à-vis the former since the 1980s, and especially since China joining the World Trade Organization in 2001.

The exact reasons behind China’s rise and how harmful or not this trade deficit has been for the United States is not a settled issue. Trade expansion vis-à-vis China has resulted in considerably lower prices and therefore increase in the purchasing power of the average American consumer (Jaravel and Sager 2019). Nevertheless, there is a widely shared sense on the American side that increased trade with and investment in China has led to the outsourcing of U.S.-based manufacturing jobs, and therefore is a major reason behind significant job loss in the industrial Midwest and the decades-long stagnation of middle-class wages. In the 2000-2008 period 1 percentage point increase in import penetration from China has been associated with a 0.6 percentage point decline in the wages of sectorally affected American workers (Eberstein, Harrison and McMillan 2015: 27). Much of this job and wage loss took place concentrated in a handful of U.S. states: Indiana, Michigan, Ohio, Pennsylvania, and Wisconsin - the so-called 'Rust Belt' (Probst 2023).

Similarly, it is debated what China's trade surplus and its supposed negative on the U.S. can exactly be attributed to. Some warn against overstating the role of China's centrally managed economic model in the country's economic success (Lincicome and Zhu 2021). Still, as earlier, there is a widely held sense in the U.S. that both Chinese and earlier U.S. policy makers are deserving of blame. On the Chinese side, supposedly, Beijing's own industrial policies and 'unfair' trade practices (mainly Beijing's tight control over and artificial lowering of the Chinese Renminbi 's exchange rate vis-à-vis the U.S. Dollar) have essentially 'rigged' the rules-based system of global free trade, and therefore China's rise is an 'ill-gotten' success achieved at the back of the American working class. On the U.S. side, supposedly, earlier American administrations have foolishly opened up the country to free trade, such as by supporting China's accession to WTO or signing the NAFTA agreement with Canada and Mexico in 1992; thus, they betrayed the interest of the American working class and are complicit in China's ill-gotten success.

On the political left, the growing perception of climate change as a major threat has also been a source of souring on free market fundamentalism and increasing calls for green industrial policies. In 2019 a group of left-wing Democratic lawmakers led by New York Congresswoman Alexandria Ocasio-Cortez put forward the 'Green New Deal' proposal, echoing the interventionist policies of Franklin Delano Roosevelt's original New Deal between 1933 and 1938 and calling for a sweeping introduction of industrial policies aimed at sectors, technologies, and elements of infrastructure crucial for slowing down and reversing climate change (such as clean energy production or electric vehicle manufacturing and charging). The 2020-2021 Covid-19 pandemic further demonstrated that certain critical goods' (including vaccines, masks, and other medical equipment) supply chains are safer to be located domestically (Schwarzenberg 2024: 1).

The Trump Administration's Industrial Policies

Having been elected on an economically populist platform after defeating establishment Republican and Democratic elements, but at the same time in significant part relying on establishment Republican expertise in policy making, the

Trump Administration did arguably not implement a broad, coherent framework of industrial policies. It did, however, make the first tentative steps in bringing industrial policies back to mainstream American political economy.

To be sure: in many respects Trump admin stayed firmly within the Republican policy prescription. Much of its signature tax cut went to high-income individuals and corporations, with rather little actual focus on the rebuilding of Rust Belt industries. It nevertheless broke away from some elements of long-standing Republican orthodoxy by imposing punitive tariffs and other trade barriers against China and promising to bring back outsourced American jobs. Indeed, by the late 2010s much of the remaining Republican establishment has also softened up to less pro-market and economically more populist policies. Florida Senator Marco Rubio notably made a difference between the 'economically most efficient outcome' and the 'common good', the two of which could, but also could not be the same (Siripurapu and Berman 2023).

Perhaps the most consequential and (at the time) controversial move of the Trump Administration's economic policy was the 'Trump Trade War' with China. In 2017 various existing mechanisms of economic dialogue between the two countries were terminated, and by 2018 the U.S. and China were engaged in a full-blown trade war. Talks about de-escalation between late 2018 and early 2019, and then around the turn of 2019 and 2020 only yielded limited results, and the January 2020 U.S.-China Phase One Trade Deal has never been fully implemented. In the meantime, the U.S. has been actively working towards halting China's growing market share in the area of advanced telecommunication, especially when it came to the buildup of new 5G networks. These efforts were built around organising U.S. allies and partners into international coalitions against the use of Chinese manufactured telecom equipment, such as the 2020 'Clean Network' initiative (Salát et al. 2024).

These efforts, while not yet organised into a coherent framework of industrial policy, do meet some parts of industrial policies' definition. Still, the Trump Administration can arguably be credited for one of the most successful items of U.S. industrial policy in recent decades. Operation Warp Speed, launched in 2020 to boost the development of Covid-19 vaccines in the U.S., is an exemplary case for highly specialised and targeted industrial policies addressing a demand that private sector entities could not address in time just on the basis of market considerations. Under Operation Warp Speed, the Biomedical Advanced Research and Development Authority (BARDA) absorbed a significant portion of financial risks related to experimenting with some non-traditional practices and innovative technologies while authorities made steps to mitigate manufacturing challenges, for example by requiring contractors to prioritise vaccine production. Operation Warp Speed is now seen as a clear-cut case of success, resulting in multiple effective vaccines authorised for use, including ones based on technologies never before used (Shih 2023; Government Accountability Office 2021).

The Biden Administration and Industrial Policies' Unapologetic Comeback

While the economic populism of Trump played a key role in ushering in more openness to increased government role in U.S. economic decision-making, it was the Biden Administration that together with the Democratic majority in both houses of Congress passed a series of major pieces of legislation firmly within the framework of industrial policy (Siripurapu and Berman 2023). These include the Bipartisan Infrastructure Law of 2021 and the CHIPS and Science Act and Inflation Reduction Act, the latter two passed by Congress and signed into law by President Biden in 2022.

In 2020, in the wake of the Covid-19 pandemic, Joe Biden run his campaign on the promise of 'Build Back Better', proposing to invest hundreds of billions of USD into post-pandemic economic recovery and the re-fitting of the U.S. economy into a more resilient, more competitive, and ecologically more sustainable model. The greatest winner of this vision was promised to be the American middle class (The White House 2024). Some elements of this wider programme and the actually implemented record of Biden's agenda squarely fall into the realm of industrial policies. As early as January 2021 a newly inaugurated President Biden signed an executive order strengthening 'Buy American' laws that require the Federal Government to purchase goods and services from American companies (The White House 2021). Another executive order began the process of replacing the Federal Government's massive car fleet with American-made electric and hybrid models (Siripurapu and Berman 2023).

The first landmark legislation that implemented parts of the Biden Administration's industrial policy agenda with congressional support was the 2021 Bipartisan Infrastructure Bill. This bill allocated about $39 billion to the development of public transport infrastructure, including $4.9 billion for electric and hybrid vehicles. $15 billion is to be spent on expanding the country's electric vehicle infrastructure, including the building of charging stations.

In the Summer of 2022 Congress passed the CHIPS and Science Act with overwhelming support from Democratic representatives and senators and a significant minority of Republican lawmakers joining in (including Senate leader Mitch McConnel from Kentucky, Senator Mitt Romney from Utah, and Senator Lindsey Graham from South Carolina). The CHIPS and Science Act channelled some $280 billion into the manufacturing of semiconductors and related R&D activities by 2031, with the aim of shifting global semiconductor supply chains away from China and its direct geographical proximity and towards the United States. In this sector U.S.-based companies play leading role in the highest value-added segments, namely, design, research, and development. They, however, rely heavily on Taiwanese and South Korean suppliers when it comes to manufacturing, testing, and packaging.

About $174 billion of funding under the CHIPS and Science Act is to be invested in the broader public sector research and technology ecosystem; $52 billion is to be provided to companies building research facilities and factories in the United States; and $13 billion earmarked for scientific research and workforce training. A 25% tax credit was introduced for investment into manufacturing equipment. In addition to the manufacturing of computer chips, adjacent areas like quantum computing, advanced materials research, biotechnology, and space activities also stand to gain from the CHIPS and Science Act. Much of the funding is handled by the U.S. Department of Commerce, with significant resources allocated to the National Institute for Standards and Technology, the Manufacturing USA research institute network, the National Science Foundation, and the National Semiconductor Technology Center. In line with the spirit of some earlier U.S. industrial policies, the CHIPS and Science Act is categorised as a 'national security law', and it limits the access of foreign government entities, such as Chinese Confucius Institutes, to certain scientific and industrial activities. Companies seeking grants must also commit not to build certain types of facilities in countries like China, Russia, Iran, or North Korea.

Also in the Summer of 2022 did Congress pass and President Biden sign into law the Inflation Reduction Act (IRA). Re-branded under this name after lengthy Democratic infighting to imply the tackling of inflation, at the time (and currently) one of the most salient issues in U.S. domestic politics, the IRA is in fact a manifestation of the Biden Administration's 'Build Back Better' agenda, its primary aim being the increasing of government and private sector investment in the production and distribution of clean energy in the United States. As part of this effort, IRA has directed an additional $60 billion in grants, loans, tax incentives, and direct government investments into high-tech manufacturing and advanced transportation systems. This includes billions of dollars of grants for both the consumers and manufacturers of electric vehicles assembled in the United States and containing critical minerals mined in the U.S. or its closest trade allies (Feingold and Torkington 2024; Siripurapu and Berman 2023).

Under the IRA, the U.S. Department of Energy gets $12 billion to expand its credit facilities aimed at financing the development and modernisation of the U.S. energy infrastructure. $47.7 billion has been allocated to production-related grants and incentives, including tax credits for the production of certain parts and products such as critical minerals. For some products, including equipment for solar and wind power production or battery components, tax credits will incrementally be phased out by 2032. Tax credits for critical minerals will not be phased out (Makronóm Intézet 2023: 9). For consumers, a maximum of $7500 tax credit has been established for the purchase of electric vehicles made in North America. 50% of this sum can be claimed if at least 40% of the critical minerals used in the vehicle's battery were sourced from the U.S. or a close trade partner, while the additional 50% can be claimed if at least 50% of the battery's value has been added in North America. These thresholds will increase to 80% by 2027 and 100% by 2029, respectively. $500 million has been earmarked for strengthening the supply chain of critical minerals in the United States (Makronóm Intézet 2023: 9). A $3 per kg credit applies for the manufacturing of solar-grade polysilicon and a $12 per square meter credit applies for photovoltaic wafers (Shih 2023). Subsidies for green energy production have been set at $30 per MWh for carbon neutral capacities brought online since 2024, $15 per MWh for nuclear energy, $1.75 per gallon for fuel produced using green energy, and 3 per kg for hydrogen fuel (Makronóm Intézet 2023: 8-9).

Altogether, according to figures of the European Commission and Credit Suisse, the U.S. has spent about $337 to $568 billion on renewable energy production and electric mobility, $185 billion on R&D, and $70 billion on semiconductor and computer chip manufacturing in the 2020s (Makronóm Intézet 2023: 3).

In addition to measures to boost high-tech manufacturing at home, the Biden Administration also took steps to curb China's global share in such markets and access to emerging technologies. Export control measures implemented against China cover technologies and equipment used for the designing and manufacturing of semiconductor products, building and maintaining supercomputers, and developing advanced artificial intelligence or quantum computers. In 2023 President Biden outright banned investment in some segments of China's tech industry for U.S. companies. In addition to the United States, a number of U.S. allies and partners followed steps in restricting Chinese access to these critical technologies. Due to their role in these industries, the co-operation of Japan and the Netherlands was particularly crucial for an effective stranglehold (Allen 2022).

Real Economic Impact at Home and Abroad

Firmly in the intersection of current political polarisation and longtime academic debate, the impact of Trump's and Biden's industrial policies on the U.S. and global economy is even harder to assess than industrial policies' general advantages and disadvantages are.

On a more academic level, proponents of industrial policies claim that in the 2020s they are critical to counter-balance China's state-led development pathway, to secure the supply of critical minerals and products, and to keep the United States' current edge in technologies critical for economic growth, strategic superiority, and necessary environmental transformation in the 21st century. Even partially sympathetic experts warn though about the potential drawbacks of artificially shortening supply chains and forcibly relocating them into the U.S. Such efforts can in the end lead to less resilient and less effective supply chains (O'Neil 2021) and cause inefficient distortions of international trade (Hillman and Manak 2023).

To this academic debate gets filtered through a lens of highly polarised political debate that only grew more intensive as the 2024 presidential election is approaching. While the Democratic side celebrates the Inflation Reduction Act as a landmark legislation achieving breakthrough in green investment and providing good-paying union jobs, the Republican side blames it for resulting in an oversupply of money and therefore (ironically) in high levels of inflation. Even within the left-of-centre segment of American politics and intellectual life criticism and at best conditional support for the Biden Administration's industrial policies are both present. Vermont Senator Bernie Sanders voted against the CHIPS and Science Act, calling it a form of corporate welfare. Others point out that while a well-designed industrial policy is a good starting point to doing away with earlier decades' neoliberal worldview, more efforts are needed to better distribute gains and increase labour's share in positive outcomes (Bivens 2023).

For business leaders who were socialised in the previous era of free market idealism, the revival of industrial policies around the world and in the U.S. has created an unfamiliar environment. Executives need to learn how different types of industrial policies - both in their countries of operation and in countries with competing sectors - affect their business (Shih 2023). There are signs nonetheless that recent industrial policies are having the desired impact on business decisions. After the passing of the CHIPS and Science Act, American and foreign companies announced new projects in the tens of billions of USD in total value. Micron, based in Boise, Idaho, plans to invest $40 billion into new microchip manufacturing facilities in the U.S. by the end of the 2020s, creating 5,000 jobs in the high-tech sector and raising the share of the U.S. in the global manufacturing of memory chips from 2% to 10%. Intel, based in Santa Clara, California, is set to invest $20 billion in two facilities in Ohio, $20 billion in the expansion of an existing facility in Arizona, and $3.5 billion in a new one in New Mexico. Taiwan's flagship TSMC, currently the world's largest manufacturer of semiconductors, is seeking subsidies for a $12 billion factory already under construction in Phoenix, Arizona (this project was to be completed by 2023 but struggled to get operational well into 2024) (Whalen 2022).

Although they are mainly aimed at improving domestic economic outcomes and playing to domestic political audiences, the Biden Administration's industrial policies will have a significant effect on global supply chains and innovation ecosystems. While on the one hand funnelling money into a range of sectors where technological advancements and market implementation are crucial for global environmental sustainability, these policies also project the image of the U.S. becoming from the defender of free market into a major disruptor (Hardwick and Tabarias 2023).

Industrial policies are manifestly spilling across national borders. Some aspects of this process resemble the logic of 'security dilemma' as used in the field of security studies (see, e.g., Glaser 1997). While states may not inherently be convinced of industrial policies' merits relative to a system of free international trade, they may feel that other states' industrial policies would put them at a disadvantage. This dynamic can lead to cycles of distrust and threaten with spiralling into full-blown trade wars.

Their revival in the United States has very much been inspired by their application in China, in part because they were perceived as successful (see, e.g., Davis 2024) and in part because they were believed to create unfair disadvantage for American industries (Pettis 2024). In turn, Washington's embracing of industrial policies incentivised other countries and country groups - including the European Union - to also consider the implementation of similar policies.

In addition to this uncontrolled 'rippling effect', the Biden Administration and its external partners are making some effort to co-ordinate their industrial policies, in part to avoid unintentional disadvantageous consequences and in part to better tailor them against China's domination of critical industries and technologies. The Biden Administration has proposed the formation of a 'Chip 4' alliance between the U.S., Japan, South Korea, and Taiwan to increase co-operation in de-risking semiconductor supply chains away from China. Some commentators have described the proposed formation to an 'OPEC-style cartel for the digital age' (Lee 2024). American companies' onshoring efforts could in theory undermine Taiwan's 'Silicon Shield' (i.e., its absolutely essential role in the global semiconductor industry, making the rest of the world deeply vested in its security), but Taipei is pivoting towards a strategy of securing U.S. and Japanese guarantees by playing along and contributing to its partners' semiconductor development strategies (Mok 2024). The G7 formation is also taking an increasing role in managing the sourcing of critical minerals (Shih 2023).

Perspectives After the 2024 Election

The inherent blurriness of political rhetoric does not make the exercise of forecasting the future of industrial policies under a hypothetical Harris or Second Trump Administration easier. While both the Harris and the Trump campaign go great length to portray the opposing side as an existential threat to America's economic prosperity, and important policy differences between them can indeed be discerned, it is also notable that there is a general (if unrecognised) agreement about the necessity of increased government role in steering the U.S. economy towards a more competitive and socially more just course - including through the use of industrial policies. In the end, just as after sharp criticism the Biden Administration refrained from breaking with the Trump Administration's tariffs with China, it can be expected that much of the industrial policy framework set up since 2021 would remain in place, or be built upon, under a Second Trump Administration. Differences are to be expected though as to the specific set of industrial policies implemented by the two candidates.

It is characteristic of the Harris campaign to avoid too much policy specifics, including on industry, manufacturing, and international trade. Curiously, Democratic presidential nominee Kamala Harris has mostly stayed quiet about manufacturing. For a Vice President of an administration that through various acts and programmes channelled over $50 billion into industry and infrastructure in the Rust Belt states, this spending record is relatively rarely mentioned in her campaign events and media messages. The topic is not entirely sidelined: the Harris campaign recently claimed that the Vice President is 'proud to have helped create 800,000 manufacturing jobs [through] the high-tech manufacturing CHIPS bill [and] the bipartisan infrastructure law'. Still, elements of the 'care economy' (childcare, affordable housing, and helping out small businesses) feature much heavier in the Democratic messaging - a striking difference with Joe Biden's 2020 campaign (Bade and Gibson 2024). Some promises, such as the one about limiting corporations' price gauging practice (Buchwald 2024), while not strictly related to industrial policies, suggest a continuation of breaking with the free market oriented worldview and embracing a more activist government role in the economy.

It would, however, be simplistic to read this shift as a signal of major policy correction on the Democratic side. Inflation is still American voters' number one economic concern, and economic concerns are expected to dominate the 2024 November election's outcome (Pew Research Center 2024). Joe Biden's earlier focus on manufacturing-related messaging has likely been measured to be closely attached to big-ticket spending programmes like the Inflation Reduction Act in voters mind, and messaging focusing on issues related to struggles with rising cost of living appear to be more attractive.

Unsurprisingly, Donald Trump's 2024 campaign's economic messages chiefly focus on the cumulative inflation the U.S. has experienced during the Biden Administration. While according to earlier polls this line of messaging has been highly advantageous for Republicans, recent Morning Consult figures suggest that Harris has closed the trust gap with Trump in the area of economy at 46% each (Peck 2024). In addition to the Harris campaign's refocusing of messages, this could plausibly be attributed to Donald Trump's personal difficulty with staying on message and communicating in a way that is appealing not only to rally-going supporters but also the wider and not yet committed audience in key swing states.

Some of the rare specificities provided by either candidate's campaigns on economic issues, Trump's post-2024 economic platform includes a sweeping rise of tariffs on imports from China. Currently, average tariffs on imports from foreign countries stand at 3%. Trump promised to increase this to 10% on most countries and a whooping 60% on all Chinese goods. More recently, a 20% tariff on imports from other countries was floated by the candidate. At a rally, a 100% tariff was promised on all foreign-made cars (Lehner 2024). It is also conceivable that a Second Trump Administration would curb or let expire some of the green subsidies and tax breaks implemented under the Biden Administration. Some recent changes in Trump's rhetoric, especially when it comes to electric vehicles, suggest that the candidate is willing to soften his position on some elements of the green technology agenda, especially in sectors where there is a sizeable domestic and global market for products and where competition with China is especially sharp. It could, on the other hand, signal a more personified approach to industrial policies: tone shift on electric vehicles came right after Tesla leader Elon Musk's endorsement of Trump, and may not be all that reassuring for Tesla's competitors (Bikales and Siegel 2024).

In the light of the relative absence of specific promises on the Harris side and Donald Trump's specific promises being mostly in line with policies under his previous administration, the following cautious predictions can be made. Both the Harris and the Trump campaign indicate the continuation of increasing government role in managing the U.S. economy. There are no promises on either side to break drastically with the industrial policies implemented under the Biden Administration. This suggest that just as the Biden Administration sticked to the earlier much criticised 'Trump tariffs', a Second Trump Administration would not break with the core tenets of the Bipartisan Infrastructure Bill, the Inflation Reduction Act, or the CHIPS and Science Act either, no matter how bitter mutual blaming has been and is around issues like inflation or consumer prices.

Still, there are significant differences as to what industrial policy tools either side tends to prefer. Much like between 2017 and 2021, the Trump campaign seems to focus on increasing tariffs as a mean to protect American industries, put foreign import at a disadvantage, and reduce China's trade footprint. In contrast and following Biden's footsteps, Harris will likely focus on subsidies, increasingly strict 'buy American' rules in government purchases, and support for R&D, when it comes to promoting selected sectors and industries (Lehner 2024). Sectorally, Trump tends to focus on traditional, labour-intensive heavy manufacturing, such as the automotive or steel industry. The Biden-Harris duo has and probably will focus more on high-tech industries such as semiconductors and environmentally sensitive industries such as renewable power generation and electric cars (Lehner 2024).

Accordingly, external partners' reaction to the policies of a Harris or Second Trump Administration would likely be also different. Increased grants, tax credits, and buy-American rules benefiting high-tech manufacturing and green industries in the U.S. are unwelcome developments for most other countries, partners like the EU and foes like China alike. Reactions, however, are likely to be limited to implementing their own similar policies, as in the case of Europe, or mostly keeping in place their already existing policies, as China does. Reactions to another wave of punitive tariffs under a returning President Trump would likely more drastic (Lehner 2024). In such a scenario it is difficult to imagine major trade partners, and especially China, not to retaliate against U.S. exports in the like. If the previous trade war with China is any indication, this retaliation would altogether fall behind the initial U.S. 'offensive' in terms of tariff rates and the range of goods for which they are applied. They would, however, be tailored to target product groups that are especially painful for key constituencies of U.S. politics while having somewhat limited impact on consumer prices in China. American agricultural products could especially be vulnerable to Chinese retaliation should a Second Sino-U.S. Trade War unfold (Lehner 2024; Wei 2024).

Europe's Dilemmas and Responses

Following the announcement of the IRA, there was a plethora of heated reactions in Europe, with the 27 EU member states unanimously agreeing that the U.S. regulation poses a threat to European economy. The views expressed that key supply chains of future industries are formulating currently, and that the semiconductor industry, the solar and hydrogen industry as well as electric vehicle manufacturing could move from Europe to the U.S. as a result of the American industrial policy. Others alarmed that European companies and the EU itself were losing further competitiveness to the US, which had already been eroded by higher energy prices. All this could trigger a wave of relocation by European firms to the opposite shore of the Atlantic. Such fears have been reinforced by corporate announcements such as Volkswagen's planned investment in South Carolina. In its analysis, Bruegel pointed out that there is already a growing fear of deindustrialization in the EU and that the continent is missing out on the growth potential offered by the green transition. The painful experience of exposure to Russian gas in the context of the war in Ukraine further underlined the importance of creating green energy production and security of supply in the EU without being overdependent on external actors. Finally, the slow GDP growth of the euro area compared to the United States and the recession of the German economy in 2023 have contributed to the persistence of fears of lagging behind.

As a result of these perceptions, Brussels has adopted a 'Europe cannot afford not to react' approach, resulting in the introduction of the Green Deal Industrial Plan, the Net Zero Industry Act and the Critical Raw Materials Act. One of the main objectives of these packages is to simplify the regulation of the green technology production and to make it easier to provide state subsidy for investment projects. In addition, the EU set up the aim of achieving 40% self-sufficiency in strategic industries. For that reason, through different funding schemes, the EU has made available twice as much funding as the IRA in renewable energy. As for the relaxation of state aid limits for five years, the EU has for the first time allowed member states to match their own subsidies to the ones available outside the EU if the strategic project would otherwise be moved outside Europe. The example of the Swedish battery manufacturer Northvolt's mega-factory in Germany shows that the simplified access to state aid can indeed be decisive in some projects to be located in the EU rather than in the U.S.

Despite the undoubted success stories, Brussels' strategy of responding to U.S. subsidy programs with its own subsidies is being heavily criticized. On the one hand, there is a renewed debate (also on the other side of the Atlantic) about the effectiveness of state intervention versus market driven mechanisms. Beyond the theoretical debates on economic policy, a more concrete risk, according to some, is that U.S. industrial policy and the EU's response could trigger a subsidy race between geopolitical allies – of which China would be the main beneficiary at the end of the day. Others see an even greater risk of a subsidy race within the EU itself, reducing incentives to innovate, creating excess production capacity and ultimately driving industrial investment to more developed and wealthier member states. There are already signs that this is a realistic scenario, as since February 2022, 48.4% of state aid approved by Brussels has been awarded to investment projects in Germany, with France second at 22.6% and Italy a distant third at 7.8%. This highlights the fundamental problem that industrial policy at national level is eroding the common market principle. Moreover, the planned temporary relaxation of state aids could easily become permanent, as its phasing out could face political resistance from the main beneficiary member states.

Critics of the subsidy race with the U.S. also argue that the relocation of European firms to the U.S. is a process that started before the IRA, partly driven by cheaper energy and partly because of corporate strategies that shift production closer to key markets. However, this is also valid for the EU as an investment location, as strong demand and the mature market could make the Union an attractive manufacturing location regardless of available state subsidies. It is also a noteworthy argument that creating a new production capacity is a long-term corporate decision, which cannot be made solely on the basis of public subsidies schemes available for an uncertain period of time. And according to a study by the Franco-German Council of Economic Experts, the EU has already made financial resources available through its various funding schemes to promote the green transition on a scale comparable to the IRA. Therefore, the macro-economic impact of U.S. subsidies on the EU is expected to be minimal.

In the EU, there is not only a debate among economists and analysts on the appropriate response to U.S. industrial policy, but also a lack of consensus among member states and Brussels on the adequate strategy. As a sign of this, in February 2024, nine member states and Iceland sent a joint letter to the Commission warning of the risks of a global and an intra-EU subsidy race. The letter's signatories argue that the EU should focus on tools of improving competitiveness, such as simplifying the regulatory environment, fast-tracking permitting, improving the efficiency of capital markets and promoting free trade and investment agreements. All this shows that one of the main questions for the coming years will be that beyond the funding whether a comprehensive vision is created, and whether industrial policy planning can be taken from national to the European level.

Conclusion and Recommendations

Early chapters of this paper demonstrate that industrial policies, despite their dubious reputation among economists, have never completely went away, either globally or in the United States itself. The recent decade has nevertheless revived them at a level not seen since the 1980s, and now there is a barely apologetic consensus about their necessity even in the U.S., which previously positioned itself as a global champion of free trade and hands-off economic policies.

In the U.S. context this shift back to government interventionism has been the result of five main drivers: a sense of industrial decline and economic disenfranchisement among large (though minority) segments of the American society; the economic rise of China which in large parts of the U.S. polity has been identified as the main source of the aforementioned decline and disenfranchisement; the emergence of climate change as a major threat to human society; and, most recently, the 2020-2021 Covid-19 pandemic that underlined how overstretched global supply chains can be a source not only of economic benefit but also serious security risks.

In 2016 Donald Trump was elected President of the United States on a platform promising major economic realignment in favour of previously overlooked working classes. In the White House, he imposed unprecedented tariffs on China and presided over one of the most successful items of current-day industrial policy, namely Operation Warp Speed, which delivered multiple efficient vaccines to the Covid-19 virus within less than a year. It was, however, the 2021-2025 Biden Administration that in earnest implemented a widespread, multi-sectoral framework of industrial policies, centred around three landmark legislations: the Bipartisan Infrastructure Law of 2021, the CHIPS and Science Act of 2022, and the Inflation Reduction Act of 2022. Together these three laws poured over $2 trillion into technologies and industries designated as strategically important or crucial for climate sustainability, including semiconductor manufacturing, electric vehicles, or the production of clean energy. While amidst the ongoing 2024 electoral campaign neither side is willing to give quarters to the other and recognise commonalities in their economic vision, this continuity of trending towards more government activism, and the fact that both the 2024 Harris and Trump platform show into the same general direction, highlights that such commonalities do in fact exists.

This is not to suggest that a hypothetical Harris or Second Trump Administration would implement the same mix of industrial policies. Should she be elected Kamala Harris is more likely to follow in President Biden's footsteps in relying primarily on grants and tax credits aimed at the domestic promotion of certain industries, while President Trump would likely keep focusing on punitive tariffs imposed on China and other trade partners. Such U.S. policies will by all likelihood provoke countermeasures from both international partners like the European Union and foes like China; albeit a wave of Trump-style tariffs is more likely to result in stronger retaliatory measures.

Against this background, European policy makers need to carefully assess what mix of industrial policies would best attain such policies' intended goals while minimise their commonly cited disadvantages. Despite the many arguments its proponents bring up in favour of industrial policies, it needs to be recognised that the vast majority of economists reject the notion that in a neutral environment they were on balance economically beneficial. On the other hand, a world where China is doubling down on its long tradition of industrial policies and the U.S. is reverting to its own such tradition is no neutral environment. To keep up with, or at least reduce the rate of falling behind its two largest competitors, European industries will need 'equalisers' - but ones that do not lead to overly wasteful practices or pamper European companies into a 'learned helplessness'. Based on the literature and empirical evidence from countries where industrial policies have in the past been implemented successfully, this requires careful planning and competent bureaucracies, the selection of industries that by default face a stimulating competition at home or internationally, and a clear focus on the higher ends of the value chain.

With cutting edge technologies in the 2020s (in contrast to easily scalable digital technologies in the 1990s and 2000s) being relatively resource intensive, it makes eminent sense to make the framework of the European Union the primary vessel of achieving these objectives. This should not mean that individual member states have no room for manoeuvre on their own in certain segments and industries. It nevertheless needs to be recognised that among the world's leading powers the United States and China bring an unparalleled scale to the table when it comes to the size of their talent and capital pool, and when it comes to artificial intelligence, big data, or space activities, this scale is the decisive factor.

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