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Global Industrial Policy: Measurement and Results

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Abstract

Industrial policy is pervasive, yet practitioners lack systematic, comparable data on its use. We develop a novel approach to measure the amount of industrial policy by applying machine learning techniques to policy texts to subsequently classify policies at scale. Using a readily available source of mass data on commercial policies, we present insights into current industrial policy use around the world. Our findings suggest that industrial policy is on the rise globally, with rich countries leading the race in terms of its use. Countries across the income distribution target a similar set of industries and use many of the same tools. The most common tools require high levels of fiscal and administrative capacity, however, and evade global surveillance more easily.

Key Messages

1.
The amount of industrial policy globally has doubled over the past 10 years, with high-income economies leading the race in terms of industrial policy use.

2.
Both industrialized and developing countries tend to target similarly broad industries and use a common set of non-tariff measures.

3.
Yet their focus within these industries differs. In high-income economies, green energy policies are far more prevalent.

Quantifying industrial policy

Countries have been experimenting with industrial policy for centuries to promote their economic development. Recent initiatives such as the U.S.'s "CHIPS for America Act" or China's "Made in China 2025" signal a re-emergence of industrial policy. In light of the current spate of new large-scale initiatives, gaining a better understanding of global industrial policies is crucial. Yet the return of industrial policy onto the global agenda has exposed the lack of comparable data on international policy practice.

BOX 1.
What is industrial policy?

Governments use industrial policy as a strategic approach to change the structure of their domestic economy. Industrial policy is motivated by a long-term goal – a vision of how the economy *should* be structured. These long-term goals can take numerous forms: growth, modernization, industrialization, etc. Industrial policy specifically seeks to change the relative prices across sectors or to direct resources towards selectively targeted activities (e.g. export, R&D), with the purpose of shifting the long-term composition of economic activity.

Looking at one policy measure alone usually does not tell us whether it is part of an industrial policy or not. Consider tariffs, for example, a standard tool used for industrial policy purposes. The challenge in this regard is that tariffs are used for other purposes as well, e.g. from increasing government revenue to managing terms of trade. Thus, a country's tariff schedule alone does not tell us whether a given tariff pursues an industrial policy objective or not. This problem is not limited to tariffs; many common industrial policy tools (e.g. preferential loans, subsidies, land grants, equity stakes) serve alternative goals beyond industrial policy.

We develop a novel approach to address this challenge and use machine learning techniques that automatically classify industrial policies based on common policy descriptions.[1] Instead of using policy measures themselves, our methodology focuses on the language of policy descriptions to identify those that include goal-oriented actions aimed at changing the composition of economic activity. These goals are reflected in policymakers' language. After all, it is policymakers who subsidize battery manufacturing for electric vehicles to expand this industry in the economy. It is also

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policymakers who promote FDI in apparel to boost domestic manufacturing.

We apply our classification algorithm to a large international dataset of commercial policies, the Global Trade Alert (GTA).[2] The dataset spans from 2009 until today and contains English language descriptions of each policy, thus allowing us to use standardized brief policy descriptions as inputs in our machine learning model.[3] Applying our classifier to these descriptions provides counts of new industrial policy use at the country-sector-year level. This disaggregated data allows us to examine the features of current industrial policy use globally.[4]

Characterizing the global landscape of industrial policy

Industrial policy is on the rise

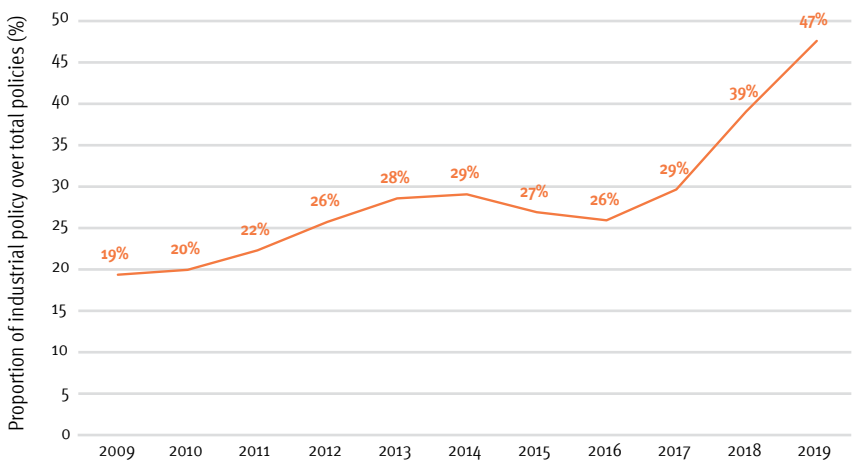
Industrial policy has increased dramatically over the past decade, growing more than twofold. Figure 1 presents the share of trade policies that our model has classified as industrial policy throughout the 2010s. Around 20 percent of all policies in the GTA in 2009 were labelled 'industrial policy', while in 2019, that same share was nearly 50 per cent. This increase is also apparent when we examine the number of policies[5], which suggests an industrial policy use that has more than doubled. This finding provides empirical support to the widely held view among experts that industrial policy is on the rise and may actually be accelerating.

Industrial policy is unevenly used across countries, with high-income industrialized countries taking the lead

Industrial policy skews heavily towards high-income industrialized countries (see Figure 2). High-income countries implement about five times as many industrial policies, on average, as low- to middle-income economies. Among the latter, it is primarily middle-income industrial economies (such as BRICS) that use industrial policies. We found virtually no industrial policy in low-income countries.

Nevertheless, it is possible that measurement issues or reporting biases account for some of the skewness in industrial policy use as our technique measures it. As no other global measures for industrial policy use exist, we conclude that our findings are the best current estimates for the distribution of industrial policy use. Future work should focus on improving the scope of these measures, with a focus on validating and expanding data coverage in low- and middle-income countries.

FIGURE 1: INDUSTRIAL POLICY IS ON THE RISE

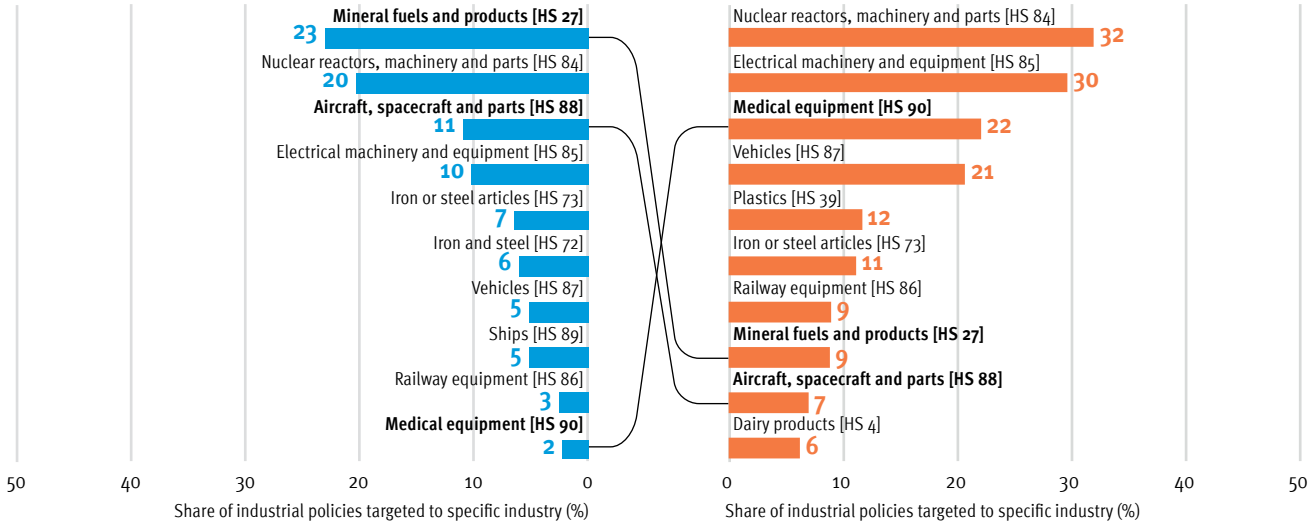


Source: Authors elaboration based on the Global Trade Alert

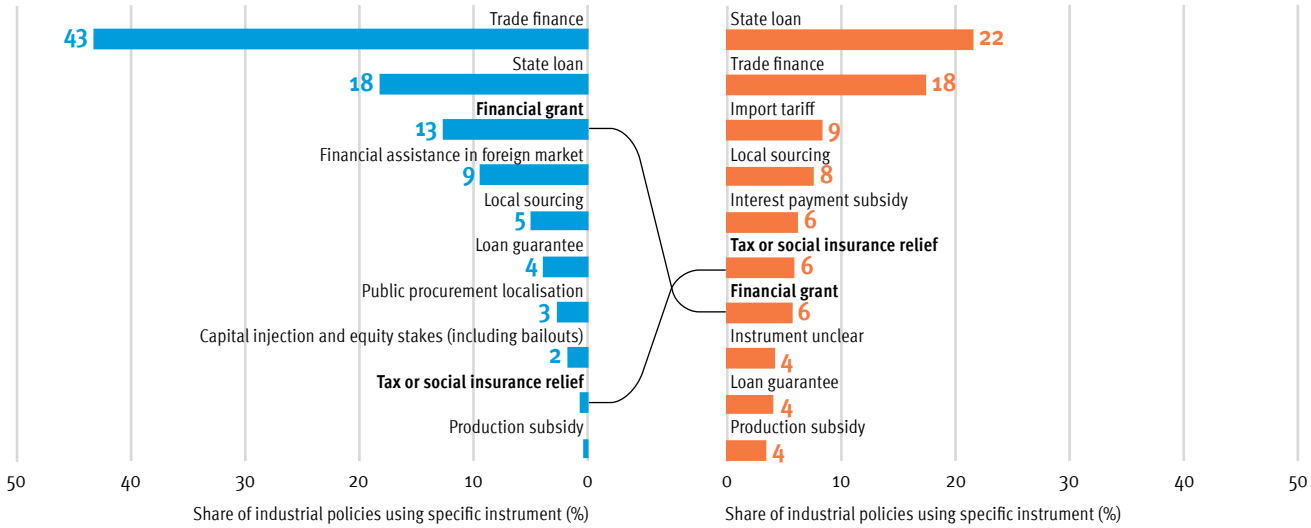
FIGURE 2. THE WHO, WHERE AND WHAT OF INDUSTRIAL POLICY

Average number of industrial policies implemented between 2009 and 2019

Top ten industries targeted



Top ten instruments used



Source: Authors elaboration based on the Global Trade Alert

Industrial policy targets similar industries across the income distribution

Although the extent of industrial policy varies across poor and rich countries, we find that countries generally tend to focus on similar types of industries. When comparing the top 10 industries targeted by industrial policy in high-income economies (left panel) and in low- to middle-income economies (right panel), the overlap is striking. Countries across the income distribution target machinery and transport equipment, as well as some heavy industry.

Interestingly, one exception to the above are policies directed at green energy and in particular at clean electricity generation, which are far more prevalent in high-income economies. This activity is assigned to Harmonized System (HS) code 27 in the data, and labelled "Mineral fuels and products" in the figure. The majority of industrial policies in rich countries targets this particular sector, but it is further down the list in low- to middle-income economies (ranking 8th). As HS 27 includes both hydrocarbons and clean sources of electricity generation, it is important to distinguish between the two types of activities. In high-income economies, most industrial policies in this sector (68 per cent) are directed at green sources of electricity generation. In low- to middle-income economies, we observe the reverse: only 28 per cent of industrial policies in HS 27 target clean energy while the remainder focus on hydrocarbons.

Although the industries focused on by both high- and low- to middle-income economies are similar, the former tend to target their industrial policies more narrowly. The average industrial policy in high-income economies covers 1.3 individual industries[6], while in low- to middle-income countries, it targets 3.7 industries.

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Contemporary industrial policy is converging towards a common set of policy measures – with one exception

As regards specific instruments used for industrial policy, we again find a substantial overlap between rich and poor countries. Countries across the income distribution heavily rely on trade finance, state loans, financial grants and local sourcing requirements. There is one striking difference, however, namely the use of import tariffs in countries in the lower parts of the income distribution (where it is the third most frequently used tool). Import tariffs are mostly absent in high-income countries' industrial policy. Finally, financial assistance in foreign markets, public procurement and capital injection and equity stakes are more widely used in high-income economies, while low- to middle-income economies relay more heavily on tax relief as an industrial policy tool.

With the exception of import tariffs, all policy tools in the infographic require spending (or foregoing) government revenue. Given that low- to middle-income countries are more fiscally constrained than their rich counterparts, the skew in industrial policy towards rich countries seems reasonable, given the policy tools most frequently used to conduct industrial policy.

Unlike non-tariff measures, tariffs increase fiscal revenue and require a lower fiscal capacity. This is likely one of the reasons why less developed countries use them more intensively. In our case, however, the database we used might not be capturing the full picture. The GTA only focuses on the flow of policies, not on the stock (a tariff rate needs to be changed or newly implemented to show up in the GTA). Our "flow"-based measures may therefore not capture these policies, if lower income countries also fall back on their "stock" of tariffs to meet industrial policy ends.

One last aspect worth noting is that 60 per cent of industrial policies are targeted at specific firms. This is consistent with the type of policy measures we find to be most commonly applied to implement industrial policy, trade financing, state loans and financial grants. Taken together, the extensive use of intricate, non-tariff and firm-specific measures characterizes contemporary industrial policy, which is likely to require a substantial level of state capacity.

Government capabilities in developing countries need to urgently be strengthened

As the world moves towards more overt industrial policy, lower income countries may find it increasingly difficult to compete in international markets. Simply put, high-income countries have the fiscal and administrative capacity to more readily deploy modern industrial policies in ways that may be challenging for lower income countries to emulate. Moreover, from the perspective of global surveillance, sophisticated non-tariff measures are also more difficult to detect than import tariffs, which may be more commonly used in low- to middle-income countries to meet industrial policy ends.

In light of our findings, more research is urgently needed to improve existing data and methodologies. Our work suggests that industrial policy seem to very well be part of policymakers' toolkits in high-income economies. As the world economy grapples with how to maintain a rules-based trading system in a changing global economic environment, this pattern should be acknowledged. Our findings further identify an urgent need to strengthen government capabilities in developing countries.

Endnotes

1 See Juhász, R. & Lane, N. & Oehlsen, E. & Pérez, V. C., (2022). «The Who, What, When, and How of Industrial Policy: A Text-Based Approach».
2 See https://www.globaltradealert.org/
3 We use a version of the data that ends in August 2020.
4 The findings presented in this brief are a first step in addressing issues of measurement in industrial policy, one that calls for further work. Our method provides a proof-of-concept using readily available mass data, and this data is necessarily limited. While our machine learning methods have their own natural limitations, a key concern is the coverage of mass policy databases, especially their coverage of low- and middle-income economies. Future research is crucial, both in terms of refining classification methods and, in particular, in expanding the scope of policy descriptions.
5 See endnote 1.
6 More specifically, an individual 2-digit Harmonized System code.

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