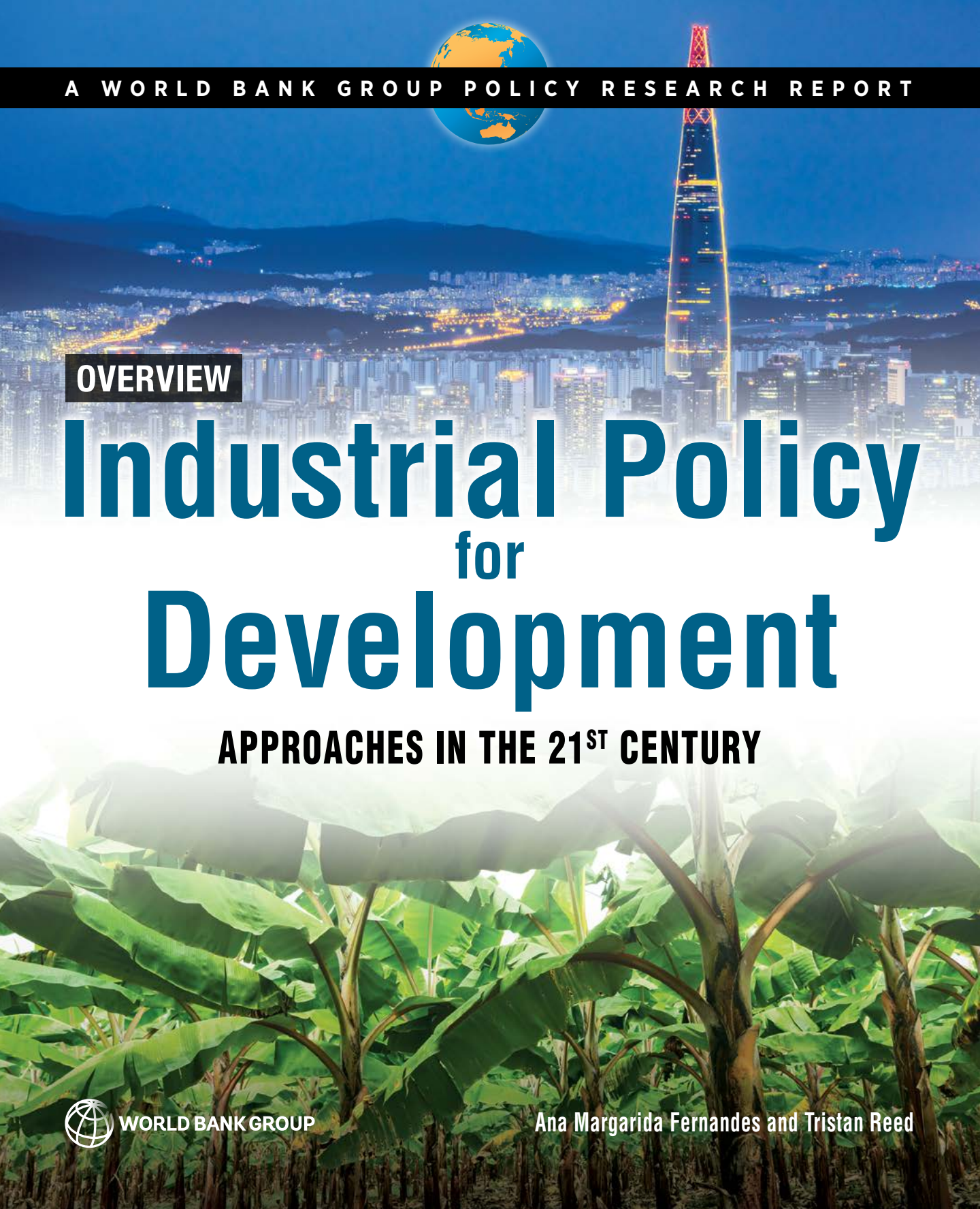

A WORLD BANK GROUP POLICY RESEARCH REPORT

OVERVIEW

Industrial Policy for Development

APPROACHES IN THE 21ST CENTURY

Ana Margarida Fernandes and Tristan Reed

WORLD BANK GROUP

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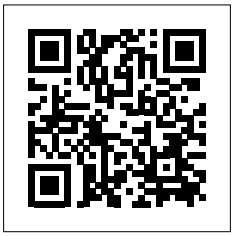

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This booklet contains the overview and chapter 7, as well as a list of contents, from *Industrial Policy for Development: Approaches in the 21st Century.* doi: 10.1596/978-1-4648-2276-6. A PDF of the final book, once published, will be available at https://openknowledge.worldbank.org/ and http://documents.worldbank.org/, and print copies can be ordered at www.amazon.com. Please use the final version of the book for citation, reproduction, and adaptation purposes.

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Overview

For decades, economic growth has been built on a simple formula: governments stuck to sound macroeconomic management, investing in education, health, and infrastructure, and opening markets; private firms did the rest. That approach thrived when global trade was booming and the rules of the game were stable. Not so today: global growth has slowed, automation is thinning out the labor market, and protectionism and subsidies have surged in advanced and middle-income economies. These new conditions could close off the easy avenues for rapid economic growth.

Not surprisingly, governments across the world have begun to resort to a once controversial policy. *Industrial policy*—the range of policy tools that governments use to shape what an economy produces rather than leave it to the discretion of markets alone—is back with a vengeance. Despite recent headlines, advanced economies are *not* the heaviest users of industrial policy. As this report documents, developing economies use it more intensively. New data show that among upper-middle-income economies—those with per capita incomes ranging from US$5,000 to US$14,000—total business subsidies now average 4.2 percent of gross domestic product (GDP), the highest on record. A review of the most recent national development plans of 183 countries reveals that all countries target growth of at least one industry, and that, on average, low-income countries target 13—more than twice the number in high-income countries. Interest in industrial policy has seldom been higher.

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In a recent survey of World Bank country economists, 80 percent reported that their client governments were seeking advice on industrial policy—overwhelmingly with the goal of spurring faster economic growth and job creation.

This report aims to provide a pragmatic answer. It offers the first comprehensive guide to industrial policies for development in the 21st century. It is distinctive in four respects. First, it covers a broad set of industrial policy tools—15 in all, well beyond the scope of existing literature, which focuses mainly on tariffs and subsidies (refer to box O.1). Second, it offers practical guidance on policy design and implementation, including how to target industries and design effective institutions. Third, it incorporates new evidence from more than 60 countries. Finally, it identifies targeted approaches that can be taken when governments seek to use industrial policy to pursue specific goals: earning foreign exchange, creating jobs, reducing pollution, and strengthening economic resilience.

Box 0.1 Industrial policy means different things to different people

This report offers a comprehensive definition of industrial policy in terms of 15 policy tools. Academic studies of industrial policy focus mainly on import tariffs and subsidies. Beyond that, some governments have emphasized industry-targeted "productive development policies" such as industrial parks or skills-development programs, or "new" industrial policies designed to tackle broader national objectives such as national security or reduced air pollution.

The 15 industrial policy tools that are examined throughout the report encompass all these categories. The tools are grouped into three broad categories: *public inputs* tailored to the needs of a specific industry or activity that are underprovided by markets, *market incentives* aimed at changing prices to make investment in a particular industry or activity more attractive than it otherwise would be, and *macroeconomic interventions* that incentivize industrial policy goals at the economywide level.

The report highlights four public inputs (industrial parks, skills development programs, market access assistance, and quality infrastructure); nine market incentives (import tariffs, public procurement rules, local content requirements, commodity export bans, "quid pro quo" arrangements that require technology transfer, and subsidies for production, innovation, exports, and consumer demand); and two macroeconomic interventions (competitive exchange rate devaluation and tax credits for research and development).

Industrial policy is more replicable than previously thought

It is now more than 30 years since the World Bank first approached the question of whether industrial policy is desirable for developing economies. In assessing the causes of the "East Asian miracle" in 1993, the World Bank's first Policy Research Report concluded: "Our assessment is that promotion of specific industries generally did not work and therefore holds little promise for other developing economies."[1] The report did find that a few "selective interventions" boosted exports and growth in northeast Asia, but these economies benefited from a relatively rare set of circumstances. First, their industrial policy interventions occurred in the context of high educational attainment, high savings rates, and low inequality. Second, the interventions were targeted to tackle problems in the functioning of markets. And third, the relevant governments had the expertise and ability to set and monitor the necessary economic performance criteria. The exact recipe, however, might not work "in other settings," the report noted.

Recent evidence suggests that industrial policy is more replicable than previously thought, depending on the precise tools used. Three broad shifts warrant a reexamination of the initial skepticism. First, the talent available to governments has expanded substantially as education levels have risen across the world. Second, the political environment in many countries has become more supportive of development objectives, delivering, for instance, improved child and maternal health and lower inflation. As a result, many political systems today appear more capable of implementing effective and efficient industrial policies. Third, most economies today trade much more with the rest of the world than they did in the early 1990s. That gives governments less room to tightly protect or micromanage industries but also means it is easier to see what works and what does not: if local firms can compete successfully in global markets, it usually means the industrial policy is working.

Success stories are no longer rare. In Romania, the government offered payroll tax exemptions to qualified computer engineers, incentivizing workers to get degrees in the field. This program helped to turn Romania into a leading global hub for software development. In Brazil, a program redirected research toward locally important staple crops and ecological conditions, laying the groundwork for Brazil's global presence in agriculture. Back in East Asia, researchers revisited the Republic of Korea's experience 33 years later.

They found that the impact of the government's big push for heavy and chemical industry (in the 1970s) caused the economy's GDP to be 3 percent larger *each* year in the long run. This benefit far exceeds the economic cost of the government's "large subsidies," estimated by the World Bank's 1993 report at 2.4 percent of GDP in only *one* year.

Two important caveats are warranted. First, notwithstanding these cases, most research on industrial policy focuses on manufacturing. Yet in a changing world, governments are increasingly exploring industrial policy in other sectors, including agriculture, mining, skilled professional services, and tourism. Second, most evidence on industrial policy assesses effectiveness in terms of opening new markets or revenue growth rather than efficiency—that is, whether the benefits are greater than the costs. On efficiency, the evidence remains strong for investments in a specific set of fundamentals, such as human capital and a sound macroeconomic framework. Nonetheless, the current period of uncertainty warrants experimentation with industrial policy, to see what is effective and efficient.

The evidence gathered in this report reinforces the importance of the preconditions for success first identified in the 1993 report. But effective industrial policy also depends on other characteristics—three, in particular: (1) the size of a country's local market; (2) the *capacity*—referred to here as "bandwidth"—of the government to interact with many businesses and industries at once; and (3) its budgetary room for error, or "fiscal space." The 15 available tools for industrial policy—ranging from industrial parks and worker skill development all the way to import tariffs, production subsidies, and competitive exchange rate devaluations—are a mix of sharp and blunt instruments, and they require varying degrees of market size, government capacity, and fiscal space to implement. Table O.1 provides a selection of country-characteristic combinations and the feasible industrial policy tools in each case from the comprehensive typology included in the report. For many developing economies, these characteristics have improved relative to decades ago: larger middle classes and regional trade agreements provide larger local markets; specialized government agencies like national development banks and investment promotion agencies have additional capacity that complements line ministries; and improved tax collection and access to capital markets has improved fiscal space.

Table 0.1 Typology of feasible industrial policy tools for selected combinations of country characteristics

Country characteristics			
Government bandwidth	Local market size	Fiscal space	Feasible policies
Small	Small	Small	• **Industrial parks** • *Commodity export ban* • *Competitive exchange rate devaluation*
Large	Small	Small	" • **Skills development** • **Market access assistance** • **Quality infrastructure**
Large	Large	Small	" " • *Technology transfer quid pro quo* • *Import tariff* • *Local content requirement*
Large	Large	Large	" " " • **Production subsidy** • **Specific innovation subsidy** • *Export subsidy* • *Public procurement* • *Consumer demand subsidy* • *Research and development tax credit*
			Comparative advantages and market potential also shape feasibility at the industry level.

Source: Original table for this publication.

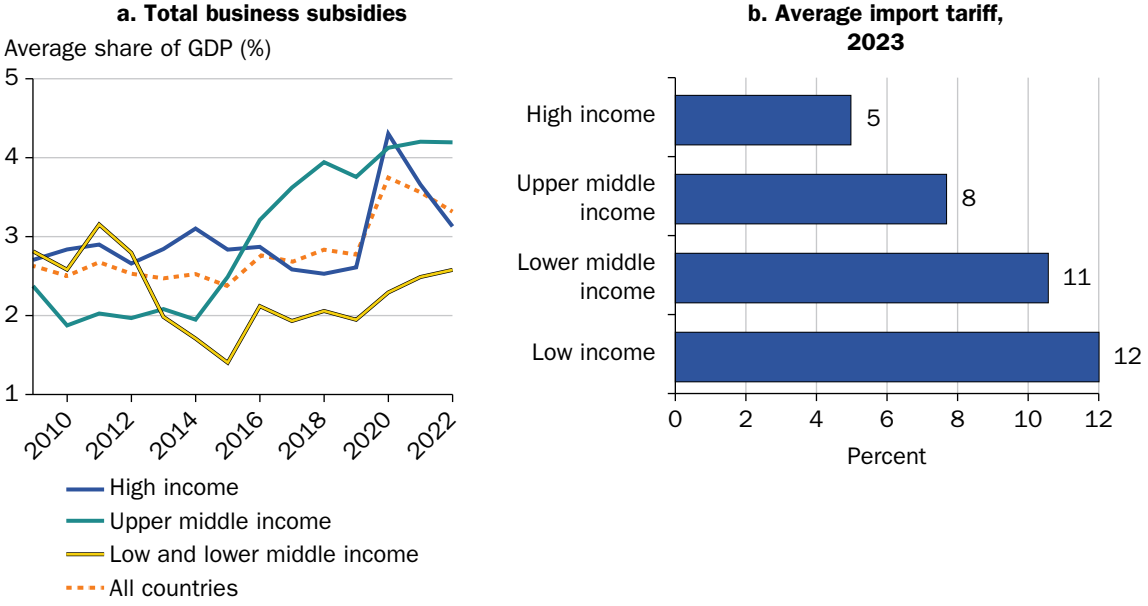
Note: Refer to chapter 1 of the report for a comprehensive typology. Refer to chapter 4 on comparative advantages and market potential. **First-choice policies** in bold address market failures head-on by subsidizing the activities that are underprovided. *Second-choice policies* in italics shape industry outcomes by intervening indirectly in adjacent markets, such as through a commodity export ban, foreign currency market, trade values, consumer markets, or the tax code. The ditto symbol (") indicates that all policy tools listed in the cell above it are feasible for countries with characteristics listed in the row.

In general, when government capacity is small, local market size is small, and fiscal space is also small (as in the case of most low-income economies still), industrial parks constitute the best industrial policy tool. When all three of those advantages are large (as in the case of the world's biggest economies), then import tariffs, innovation subsidies, local content requirements, and many other policy tools can be effective: beneficiary businesses can achieve economies of scale locally, and the government has the capacity to discipline their performance and not sacrifice expenditure on social services. These countries enjoy the widest range of opportunities to experiment with industrial policy for development. In between, countries must choose carefully from a mix of options. The situation today, however, represents some inversion of those principles: this report finds that low-income economies—usually characterized by small market size—tend to be the heaviest users of import tariffs, which require a large market size to be effective. Upper-middle-income countries, for their part, go big on business subsidies.

Subsidies for private businesses are at an all-time high in upper-middle-income countries, and tariffs are often highest in low-income countries

Recent research has called attention to the growing use of industrial policy by advanced economies, usually tracked through press coverage of announcements of new policies. This report uses additional data that capture the dollar value of these policies. It finds that the use of industrial policy is also rising in developing economies and may be used more intensively there. Total business subsidies, including both direct funding of businesses and tax exemptions, average 4.2 percent of GDP in upper-middle-income countries, the highest level on record (refer to figure O.1, panel a). By contrast, the value of subsidies

Figure 0.1 The value of industrial policies today and differences across income groups



Sources: For subsidies: BOOST Open Budget Portal, World Bank, https://www.worldbank.org/en/programs/boost-portal; Global Tax Expenditures Database, https://gted.taxexpenditures.org/; Government Finance Statistics, International Monetary Fund, https://data.imf.org/en/datasets/IMFSTA:QGFS. For tariffs: Base pour l'Analyse du Commerce International (BACI) (database), Centre d'Etudes Prospectives et d'Informations Internationales (CEPII), https://www.cepii.fr/DATA_DOWNLOAD/baci/doc/baci_webpage.html; World Integrated Trade Solution (WITS) TRAINS (Trade Analysis and Information System) tariff data, World Bank, https://wits.worldbank.org/.

Note: Business subsidies are direct funding plus tax expenditures. The term "direct funding" refers to direct transfers to businesses, such as cash grants, while "tax expenditures" refers to forgone tax revenue from businesses. Tax expenditures are an upper-bound estimate, as they assume activities receiving tax holidays would have occurred in the absence of the tax holiday. If the activity receiving a tax holiday, such as foreign investment, would not have taken place otherwise, forgone tax revenue would be zero. Import tariffs are import-weighted averages of most-favored nation (MFN) tariffs; a similar pattern emerges when using applied tariffs. GDP = gross domestic product.

in high-income countries has declined somewhat from its peak in 2020 during the COVID-19 pandemic, to 3.1 percent.

Tariff levels are another important measure of industrial policy, because higher tariff rates provide greater protection to domestic producers. Low-income countries impose the highest average tariffs on imports, at 12 percent, while high-income countries apply an average tariff of just 5 percent (refer to figure O.1, panel b). This ranking across income groups remains unchanged even after accounting for the tariff increases introduced by the United States in 2025 and China's retaliatory measures. Tariffs also generate government revenue. However, the dispersion of tariff rates across products is much larger in developing economies than in advanced economies, suggesting that tariffs are often applied selectively to tilt economic activity and protect certain industries. If revenue generation were the only goal, governments could instead apply a uniform tariff across all products. These patterns suggest that industrial policy today is hardly the exclusive preserve of advanced economies.

How to make industrial policy work for development

Given the current global appetite for industrial policy, how and when should it be deployed? This report concludes that industrial policy is not a magic bullet for any country, but it can be a useful instrument of development for many. The tool is seldom easy to wield, and it usually comes with trade-offs. Export pushes, for example, can drive growth and earn foreign exchange, but at the risk of provoking protectionist responses. Green industrial policy can help lower emissions at home, but it can also push pollution abroad. Policies aimed at job creation might have to choose between creating large numbers of low-wage jobs or smaller numbers of high-wage jobs.

The key, therefore, is in choosing the most *feasible* instrument of industrial policy, one that matches the opportunities and limitations of market size, government capacity, and fiscal space. This report is the first to offer policy makers a graduated framework for doing so (refer to table O.1). At the low and relatively easy end of the scale are tools such as industrial parks, commodity export bans, and competitive exchange rate devaluations. At the opposite and most difficult end are innovation subsidies and public procurement rules. Developing economies are especially poised to make progress on multiple goals, especially those seeing growth in civil service capacity, local market size, and fiscal space.

Once they have chosen the right tool, governments that achieve success in industrial policy tend to get three things right. First, they maintain close contact with businesses. They talk with firms. They pay attention to what is working and what is not and adjust policy accordingly. Second, they put in place smart incentives, in the form of carrots and sticks. The financial support they offer to businesses, via loans, subsidies, or tariff protection, is conditional: the support is pulled when businesses underperform. Third, they operate with full transparency and accountability: agencies that oversee industrial policies have clear goals and report their results publicly. But in pursuing industrial policy, governments should commit to improve economywide fundamentals, even if that takes longer to see results (refer to box O.2).

Road map

The report is organized around five broad questions that can shape the design and implementation of industrial policies for development. In the complete report, each chapter represents a concrete answer to those questions. The five questions are as follows:

- ***What is industrial policy?*** Chapter 1 lays the conceptual groundwork, framing industrial policy for development as addressing market failures and proposing a taxonomy that links country characteristics to the choice of industrial policy tools, as well as their prioritization (refer to box O.2)—while also recognizing the associated risks.
- ***Who does industrial policy?*** Chapter 2 presents new stylized facts on cross-country patterns in the use of industrial policy tools, showing it is not only, or even mainly, the remit of advanced economies.
- ***How to do industrial policy?*** Chapter 3 distills 12 lessons from a survey of recent evidence on each of the 15 industrial policy tools, emphasizing that context and details matter greatly for outcomes. The chapter offers principles of practice to implement each policy tool and tailor it to the local context.
- ***Which activities to target?*** Chapter 4 proposes a practical framework that can guide governments in the complex decision of which activities to target strategically when pursuing industrial policy for development. The framework considers both the potential development benefits of activities, in terms of positive spillovers and external impacts, and their feasibility,

Box 0.2 Deciding to do industrial policy

(1) Keep emphasis on improving enabling institutions.

Despite the potential of well-designed industrial policies for development, nothing in this report suggests that they can be effective or efficient without enabling institutions. These institutions include accountable and capable implementing agencies that are insulated from politics and interest-group pressures, and strong economywide fundamentals: an educated and healthy workforce, energy and transportation infrastructure, and a sound macroeconomic framework. If governments pursue industrial policy as a temporary fix for fundamentals, they should set milestones for improvements in those fundamentals over the planned length of the industrial policy, 3–10 years.

(2) Select low-cost public inputs not provided by the market.

Even with limited fiscal space and small local markets, countries with sufficient government bandwidth can still pursue an industrial strategy. The first choice should be public inputs that can be delivered at cost and are underprovided due to specific market failures, such as coordination failures (industrial parks), skills underinvestment (skills development), and information asymmetries (market access assistance and quality infrastructure). Some tailoring to the needs of industries may be required but should not be exclusive.

(3) Provide market incentives if fundamentals and public inputs are insufficient.

Countries should turn to market incentives as a last resort, as these are typically the most costly—either fiscally (production and innovation subsidies, consumer demand subsidies, and public procurement), for the broader economy (import tariffs, local content requirements, commodity export bans, export subsidies), or due to retaliation from trading partners. Moreover, these tools require careful monitoring. A notable exception is a technology transfer quid pro quo arrangement, when technology cannot be licensed, which incurs no fiscal cost.

(4) Be wary of macroeconomic interventions.

Competitive exchange rate devaluation is difficult to sustain over the long period of time needed to realize benefits and can trigger retaliation by other countries. More research is needed to understand whether and when general tax credits for research and development in private businesses translate into valuable inventions.

based on market potential and evolving comparative advantages. The discussion encourages governments to think in terms of industrial strategies and proposes experimenting with a portfolio of targeted activities, recognizing that some initiatives will fail.

- ***How to get the institutions right?*** Chapter 5 focuses on the institutions that are crucial for effective industrial policy, which have arguably improved in recent decades. It considers delivery units, which guide diagnostics and policy design for the head of government, and seven implementing agencies with the potential to deliver, including national development banks and export promotion agencies, among others. Three core criteria for effective design and implementation of industrial policy are proposed: embeddedness, appropriate use of incentives, and accountability.
- After addressing these core questions, the report turns to ***applications with narrow industrial policy objectives*** (chapter 6), examining the additional considerations and trade-offs that arise when industrial policy targets specific goals: generating *foreign exchange,* creating *jobs,* reducing pollution through *green industrial policy,* and strengthening economic *resilience*.
- The report concludes with a ***policy brief*** (chapter 7), synthesizing the lessons from across the report for the practice of industrial policy for development.

Note

1. Page et al. (1993, 24).

Reference

Page, J., N. Birdsall, E. Campos, et al. 1993. *The East Asian Miracle: Economic Growth and Public Policy*. World Bank Policy Research Report Series. World Bank; Oxford University Press.

CHAPTER 7

Policy Brief

This brief for policy makers and civil society reviews the report's frameworks, focusing on three key questions for those designing and implementing industrial policies for development: Which activities should be targeted, given considerations of comparative advantage and market potential? Which policy tools should be chosen, given context-specific constraints? What should be done to get the institutions right?

Industrial policies for development can be effective only when supported by strong fundamentals, including prudent investments in education, health, and shared infrastructure. This report is intended for governments already working to strengthen those fundamentals, serving as a reference for policy makers who may be considering industrial policies as an additional development tool. The report offers lessons and principles with sufficient detail to enable governments to adapt the guidance to their own contexts and priorities, and to design and implement industrial policy tools and approaches successfully.

Which activities to target? Benefits, opportunity, feasibility, and an industrial strategy portfolio approach

To decide which business activities to strategically target when designing industrial policies for development, governments need a framework that considers both the **development benefits** of activities and their **opportunity and feasibility** in the local context (refer to table 7.1).

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Table 7.1 Criteria to identify strategic business activities for development

Criteria		Indicator
I. Benefits from business activity	Positive spillovers	• Business activity is new, and has not been done in the economy before • Diversification of the economy through new products, processes, and inputs, creating knowledge spillovers • Learning-by-doing with advanced production methods (for example, through worker training, research and development) • Contribution to industrial upgrading (for example, experience producing for a leading international buyer signals ability to produce high quality)
	External impacts	• Foreign exchange earnings • Job creation • Pollution reduction • Economic resilience and security
II. Opportunity	Market potential	• Current value of world imports and/or domestic demand • Growth of world imports and/or domestic demand • Limited competition in international market measured by number of exporters
III. Feasibility	Risk based on evolving comparative advantage	• Low-risk activities have revealed comparative advantage • Medium-risk activities use adjacent technology in "product space" • High-risk activities lack both revealed comparative advantage and adjacent technology

Source: Original table for this publication.

- **Target new activities with positive spillovers, but be aware that measurement is hard.**

The benefits of a business activity stem from market failures, including positive spillovers not fully captured by private businesses—such as knowledge spillovers from learning-by-doing or contributions to a country's industrial upgrading. Because spillovers are difficult to quantify, it is advisable to use a simple rule of thumb: focus only on activities that are new, since adopting new activities requires learning. Quantitatively ranking activities by the size of their spillovers is not feasible.

Other benefits may also include an activity's external impacts, including foreign exchange earnings, job creation, pollution reduction, and economic resilience. However, targeting based solely on these outcomes can be misleading: large-scale employment in an industry (for example, personal services like taxi driving) does not necessarily indicate that industrial policy targeted toward that industry will create productive jobs. Policy choice must consider both effectiveness (that is, achieving desired outcomes) and efficiency (that is, benefits exceeding costs). In principle, industrial policy is efficient only if it promotes an activity with positive spillovers.

- **Trade-led growth is still attractive, but the criteria for success have narrowed.**

For decades, governments pursued an export-led growth model focused on promoting new export activities to capture knowledge spillovers. The model can also be described as **trade-led growth,** since it depended on maintaining low tariffs on imported intermediate inputs and capital goods needed to produce exports. Recently, this model has faced mounting challenges. Technological advances, like automation, have eroded the competitive advantage of low-wage labor in global manufacturing. Policy changes—particularly in advanced economies—including the rise of protectionism and economic nationalism, the growing use of industrial policy, and new climate-related regulations, have limited the space for traditional trade-led growth.

Many governments are now asking: What activities should be targeted in this new era? While manufacturing was once the default target, many governments are now considering tradable services—tourism, software development, and creative industries—as alternative sources of foreign revenue. Governments are also pursuing trade with regional rather than global partners through preferential trade agreements, particularly South-South agreements as well as "deep agreements" that cover a wide range of policy areas beyond tariff liberalization.

The older **import-substitution** model—using high tariffs to build domestic industries—was largely abandoned by the 1980s after repeated failures. Success stories come exclusively from countries with large domestic markets and abundant resources, as in the United States tinplate industry of 1890. But some are now wondering whether import substitution could be revived, given the expansion of the middle class and thus the size of domestic markets in developing economies. Still, major concerns persist: without import competition, businesses have weak incentives to upgrade quality, and foreign investors have limited interest in transferring technology when serving only local markets.

- **Opportunity and feasibility depend on competitiveness, market potential, and comparative advantage.**

An activity's feasibility reflects its likelihood to become economically competitive in the current context. Governments can evaluate this using **market potential, competitive conditions,** and **comparative advantage,** all of which are measurable from publicly available data.

- **Market potential and competitive conditions:** Governments can target activities that have limited global competition or growing demand, where first-mover advantages and expanding export markets may accelerate growth. Many governments pursue strategies that target new and growing industries, particularly those with relatively few established exporters—such as minerals processing for components critical to modern transport and energy infrastructure. It is important to note that policies to target growing markets can face resistance, as businesses in declining or mature industries have stronger incentives to lobby for support.
- **Comparative advantage:** Many activities have strong potential, but not all countries have the capabilities to develop them competitively. Such capabilities are summarized in the concept of comparative advantage, in terms of factors that are fixed (for example, natural endowments) or that can be developed over time (for example, installed infrastructure, human capital, basic research institutions, or liberal trade policy). Governments can consider metrics for both **revealed comparative advantage** (current strengths) and **latent comparative advantage** (future potential).

Activities can be categorized by their risk of failing to grow—and thus their ability to deliver development benefits—in a given context. Governments can balance their targeting efforts across risk levels according to their risk tolerance:

- **Low risk:** Aligns with existing comparative advantages; targeting reduces the chance of supporting unproductive businesses.
- **Medium risk:** New activities that are technologically related or adjacent to current advantages; moderate chance of success.
- **High risk:** New activities that are unrelated to current advantages; difficult to predict but potentially high returns.

- **Adopt a portfolio approach within an industrial strategy that targets broad sectors.**

Governments often think in terms of industrial "strategy" rather than industrial policy, akin to strategies for a particular sector (for example, agriculture, tourism, or mining). How specific should an industrial strategy be? Given the uncertainty over which industries will ultimately succeed, it is often more effective to target broad industries. Broad targeting—like making industrial parks, subsidies, and import tariff protection common for all industries in a

strategic sector, rather than a narrow few industries—can avoid privileging and concentrating investment in narrow industries or individual businesses. The famous industrial policy in the Republic of Korea followed this approach, targeting diversification into a broad grouping called "heavy and chemical industry" rather than only a few narrowly defined products or markets.

Once a strategic sector is identified, a government should experiment with a portfolio of activities within that sector. Experimentation involves the following:

- Engaging entrepreneurs to identify opportunities and constraints caused by market failures
- Tracking progress
- Tailoring public inputs, market incentives, or macroeconomic interventions to relevant challenges.

Governments can identify priority activities through a top-down approach (the government selects industries based on diagnostics) or a bottom-up approach (entrepreneurs highlight opportunities and government tailors support). The **top-down approach** is information-intensive, requiring credible diagnostics from in-house think tanks or consultants. The **bottom-up approach,** by contrast, requires the government to engage entrepreneurs about the opportunities they see and the constraints they face. Governments sometimes distinguish between "my problems," which they commit to address, and "your problems," which they do not. "My" problems (from the perspective of government) are related to market failures like missing public inputs or positive spillovers. "Your" problems are related to the comparative advantages of an industry, which can only be addressed by market incentives. Since entrepreneurs have a strong incentive to lobby for market incentives like subsidies and protective tariffs, the bottom-up approach requires stronger safeguards—such as the "my"/"your" problem distinction—to avoid costly interventions with limited benefit.

How to do industrial policy? Guidance to choose the mix of policy tools

Once a government decides to expand a particular business activity, the central question becomes how best to promote it. Which industrial policy tools offer the greatest potential to stimulate growth, and how does this depend on country context and constraints? Beyond an industry's comparative advantage and market potential, the feasibility and effectiveness of different tools depend on three country

characteristics: **government bandwidth** (institutional capability, trained personnel, and interagency coordination), **local market size** (domestic demand and preferential export markets), and **fiscal space** (the ability to mobilize revenue).

In table 7.2, cells marked "large" indicate where an industrial policy tool requires a large level of fiscal space, market size, or government bandwidth for success. Blank cells indicate feasibility even in countries with limited resources. The purpose of these binaries is to illustrate the assumptions required for industrial policy to be effective. It is up to governments to assess whether the government bandwidth, local market size, and fiscal space are "large" enough in their context. With more talent in government, larger middle classes, and domestic tax mobilization, these preconditions may well be satisfied.

Table 7.2 Minimum country requirements to use industrial policy tools

Market failure	No.	Industrial policy tool	Rank	Minimum country requirements		
				Government bandwidth	Local market size	Fiscal space
		Public inputs tailored to needs of activity				
Coordination failure	1	Industrial parks	**1st choice**			
Underinvestment in training	2	Skills development	**1st choice**	Large		
Asymmetric information	3	Market access assistance	**1st choice**	Large		
	4	Quality infrastructure	**1st choice**	Large		
		Market incentives				
Positive spillovers, including learning-by-doing with advanced products and processes	5	Production subsidies	**1st choice**	Large		Large
	6	Specific innovation subsidies	**1st choice**	Large		Large
	7	Commodity export bans	2nd choice			
	8	Public procurement	2nd choice	Large	Large	Large
	9	Import tariffs or quotas	2nd choice		Large	
	10	Export subsidies	2nd choice			Large
	11	Technology transfer quid pro quo	2nd choice	Large	Large	
	12	Local content requirements	2nd choice	Large	Large	
	13	Consumer demand subsidies	2nd choice	Large	Large	Large
		Macroeconomic interventions				
	14	Competitive exchange rate devaluation	2nd choice			
	15	Research and development tax credit	2nd choice			Large

Source: Original table for this publication.

Note: First-choice policies address market failures directly by subsidizing the activities that are underprovided. Second-choice policies shape industry outcomes by intervening indirectly in adjacent markets. Blank cells indicate that no minimum requirements of a given country characteristic are needed for a policy to be feasible.

Four key messages emerge from evidence and practice:

- **Public inputs tailored to industry needs are fiscally inexpensive tools with proven success, though some require greater government bandwidth.**

Public inputs are first-choice policy tools that target problems directly, such as by addressing specific market failures related to investment or by providing an underprovided activity. They have the advantage of being fiscally inexpensive industrial policy tools that are also fully World Trade Organization (WTO)–compliant, with little risk of retaliation.

Industrial parks help resolve coordination failures by reducing the risk of being a first mover in a new industry. They can include worker housing, as in Tamil Nadu in India (refer to box 4.2), in addition to concentrated infrastructure for businesses. When operation and management are delegated to the private sector, they can be implemented with modest fiscal resources and moderate government bandwidth. More bandwidth is needed for special economic zones (SEZs), which combine the physical features of an industrial park with special regulatory regimes and tax incentives and thus carry fiscal costs. SEZs have a track record of both successes (for example, in China, Ethiopia, and India) and failures (for example, in Indonesia and Nigeria), making sound design essential:

  - Governments should prioritize locations near pools of specialized or low-cost labor and close to ports or major transport hubs and invest in complementary infrastructure, including transportation links and reliable utilities.

Other public inputs—**skills development programs, market access assistance, and quality infrastructure**—are also first-choice tools. They can often be implemented on a cost-recovery basis but require greater administrative capacity to engage with businesses and diagnose needs. Industry-targeted skills development programs, for example, help overcome underinvestment in worker training that can hinder the emergence of a new industry. Successful cases, such as skills development for the electronics industry in Costa Rica (refer to box 3.1), emphasize aligning training programs with industry requirements, adapting as conditions evolve, and addressing managerial as well as technical skills gaps.

- **Market interventions—subsidies, tariffs, commodity export bans, local content requirements, public procurement—are costly both fiscally and to the wider economy.**

Market intervention tools incentivize a specific industry or activity by altering prices. These are actionable under WTO rules and may incur the threat of retaliation. **Production or specific innovation subsidies** are first-choice tools that directly target the problem head-on by subsidizing activities with positive spillovers, but they require sufficient fiscal space and government bandwidth. There is strong evidence on the effectiveness of production subsidies (often tied to sales, investment, or wages), including in the Republic of Korea (refer to box 3.2), Romania, and Tunisia, and on innovation subsidies (which incentivize businesses to adopt or develop new technologies). By often being firm-specific, these tools require intensive engagement and monitoring, and thus high administrative capacity. Effective subsidy design involves the following (among others):

  - Tying subsidies to sales rather than profits and offering support to all businesses within an industry to preserve competition, even if this increases fiscal cost.

Other tools—**import tariffs, commodity export bans, local content requirements, technology transfer quid pro quo, and public procurement**—are second choice because they impose broader economic costs and operate indirectly by regulating entire markets rather than providing benefits to specific firms. Tariffs may support domestic producers, but they raise input costs for businesses and prices for consumers (for example, Colombia). Evidence is limited on the effectiveness of local content requirements or commodity export bans in fostering local industries (for example, Indonesia). Where fiscal space and government bandwidth permit, public inputs as well as targeted production or innovation subsidies should be prioritized as industrial policy tools to capture benefits from foreign investment and develop upstream and downstream industries, rather than relying on economically costly second-choice market incentives.

Macroeconomic interventions that target very broad activities are also available. **Competitive exchange rate devaluation** requires a responsive labor supply and effective capital account management. **Research and development (R&D) tax credits** can be useful in both advanced and developing economies.

However, R&D tax credits need to be evaluated rigorously to demonstrate that they are producing either frontier patents widely cited elsewhere or patents that adapt foreign technology to the local context, which cite foreign patents and coincide with machinery and equipment imports.

- **Industrial policy tools should include termination clauses tied to evidence of learning-by-doing and productivity improvements.**

For any industrial policy tool—particularly those justified by the infant-industry argument—a central question is when to end support. Ending support too early can undermine long-term benefits, but extending it too long can create dependency. How can governments decide when to withdraw a public input, phase out subsidies, or reduce tariffs?

Decisions should hinge on whether the targeted industry is demonstrating "learning-by-doing" as well as productivity improvements that are sufficient for the industry to become internationally competitive. Automatic sunset or termination clauses help ensure this discipline, while also encouraging businesses to invest quickly.

  - Termination windows of 10 years generally give enough time for businesses to gain experience with production processes without entrenching prolonged subsidies.
  - Some governments establish automatic termination milestones every three years, and withdraw support unless there clear evidence of progress—for example, when productivity (measured by input use per unit of output) is improving faster in the targeted industry than in comparable untargeted industries.
  - Automatic termination clauses should not be used for subsidies delivered through tax, duty, or regulatory exemptions that may later be extended to all businesses. In these cases, it is more effective to broaden the exemption than to retract it from the initial beneficiaries.

- **Expect some failure in industrial policy efforts and communicate this expectation.**

Even when support continues beyond a sunset clause, targeted businesses may not become internationally competitive due to lack of a fundamental comparative advantage. With limited scope for future improvements, some businesses may shut down once support is removed. Some industrial policy

targeting efforts will inevitably fail, but a portfolio approach spreads risk, increases overall success, and maintains political support by emphasizing broad industry development rather than individual projects.

How to get the institutions right?

Political economy shapes industrial policy choice and implementation. In Argentina, a Tierra del Fuego special incentive regime for local manufacturing was established in 1972 with an initial sunset clause ending 35 years later, at which point it was still not internationally competitive. Since 2007, the regime has been extended multiple times, most recently to 2038 for some industries—66 years later than its creation. This reflects largely political pressures to preserve employment and regional economic support.

Whatever the political reality, smaller independent agencies have a greater role today in implementing industrial policy tools. These agencies, given their independent charters, especially at the state and local levels, are potentially more insulated from politics relative to finance and trade ministries that were traditionally responsible for implementing industrial policy in the past. These are national development banks, state-owned enterprises, cluster initiatives (including by local governments), public-private dialogue and coordination, innovation agencies, investment promotion agencies, and export promotion agencies. Three institutional qualities can support effective implementation of industrial policy.

- **Implementing agencies should have embeddedness, appropriate use of incentives, and accountability.**

Supporters of industrial policy call it a "process of discovery," aimed at identifying market failures and eliciting information on the private sector's willingness to invest. Of course, most of the things that businesses complain or talk about have little to do with market failures, necessarily, such as a high cost of finance or land; these may be high because of a decision by the central bank or because the location is in demand. Nonetheless, tools and targeting on feasible issues to address through industrial policy emerge iteratively through this process that satisfies three criteria (refer to table 7.3).

Table 7.3 Criteria for industrial policy institutions

Criteria	Indicator
Embeddedness	• High-quality industry diagnostic studies, produced in-house or by consultants • Surveys of beneficiaries and other market participants • Private sector membership in executive committee and general assembly • Managerial expertise in government
Appropriate use of incentives as carrots and sticks	• Avoid automatic termination clauses when subsidies are exemptions from taxes, duties, or rules that may eventually be extended to all businesses • Otherwise, use automatic termination dates of 10 years • Allow extension only when there is clear evidence of productivity gains, measured by declining input cost per unit of output compared to nontargeted industries • Successful exports or import substitution can proxy for productivity gains
Accountability	• Reporting of outcomes, targets, and workplans • Clear, publicly available criteria for policy decisions and program participation • Civil society membership in executive committee and/or general assembly • Independent oversight bodies like supreme audit institutions, judicial oversight

Source: Original table for this publication.

- **Delivery units with access to the head of local, state, or national government can allow for effective strategy setting and oversight.**

Industrial strategy is often set and overseen by a team close to the head of government, a "delivery unit" or "reform team." Such delivery units do not implement policies themselves but rather provide strategic guidance to implementing agencies. Effective delivery units should focus on three functions:

  - **Diagnostics:** Assess global demand, identify strategic industries, and pinpoint constraints that government policy can address.
  - **Coordination:** Plan and coordinate across agencies, specify actions for implementing bodies, and advise on funding allocations.
  - **Monitoring:** Track productivity of supported industries and businesses and recommend corrective action.

- **There are trade-offs for industrial policy with more narrow goals: generating foreign exchange, creating jobs, reducing pollution, and strengthening economic resilience.**

Governments frequently pursue more narrow goals for industrial policy: generating foreign exchange, creating jobs, reducing pollution, and strengthening economic resilience. While it may be possible to push toward multiple goals through one policy, multiple goals also imply trade-offs that can be political, unlike industrial policy for development—which focuses on addressing market failures to boost growth and benefit society. Key trade-offs for each of the narrow goals are provided below.

- **Industrial policy for foreign exchange**
  - Governments can still pursue a trade-led growth model by using public inputs (for example, industrial parks, skills development, market access assistance, quality infrastructure) to help local exporters succeed and expanding preferential trade agreements with a diverse set of partners—particularly South-South agreements and deeper trade agreements allowing for investment and movement of workers.
  - Without large domestic markets—such as those of Brazil or India—encompassed by a preferential trade agreement, import substitution will be difficult limiting the gain from import tariffs, commodity export bans, local content requirements, consumer subsidies, and public procurement.
  - Export subsidies used to generate foreign exchange earnings as well as competitive exchange rate devaluation are used less often, given the risk of retaliation from trading partners.

- **Industrial policy for jobs**
  - Governments face a trade-off between supporting labor-absorbing industries that quickly create many lower-wage jobs and supporting high-wage, skill-intensive industries that raise productivity, increase average wages, and deliver broader economic benefits.
  - Governments must decide when to subsidize labor rather than capital, recognizing that in capital-intensive industries, capital subsidies can be a more cost-effective way to create jobs than labor subsidies.
  - Governments may need to assist workers displaced by trade or technology, even though broader social safety nets that support all workers may provide greater overall benefits.

- **Green industrial policy**
  - Emissions regulations, including emissions trading schemes, may require adaptation to avoid damaging the competitiveness of domestic industries, such as by providing free emissions allowances for energy-intensive industries.
  - Subsidies for adopting or inventing low-pollution technologies can reduce operating costs for eligible businesses, but they may displace conventional power generation without distinguishing between cleaner and dirtier fossil fuels, and they do not necessarily promote energy conservation.
  - Governments may pair subsidies for downstream adoption with protective second-choice tools—such as local content requirements or import tariffs—to ensure that the benefits of green technology uptake accrue to domestic businesses, but this will slow the pace of adoption if domestic businesses cannot produce these technologies competitively.
- **Industrial policy for resilience and security**
  - Governments can protect against domestic shocks by dispersing production across multiple locations, but this raises costs when new plants operate in higher-cost locations or when underutilized capacity is expensive to maintain.
  - Governments can diversify import supply away from unreliable suppliers by building domestic production capacity, but this may be prohibitively costly. A better approach is to encourage businesses to switch to alternative, ideally lower-cost, foreign suppliers.
  - Governments can help businesses adapt to shifts in export demand—such as when trade partners raise tariffs—by providing market access assistance and improving quality infrastructure to support entry into new markets.

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