Industrial Policy for Development

TECHNICAL BRIEFING

Industrial Policy for Africa Conference, Nairobi, Kenya
February 16-18, 2026

WORLD BANK GROUP

Industrial policy means different things to different people

Definitions share a common thread used in this report:

Industrial policy is a government action expected to increase a strategic business activity

- "Business activity" can mean performing tasks or producing products:
  - — assembling automobiles
  - — creating jobs in the film industry
  - — adopting artificial intelligence in forestry
  - — conducting research and development (R&D) in export horticulture
- "Strategic" means that government has decided one business activity is more important than others
- "Industrial" is not just manufacturing. Any business activity can be strategic:
  - — agribusiness
  - — mining, mineral and metal processing
  - — skilled professional services, tourism, creative professions

Sources: (i) *World Development Report 2024, (ii)* Tirole, J. 2017. *Economics for the Common Good*. Translated by S. Rendall. Princeton University Press, (iii) Juhász, R., Lane, N. and Rodrik, D., 2024. The new economics of industrial policy. *Annual Review of Economics*, *16*(1), pp.213-242.

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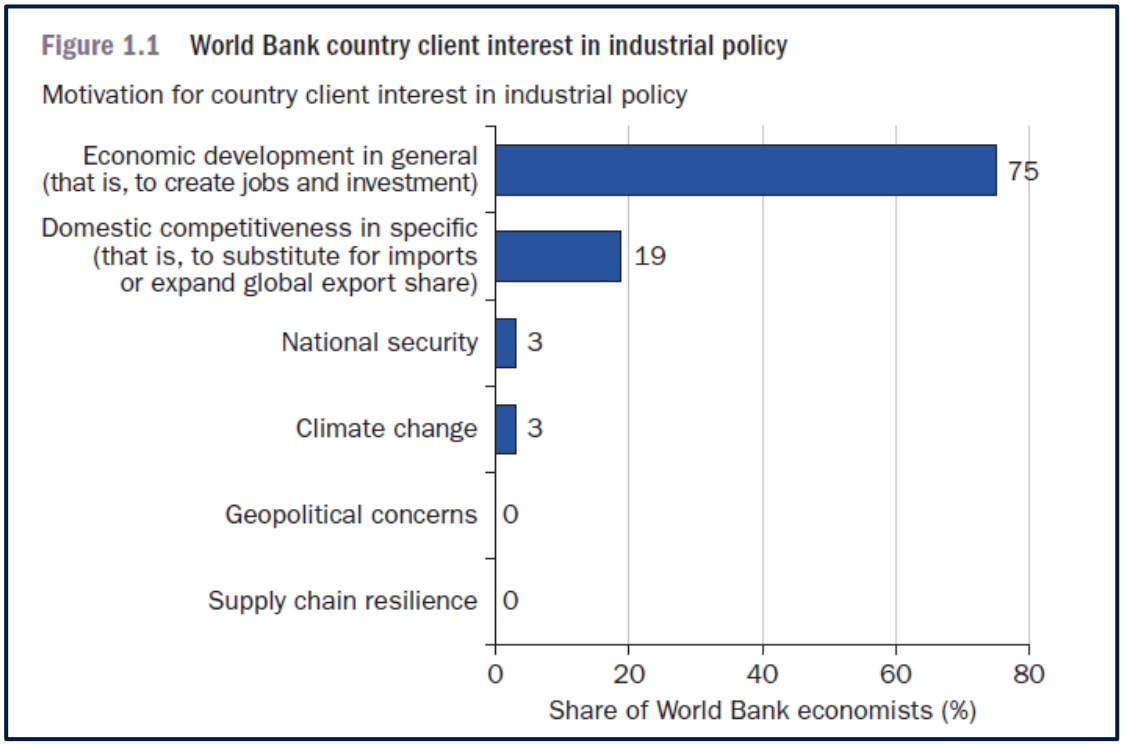
World Bank clients are interested in industrial policy for development, not security or climate

In March 2025, 32 World Bank Prosperity lead economists were asked whether clients had sought advice on policies to grow specific industries during the prior year.

80% responded they were asked by clients about industrial policy in the previous year.

Motivations of clients for pursuing industrial policy are **mostly jobs and investment**, not "new" motivations as International Monetary Fund sponsored research (Evenett et al. 2024/5).

This is very different from high-income countries.



Sources: (i) Survey results, World Bank; (ii) Evenett, S., A. Jakubik, F. Martín, and M. Ruta. 2024. "The Return of Industrial Policy in Data." *World Economy* 47 (7): 2762–88; (iii) Evenett, S., Jakubik, A., Kim, J., Martín, F., Pienknagura, S., Ruta, M., Baquie, S., Huang, Y., and R. Parente. 2025. "Industrial Policy Since the Great Financial Crisis." IMF Working Paper 2025/222, International Monetary Fund.

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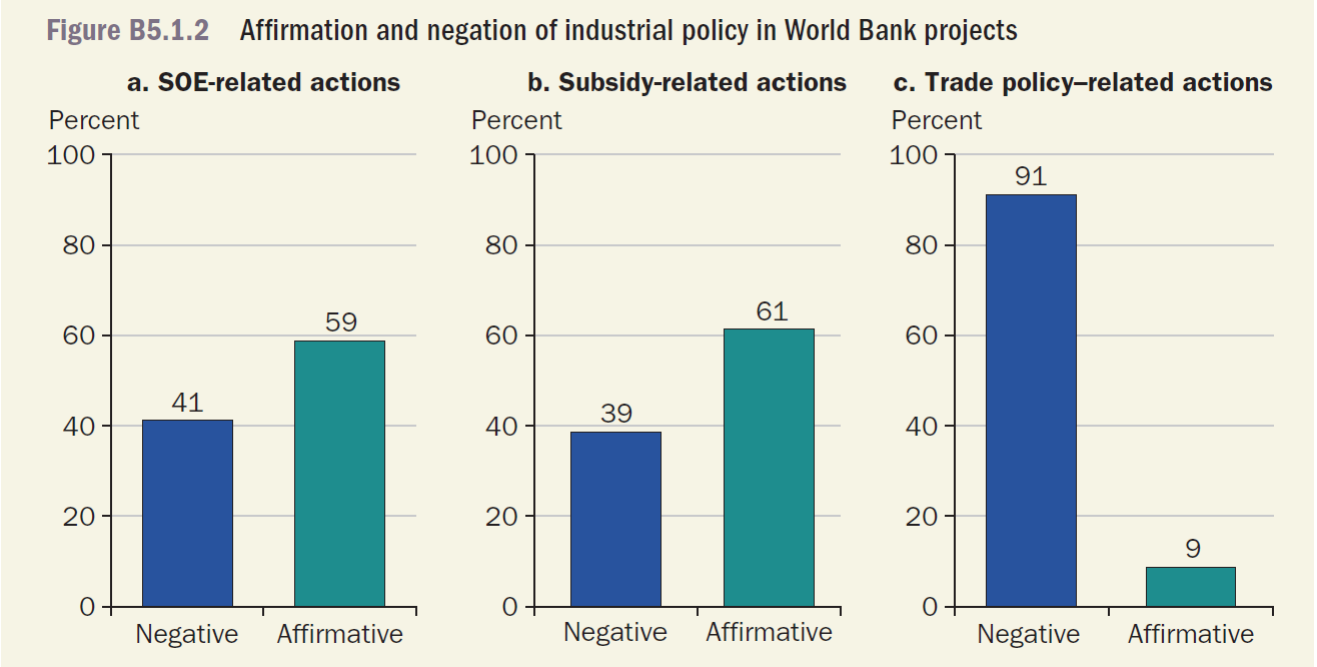
Recently, World Bank conditional loans are more likely to affirm subsidies and state-owned enterprises

Development policy loans require prior actions or "conditionalities"

— In the past, the Bank emphasized privatization of state-owned enterprises and repeal of subsidies and tariffs.

— Since 2004, most loans affirm rather than negate SOEs and subsidies.

— Since 2004, most loans still call for lower tariffs.



Covering 10,000 prior actions in World Bank policy loans over 2004-2023 period

Sources: Development Policy Operations: Prior Actions Database, World Bank, https://www.worldbank.org/en/what-we-do/products-and -services/financing-instruments/development-policy-financing; World Bank manual classification of stance toward policy area.

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When the goal is development, industrial policy involves no trade-offs

A common claim is industrial policy involves “trade offs”. This can be true for policy goals like resilience, since risk management has a cost.

But in theory, industrial policy for development involves no trade-offs:

- Any business activity with “positive spillovers” is strategic
  - Positive spillovers are market failures - when private incentives fall short of the social optimum
- Budget neutral subsidies for strategic activities grow GDP

Sources: (i) Pigou, A. C. 1920. The Economics of Welfare. Macmillan and Co; (ii) Krugman, P. R. 1983. “Targeted Industrial Policies: Theory and Evidence.” In *Industrial Change and Public Policy*. Federal Reserve Bank of Kansas City; (iii) Rodrik, D. 2004. Industrial Policy for the Twenty-First Century. Harvard;

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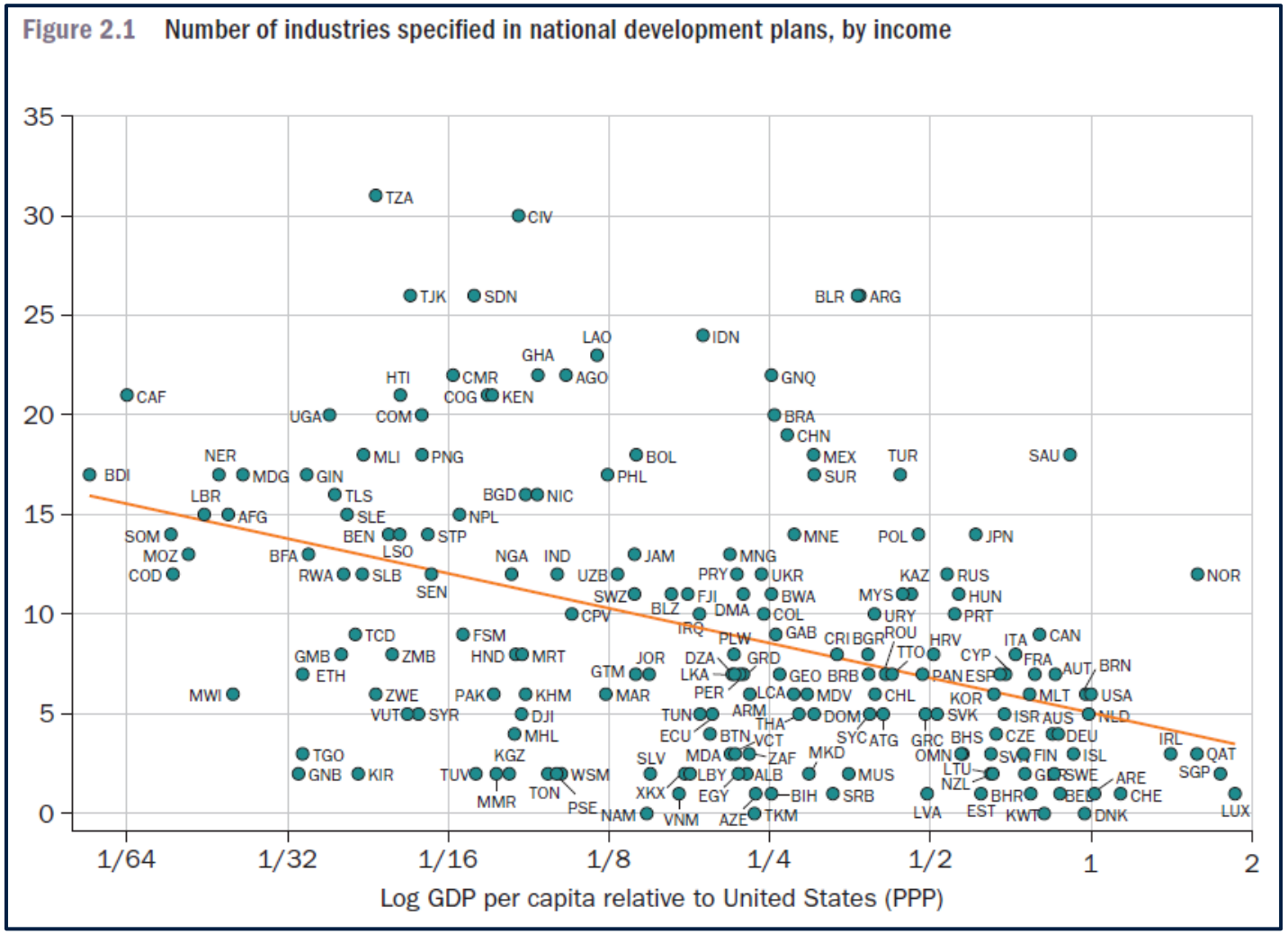
National development plans target fewer industries as countries become richer



- Low-income countries target 13 industries in national development plans
- High-income countries target 5

Sources: (i) National development plans (183 total); (ii) Harmonized System (HS) codes, United Nations Statistics Division; (iii) World Development Indicators (database), World Bank, https://databank.worldbank.org/source/world-development-indicators.

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Some industrial policies are "second choice"

Table 7.2 Minimum country requirements to use industrial policy tools

Market failure	No.	Industrial policy tool	Rank
		Public inputs tailored to needs of activity	
Coordination failure	1	Industrial parks	**1st choice**
Underinvestment in training	2	Skills development	**1st choice**
Asymmetric information	3	Market access assistance	**1st choice**
	4	Quality infrastructure	**1st choice**
		Market interventions incentivizing a narrow activity	
Positive spillovers, including learning-by-doing with advanced products and processes, plus external benefits, including foreign exchange, job creation, pollution reduction, and resilience	5	Production subsidies	**1st choice**
	6	Innovation subsidies	**1st choice**
	7	Commodity export bans	2nd choice
	8	Public procurement	2nd choice
	9	Import tariffs or quotas	2nd choice
	10	Export subsidies	2nd choice
	11	Technology transfer quid pro quo	2nd choice
	12	Local content requirements	2nd choice
	13	Consumer demand subsidies	2nd choice
		Macroeconomic interventions incentivizing a broad activity	
	14	Competitive exchange rate devaluation	2nd choice
	15	Research and development tax credit	2nd choice

- *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

Sources: (i) Corden, M. 1997. *Trade Policy and Economic Welfare*. 2nd ed. Clarendon Press; (ii) Fernandes and Reed (2026)

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Further, government bandwidth, local market size, and fiscal space constrain industrial policy

Country Characteristic	Description	Industrial policy relevance
Government bandwidth	• Workforce dedicated to engaging with businesses and effective institutional setup for public-private dialogue (can vary within countries across agencies and localities)	• Deliver targeted policies that require extensive interaction with businesses and investors (e.g., skills development programs; subsidies)
Local market size	• Size of the domestic middle class combined with size of destination markets covered by preferential trade agreements	• Achieve economies of scale required for protected industry (e.g., tariffs; local content requirements; government procurement rules)
Fiscal space	• Ability to raise tax revenue and/or borrow affordably	• Resource intensive policies (e.g., investment, wage, or innovation subsidies)

Source: Fernandes, A.M. and Reed, T. (2026) *Industrial Policy for Development.* Policy Research Report Series. World Bank Group.

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Country characteristics shape policy feasibility

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

Country characteristics			Feasible policies
Government bandwidth	Local market size	Fiscal space	
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: Fernandes and Reed (2026)

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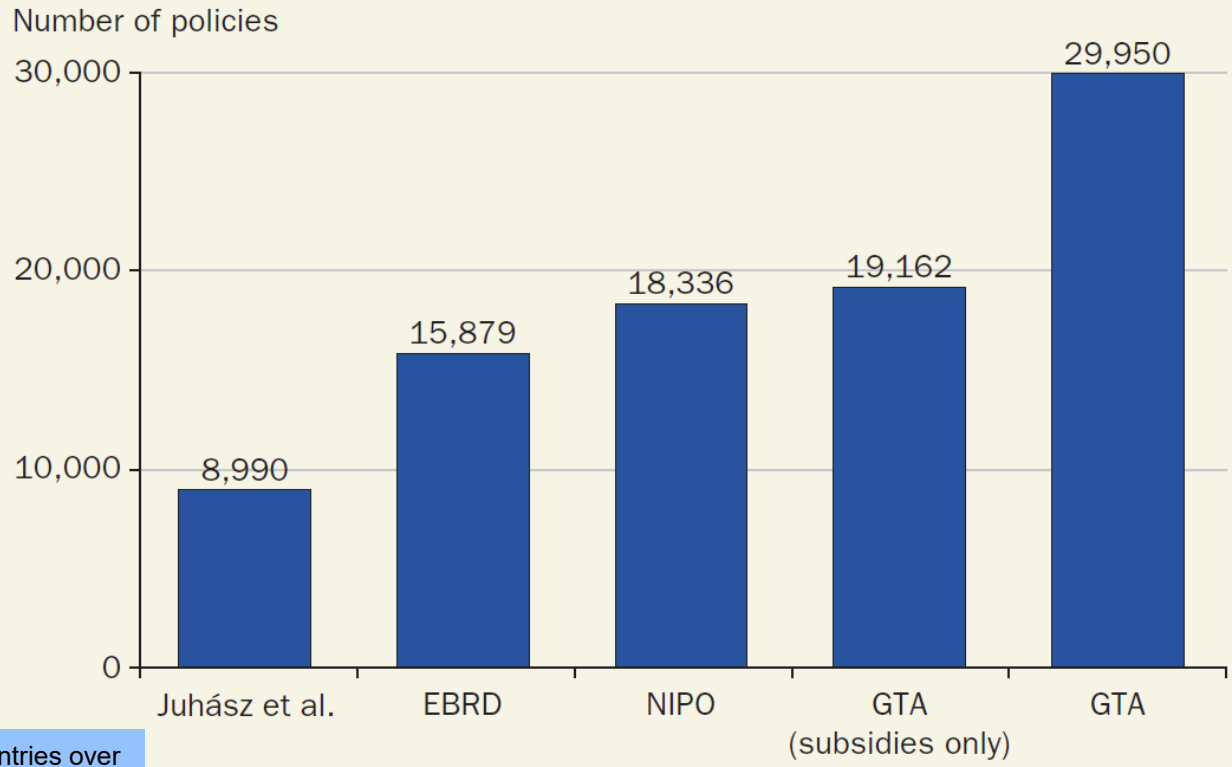
Widely used industrial policy datasets rely on subjective judgment

Juhász et al., EBRD and NIPO all focus only on policies where industrial policy "*intent*" is verified through automated text analysis, ignoring subsidies with similar expected *economic impact*

Figure B2.1.1 Alternative databases of industrial policy practice compared to the Global Trade Alert

Industrial policy interventions in Global Trade Alert



Covering 69 countries over 2017-2022 period

Sources: (i) Juhász, R., Lane, N., Oehlsen, E. and Pérez, V., 2023.; (ii) EBRD, 2024. *Transition report 2024–25: Navigating industrial policy*. London: European Bank for Reconstruction and Development; (iii) Evenett, S., Jakubik, A., Martín, F. and Ruta, M., 2024. *The return of industrial policy in data*. *The World Economy*, 47(7), pp.2762–2788; (iv) Evenett, S., Jakubik, A., Kim, J., Martín, F., Pienknagura, S., Ruta, M., Baquie, S., Huang, Y., and R. Parente. 2025. "Industrial Policy Since the Great Financial Crisis." IMF Working Paper 2025/222, International Monetary Fund.

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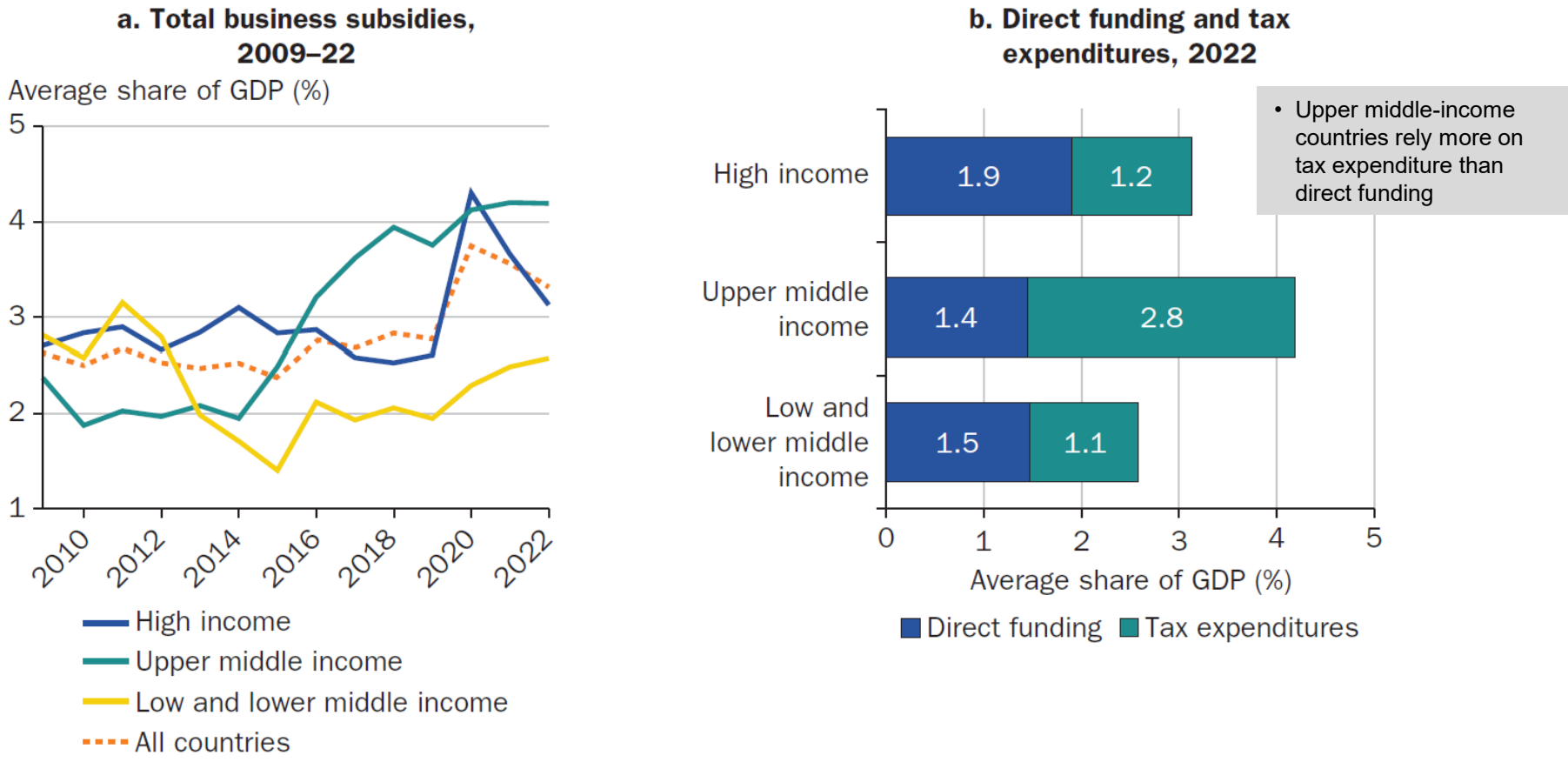
Business subsidies are highest on record in upper-middle income countries

Figure 2.4 Direct funding to businesses and tax expenditures, by income group



Sources: (i) BOOST Open Budget Portal, World Bank, https://www.worldbank.org/en/programs/boost-portal; (ii) Global Tax Expenditures Database, Council on Economic Policies and the German Institute of Development and Sustainability, https://gted.taxexpenditures.org, Redonda et al. 2025; (iii) Government Finance Statistics (GFS), International Monetary Fund, ttps://data.imf.org/en/datasets/IMF.STA:QGFS;
Notes: Total business subsidies is direct funding or transfers plus tax expenditures. Direct funding includes transfers to compensate for recurrent losses, subsidies payable to resident producers for output used locally, subsidies resulting from the central bank accepting interest rates lower than the prevailing market rates, and subsidies on payroll, while "tax expenditures" refers to forgone tax revenue from businesses, an upper bound estimate. The sample covers 89 economies in the left panel and 64 economies in the right panel.

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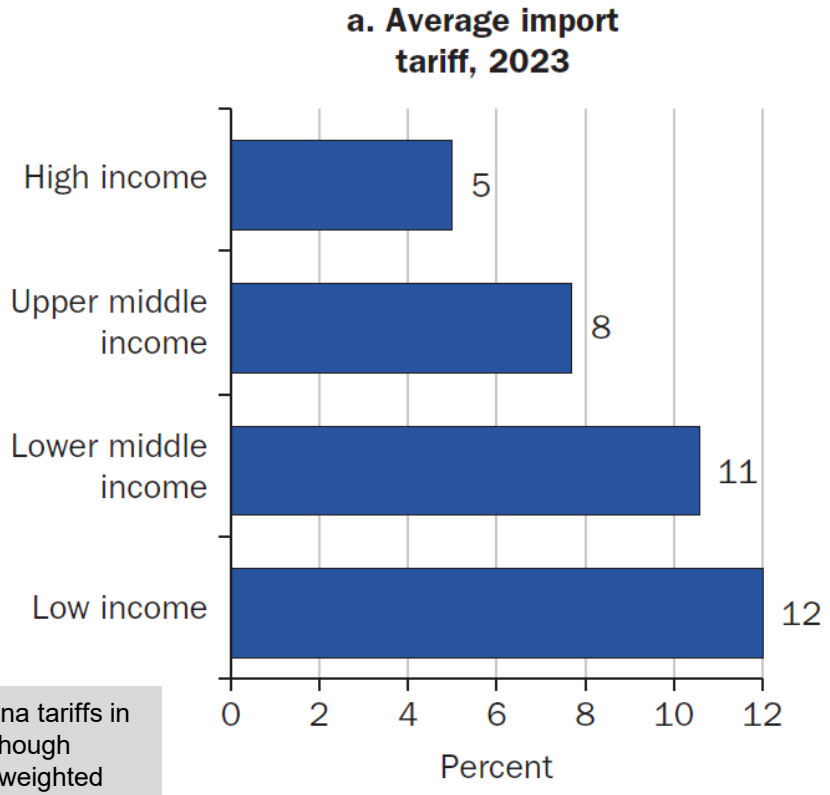
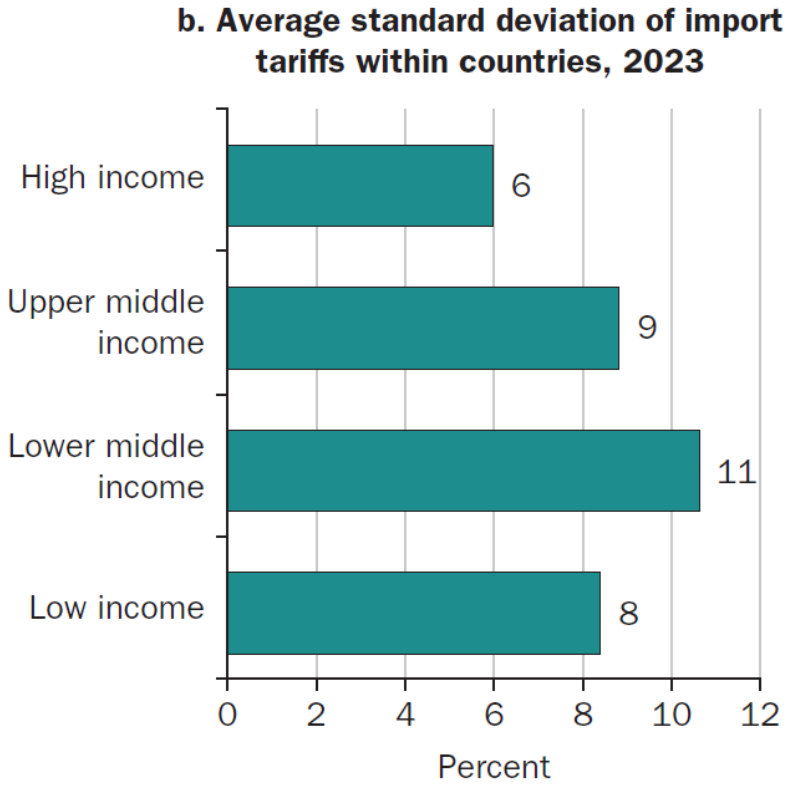
Low- and middle-income countries have higher import tariffs and more variance in tariff rates across products

Figure 2.2 Average tariff levels and dispersion within countries, by income group





- US/China tariffs in 2025, though import weighted would not change the rank of income group averages

- Greater variance in tariff rates consistent with industrial policy that gives more protection to some industries

Sources: (i) Base pour l'Analyse du Commerce International (BACI) (database), (ii) Centre d'Etudes Prospectives et d'Informations Internationales (CEPII), https://www.cepii.fr/DATA_DOWNLOAD/baci/doc/baci_webpage.html; (iii) World Integrated Trade Solution (WITS) TRAINS (Trade Analysis and Information System) tariff data, World Bank.

Notes: Most-favored nation (MFN) tariff rates are used. Panel b presents the average standard deviation of MFN tariffs across Harmonized System (HS) six-digit products within countries by income group. Within-country the average tariff is value-weighted, but averages across income groups weight countries equally. The rankings between income groups are identical using applied tariff rates, though average rates are slightly lower. The sample covers 187 economies.

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12 lessons from recent research on industrial policy

Begin with the premise of a government that has already decided to expand a particular business activity. The question is not why, but how?

Several questions emerge:

- Which policy tool to select?
- How does this choice depend on local context and constraints?
- If only second-choice tools are feasible, how to achieve the best results?

Some caveats about recent causal evidence:

- ➢ Most evidence is about manufacturing, but now other sectors are being targeted (agriculture, mining, skilled professional services, and tourism)
- ➢ Most evidence shows “effectiveness” (e.g., opening new markets or revenue growth) but does not examine “efficiency” (whether benefits are greater than costs)

Source: Fernandes and Reed (2026)

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1) Industrial parks solve coordination failures

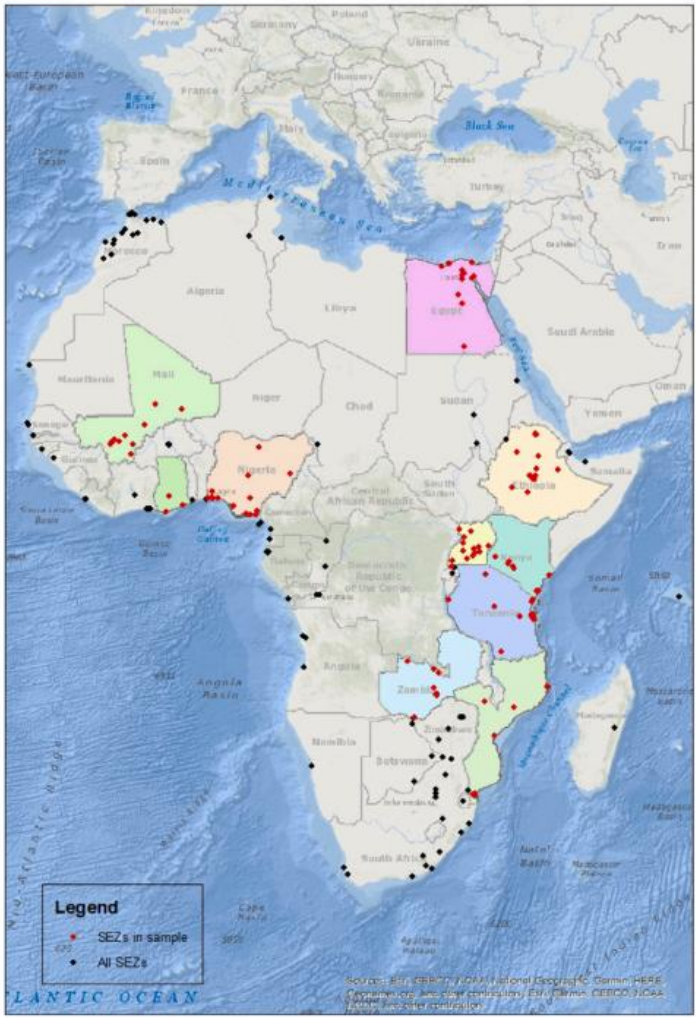

Fig. 1. Map of SEZs in Africa.

Case study

- Across 10 African economies industrial parks increased:
  - — Shift away from agriculture jobs
  - — Higher consumption of durable goods
  - — Educational attainment

Principles of practice

- Governments may pay upfront but recoup quickly by selling units to occupants
- Select locations close to pools of specialized or low-cost labor, with access to markets via ports or transport hubs
- Make economy-wide investments to serve people working in the park (e.g., in utilities and schooling)

Source: Abagna, M.A., Hornok, C. and Mulyukova, A., 2025. Place-based policies and household wealth in Africa. *Journal of Development Economics*, 176, p.103482.

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2) Skills development, market access assistance, and quality infrastructure solve information asymmetries

Case studies

Skills development: Industry-specific training in high-tech to attract Intel, retain advanced engineering and design functions

Market assistance: Counselling and technical assistance increase inexperienced exporters' sales and diversification

Quality infrastructure investments effective in allowing pineapple exports to European Union

Principles of practice

- Match training with industry needs, but maintain flexibility
- Develop technical and managerial skills through apprenticeships

- Bundle services
- Pair with other industrial policy tools like innovation subsidies and industrial parks

- Establish independent agencies for standardization, metrology, and accreditation

Sources: (i) Spar, D. 1998. "Attracting High Technology Investment: Intel's Costa Rican Plant." FIAS Occasional Paper No. 11. Foreign Investment Advisory Service, International Finance Corporation and World Bank; (ii) Volpe Martincus, C., and J. Carballo. 2008. "Is Export Promotion Effective in Developing Countries? Firm-Level Evidence on the Intensive and the Extensive Margins of Exports." *Journal of International Economics* 76 (1): 89–106; (iii) International Finance Corporation. 2023. Creating Markets in Benin: Country Private Sector Diagnostic; (iv) 2025 World Development Report

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3) Production subsidies may be best tied to either output, wages, or investment depending on information available and context

Case studies

Investment subsidies for heavy and chemical industry: *Effective* in raising sales, employment, labor productivity & *efficient* with large net benefits

Payroll tax exemption for software industry: *Effective* in raising sales, employment, labor productivity

Production-based tax credit for renewable energy: More e*ffective* in raising generator productivity and more *efficient* than input equipment subsidy

Principles of practice

- Subsidize *costs* only when you know which inputs constrain growth and *production* when key constraints are less certain
- Widely-used corporate income tax holidays can be made more effective by making them contingent on declines in cost per unit of output compared to non-targeted industries

Sources: (i) Choi, J., and A. Levchenko. 2025. "The Long-Term Effects of Industrial Policy." *Journal of Monetary Economics* 152: 103779; (ii) Kim, M., M. Lee, and Y. Shin. 2021. "The Plant-Level View of an Industrial Policy: The Korean Heavy Industry Drive of 1973." NBER Working Paper 29252, National Bureau of Economic Research; (iii) Lane, N. 2025. "Manufacturing Revolutions: Industrial Policy and Industrialization in South Korea." *Quarterly Journal of Economics* 140 (3): 1683–741; (iv) Manelici, I., and S. Pantea. 2021. "Industrial Policy at Work: Evidence from Romania's Income Tax Break for Workers in IT." *European Economic Review* 133: 103674; (v) Aldy, J. E., T. D. Gerarden, and R. L. Sweeney. 2023. "Investment versus Output Subsidies: Implications of Alternative Incentives for Wind Energy." *Journal of the Association of Environmental and Resource Economists* 10 (4): 981–1018.

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4) Innovation subsidies are effective and efficient even when technology adoption or invention is low

Case study

Embrapa funds research on priority staple crops in local climactic zones:

— Highly *efficient* (benefits 17 times costs)

Finep gives grants for promising research proposals in Brazil:

— *Effective* in fostering business growth but more foreign technology adaptation than invention – resulting patents cited heavily foreign patents and coincided with machinery imports

Principles of practice

- Incentivize participation and performance
- Keep application procedures simple and fast otherwise only larger and R&D intensive businesses apply
- Build in rigorous evaluation

Sources: (i) Akerman, A., J. Moscona, H. S. Pellegrina, and K. Sastry. 2025. "Public R&D Meets Economic Development: Embrapa and Brazil's Agricultural Revolution." NBER Working Paper 34213, National Bureau of Economic Research; (ii) De Souza, G., and G. Garber. 2025. "R&D Subsidy and Import Substitution: Growing in the Shadow of Protection." Working Paper 2023-37, Federal Reserve Bank of Chicago.

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5) Import tariffs can accelerate industry growth when there are resources and a large local market

Case study

Tinplate tariffs of over 70% are *effective*:

- 10 years after Tariff Act of 1890, most consumption is domestic production
- But *inefficient* as loss of consumer surplus to oil, food canning, and roofing industries not offset by domestic tin plate producer profits
- Without tariff, industry would have emerged 20 years after 1890 since iron bar price was falling due to economy-wide growth

Principle of practice

- Avoid tariffs on raw materials or capital equipment:
  - ➢ Tinplate case study had abundant endowments of iron ore and coal deposits and know-how

Sources: (i) Irwin, D. 2000. "Did Late-Nineteenth-Century US Tariffs Promote Infant Industries? Evidence from the Tinplate Industry." Journal of Economic History 60 (2): 335–60; (ii) Sylla, R., 2024. Alexander Hamilton's Report on manufactures and industrial policy. Journal of Economic Perspectives, 38(4), pp.111-130.

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6) Public procurement can spark innovations with demonstration effects

Case examples

Public procurement helps firms upgrade and demonstrate their ability to deliver to the market

- Four years after first procurement, beneficiary firms have 27% increase in productivity and employ 10% people
- Effect of government contract on firm performance comparable to the gains from trading with a multinational

Principles of practice

- Consider conditionalities
  - businesses receive or renew a procurement contract for delivering a solution to an innovation problem
- Collect and analyze bid data to assess costs:
  - Buy “small” or “local” policies can increase the cost of providing public services
- Ensure fair, contestable, and transparent procurement

Sources: (i) Mensah, J.T., Wankuru, P.C. and Kirui, B.K., 2025. Public procurement and firms: Evidence from Kenya. *Journal of Development Economics,* p.103688; (ii) Mazzucato, M., and D. Rodrik. 2023. “Industrial Policy with Conditionalities: A Taxonomy and Sample Cases.” Institute for Innovation and Public Purpose Working Paper 2023/07, University College London; (iii) Di Giovanni, J., M. García-Santana, M. Jeenas, E. Moral-Benito, and J. Pijoan-Mas. 2025. *Buy Big or Buy Small? Procurement Policies, Firms’ Financing, and the Macroeconomy*. Staff Report 1006, Federal Reserve Bank of New York.

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7) Technology transfer quid pro quo transfers technology effectively but requires a large market

Case examples

50% cap on foreign ownership *effective* in allowing Chinese partners to develop own capabilities (e.g., own fuel-efficient models

Efficient with no evidence of harm to investor's home country in combustion engine vehicle segment

Effective and efficient: Suzuki Maruti is leading car company, in part due to dealership network built with local expertise

Principles of practice

- Consider only with a large enough market to attract investors: avoid driving away FDI
- Smaller economies can consider alternative approaches to promote foreign technology transfer:
  - — Conditional tax incentives
  - — Public-private innovation hubs
  - — Joint research funding

Sources: (i) Bai, J., J. Panle, C. Shengmao, and S. Li. 2025. "Quid Pro Quo, Knowledge Spillovers, and Industrial Quality Upgrading: Evidence from the Chinese Auto Industry." *American Economic Review* 115 (11): 3825–52; (ii) Financial Times. "Maruti Suzuki looks to India's 'next billion' car buyers" May 19, 2025.

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8) Commodity export bans and local content requirements (LCRs) shape downstream and upstream markets

Case examples

Commodity export bans and LCRs used in different industries:

- — LCRs attracts low wage assembly, but not yet innovation or export manufacturing
- — Nickel ore export ban increased domestic value added, but no import substitution of steel yet
- — Bauxite export ban slower to attract aluminum smelting

Principles of practice

- Try subsidies or public inputs instead:
  - — for upstream industries before relying on LCRs
  - — for downstream industries before relying on export bans
- Account for market position:
  - — Investors accept LCRs only with large local market
  - — Commodity export bans only successful with large export market share (nickel but not bauxite)

Sources: (i) Reed, T., M. Pasha, and A. Gonzales. 2024. "Leveraging Foreign Direct Investment in Indonesia: Assessing Foreign Investor's Use of Domestic Suppliers." Research and Policy Brief 65, World Bank Group; (ii) Kee, H.-L., and E. Xie. 2025. "Nickel, Steel and Cars: Export Ban and Domestic Value Added in Indonesia." Policy Research Working Paper 11249, World Bank Group; (iii) Bosker, M., E. Van den Herik, P. Pelzl, and S. Poelhekke. 2025. "The (Un)intended Consequences of Export Restrictions: Evidence from Indonesia." CEPR Discussion Paper 20791, CEPR Press.

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9) Consumer demand subsidies are difficult to target to the most responsive consumers

Case examples

Demand subsidies for energy-efficient appliances in Mexico:

— *Effective* in encouraging consumers to upgrade their appliances but *not efficient* as many were planning to upgrade regardless

Principles of practice

- Target subsidies towards consumers who face barriers
- Estimate consumer demand and conduct a cost-benefit analysis
- Exhaust alternative approaches to boost consumer demand before relying on consumer subsidies (e.g., subsidies to charging stations)

Source: Boomhower, J., and L. W. Davis. 2014. "A Credible Approach for Measuring Inframarginal Participation in Energy Efficiency Programs." *Journal of Public Economics* 113: 67–79.

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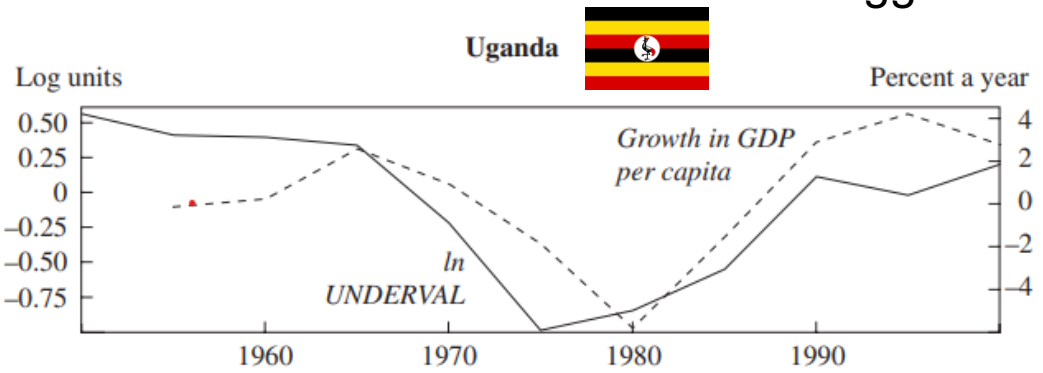
10) Competitive exchange rate devaluation requires preconditions including government bandwidth at central bank

Many cases, including Uganda

- Governments deliberately lower their currency's value, to make exports cheaper in global markets and spur trade-led growth
- Regression evidence from 188 countries, and correlations[1] from Asia and Africa are suggestive



- Effects are larger for developing countries

Principles of practice

- Carefully manage the capital account:
  - ➢ Devaluation requires central bank to accumulate foreign reserves
- More effective for developing economies, where there are more positive spillovers

1. ln UNDERVAL is the log difference between the purchasing power parity adjusted exchange rate and the value predicted, across countries, by GDP per capita

Source: Rodrik, D. 2008. "The Real Exchange Rate and Economic Growth." *Brookings Papers on Economic Activity* 39 (2): 365–439.

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11) Automatic termination rules may end policies too early

Case examples

- Automatic termination clauses are often advised, and typically 3-5 years

Pioneer Status Incentive tax exemption for 3 years, with possible 2 year extension with employment creation

- Governments typically argue policies are temporary, until fundamentals improve:

India's Production-linked incentive short-term fix while government addresses longer-term challenges like quality power, limited design capabilities in industry, and inadequate skills of Indian workers

Principles of practice

- Establish automatic termination milestones every 3 years, but allow policies to persist for up to 10 years
  - ➢ Progress curves show most learning takes 3-5 years
  - ➢ Import substitution (US tinplate) took 10 years
- Allow extension only with clear evidence declining cost per unit of output compared to non-targeted industries
- If you do industrial policy, commit to improve economy-wide fundamentals too

Sources: (i) Rodrik (2004); (ii) Government of Nigeria. 2017. *Application Guidelines for Pioneer Status Incentive; (iii)* Rajan, R., and R. Lamba. 2024. Breaking the Mold: India's Untravelled Path to Prosperity. Princeton University Press.

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12) Pro-competitive industrial policy is open to trade

Two contradictory cases?

Subsidies more effective at raising productivity when dispersed across many businesses within an industry

Government-organized cartels to coordinate bulk purchases of raw materials, standardize quality, and restrict quantities to avoid investment in excess capacity

Pro-competition industrial policy

With large local market, make industrial policy available to all firms in industry

- Except in mature industries, where there can be excess entry

Require firms to export:

- Given exposure to international competition, cartels caused only small changes in prices and had no impact on industry margins
- But today WTO rules prohibit export contingency

Sources: (i) Aghion, P., J. Cai, M. Dewatripont, L. Du, A. Harrison, and P. Legros. 2015. "Industrial Policy and Competition." *American Economic Journal: Macroeconomics* 7 (4): 1–32; (ii) Barwick, P. J., M. Kalouptsidi, and N. B. Zahur. 2025a. "Industrial Policy Implementation: Empirical Evidence from China's Shipbuilding Industry." *Review of Economic Studies* 92 (6): 3611–48; (iii) Weinstein, D. 1995. "Evaluating Administrative Guidance and Cartels in Japan (1957–1988)." *Journal of Japanese and International Economies* 9 (2): 200–23.

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For developing economies, all new business activities can be strategic

When the goal of industrial policy is development, targeting is challenging.

Paul Krugman's claim holds:

- "While there is a valid case for targeting grounded in economic theory, the theoretical basis is too complex and ambiguous to be useful given the current state of knowledge"

Instead, "new" activities can be used to proxy for "knowledge spillovers":

- Goal is to "diversify the economy" and "move up the value chain"
- Diversification can reduce macroeconomic volatility (e.g., the exchange rate)

Sources: (i) Pigou, A. C. 1920. The Economics of Welfare. Macmillan and Co; (ii) Krugman, P. R. 1983. "Targeted Industrial Policies: Theory and Evidence." In *Industrial Change and Public Policy*. Federal Reserve Bank of Kansas City; (iii) Rodrik, D. 2004. Industrial Policy for the Twenty-First Century. Harvard; (iv) Caselli, F., Koren, M., Lisicky, M. and Tenreyro, S., 2020. Diversification through trade. *The Quarterly Journal of Economics*, 135(1), pp.449-502.

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In targeting activities, manage risk with comparative advantage and market potential

To decide which business activities to target, governments can consider their **development benefits** and their **feasibility in the local context**

- Development benefits are hard to quantify: positive spillovers (diversification, learning-by-doing) and external impacts (foreign exchange, jobs, pollution reduction, economic resilience and security

- Feasibility less so:

Market potential	• Growth of world imports and/or domestic demand • Limited competition in international market measured by number of exporters
Risk based on evolving comparative advantage	• Low-risk activities have revealed comparative advantage[a] • Medium-risk activities use adjacent technology in "product space"[b] • High-risk activities lack both revealed comparative advantage and adjacent technology

Source: Reed, T., 2024. Export-led industrial policy for developing countries: Is there a way to pick winners?. *Journal of Economic Perspectives,* 38(4), pp.3-26.

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Additional goals allow for more precise targeting, but involve tradeoffs

Industrial policy for foreign exchange

- Trade-led growth model can still be pursued using public inputs and expanding deep preferential trade agreements with diverse partners
- Import substitution is difficult without a large market
- Export subsidies and competitive devaluation carry greatest retaliation risk

Industrial policy for jobs

- Trade-off between supporting labor-absorbing industries (lower-wage job creators) vs skill-intensive industries (increasing productivity)
- Decide when to subsidize labor vs capital - in capital-intensive industries capital subsidies are a more cost-effective way to create jobs
- Assist workers displaced by trade or technology, although broader social safety nets provide greater overall benefits

Green industrial policy

- Emissions regulations require adaptation to avoid damaging competitiveness of domestic industries (e.g., free emissions allowances for some)
- Subsidies for adopting or inventing low-pollution technologies can reduce costs but may not promote energy conservation
- Pair subsidies for downstream adoption with local content requirements or import tariffs to ensure domestic benefits of green technology uptake

Source: Fernandes and Reed (2026)

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The historical archetype for success is a small group of technocrats insulated from politics

Japan's MITI controlled trade, credit, and tax levers of industrial policy:

> The model is … a small, inexpensive bureaucracy staffed by the best managerial talent available in the system … demonstrated academically and competitively … the majority should be generalists … educated in law and economics, but it would be preferable if they were not professional lawyers or economists, since as a general rule professionals make poor organization men. The term that best describes what we are looking for here is not professionals, civil servants, or experts, but managers."

World Bank observes about the *East Asian Miracle*:

> "Institutional traits have been critical … Foremost among them is technocratic insulation … the ability of economic technocrats to formulate and implement policies in keeping with politically formulated national goals with a minimum of lobbying for special favors from politicians and interest groups."

Sources: (i) Johnson, C. 1982. *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925–1975*. Stanford University Press; (ii) 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.

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But there are more examples of failure due to political interference

Arthur Lewis on Ghana's Industrial Development Corporation:

> "The IDC has suffered greatly from outside interference, in the shape of members of Parliament and other influential persons expecting staff appointments to be made irrespective of merit, redundant staff to be kept on the pay-roll, disciplinary measures to be relaxed in favour of constituents, businesses to be purchased at inflated prices, loans to be made irrespective of security, etc."

More recently Argentina's special tax regime for electronics Tierra del Fuego:

— Regime established in 1972 to end in 2007 (35 years later)
— Quality and price are still not internationally competitive
— Extended most recently to 2038 (66 years later)

→ As of 1993, leading hypothesis was that industrial policy failed outside of Northeast Asia because of different "culture, politics, and history"

Sources: (i) Arthur Lewis as quoted Killick, T. 1978. Development Economics in Action: A Study of Economic Policies in Ghana. Heinemann; (ii) Hallak, J. C., L. Park, and B. Bentivegna. 2024. "The Tierra del Fuego Industrial Sub-Regime: A Reformulation Proposal for a Failed Industrial Policy." *Revista Economica La Plata* 70; (iii) Lewis Preston quoted in Page et al. 1993.

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But successful industrial policy is more replicable than ever before

Today, industrial policy will likely be more effective due to talent in government, better political economy, and greater openness to trade.

In addition, three country characteristics have improved for many countries:

- Government bandwidth to interact with private sector is larger
  - — Independent agencies like national development banks, investment promotion agencies, and cluster initiatives augment line ministries
- Local market size is larger
  - — Larger middle classes
  - — Regional and global integration through preferential trade agreements
- Fiscal space is larger
  - — Tax revenue to GDP has increased with domestic resource mobilization
  - — Optimization of existing industrial policy can yield fiscal space

Sources: (i) Survey of current ministers' education. Li et al. (2020), (ii) Goldberg, P.K. and Reed, T., 2023. Presidential Address: Demand-Side Constraints in Development. The Role of Market Size, Trade, and (In) Equality. *Econometrica*, *91*(6), pp.1915-1950. (iii) Bachas, P., Fisher-Post, M.H., Jensen, A. and Zucman, G., 2022. *Capital taxation, development, and globalization: Evidence from a macro-historical database* (No. w29819). National Bureau of Economic Research; (iv) Benitez, J.C., Mansour, M., Pecho, M. and Vellutini, C., 2023. *Building tax capacity in developing countries*. International Monetary Fund.

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How to prioritize interventions in the pursuit of industrial policy for development?

1) <u>Always keep some focus on fundamentals and institutions</u>

- If governments pursue industrial policy as a temporary fix for fundamentals, set milestones for investments in fundamentals over 5-10 years until automatic termination date

2) <u>Select low-cost public inputs not provided by the market</u>

- Requires tailoring to needs of industry, but should not be exclusive

3) <u>Pursue market or macroeconomic interventions if fundamentals and public inputs are insufficient, but measure benefits and ensure they exceed costs</u>

- Market and macroeconomic interventions are costliest, either fiscally or for the broader economy including producers and consumers
- When you do industrial policy, commit to improve economy-wide fundamentals too

Source: Fernandes and Reed (2026)

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