Industrial Policy for Development

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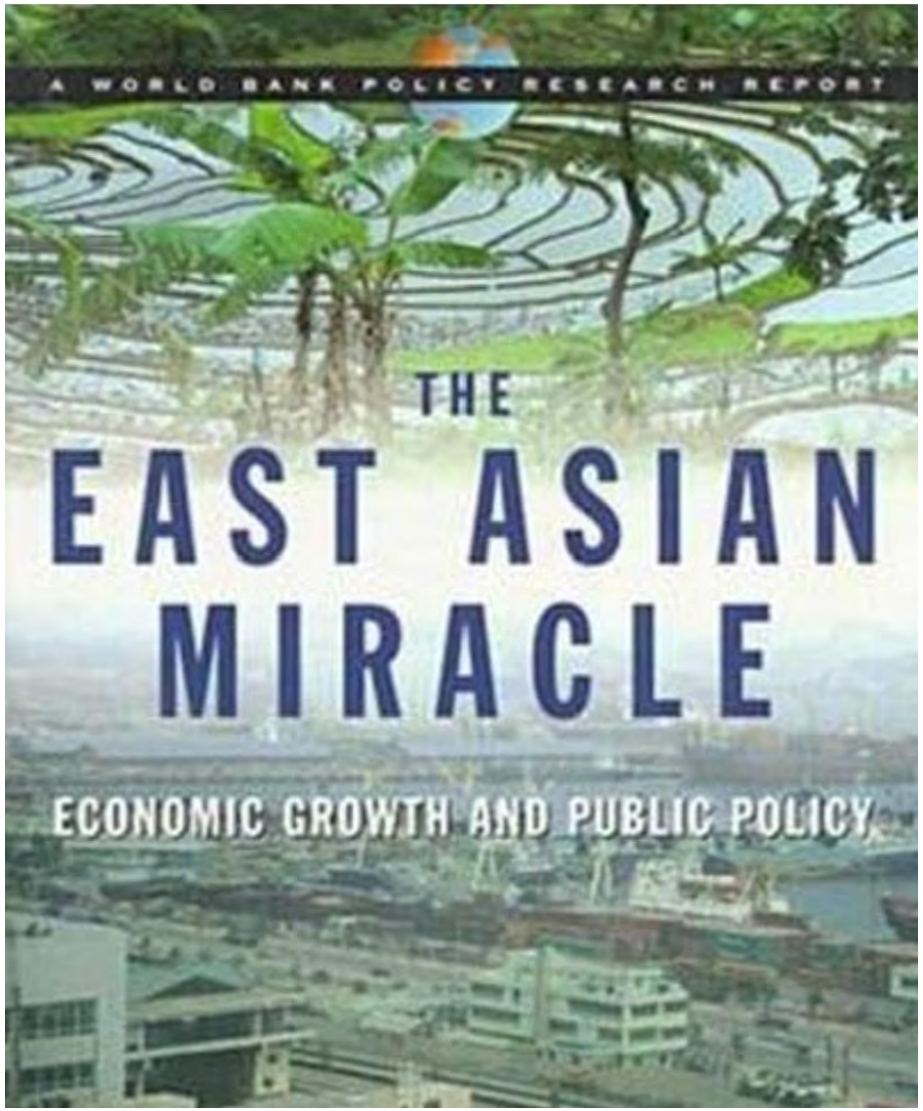
WORLD BANK GROUP

The East Asian Miracle?



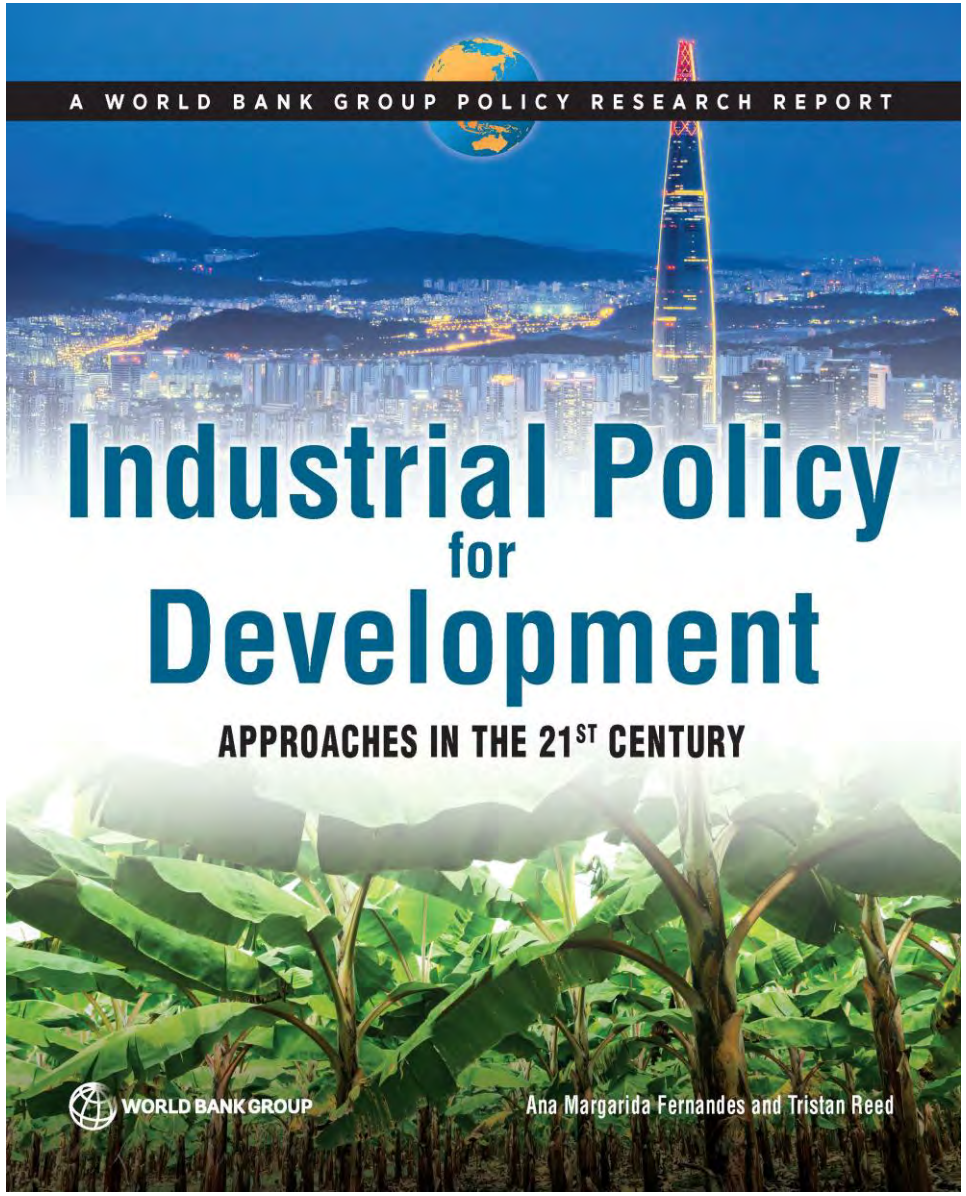
Big Debates in 1993

- **State vs. Market:**
  - — World Bank emphasizes market fundamentals (human capital, savings rate, macro stability) as source of east Asian growth
  - — Critics argued that active state-led industrial policy was crucial to success

- **Replicability:**
  - — Pres. Lew Preston argues unique “culture, politics, and history” may be preconditions for both fundamentals and industrial policy
  - — Difficult for other nations to replicate

A fresh perspective

1. What is industrial policy?
2. Who does industrial policy?
3. How to do industrial policy?
4. Which activities to target?
5. How to get institutions right?



Industrial policy is government action to grow a strategic business activity

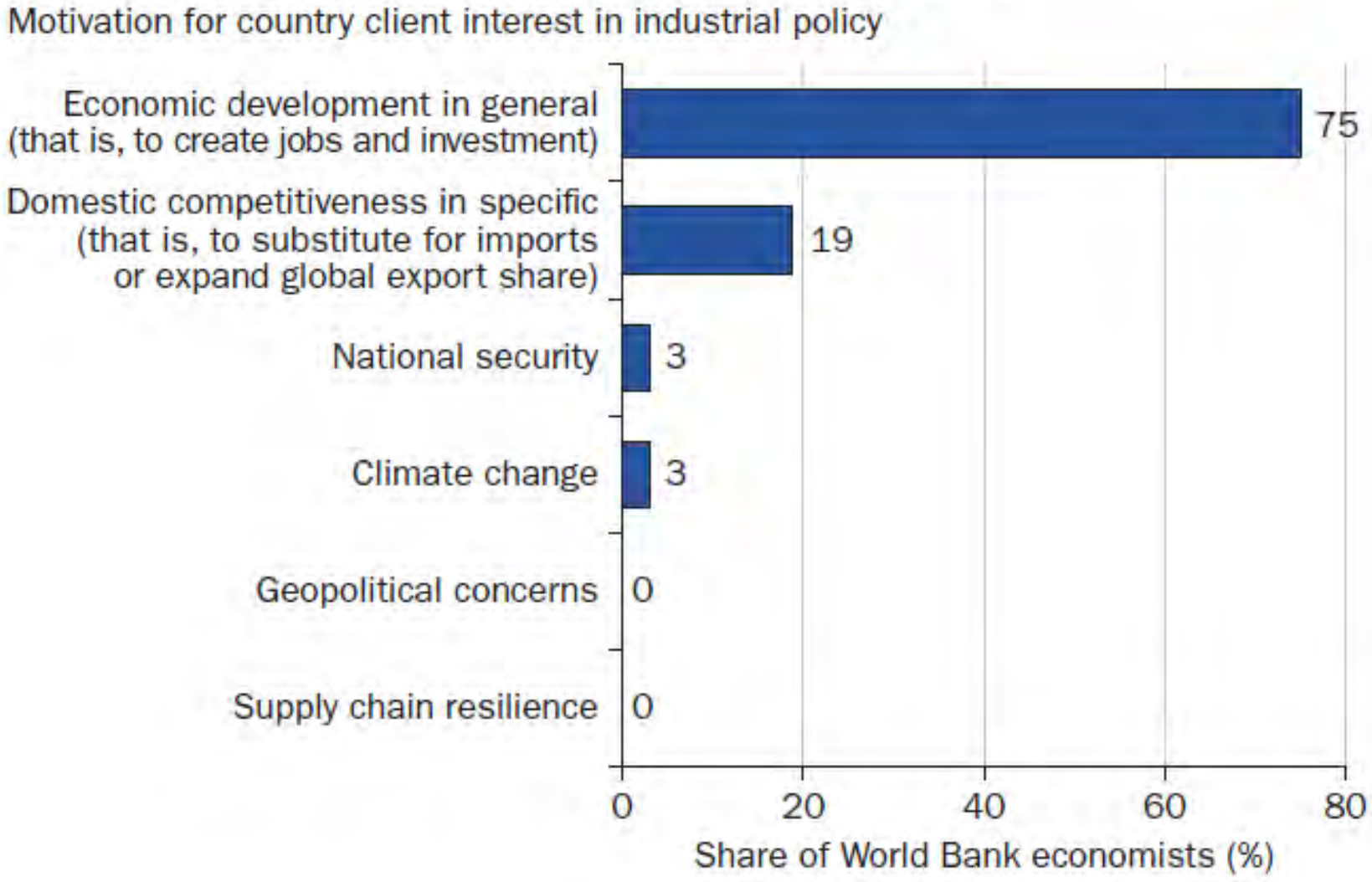
- **“Industrial”** is not just manufacturing. Any business activity can be strategic:
  - Agribusiness, critical minerals, skilled professional services, tourism

- **“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 decides one activity is more important than others

Developing countries want industrial policy for development

Figure 1.1 World Bank country client interest in industrial policy



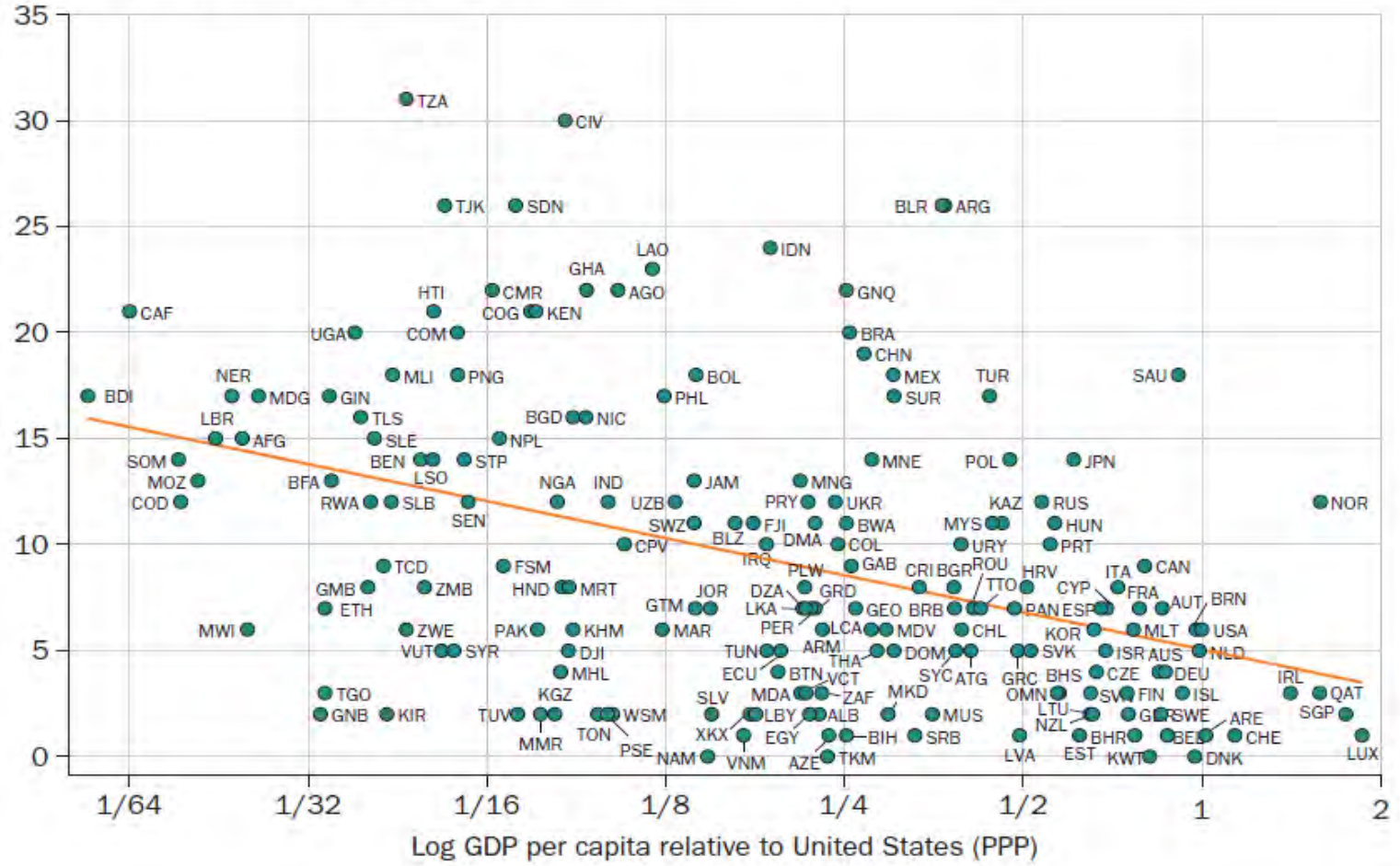
In theory, industrial policy can quicken growth

- **A common claim is that industrial policy involves "trade offs" and high costs**

- **But in theory, well-formulated industrial policy for development has net benefits**
  - Any business activity with "positive spillovers" is strategic
  - Positive spillovers occur when private incentives fall short of the social optimum
  - Budget-neutral subsidies for "positive spillovers" grow economic output

Developing economies target more industries in development plans

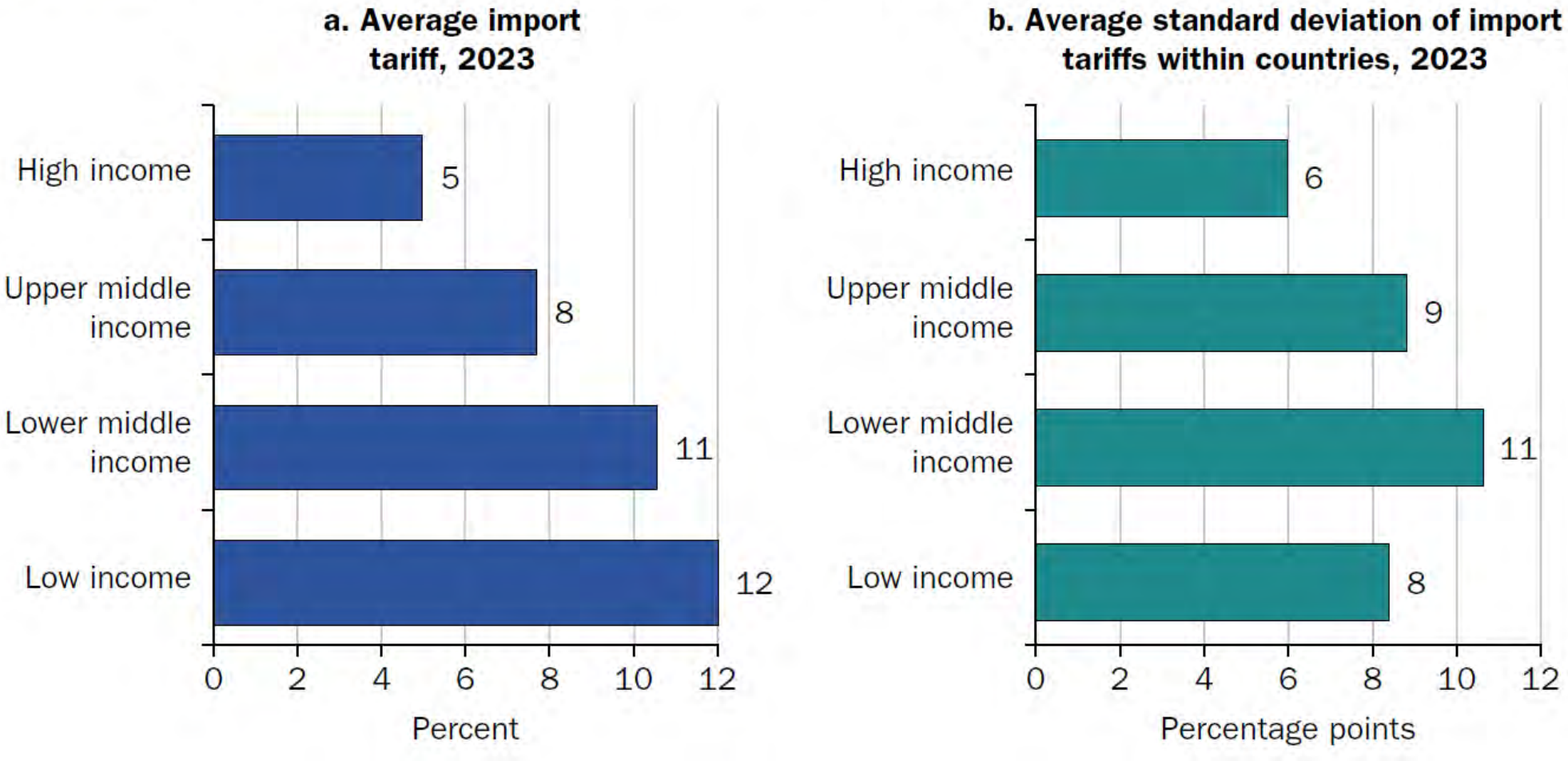
Figure 2.1 Number of industries specified in national development plans, by income



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.

Developing economies have higher tariffs and variance in rates

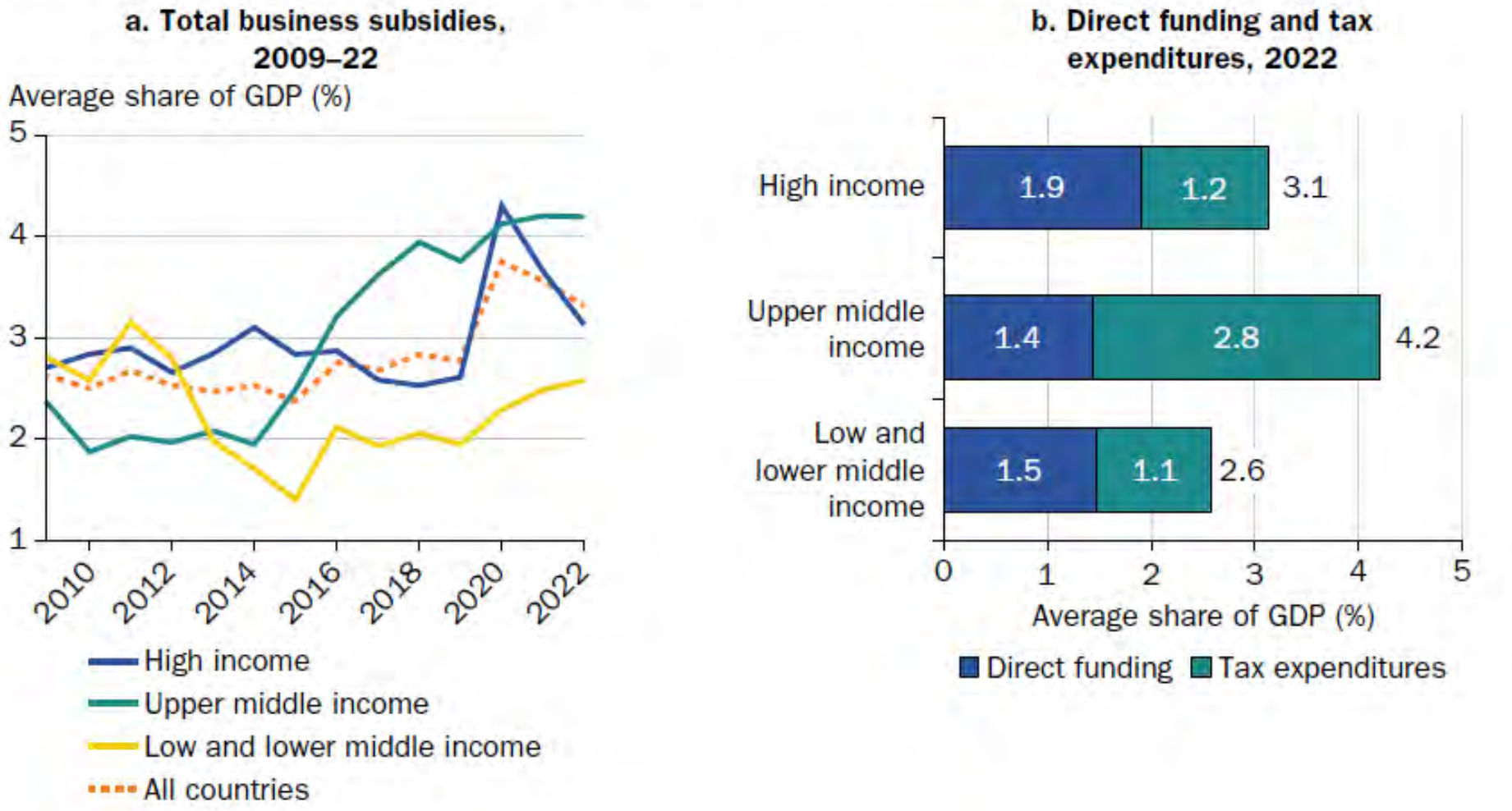
Figure 2.2 Average tariff levels and dispersion within countries, by income group



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.

Subsidies are highest on record in upper-middle income countries

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



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.

Fifteen industrial policy tools are available, but not all equal

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 incentives	
Positive spillovers, including learning-by-doing with advanced products and processes	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	
	14	Competitive exchange rate devaluation	2nd choice
	15	Research and development tax credit	2nd choice

Source: Fernandes and Reed (2026).

Three country characteristics determine policy feasibility

Country Characteristic	Description	Industrial policy relevance
Government bandwidth	• Workforce dedicated to engaging with businesses	• Industry tailoring and targeting (skills development; market access assistance; quality infrastructure)
Local market size	• Size of middle class • Size of destination markets covered by preferential trade agreements	• Achieve economies of scale required for protected industry
Fiscal space	• Ability to raise tax revenue and/or borrow affordably	• Expensive policies (subsidies)

Source: Fernandes and Reed (2026).

Matching country capacity to tool feasibility

Country characteristics			Feasible policies
Govern-ment band-width	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.

- **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
- The ditto symbol (") indicates that all policy tools listed in the cell above it are feasible for countries with characteristics listed in row

Source: Fernandes and Reed (2026).

Industrial policy today seems more replicable than before

- **Government bandwidth to interact with private sector is greater**
  - Independent agencies like national development banks, investment promotion agencies, and cluster initiatives augment capacity in line ministries

- **Local market size is larger allowing for scale economies**
  - Larger middle classes have added to domestic consumption
  - Regional and global integration through trade agreements allows specialization in production

- **Fiscal space is larger, conditional on expenditure rationalization**
  - 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.

Production subsidies best tied to production, not costs or profits

Case studies

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

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

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

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.

Innovation subsidies can be effective and efficient

Case studies

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

— Highly *efficient* (benefits 17 times costs)

Finep gives competitive grants for promising research proposals:

— *Effective* in fostering growth with technology adaptation not invention

— Patents cited heavily foreign patents and coincided with machinery imports

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.

Industrial policy should be temporary but after ~10 years

Case examples

Effective industrial policies vary over time:

— In shipbuilding, entry subsidies (e.g., below-market-rate land prices) curtailed after few years to allow consolidation in industry with economies of scale

Governments typically argue policies are temporary, until fundamentals improve:

— India's Production-linked incentive short-term fix while government addresses longer-term challenges like electric power and inadequate skills of Indian workers

But ~10 years seems to be how long it takes to develop new industries

— Problem may not be "letting losers go" but "keeping winners long enough"

Sources: (i) Barwick, P. J., M. Kalouptsidi, and N. B. Zahur. 2025. "Industrial Policy Implementation: Empirical Evidence from China's Shipbuilding Industry." Review of Economic Studies 92(6): 3611–48. (ii) Rajan, R., and R. Lamba. 2024. *Breaking the Mold: India's Untravelled Path to Prosperity*. Princeton University Press.

Targeting “new” business activities is a good rule of thumb

- **Scientific targeting of activities is hard and research points in different directions**
  - Paul Krugman’s (1983) 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”
  - Bartelme et al. (2025) find scale economies are largest in rubber and plastic, but Lashkaripour and Lugovskyy (2023) find they are smallest. Who to believe?

- **A simple rule of thumb is to focus on new activities**
  - New activities require learning and create “knowledge spillovers”
  - Could also target “sophisticated” or “complex” activities, but they should still be new

- **But many countries still target “old” rather than “new” activities”**
  - In Kenya, dairy, leather, and tea still feature in National Industrialization Strategy
  - In Serbia, 92 percent of subsidy value supports businesses that do not invest in R&D

Sources: (i) Krugman, P. R. 1983. “Targeted Industrial Policies: Theory and Evidence.” In *Industrial Change and Public Policy*. Federal Reserve Bank of Kansas City; (ii) Bartelme, D., Costinot, A., Donaldson, D. and A. Rodriguez-Clare. 2025. The textbook case for industrial policy: Theory meets data. Journal of Political Economy, 133(5), pp.1527-1573; (iii) Lashkaripour, A., and V. Lugovskyy. 2023. "Profits, scale economies, and the gains from trade and industrial policy." *American Economic Review* 113(10), pp. 2759-2808; (iv) Fernandes and Reed (2026).

Opportunity and feasibility are measurable, unlike benefits

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

Only these can be measured reliably

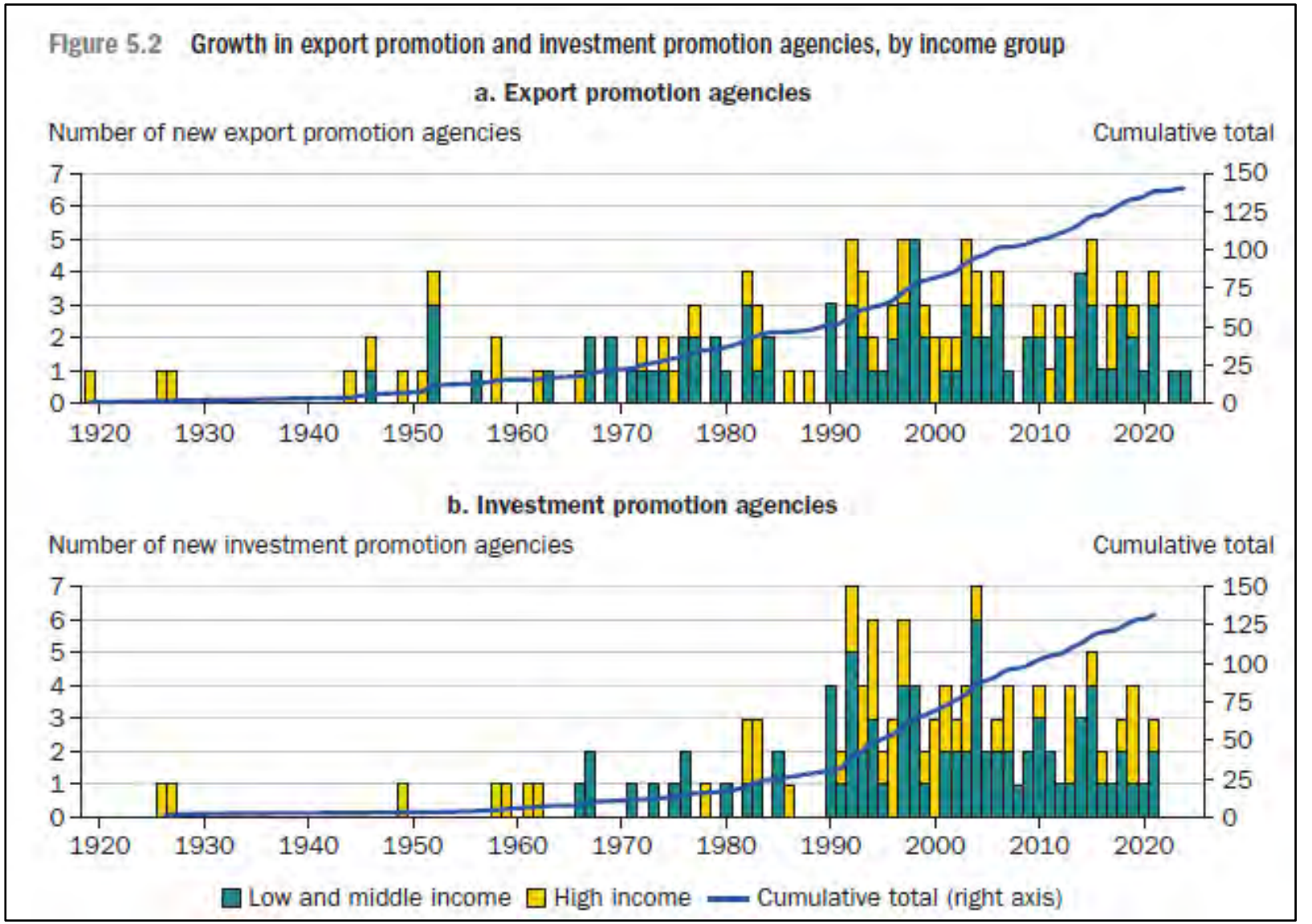
Practical indicators exist for essential qualities of institutions

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 3–5 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: Adapted from Rodrik, D. 2008. "Normalizing Industrial Policy." Commission on Growth and Development Working Paper 3, World Bank

Export and investment promotion have these qualities



Other goals allow for precise targeting, but with tradeoffs

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

How to prioritize interventions in pursuit of development?

1) Keep the emphasis on improving enabling institutions

- When governments pursue industrial policy as a temporary fix for fundamentals, set milestones for improvements in fundamentals

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

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

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

- Market incentives are costlier, either fiscally or for the broader economy including producers and consumers and can elicit retaliation

4) Be wary of macroeconomic interventions

- Competitive exchange rate devaluation is difficult to sustain and general tax credits including for R&D may not translate into innovation