

SESSION 4: THE WAY FORWARD

PANEL 4.1: Challenges and opportunities for the promotion of nuclear science and technology



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The Innovation Paradox

The Unrealized Promise of Technological Catch-Up

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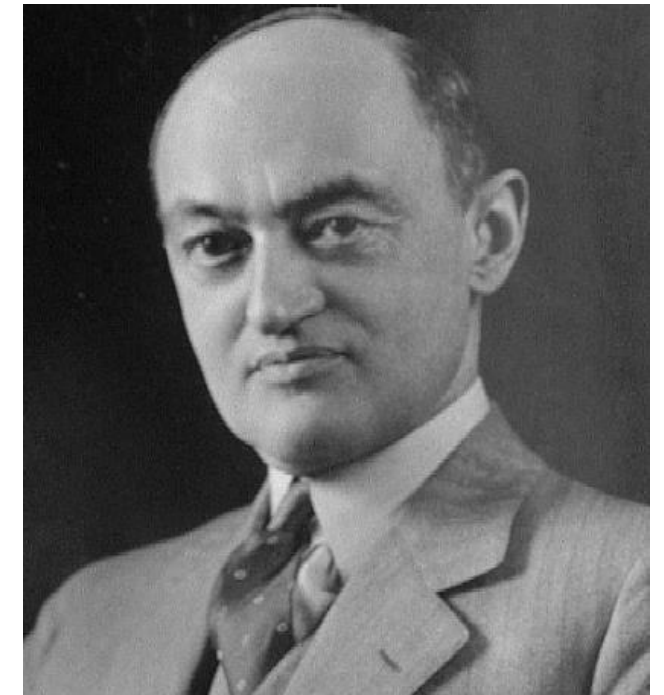
World Bank

Vienna, November 2018

Returns to innovation and adoption rise steeply with distance from the technological frontier

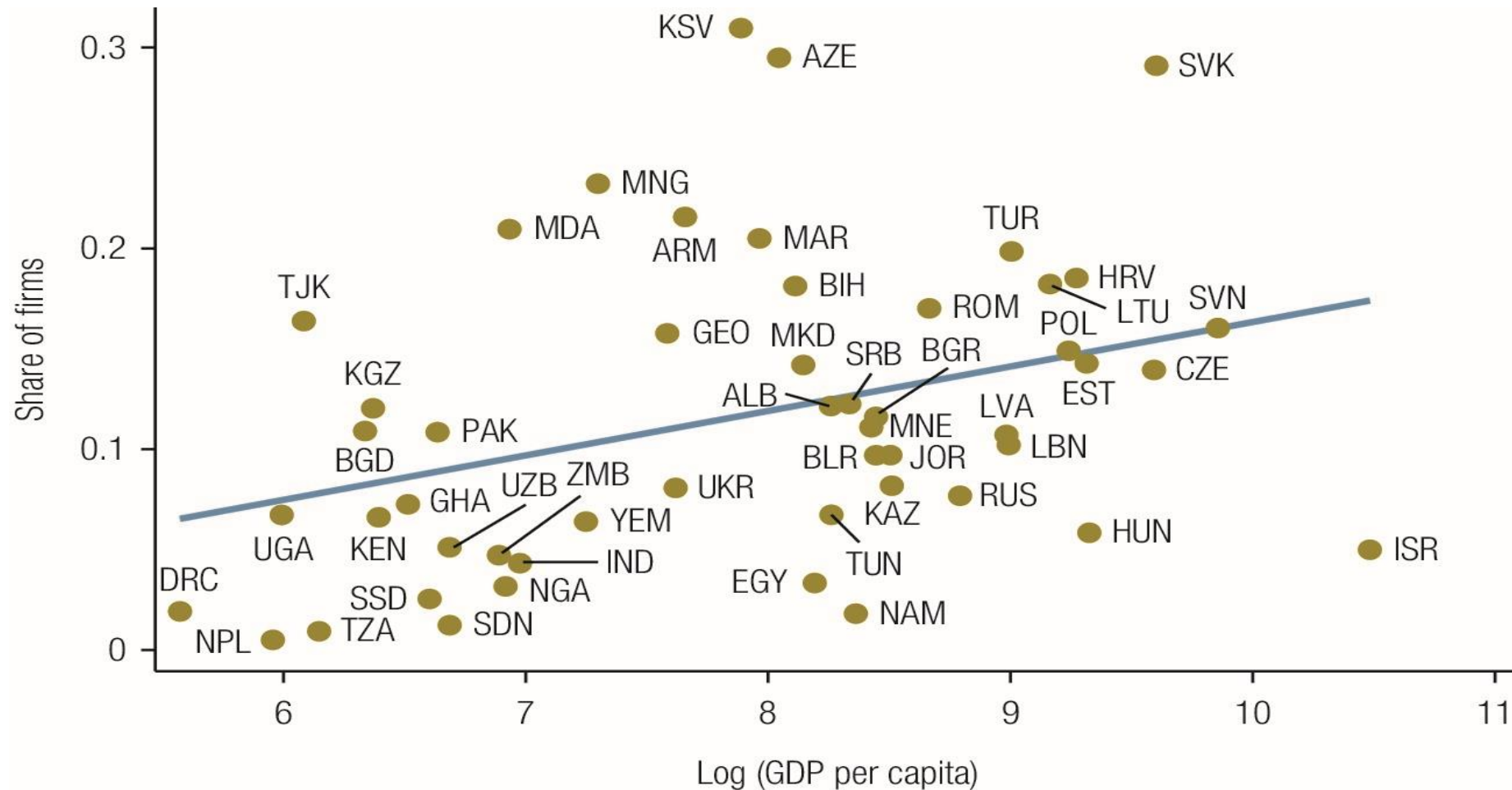
Joseph Schumpeter, 1883-1950

	Dist. to Frontier	Rate of Return to R&D	
▶ USA	-.18	57%	
▶ UK	-.53	77%	
▶ Italy	-.73	88%	
Korea	-1.33	?	
Malaysia	-2.28	?	200-300?
Indonesia	-3.74	?	
Africa	~-5.0	???	

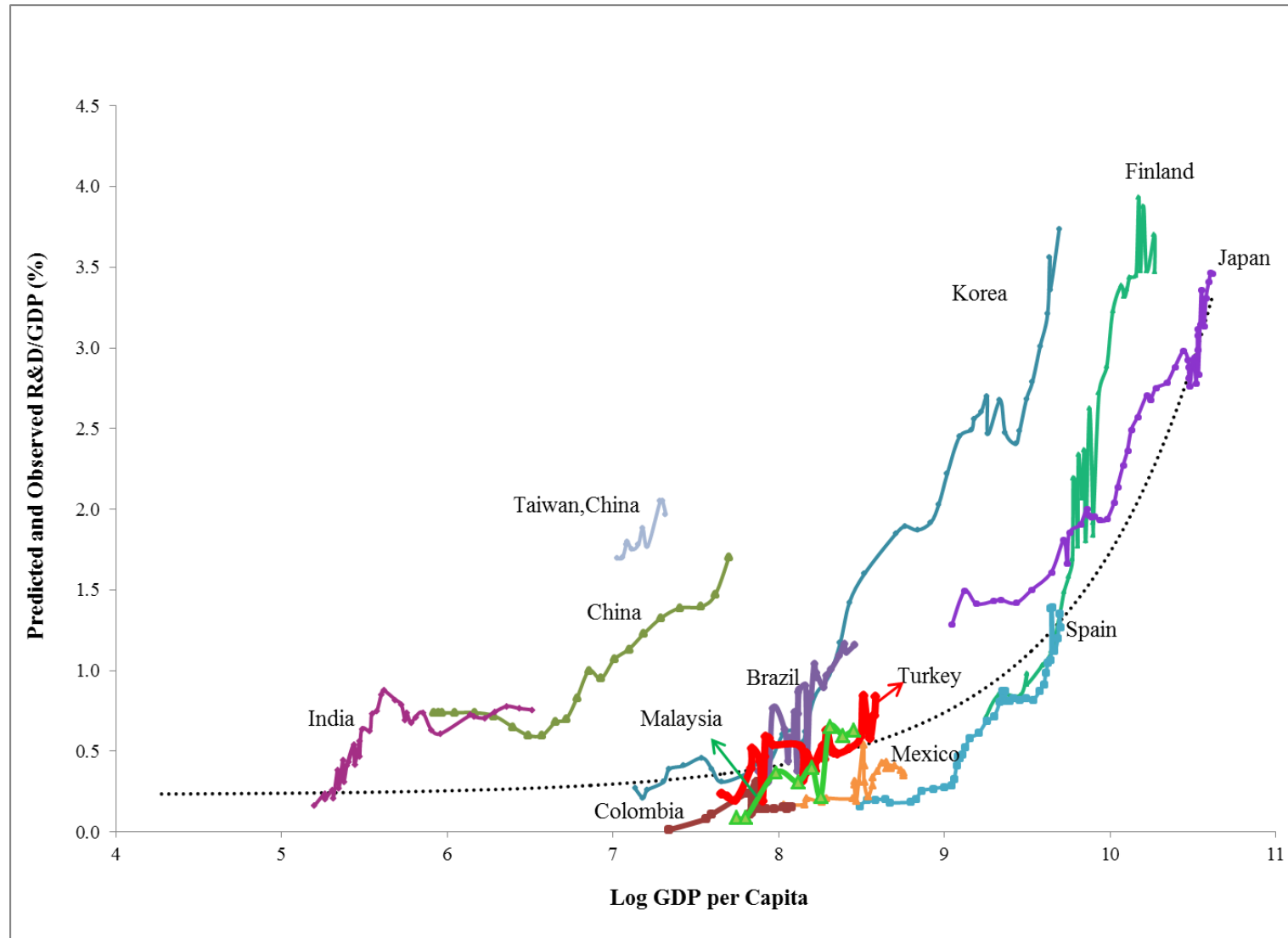


Griffith, Redding, Van Reenen (2004)

But developing countries do little licensing of foreign technologies...

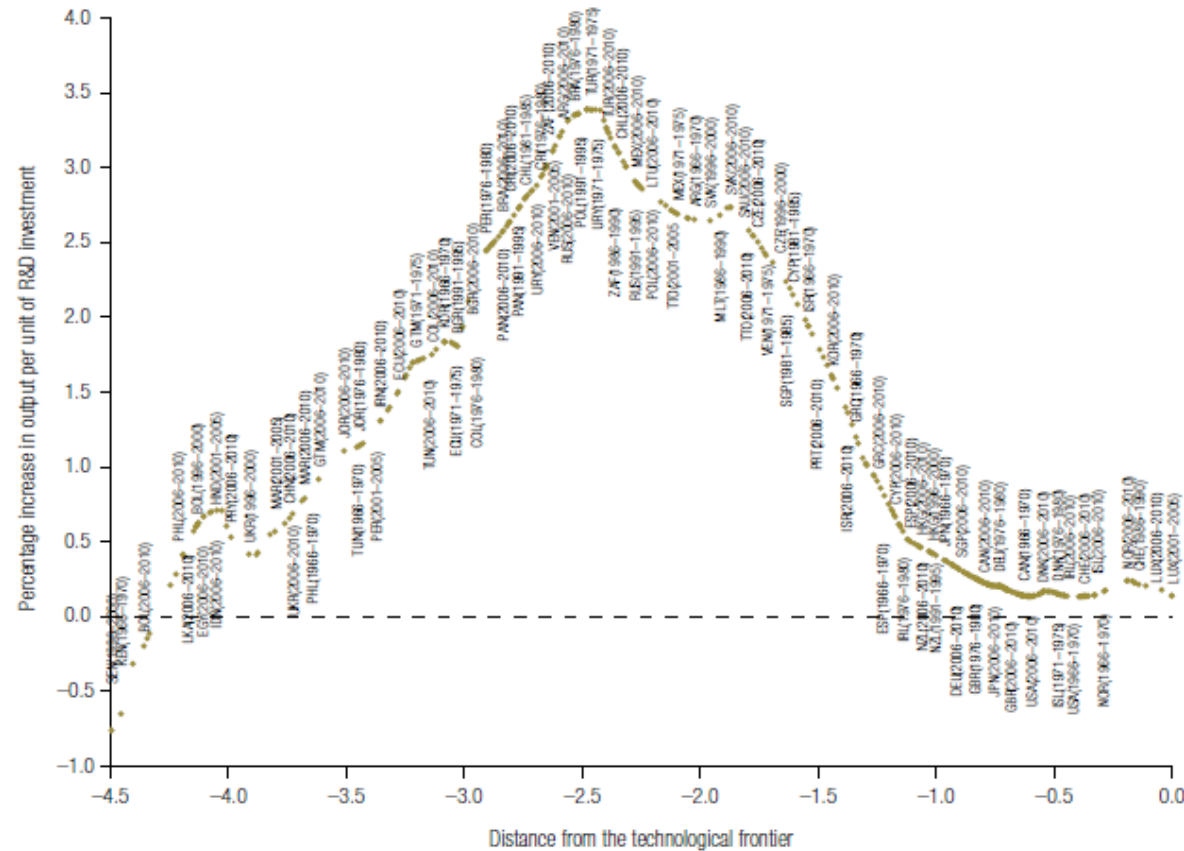


And do little of the necessary accompanying R&D



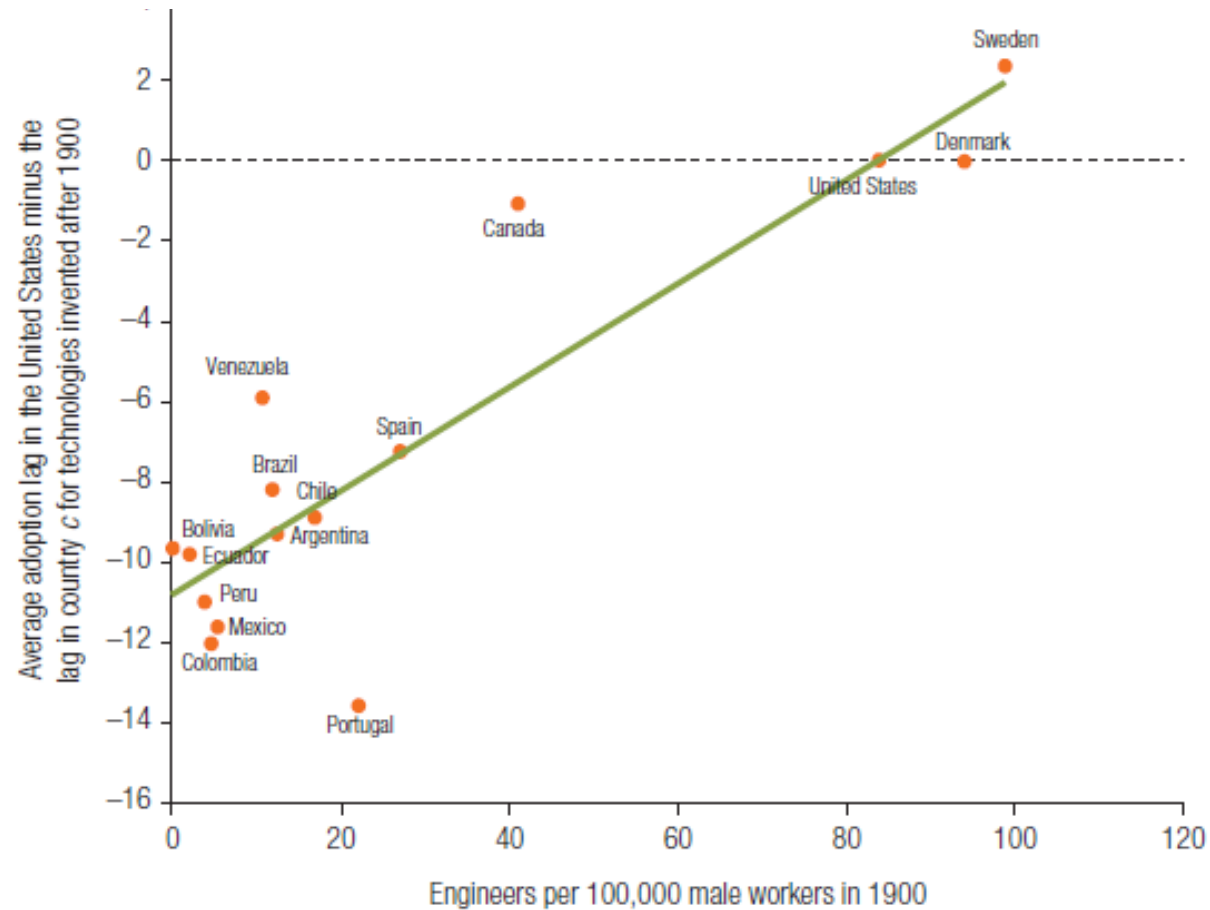
Maybe they don't expect high rates of return

FIGURE 0.3 For Countries That Are Far from the Technological Frontier, the Returns to R&D Increase Until a Point Where the Lack of Complementary Factors Depresses Them



Source: Goñi and Maloney 2017.

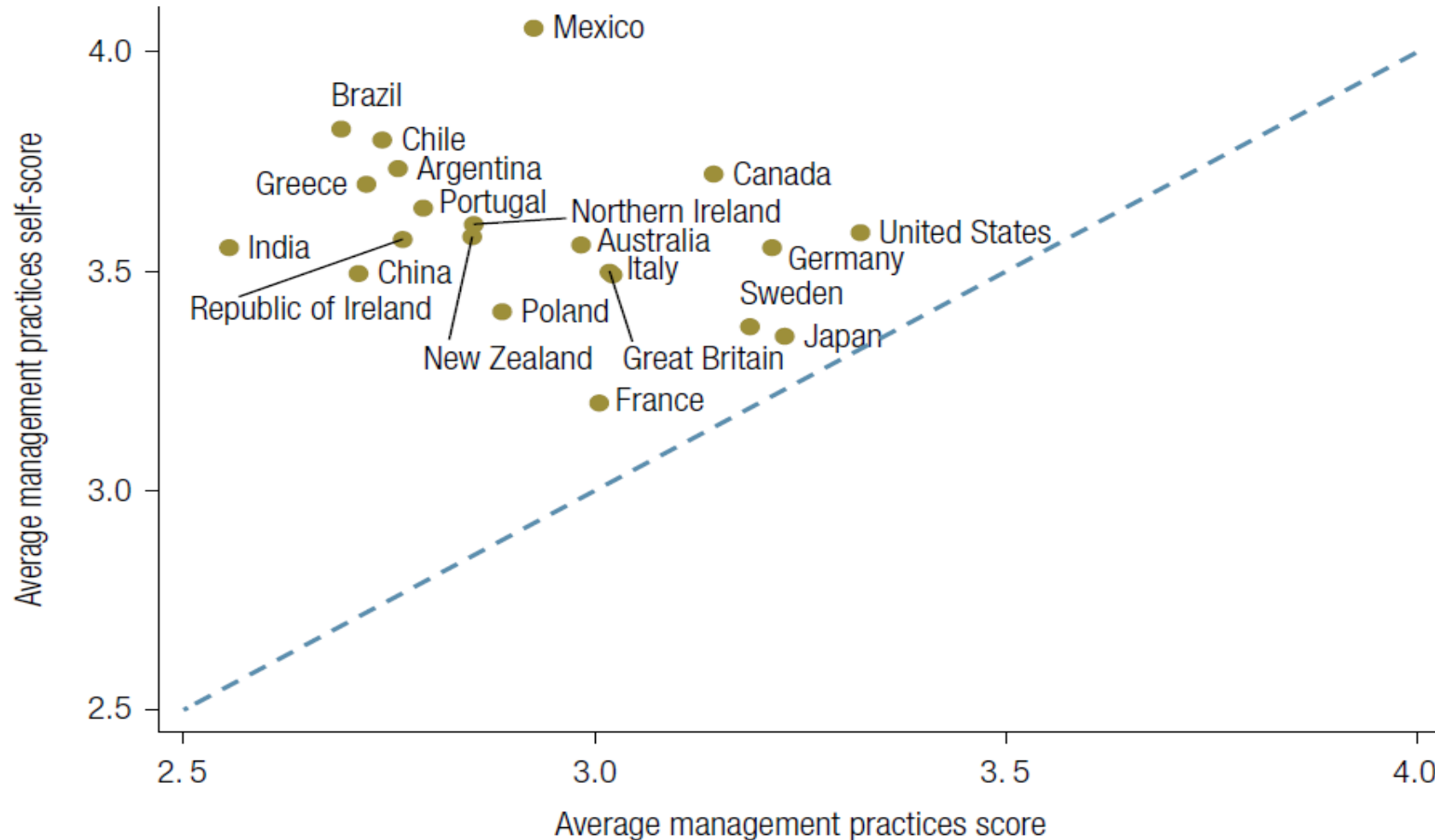
Technological Capabilities are Critical for Adoption of New Technologies



Source: Alfaro and Comin, forthcoming, based on data from Comin and Mestieri 2018 and Maloney and Valencia 2017.

Note: The figure plots the average adoption lag in the United States minus the lag in country c for technologies invented after 1900 against the number of engineers per 100,000 male workers in country c in year 1900.

Management capabilities: Firms don't know what they don't know.....

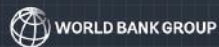


The Innovation Paradox



Developing-Country Capabilities and the
Unrealized Promise of Technological Catch-Up

Xavier Cirera and William F. Maloney



Pasteur: “Fortune favors
the prepared mind” (and
prepared countries))

The Productivity Project: www.worldbank.org/productivity