Latin American Productivity Paradoxes

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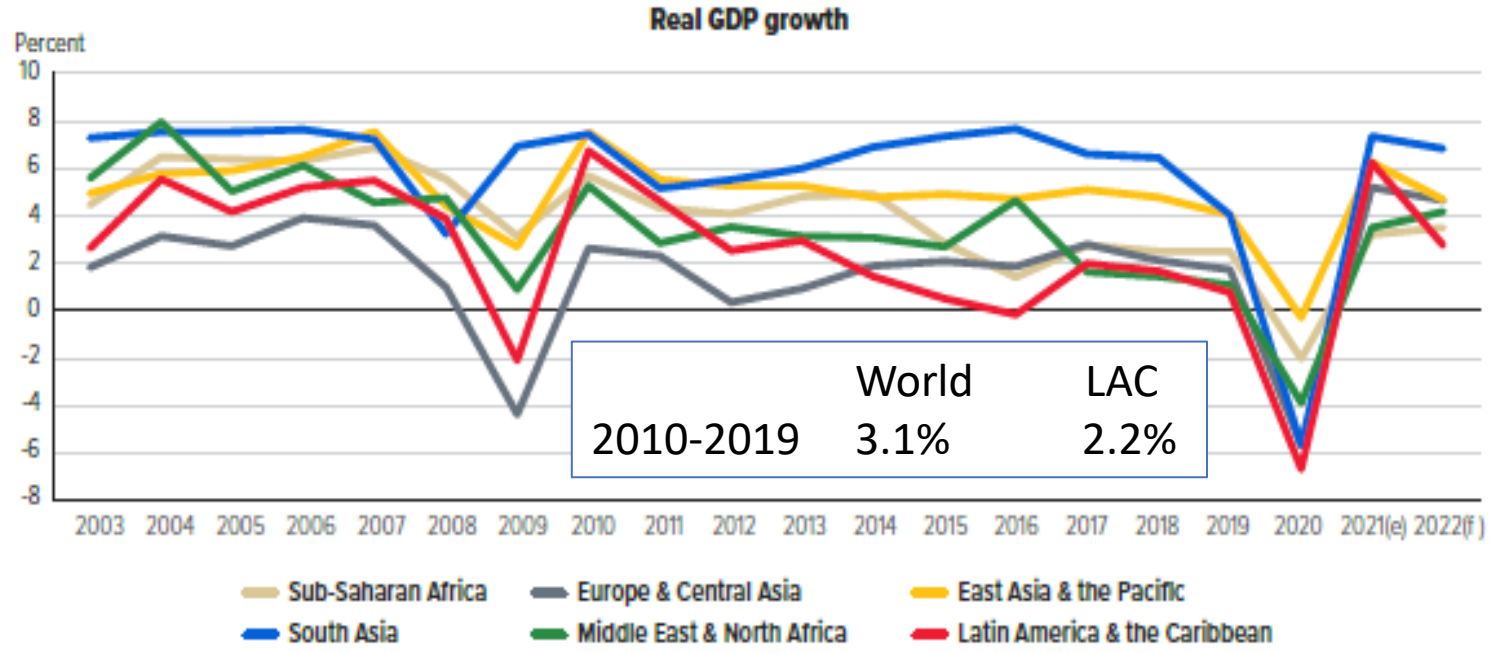
Latin America is stalled and grumpy

Figure 1.6: From Low Growth to the Worst Recession



Source: World Bank
Note: e-estimate; f-forecast

- **Growth forecasts are low...**
  2022: 2.3%
  2023: 2.2%
  2024: 2.4%

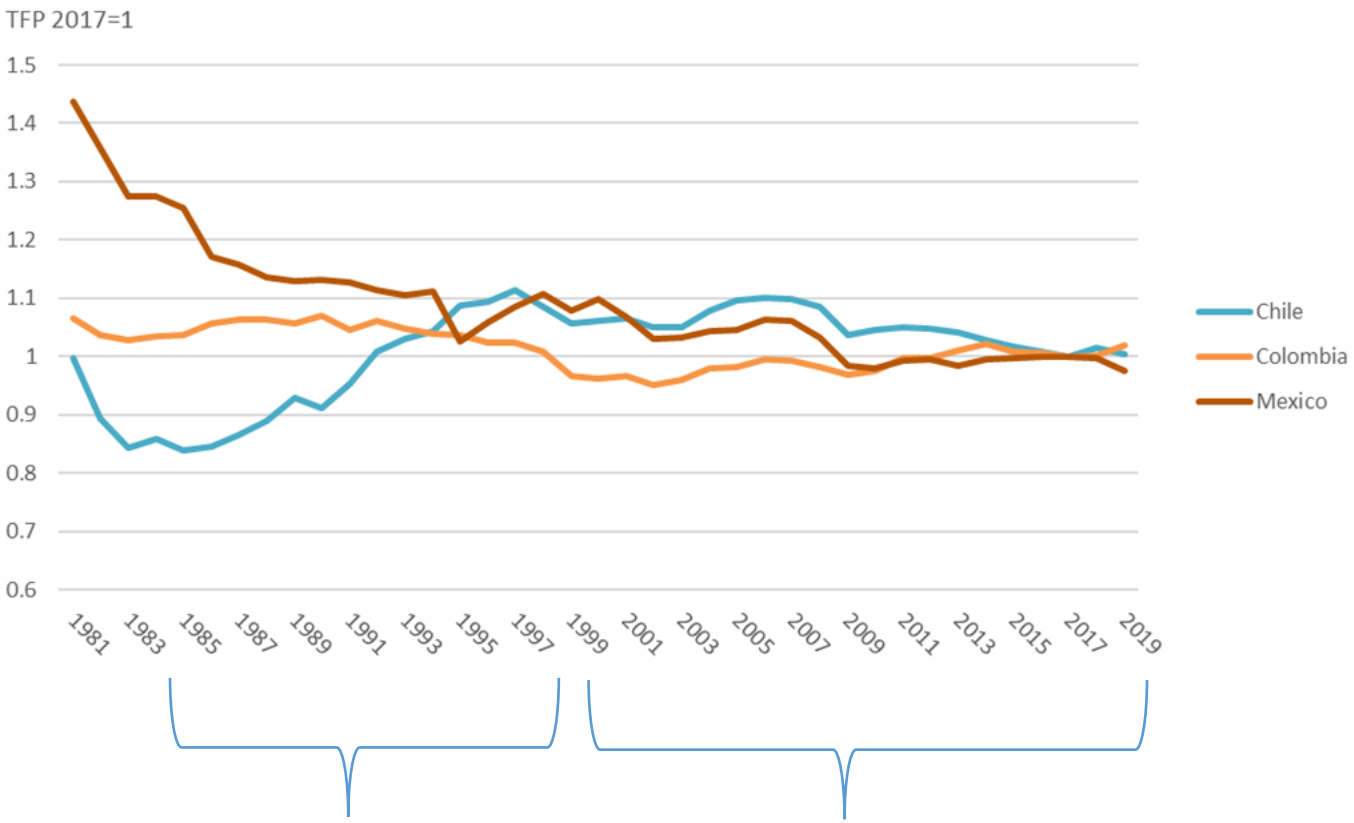
  …And similar to low rates of 2010s

- **Modest progress on poverty/inequality**

Five Paradoxes

1. Productivity is stagnant despite reforms; Product quality remains low absolutely and conditionally.
2. Poor performance regardless of economic structure; A missed Resource Blessing.
3. Business climate supposedly prohibitive, but Immigrants could industrialize LA.
4. Innovation investment low when returns should be astronomical.
5. Low competitiveness kills, but ambiguous responses of firms to more competitiveness

P1: Slowing growth, despite reforms.

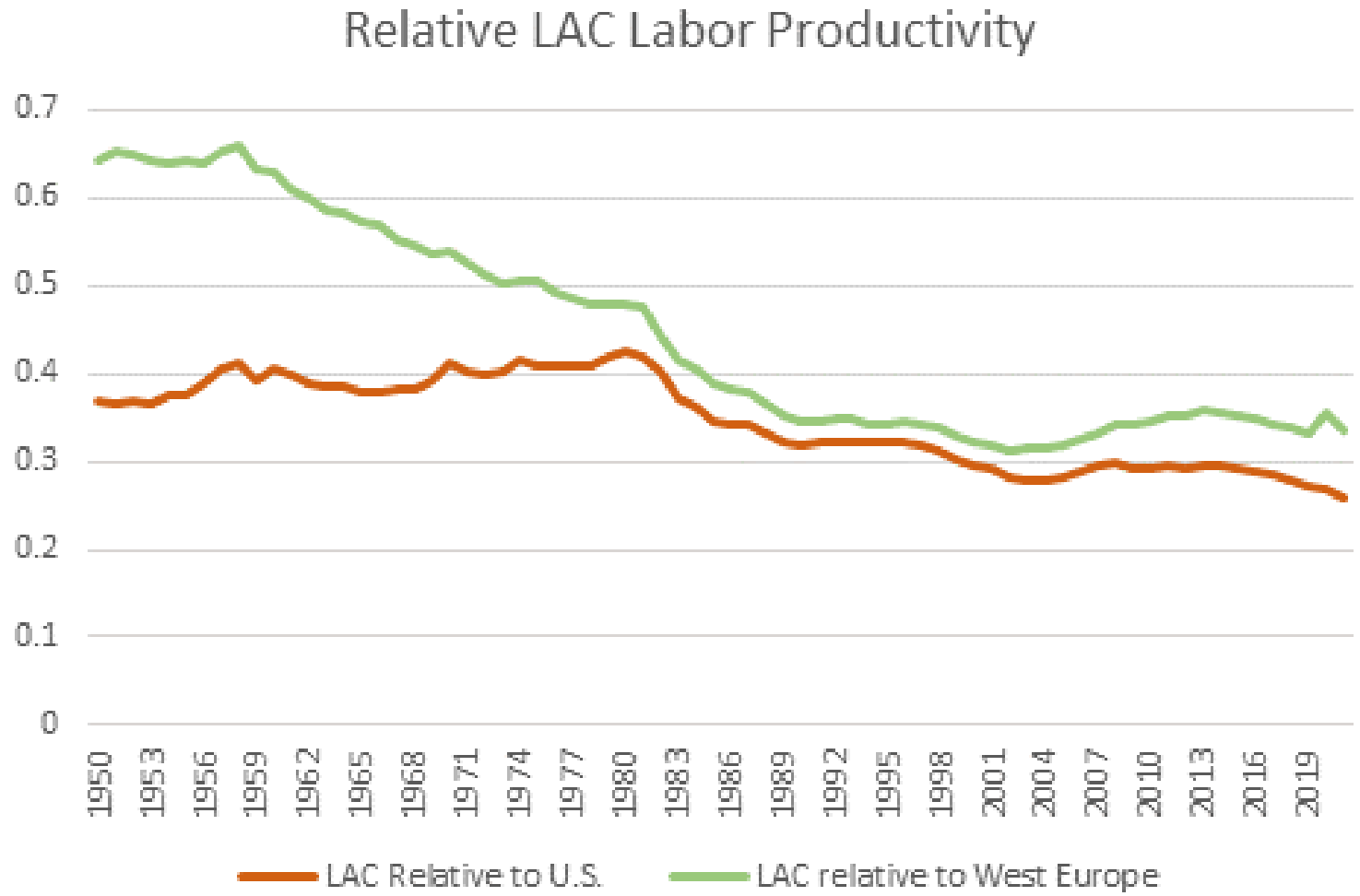


Chile: Reallocation and upgrading period

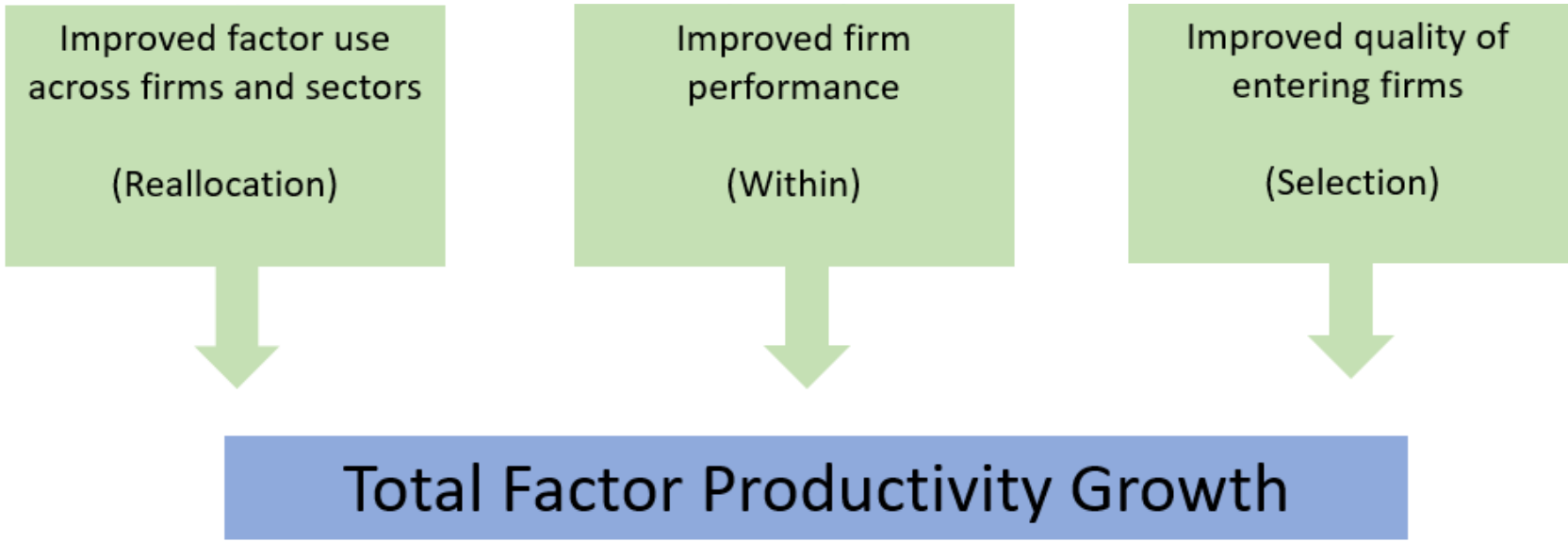
Entry of new industries, upgrading?

- Crisis in the mainstream growth "model"?
- Productivity is stagnant.
- Growth remains volatile and dependent on commodities

Region wide, there is no productivity convergence- What are we missing?

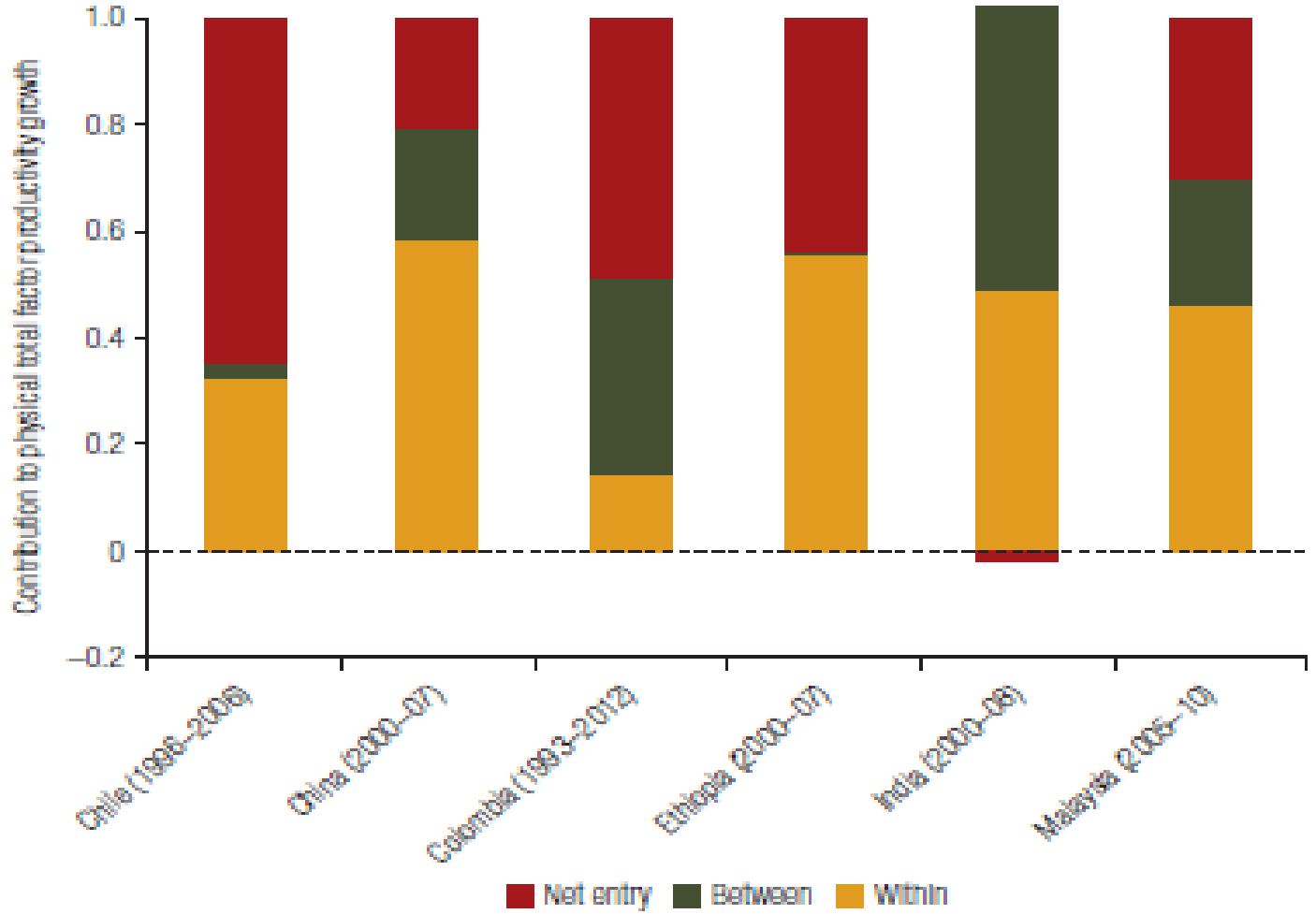


Sources of Productivity Growth



Cusolito and Maloney 2018

FIGURE 1.11 **Which Dimension Contributes Most to Productivity Growth?**

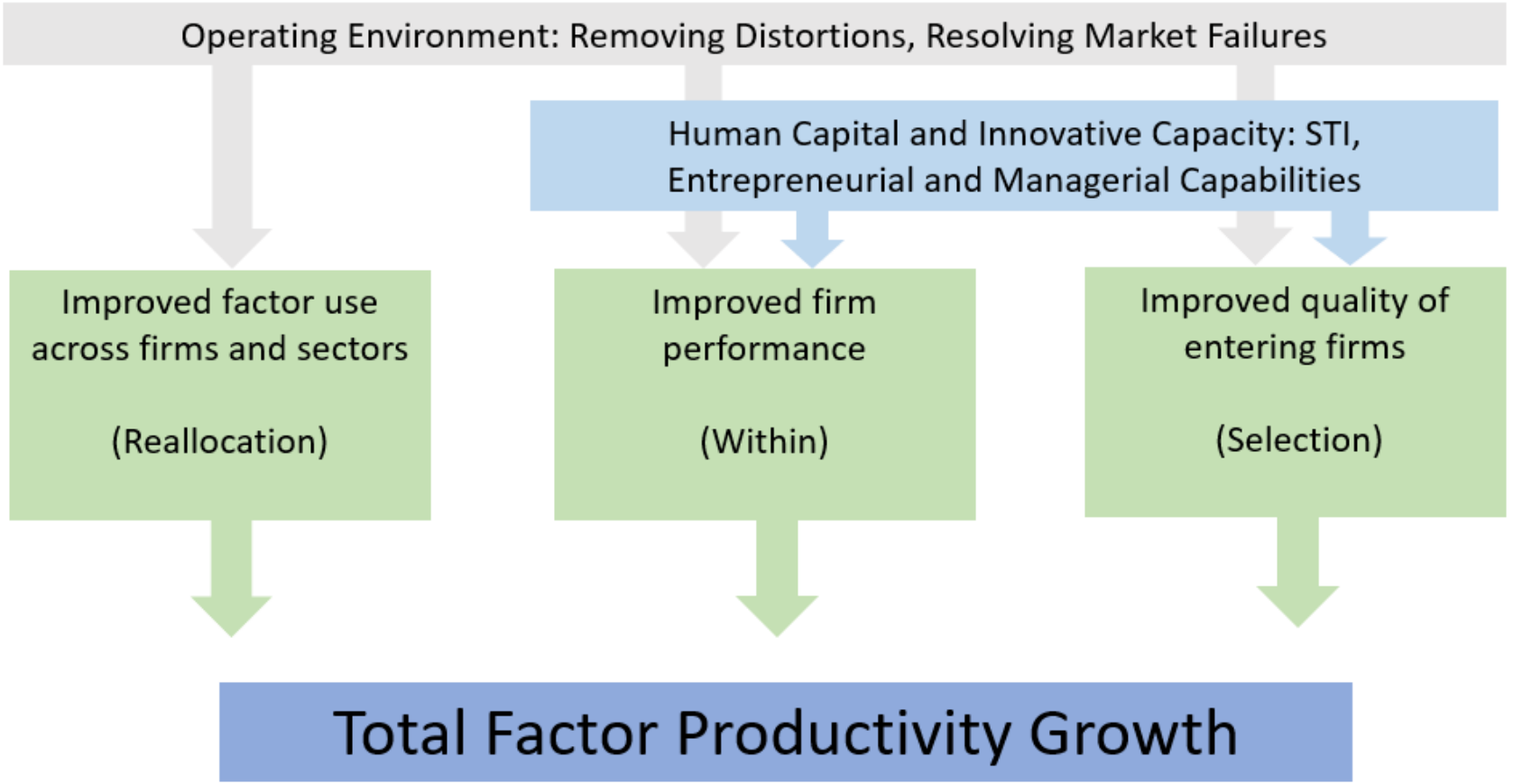


Source: Physical total factor productivity decompositions using Melitz and Polanec's (2015) methodology.

Need to work on all three fronts!

Source: Cusolito and Maloney Productivity Revisited (2018).

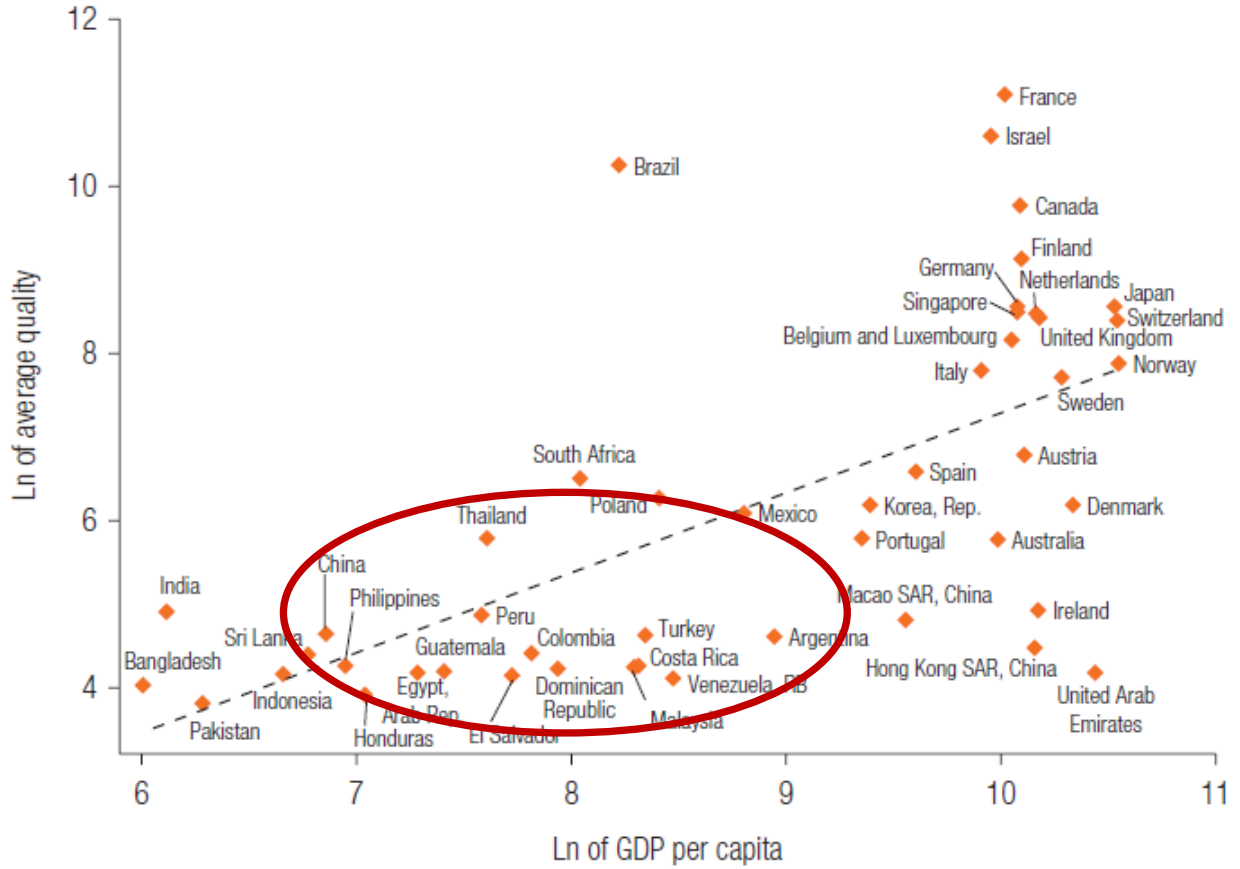
Sources of Productivity Growth



Cusolito and Maloney Productivity Revisited 2018

P1: Quality - The understudied dimension of TFP- LAC performance low, despite reforms

FIGURE 2.4 Average Product Quality Increases with the Level of Development



Source: Krishna, Levchenko, and Maloney 2018.

Note: The figure plots average cross-good unit values standardized by the 90th value of HS-10 against log GDP per capita for countries with more than 50 products. Ln of average quality versus ln of gross domestic product per capita. Slope = 0.956 (*t*-statistic =

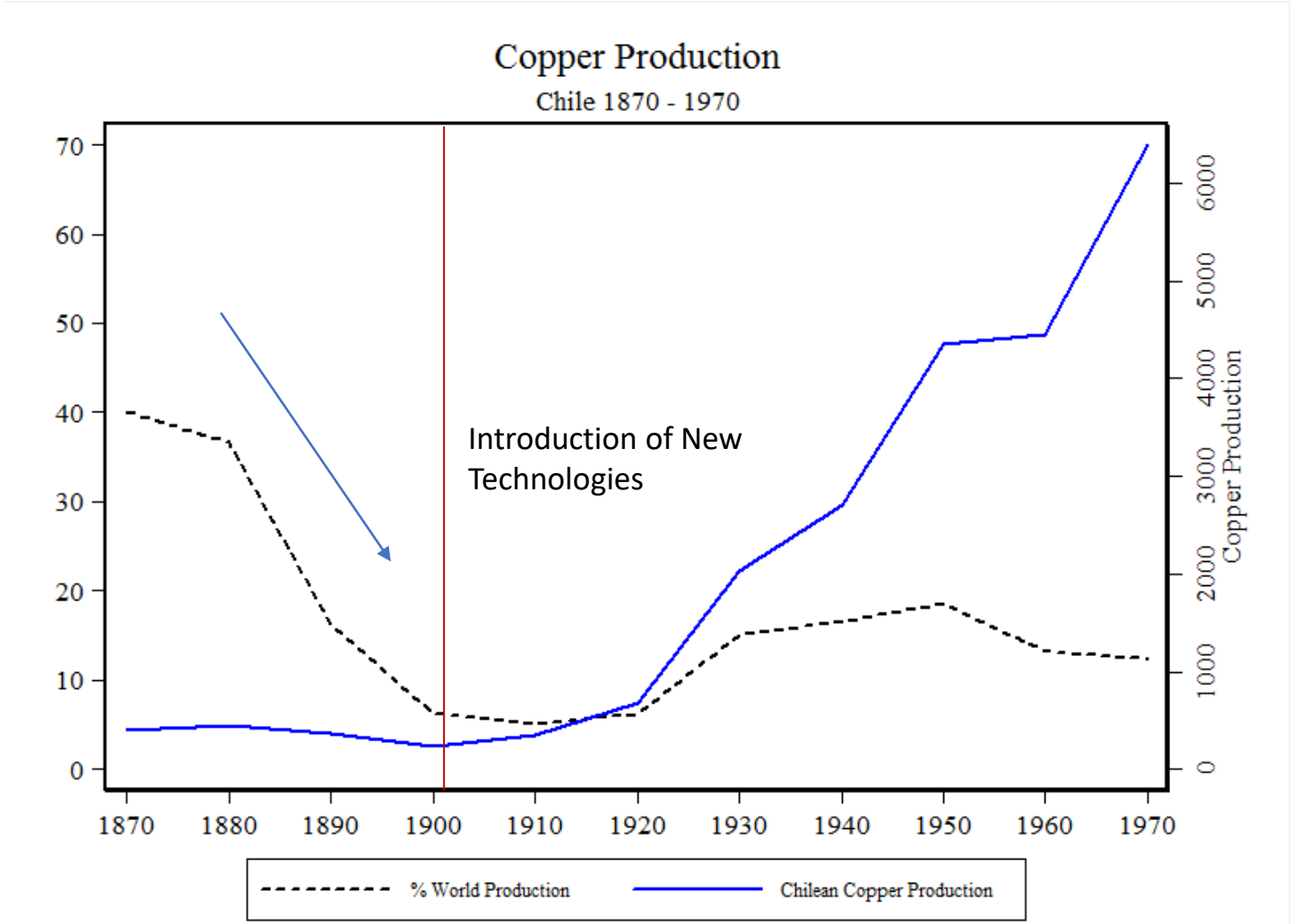
Growth is about taking risks. Need risk takers and risk taking encouraging climate

FIGURE 3.7 Faster Quality Growth Is Riskier Quality Growth

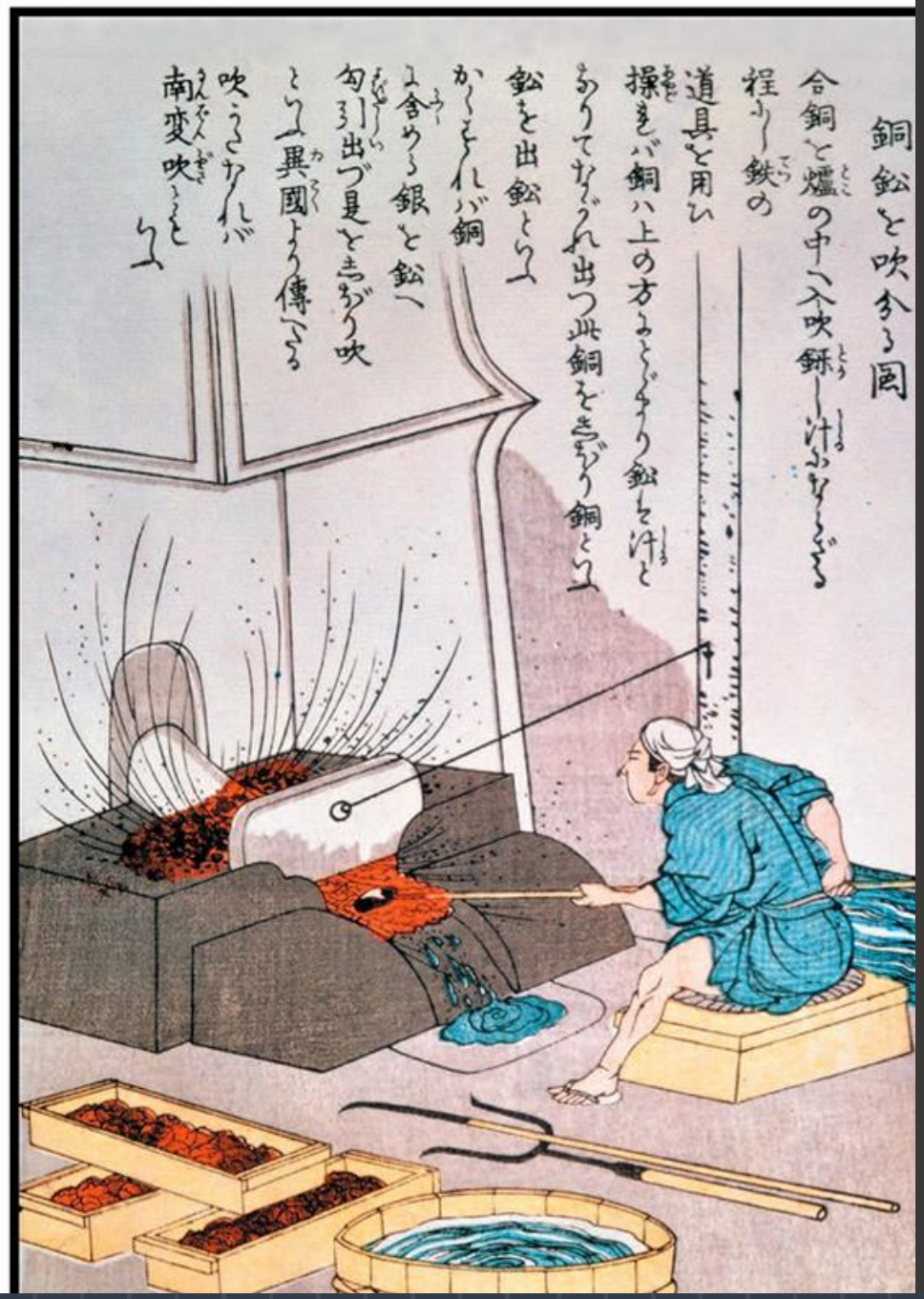
Source: Krishna, Levchenko, and Maloney 2018.

Lessons from historical paradoxes

P2: Persistent missed opportunities for growth and diversification, regardless of economic structure.



Development impact of same good radically different across time.. And place



Counterexample 1:

Japan- the Natural Resource Miracle

Second largest copper exporter after…..Chile in mid 1800s. Gave rise to numerous zaibatsu that propelled growth

Sumitomo: Masatomo Sumitomo (1585 – 1652)**: "**Father of Copper" in Japan

Hitachi: Developed electric motors for ..Hitachi copper mine ..and diversified

Fujitsu: 4th largest information company in the world Ichibei Furukawa "The Copper King" 1877 to top Zaibatsu

Where are LAC's analogues in either NRs or Manufacturing or any sector?!!!!

Counterexample 2:

The US: Became a learning nation through copper production.

- Gavin Wright (1999) “Can a National Learn?” YES
- U.S leveraged copper into a “learning network”
  - Established universities around mining: **U.C. Berkeley**, Columbia, Colorado School of Mines.
  - Developed capabilities in Metallurgy and Chemistry that provided the foundation for subsequent diversification.
- US companies (including Anaconda) introduce new tech into Chile’s copper mines after 1900 until CODELCO established 1976.

Actually, they’re complementary!!

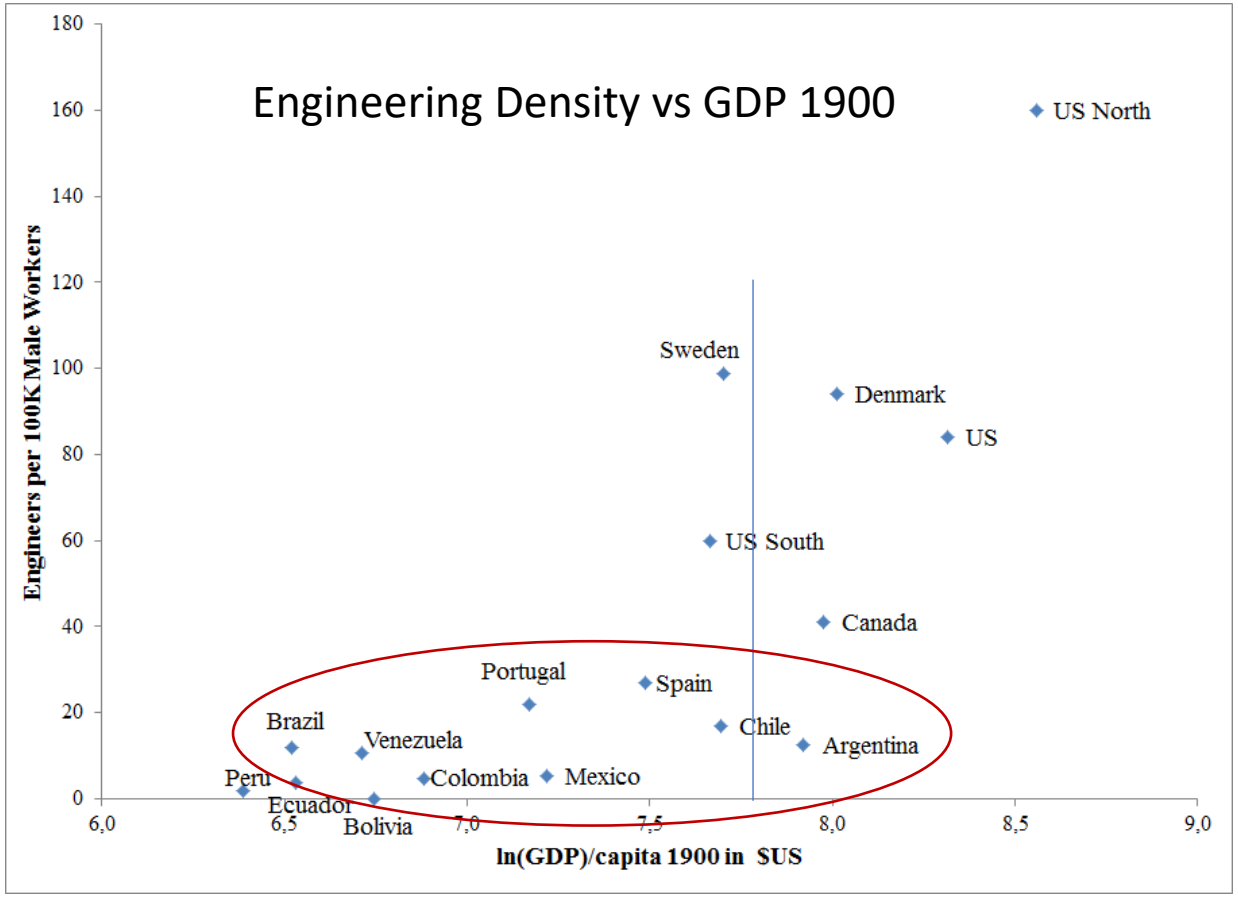
A view from Montana

LAC inability to leverage comparative advantage linked to difficulty adapting and inventing new technologies.

- **LAC entered 2nd Industrial Revolution Unarmed!**

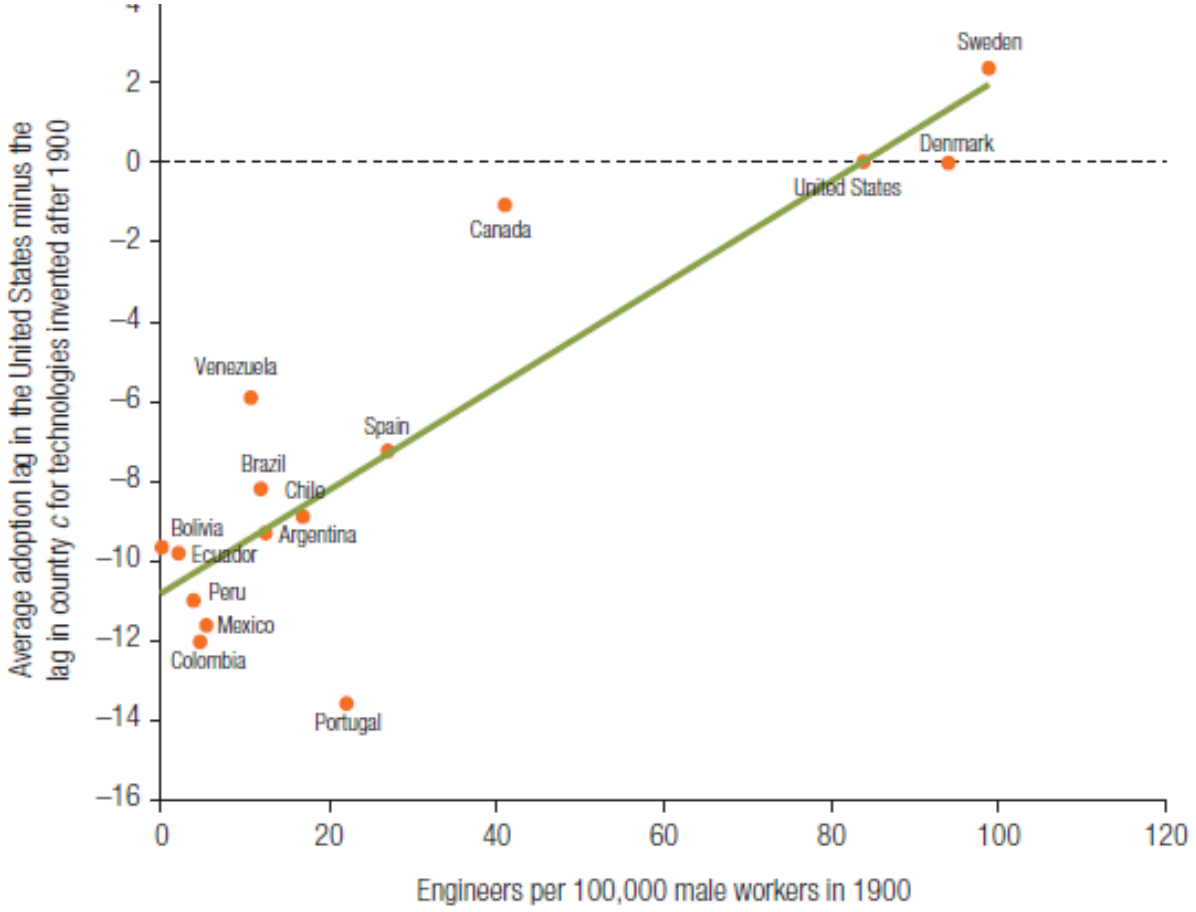
- Lesson: More **how** than **what** you produce
  - Brazil Steel Industry- Military U.
  - Mexico vs. Korea –electronics

- Going into 4th industrial revolution, we remain low along every measure of innovation.



Maloney and Valencia (2022)

Technological capabilities drive tech adoption, (including green tech).



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.

Comin and Mestieri (2018)

- Can explain Great Divergence- why Sweden and Denmark left Chile and Argentina behind.
- Reduction in adoption lag by one year associated with 3.8% higher per capita income.

OJO: Green agenda is fundamentally an adoption agenda.

See Vol 1, 2, 7.

P3: Despite prohibitive business climate, foreigners were able to start businesses, but locals couldn't.

TABLE 4.1 Immigrants, Rather Than Locals, Dominated Industrialization during the Second Industrial Revolution in Many Places around the World

Country	Year(s)	Percentage of immigrants among business owners	Percentage of immigrants in the population	Ratio of male immigrant business owners to male population
Argentina	1900	80.0	30.00	1.3
Brazil (São Paulo)	1920–50	50.0	16.50	1.5
Brazil (Minas Gerais)	1870–1900	3.6	1.50	1.2
Chile	1880	70.0	2.90	12.1
Colombia (Antioquia)	1900	5.0	4.70	0.5
Colombia (Barranquilla)	1888	60.0	9.50	3.2
Colombia (Santander)	1880	50.0	3.00	8.3
Mexico	1935	50.0	0.97	25.8
USA (5 percent census sample)	1900	31.0	13.60	1.1
USA (Fortune 500 firms)	Various	18.0	10.50	0.7
Comparator				
Japan (Shizoku, former Samurai)	1868–1912	50.0	5.00	5.0

Source: Maloney and Zambrano 2016.

Note: The final column shows the ratio of foreign entrepreneurs to the local male population because women were largely precluded from productive entrepreneurship during the study period.

- **São Paolo** 50%+ started by immigrants, 70% if include their children (Bresser Pereira 1994)
- **Rio de Janeiro** between 1878 and 1895, most textile mills were founded by foreigners, owned 62% of wholesale textile trade.
- **São Paulo and Rio**, the first electricity generating companies were founded by foreigners. (Prado in Birchal (1999))
- **Juis de Fora**, Minas Gerais, a major steel and manufacturing area from 1858-1912, immigrants were responsible for 66% of industries (Birchal, 1999)

Culture? LAC had substantial entrepreneurial drive, but started behind and slipped as tech frontier moved in 2nd IR

- Chile: Developed Nitrate, Copper industries during peak.
- 30-40,000 Chileans and Peruvians migrated to San Francisco during the gold rush and brought mining technologies to US!!

A view from Chile:

''*Chilenos didn't lack either an entrepreneurial spirit, nor the energy to work, characteristics which are incarnate in the first railroads and telegraphs, in ports and piers, the irrigation canals in the central valley.* ***But these qualities have been lost****.“*

Enrique Mac-Iver (1900)

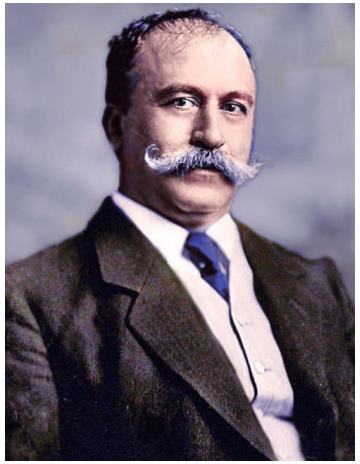
The Chilean Mill

Exported to Australia and California

Creating Paisa (Antioquian) Entrepreneurial and Technical capabilities

Gold Trade w/London

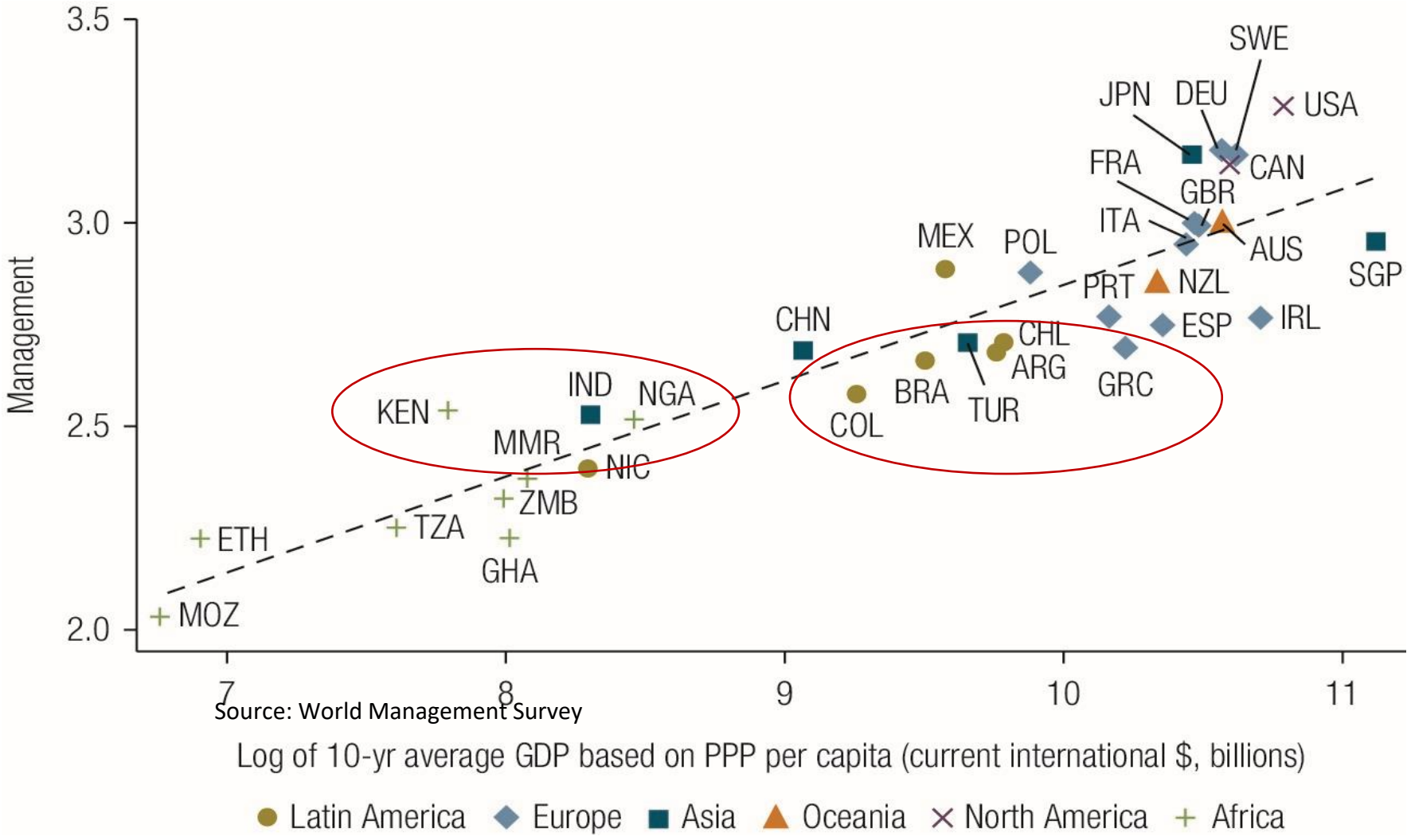
Pedro Nel Ospina



Escuela Nacional de Minas
Modeled on UC Berkeley

But how did Antioquian textiles *lose* the US market to the Asians?: Problems of quality, productivity, and timeliness (Morawetz 1981)

Today, we lag in managerial capabilities



Source: World Management Survey

Building Entrepreneurial and Technological Capabilities to Innovate. Key to Asian Miracles.

Wartime Production

Japanese Productivity Movement (1945)

Japan Management Association (efficiency)

Japan Productivity Center

Union of Japanese Scientists and Engineers (Quality)

Japanese Industrial Standards Committee

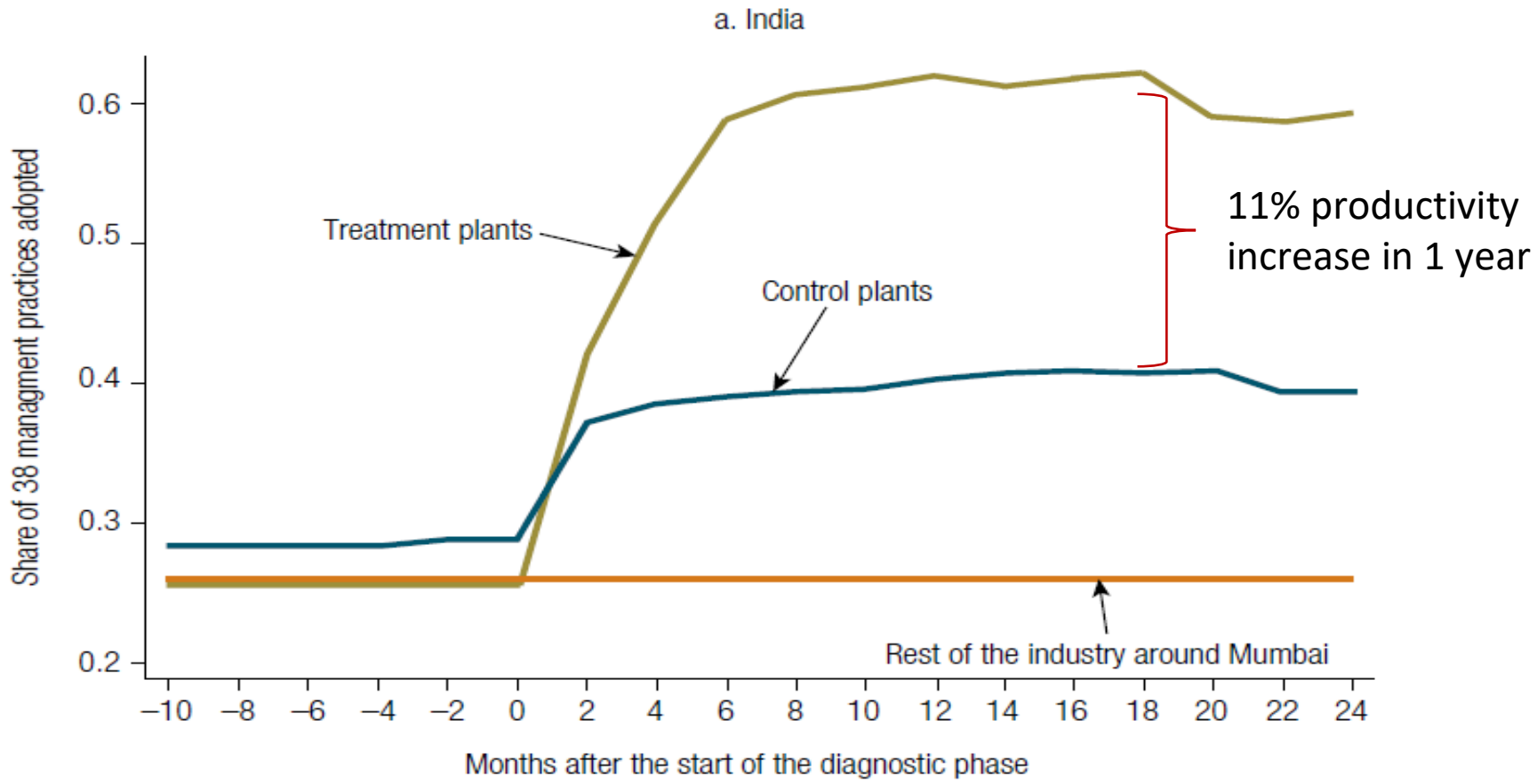
Singapore: SPRING and Productivity Movement

Colombia: Centro Nacional de Productividad

Iacovone et al (2022): Colombia can improve management quality

Indian data show management extension services work: why don't firms use them?

FIGURE 7.4 **Management Extension Improved Management Practices in India and Colombia**



Bloom et al 2007

P4: Low investment in innovation despite allegedly high returns.

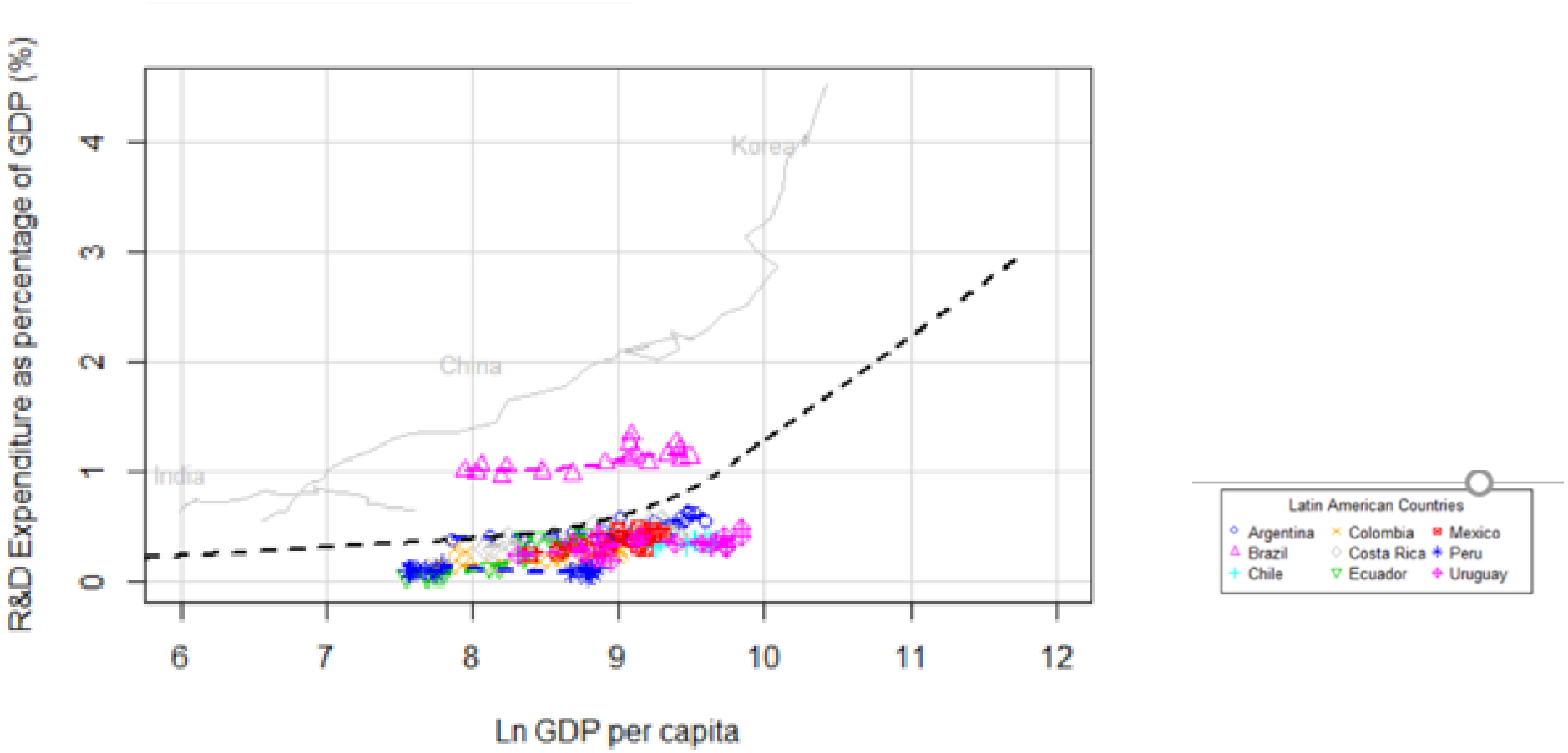
	Dist. to Frontier	Rate of Return to R&D
USA	-.18	57%
UK	-.53	77%
Italy	-.73	88%
Korea	-1.33	?
Malaysia	-2.28	?
Argentina	-2.74	?
Peru	-3.00	?

200-300%?

Griffith, Redding, Van Reenen (2004)

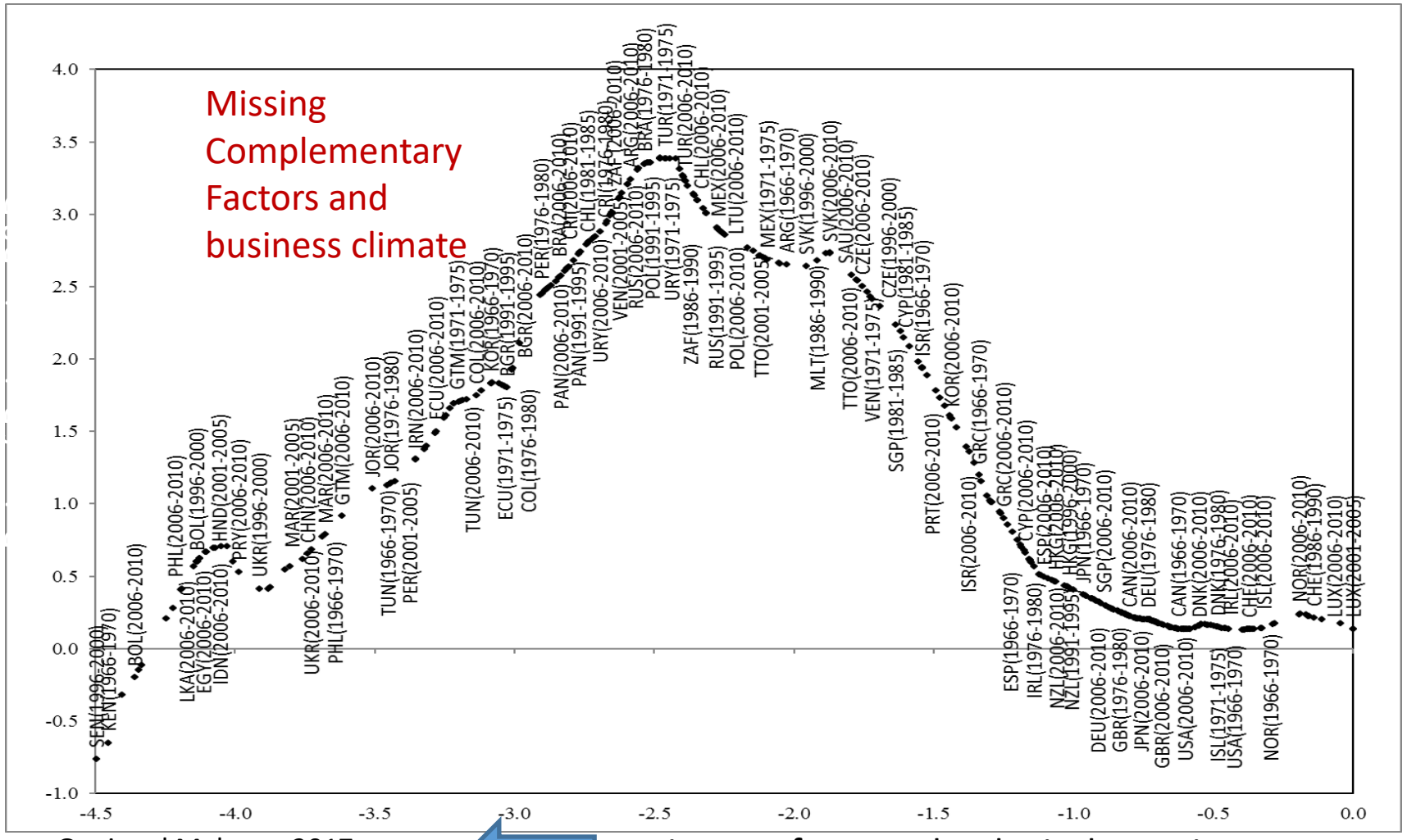
To paraphrase Lucas: Why don't firms invest? How could policy makers think of anything else?

R&D remains below expected for our level of development



Maybe they don't expect high rates of return

Returns to R&D vs. Distance to Frontier



Goni and Maloney 2017

Distance from Technological Frontier

P5: Competition: Essential but response to it has been ambiguous.

- In the LR- competition is critical
  - US cars in 1970s
  - BA: 1968 Ford Falcons in 1988

- Effects through within, between, selection channels
- Generally, positive correlation with productivity

- Regional Study on Competition and productivity forthcoming

Firm Markups by Region (1980-2016)

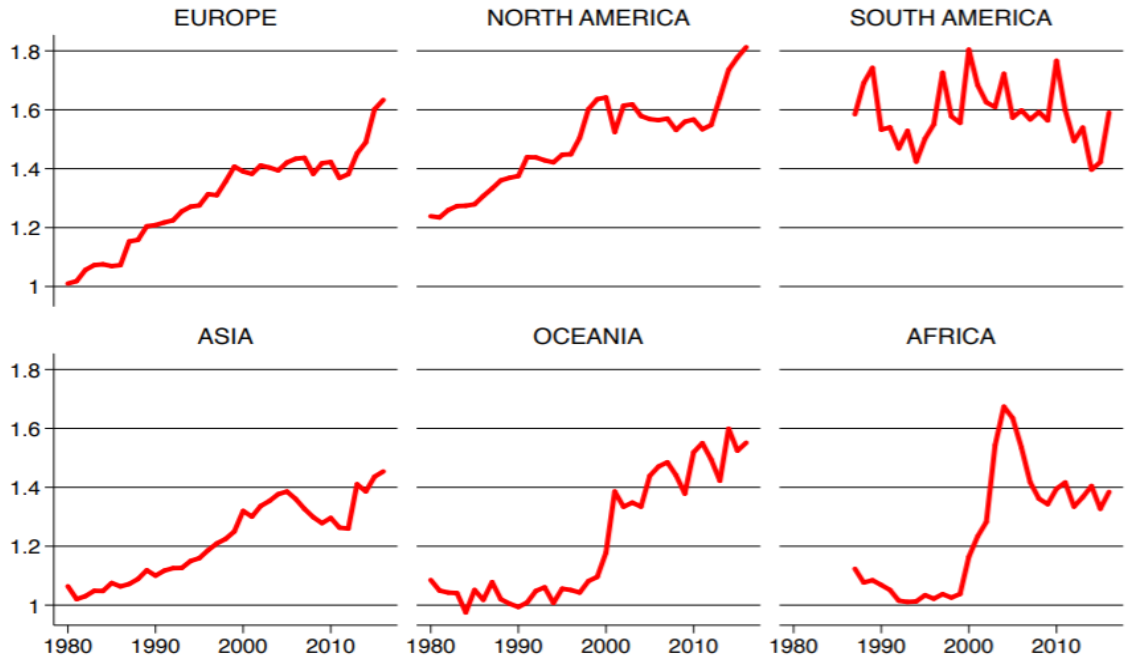


Figure 5: Global Regions

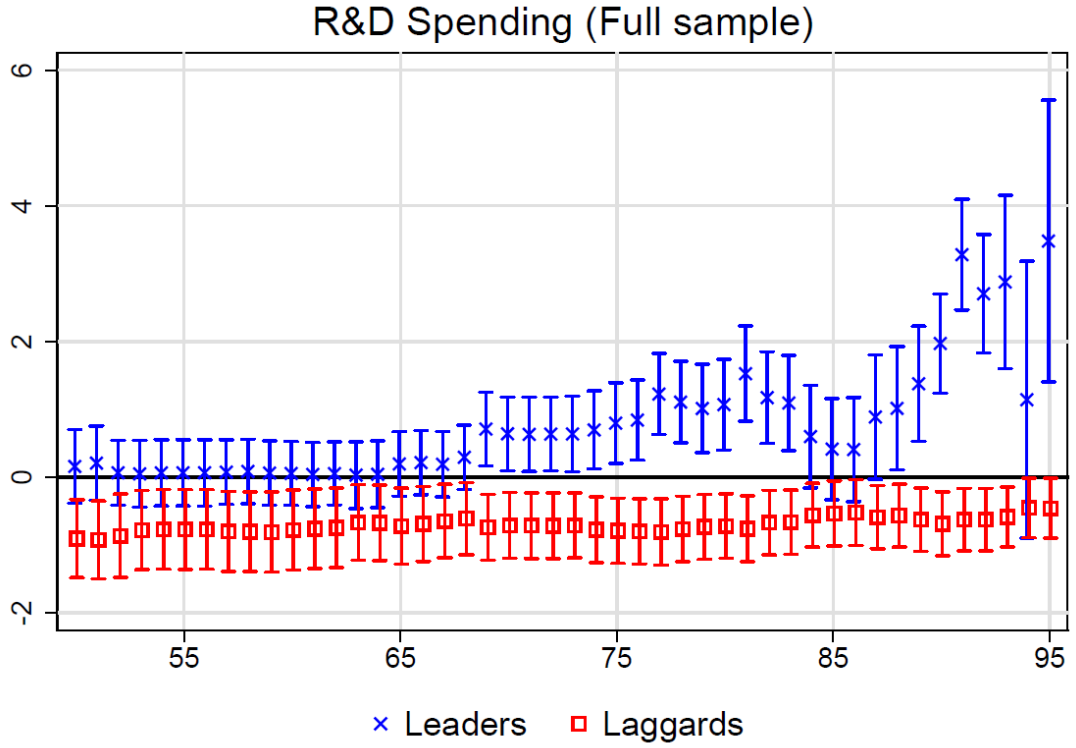
De Loecker and Eeckhout (2020)

Competition increases innovation only in the most capable firms

- Medium term, within firm- less clear
  - Leaders (high TFPQ) increase innovation…10-30% of firms
  - The rest see a decrease in everything.
  - Rents help also- some minimum level of rents+incentive to innovate.

- Complementarity with managerial and technical skills.

Impact of Increased Chinese Competition on R&D in Chile

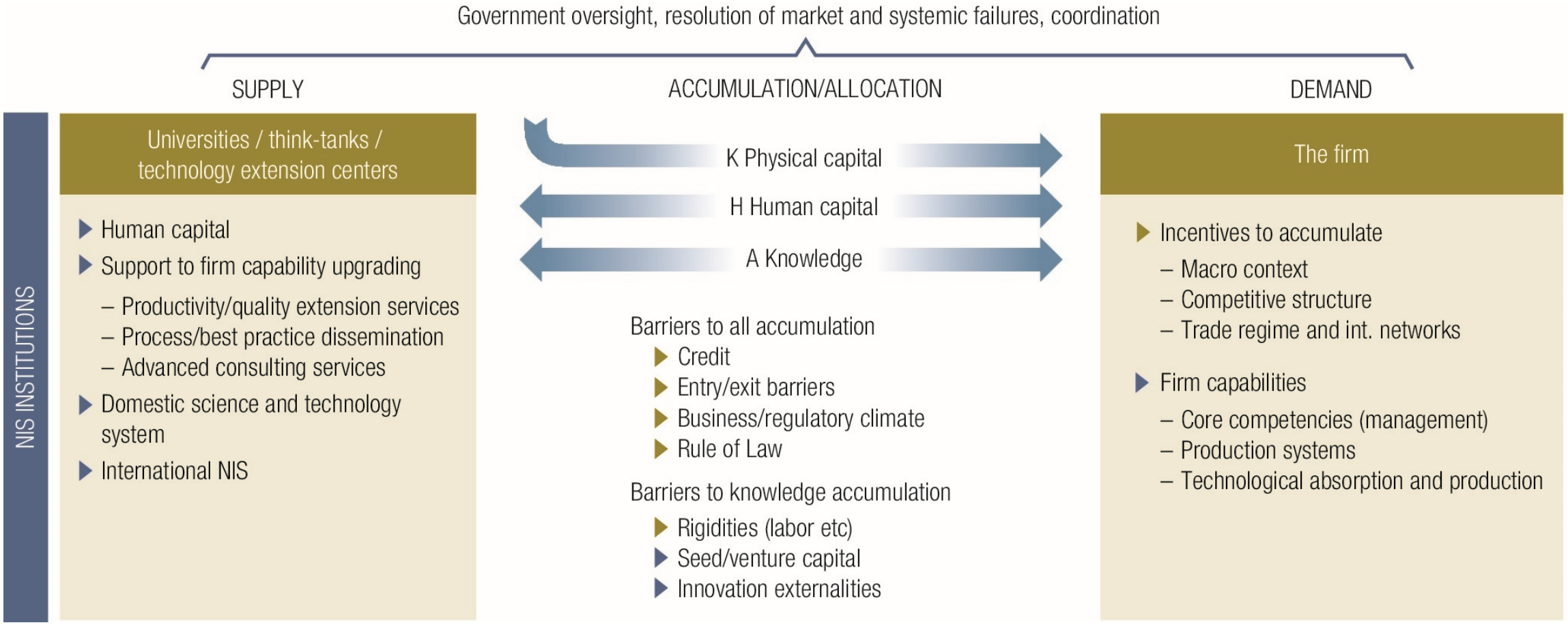


Cusolito, Garcia and Maloney (2022)

Putting enabling environment and capabilities together

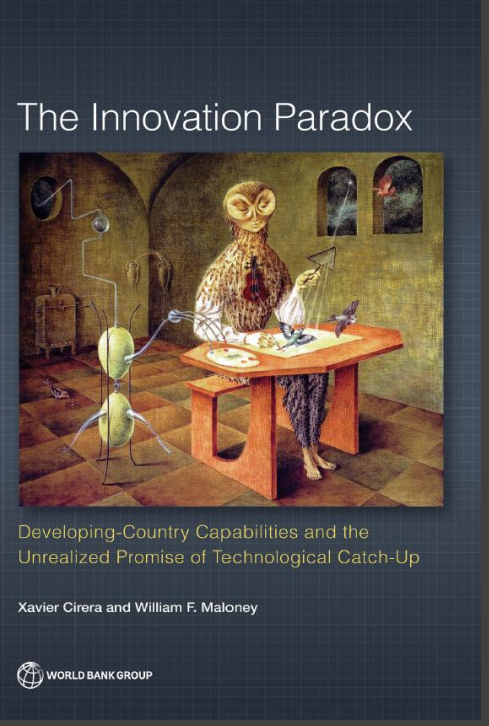
The Expanded National Innovation System

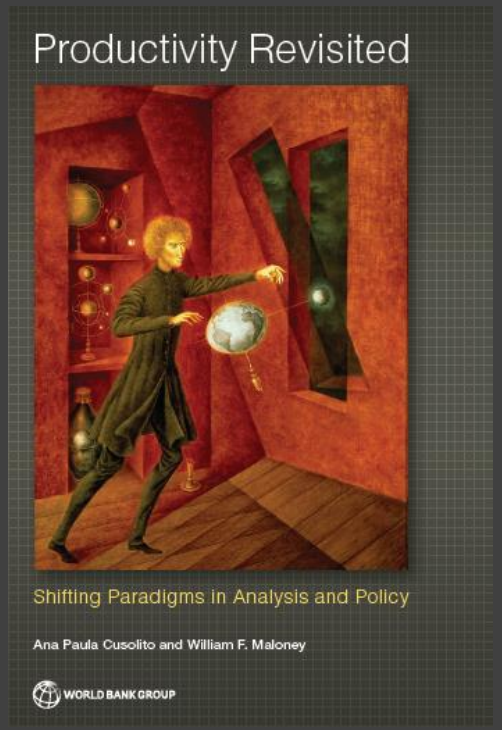
Integrated approach to innovation

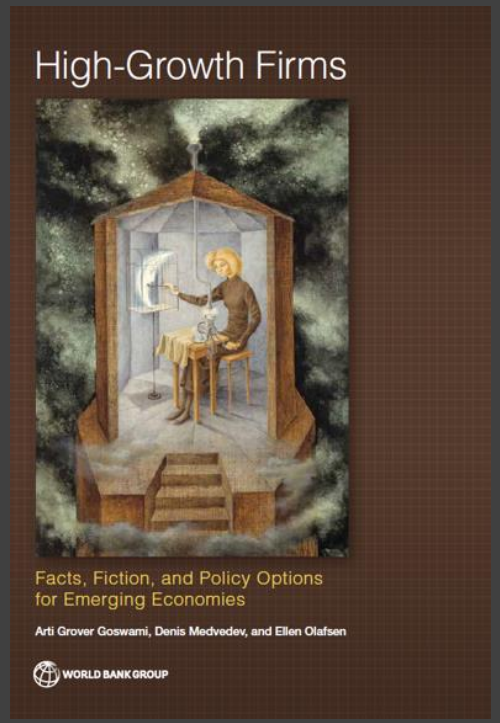


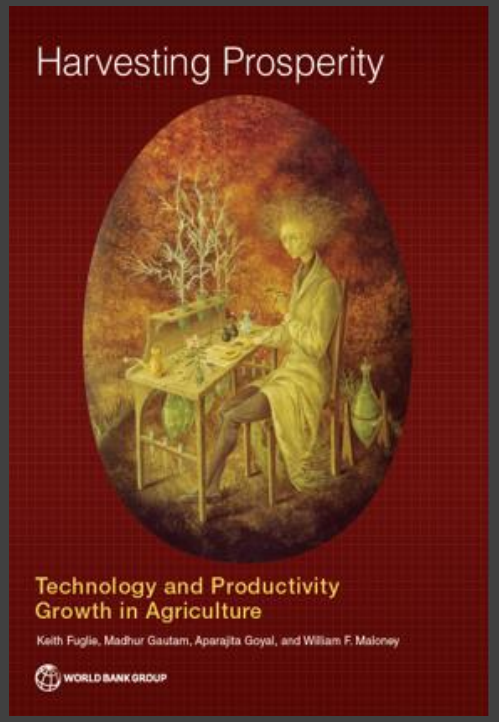
A final note on education capabilities

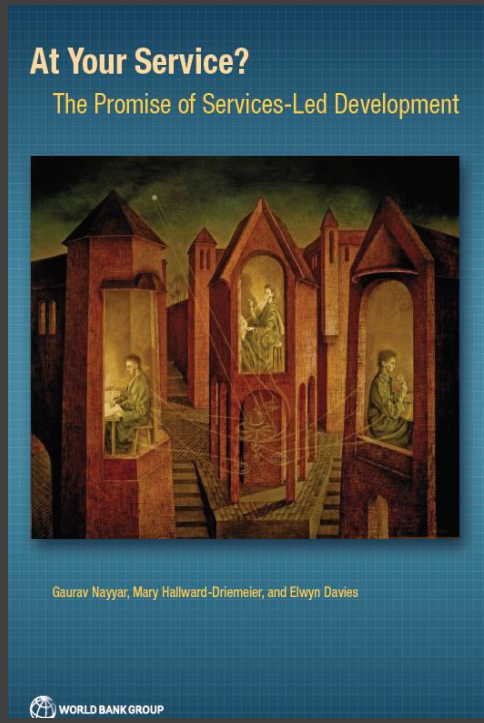
- **Critical to both productivity and social mobility**
- 30% of employers say growth is restricted by poor worker training. 20 globally
  - 50% of ten year olds cannot read a text appropriate to their age. Pisa scores remain low. **Bright spot in Sobral, Ceara!**
- 30% of students in the region meet minimum standards for science. **Where will our high tech entrepreneurs come from?**
- Lost 1.5 years of education to COVID
- LAC higher education is expensive and generates proportionally more useless economists/lawyers than engineers.
- Missing short cycle courses for tecnicos y tecnologicos (See The Fast Track)
- Training programs often not responsive to private sector needs.

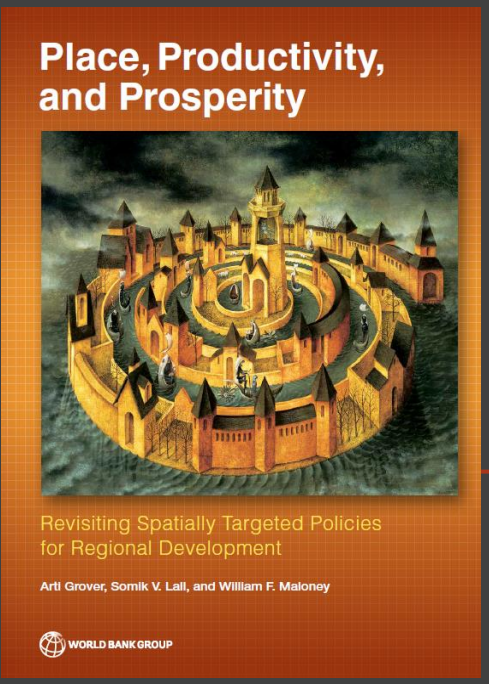


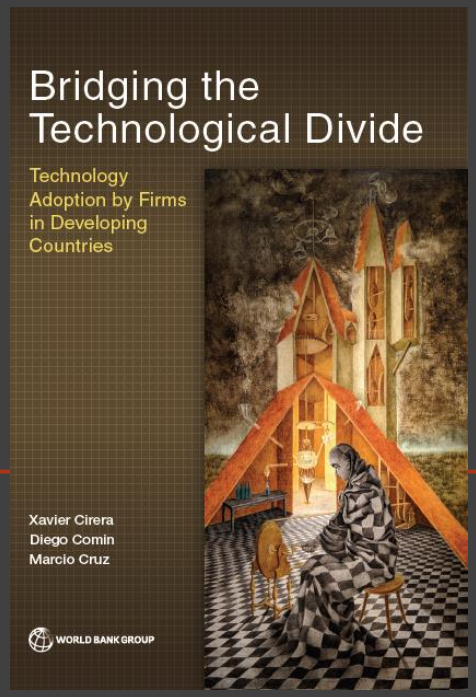












“Fortune favors the prepared”- Pascal

World Bank Productivity Project

www.worldbank.org/productivity

Obrigado Gracias