



The Productivity Gap in LAC

Lessons from 50 years
(IDB WP # 692)

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Outline

- The Stylized Facts of Total Factor Productivity (TFP)
- The Overall Impact of TFP growth: Productivity-driven Economic Development
- Is Investment Productivity-enhancing?

The Stylized Facts of TFP

Aggregate Productivity as TFP: why is it the right productivity measure to look at?

- TFP as parameter A residual from

$$y = \frac{Y}{N} = A \left(\frac{K}{L} \right)^a h^{1-a} \frac{L}{N} = Ak^a h^{1-a} f$$

- TFP important. It “explains” 86% in country income variation: why does it vary?
- TFP amenable to policy reform (easier than engineering factor accumulation)

Aggregate Productivity as TFP

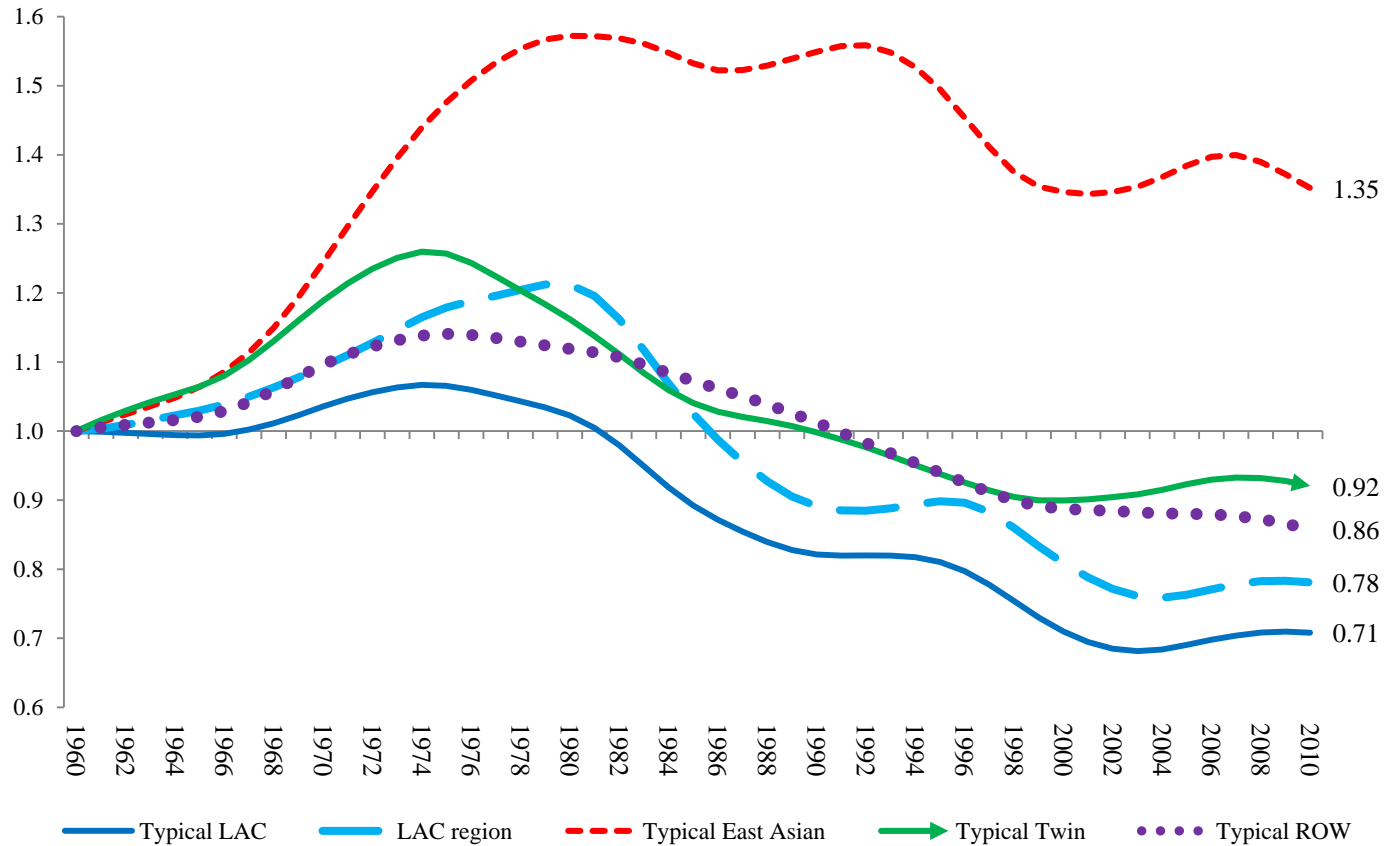
- TFP reflects
 - Market and public efficiency, not only technology
 - Quality of education (multiple of h)
- TFP does not reflect
 - Cyclical phenomena (HP detrended), so our TFP is structural
 - Labor force participation rate (L is labor force)

Three key stylized facts

1. LAC's productivity is not catching up with the frontier, in contrast to East Asia and others
2. LAC's productivity is about half its potential
3. Slower growth in LAC is due to slower TFP growth: The income gap with the US is increasingly due to the productivity gap

Productivity is not catching up, the gap is opening

Productivity Catch-up
(Productivity Index relative to U.S., 1960=1) - Contrast with selected regions

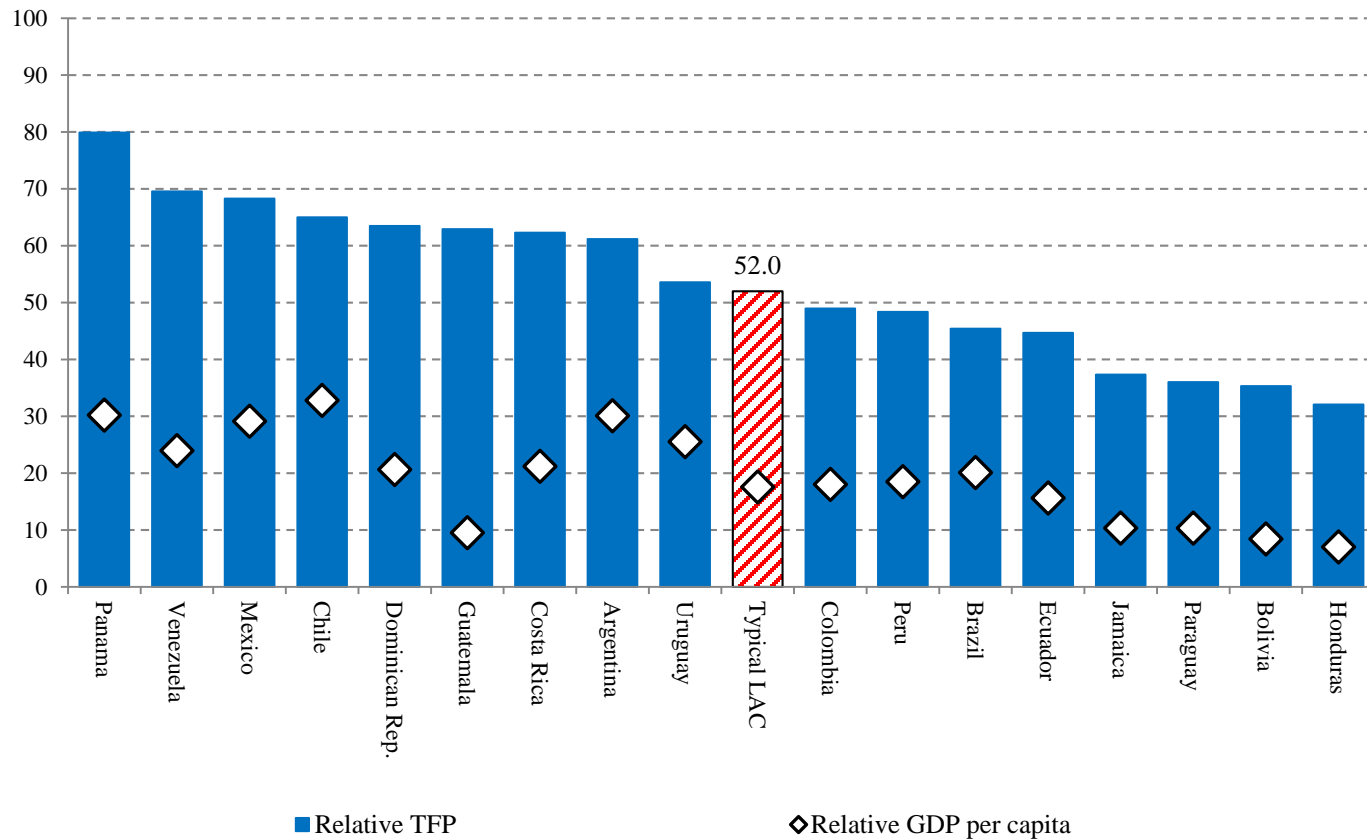


Source: Authors' Calculations based on Feenstra, Inklaar and Timmer (2013) and Barro and Lee (2013).



LAC income would double if TFP were not subpar

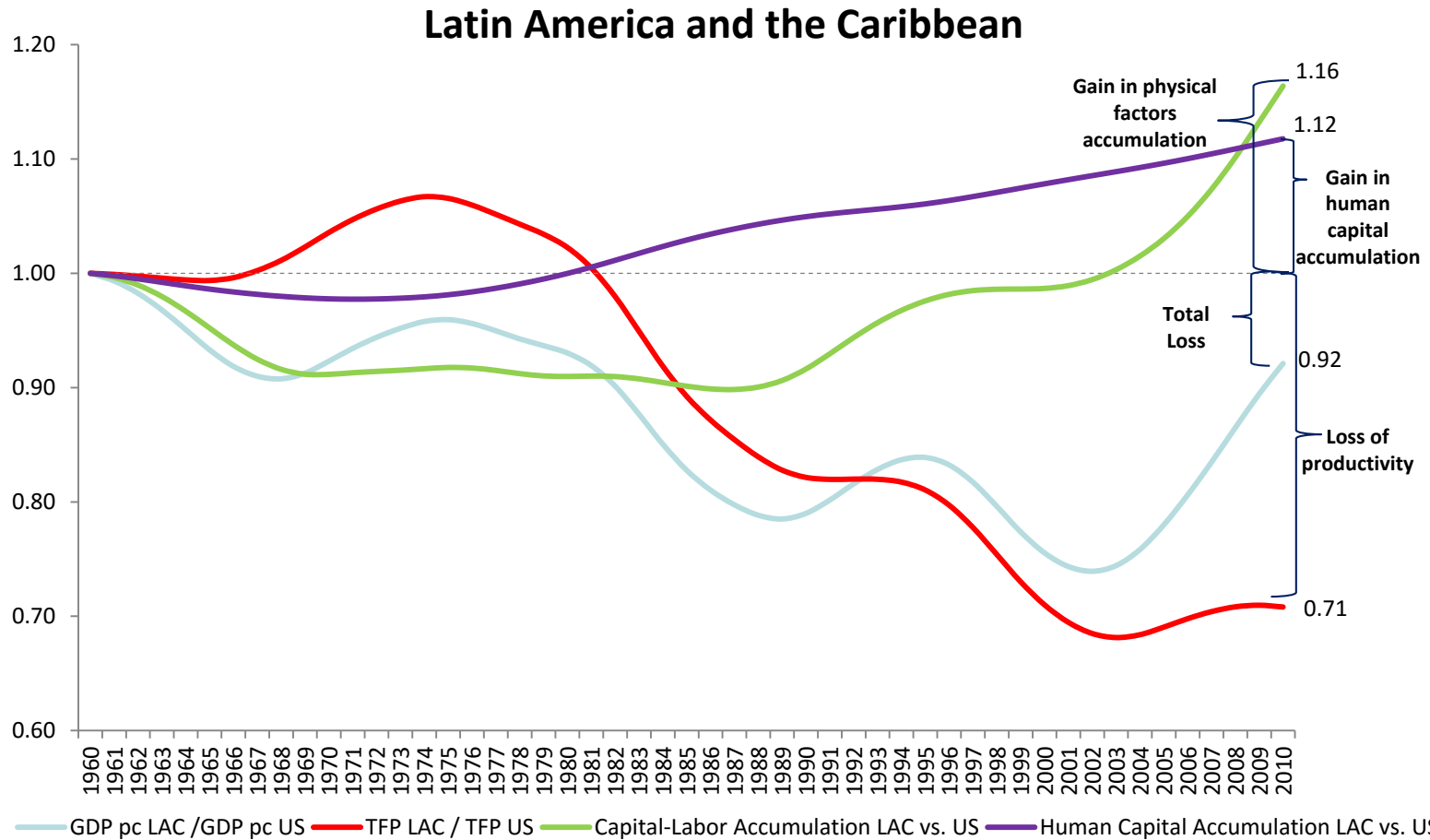
Relative productivity in LAC countries
(% of U.S. productivity, 2010)



Source: Authors' Calculations based on Feenstra, Inklaar and Timmer (2013) and Barro and Lee (2013).

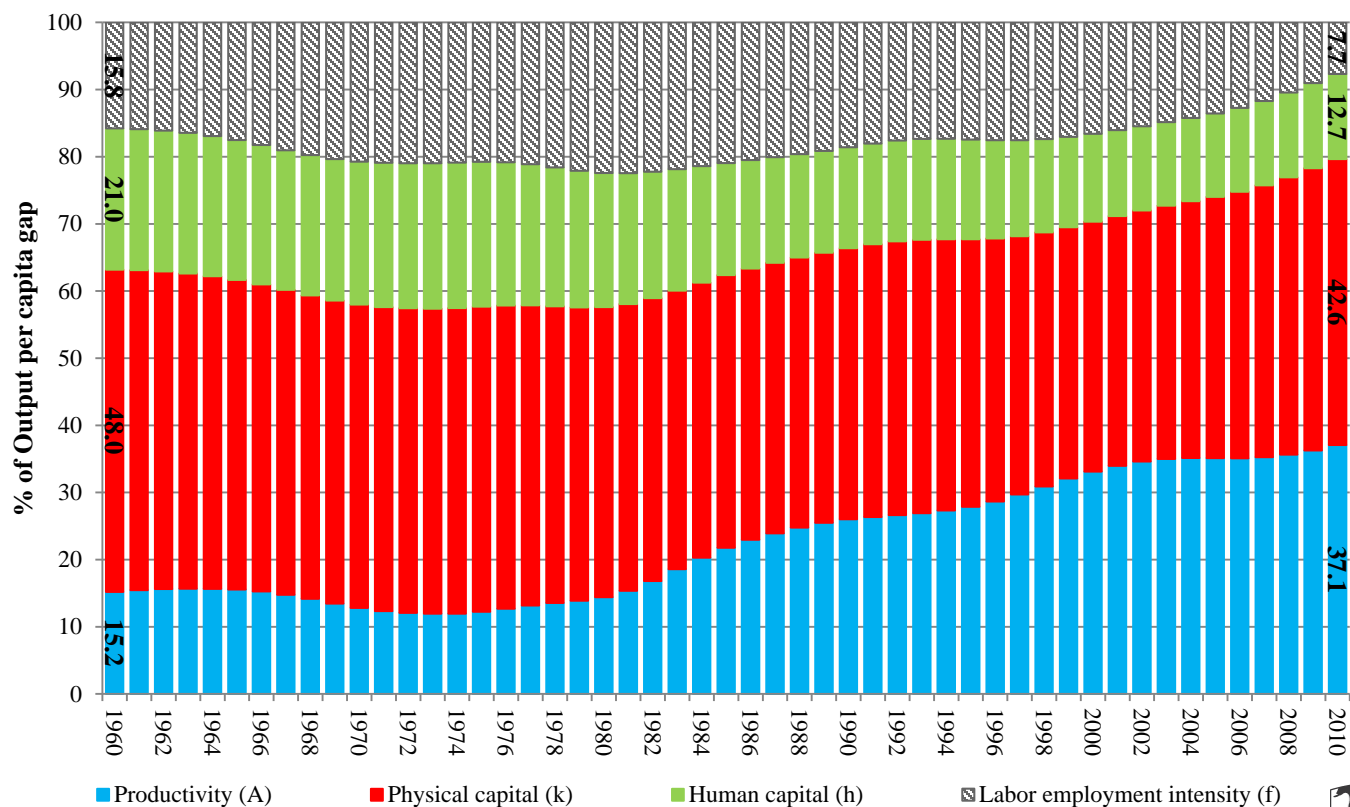


The opening of the income gap is due to faltering productivity, not factor accumulation



Subpar productivity is by now as important as lower capital per worker to explain the income gap

Contribution to closing the output per capita gap
(Typical LAC country versus U.S.)



Source: Authors' Calculations based on Feenstra, Inklaar and Timmer (2013) and Barro and Lee (2013)



The overall impact of TFP convergence

TFP and Economic Development: the overall dynamic effect of TFP gap is dominant

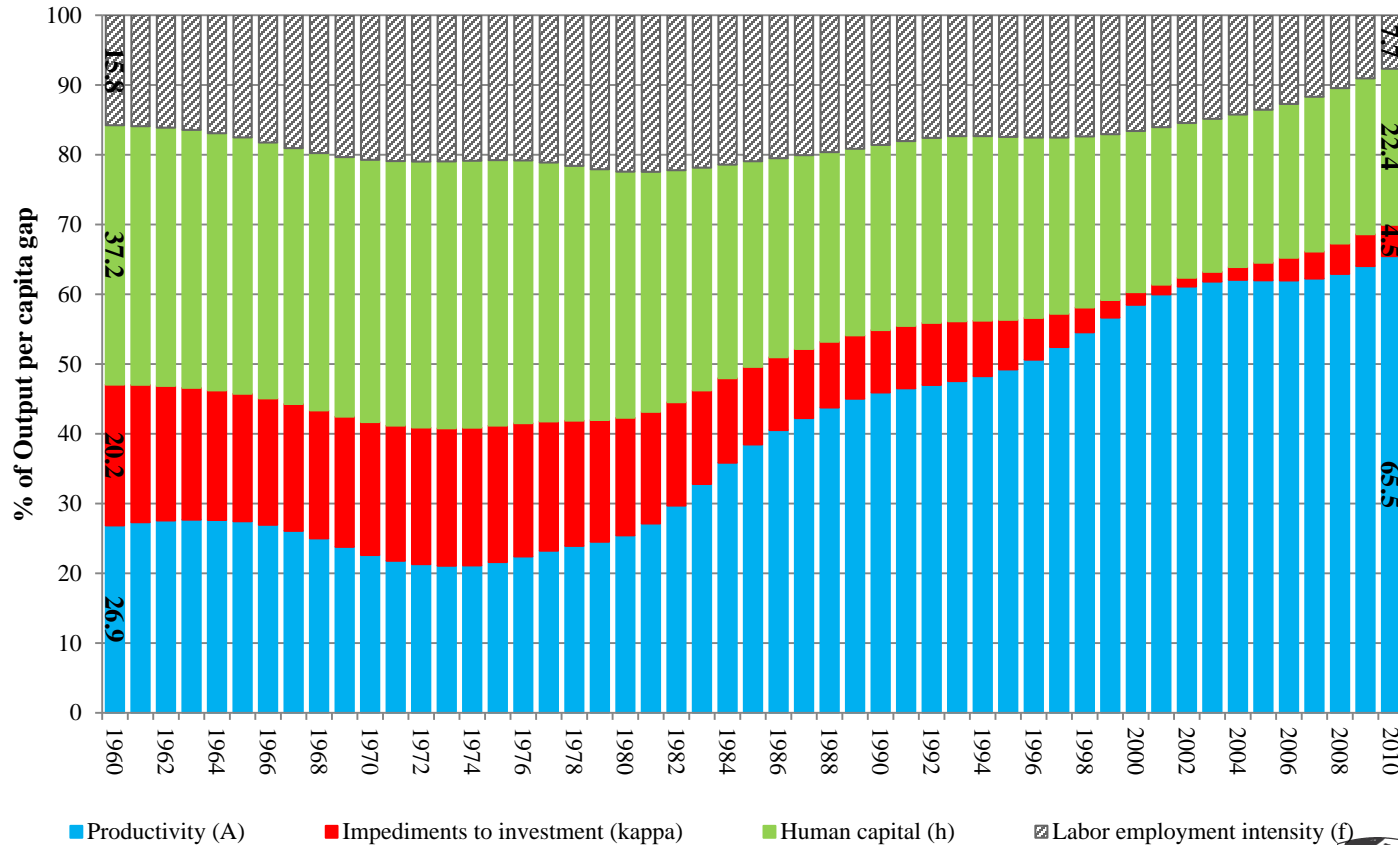
- TFP-led increased returns cause more physical capital accumulation as firms maximize profits
- Assuming h and f exogenous, intensive form:

$$y = A^{\frac{1}{1-a}} \kappa^{\frac{a}{1-a}} h f$$

where $\kappa = K/Y$ depends on price distortions (cost of financing, return appropriability), not TFP

With endogenous investment, the productivity factor is predominant (not so business barriers)

Contributions to Output per capita gap. LAC typical country vs. U.S.
(Endogenous physical capital)



Source: Authors' Calculations based on Feenstra, Inklaar and Timmer (2013) and Barro and Lee (2013).



Is investment productivity-enhancing?

Disentangling the reciprocal effects between productivity and physical capital accumulation

- Capital accumulation is endogenous as firms maximize profits:

- Exactly

$$\max_k (1 - \tau) A k^\alpha h^{1-\alpha} - p_K (r + \delta) k$$

- Or approximately

$$\text{where } A = A(k) = A_0 k^\beta$$

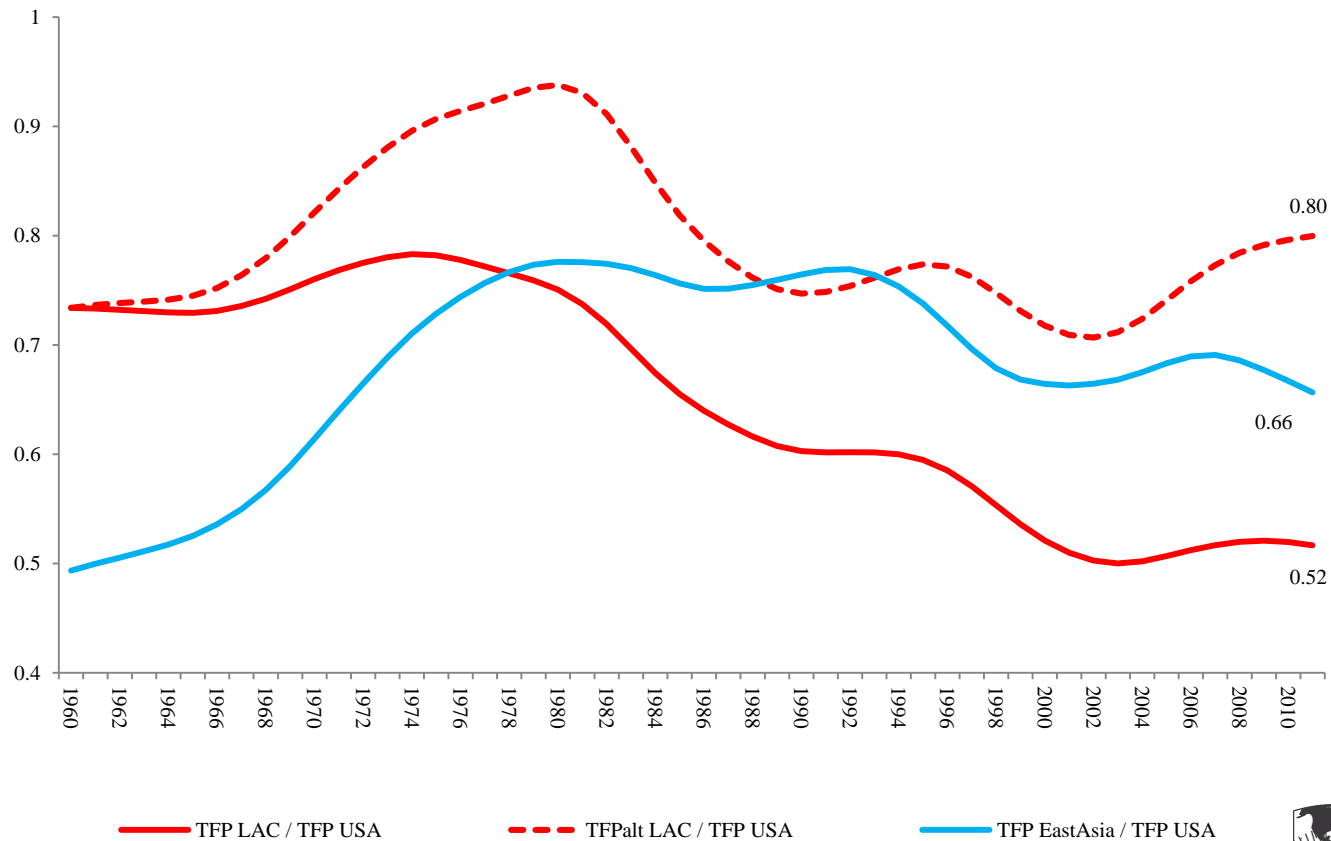
$$\log k_{it} = c + \pi \log A_{it} + \mu \log h_{it} + \omega \log p_{K,it} + \eta_{it}$$

- Productivity is endogenous to capital accumulation:

$$\log A_{it} = b + \gamma \log k_{it} + \varepsilon_{it}$$

If LAC had East Asian productivity elasticity to investment, it would have surpassed its TFP

TFP in LAC and East Asia (relative to the U.S.)





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