Productivity and Factor Accumulation in Latin America and the Caribbean: A Database

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Related Papers:

Daude, Christian and Eduardo Fernández-Arias. Forthcoming. "On the Role of Productivity and Factor Accumulation in Economic Development in Latin America and the Caribbean: An Update" Research Department, Inter- American Development Bank.

Daude, Christian and Eduardo Fernández-Arias. 2010. "On the Role of Productivity and Factor Accumulation in Economic Development in Latin America and the Caribbean" IDB Working Paper 155. Washington, DC, United States: Research Department, Inter- American Development Bank. Available at: http://www.iadb.org/research/pub_desc.cfm?pub_id=IDB-WP-155

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1. Overview

Low productivity and insufficient productivity growth, as opposed to impediments to factor accumulation, is the key to understanding low income in Latin America and the Caribbean relative to developed economies and its stagnation relative to other developing countries that are catching up. Daude and Fernández-Arias (2010) calculated measures of total factor productivity (TFP) for 1960-2005 for a cross section of countries and showed that TFP is the principal driver of the slow development of LAC.

This database provides measures of labor productivity (LP), capital and labor productivity (KLP) and TFP updated for the period 1960-2011 along with the inputs used to calculate them. The paper by Daude and Fernández-Arias (2010) was also updated to reflect the new database.

2. Description of variables

Variable: isocode
Description: ISO country code
Source: Penn World Table 8.0

Variable: country
Description: Country name
Source: Penn World Table 8.0

Variable: year
Description: Year
Source: Penn World Table 8.0

Variable: Y
Description: Output-side real GDP at current PPPs (*cgdpo*). Not filtered.
Source: Penn World Table 8.0

Variable: K
Description: Real physical capital stock at current PPPs (*ck*). Not filtered.
Source: Penn World Table 8.0

Variable: Lpop
Description: Population, total number of people (*pop*). Not filtered.
Source: Penn World Table 8.0

Variable: Lemp
Description: Labor Force. Number of persons engaged (emp). Not filtered.
Source: Penn World Table 8.0

Variable: S
Description: Average years of schooling of population over 15 years. Not filtered.
Source: Barro-Lee database (April 2013 update) and Authors' calculations

Variable: h
Description: Human capital index. Not filtered.
We follow Bils and Klenow (2000) and construct the index as a function of the average years of schooling of country *i* at time *t* (S_{it}) as:

$$h = e^{\phi(S_{it})} \tag{1}$$

where $\phi'(S_{it})$ is the Mincerian return on education. We approximate the function $\phi(S_{it})$ by the log-linear function proposed by Bils and Klenow:

$$\phi(S_{it}) = \frac{\theta}{1-\psi} S_{it}^{1-\psi} \tag{2}$$

We estimated the parameters θ and ψ using and completing data in Table A2 in Psacharopoulos and Patrinos (2004) and the average years of schooling by Barro and Lee (2013), obtaining $\hat{\theta} \approx 0.188, \hat{\psi} \approx 0.368$ (available upon demand).

Source: Authors' calculations

Variable: alpha_it, *a*
Description: Capital share in the production function. Calculated as 1 minus the labor income share (*labsh).* For our productivity estimations we used α equal to the cross-country average of ***alpha_it*** in 1960, the base year ($a \approx 0.433$), in contrast to the 1/3-standard value in the literature (see Klenow and Rodríguez-Clare, 2005).
Source: Penn World Table 8.0

Filtering. We considered the logarithms of the series of output, physical capital, skill level and labor headcount (*Y, K, h* and *Lemp* respectively), filtered them with a Hodrick-Prescott filter with smoothing parameter $\lambda=7$, and then inverted the logarithmic transformation. Using these filtered series, we computed our measures of productivity, where the bar above each variable ($\overline{X}$) indicates that it is a filtered series. To avoid end-point problems in the filtering process we used WEO projections for 2011-2013.

Variable: LP
Description: Measure of structural labor productivity or output per worker

$$LP_{it} = \frac{\overline{Y}_{it}}{\overline{L}_{it}} \tag{3}$$

Source: Author's calculations

Variable: KLP
Description: Measure of structural raw factors (capital and labor) productivity.

$$KLP_{it} = \frac{\overline{Y}_{it}}{\overline{K}_{it}^{a}\overline{L}_{it}^{1-a}} \tag{4}$$

Source: Author's calculations

Variable: TFP
Description: Measure of structural total factor productivity (TFP) as

$$TFP_{it} = \frac{\overline{Y}_{it}}{\overline{K}_{it}^{a}\left(\overline{h}_{it}\overline{L}_{it}\right)^{1-a}} \tag{5}$$

where the human capital index was also filtered like the classical factors of production.

Source: Author's calculations

Variable: LAC
Description: Dummy = 1 if the country belongs to Latin America and the Caribbean.
Source: Author's calculations

Variable: ROW
Description: Dummy = 1 if the country does not belong to Latin America and the Caribbean.
Source: Author's calculations

Variable: DEV
Description: Dummy = 1 if the country belongs to the OECD High Income countries.
Source: Author's calculations

Variable: EA
Description: Dummy = 1 if the country belongs to the East Asia group.
Source: Author's calculations

Variable: TWIN
Description: Dummy = 1 if the country had an income within the inter-quartile range of the Latin American and the Caribbean countries income in 1960.
Source: Author's calculations

3. References

Barro, R. and J. Lee, 2013. "A new data set of educational attainment in the world, 1950–2010". *Journal of Development Economics* 104, September: 184-198.

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Psacharopoulos, G. and H. Patrinos, 2004. "Returns to Investment in Education: A Further Update." *Education Economics* 12(2): 111-134.