

報告番号	※	第	号
------	---	---	---

## 主 論 文 の 要 旨

論文題目

Essays on Aggregate Productivity, Structural Change, and Resource Misallocation

氏 名

MENDEZ GUERRA Carlos Alberto

## 論 文 内 容 の 要 旨

### 1. Introduction

When Adam Smith wrote *The Wealth of Nations* in 1776, he was puzzled by the differences in per-capita income between the richest and poorest countries of the world. In those days, income differences were in the order of three, four or even five, at most. By the year 2000, differences in per-capita income increased dramatically. For instance, per-capita Gross Domestic Product (GDP) between the United States and Niger were about 50 times. What explains these astonishingly large differences in per-capita income around the globe?

This dissertation first argues that cross-country differences in per-capita income are mostly explained by cross-country differences in labor productivity. The dynamics of the world income distribution (Quah 1993 and Jones 1997) are consistent with those of the world productivity distribution. Second, it quantitatively evaluates the relative contribution of the proximate determinants of labor productivity: physical capital, human capital, and aggregate efficiency. Finally, taking the productivity differences between Latin America and East Asia as an example, it argues that resource misallocation across sectors generates large losses in aggregate efficiency and ultimately labor productivity.

### 2. Research Objectives

General objectives for this dissertation are:

- Study the dynamics of the world productivity distribution.
- Study the proximate determinants of labor productivity.
- Study the effects of resource misallocation on labor productivity.

### 3. Research Questions

In turn, each analytical chapter attempts to answer the following research questions:

#### Chapter 2: Aggregate Productivity and Resource Misallocation

- How large are the cross-country differences in labor productivity, physical capital, human capital, aggregate efficiency, and resource misallocation?
- How important are aggregate efficiency and resource misallocation for understanding cross-country differences in labor productivity?

#### Chapter 3: On the World Productivity Distribution

- What are the most noticeable trends in labor productivity in the post-World War II period?
- What will the distribution of labor productivity look like in the future?
- How sensitive is the world productivity distribution to improvements in physical capital, human capital, and aggregate efficiency?

#### Chapter 4: On the Development Gap between Latin America and East Asia

- How large is the development gap between Latin America and East Asia?
- What are the main determinants of this development gap?

### 4. Methodology and Data

This dissertation mostly uses calibration methods to evaluate the production structure of 92 countries over the 1950-2013 period.<sup>1</sup> Production functions for per-capita output, human capital, and physical capital are constructed using standard functional forms and parameters from the literature on economic growth. After documenting, updating, and extending a series of stylized facts on productivity, simulations exercises are implemented to evaluate the response of key variables. Newly available macro and sector-level datasets are used to document productivity facts: Barro and Lee (2013), Fernandez-Arias (2014), Penn World Tables V 7.1, and McMillan and Rodrik (2011).

### 5. Main Findings

#### 5.1 On the World Productivity Distribution (Chapter 2 and Chapter 3)

The world productivity distribution in the post-World War II period is characterized by three remarkable facts: (1) a large and increasing disparity between the tails of the distribution; (2) this disparity rapidly increased in the mid-1980s, slowed down in the next decade, and stabilized in the mid-2000s; and (3) overtime, there has been substantial forward and backward mobility of countries and regions within the distribution.

---

<sup>1</sup> The number of countries and time coverage changes depending on the topic of each analytical chapter.

During the 1950-2010 period, relative labor productivity of the median country has been stagnant, while cross-country dispersion has drastically increased. An evaluation of the cross-section dynamics of the proximate determinants of productivity reveals the following patterns:

- Physical capital accumulation of the median country appears stagnant, with an increasing dispersion only in the upper tail of the distribution.
- Human capital accumulation of the median country increased over time. Contrasting the behavior of other determinants, this is the only variable in which the cross-country dispersion decreased over time.
- Aggregate efficiency of the median country decreased over time, with an increasing dispersion in both upper and lower tails.

In the proximate future, if current institutions and policies remain in place, the world productivity distribution might be characterized by additional divergence at the bottom, and further convergence and overtaking at the top. The upper tail of this distribution is more sensitive to improvements in human capital, whereas the lower tail is more sensitive to improvements in aggregate efficiency.

## **5.2 On Aggregate Productivity and Efficiency (Chapter 2, Chapter 3, Chapter 4)**

Regression methods overestimate the fraction of the variation in labor productivity that is explained by physical capital. This upward bias is due to the unaccounted covariance between physical capital and aggregate efficiency. Calibration methods attempt to control for this covariance. Results from this approach highlight that most of the variation in labor productivity is actually explained by aggregate efficiency rather than physical capital.

Most of the (welfare-adjusted) development gap between Latin America and East Asia (55 percent) is explained by their gap in labor productivity. In turn, inefficient production is the main factor holding down labor productivity in Latin America. Also differences in aggregate efficiency account for 27 percent of the development gap between the regions.

## **5.3 Structural Change and Resource Misallocation (Chapter 2 and Chapter 4)**

Resource misallocation is an important channel for understanding the relationship between the fundamental determinants (i.e., geography, culture, institutions and policies) and the proximate determinants (i.e., physical capital, human capital, and aggregate efficiency) of labor productivity. Resource misallocation across sectors generate significant losses in aggregate efficiency. Misallocation is also a symptom of dysfunctional factor and output markets. That means that in a static equilibrium, markets fail to equalize the marginal productivities across sectors. In the last

60 years, different structural change and allocation patterns have largely contributed to the increasing socioeconomic gap between Latin America and East Asia. In the former, workers moved from relatively high-productivity sectors to low-productivity productivity sectors, whereas in the latter the opposite holds true.

Economies of Latin America appear to be suffering from large inefficiencies at the sectoral level. Most of their labor force (61 percent) is concentrated in the service sector, which is the part of the economy that reports the lowest productivity levels. Over time workers keep gravitating to low productivity and low wage sectors, where the scale of production is minuscule, mostly non-tradable, and hardly standardizable

## **6. Policy Implications**

The following policy implications are mostly based on the productivity, structural change, and misallocation differences between Latin America and East Asia. They are presented as a series of policy reforms that countries in Latin America could implement to close their productivity, income, and welfare gaps.

### **6.1 Making Productivity a Central Issue**

Aggregate productivity growth should be a central theme of the public debate (Pages 2010). Similar to the importance of inflation or unemployment, policy makers, citizens, and opinion leaders should be aware of the welfare implications of low productivity growth. Higher public awareness of the importance of aggregate and sectorial productivity may increase the demand for productivity-oriented policies. Making productivity a central issue of the policy and public debate requires independent, opportune, and credible statistics

### **6.2 Overcoming Labor Market Rigidities**

To reallocate workers from low-productivity sectors to high-productivity parts of the economy, policy makers should first make job security laws more flexible. Heckman and Pages (2000) argue that such flexibility could increase the demand of workers by relatively large and formal) firms. It is typically the case that some social policies have productivity trade-offs, and yet be implemented because its positive net effect on welfare. In the case of Latin America, however, job security laws have not only failed to promote social inclusion but appear to have fostered the degree of labor misallocation in the region.

### **6.3 Overcoming Dutch Disease Concerns**

Historically, Latin America has experienced a variety of currency crises. The policy management of commodity booms and busts has also been constrained by the limited independence of central banks. Overvalued exchange rates can easily dismantle the international competitiveness of emerging export industries that have the potential to absorb a relatively larger fraction of the labor force. In the future, as in the recent financial crisis, sound macroeconomic and exchange rate frameworks should help mitigate misallocation effects originated in external shocks.

### **6.4 Exploring Productive Development Policies**

Consistent with the typology suggested by Crespi et al. (2014), Latin American countries could implement productive development policies in three sequential stages. First, the region needs to improve its business climate by reducing labor and firm-entry regulations. Second, vertical policies, such as phytosanitary control of agricultural products, and market interventions, such as subsidies for research and development, could facilitate access to new international markets, and technology adoption and diffusion. Third, subsidies and tax exemptions to specific sectors and firms should be temporary and strictly conditional on economic performance. However, policy interventions in this last stage are the most vulnerable to rent seeking behavior and political capture. Thus, most countries in the region should first accumulate institutional capabilities before implementing these more ambitious policies.

### **6.5 Building Institutional Capabilities**

Given their highly constrained institutional and political environment, in the short term, most Latin American countries can only implement a somewhat limited set of productive development policies. Over time, Latin American countries should focus on building institutional and state capabilities to enable more ambitious policies.