



# Innovation and business research in Latin America: An overview<sup>☆</sup>



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## ABSTRACT

Innovation in Latin America is a challenge for achieving development. Several Latin American countries and businesses are attempting to increase innovation and entrepreneurship but they face substantial challenges and difficulties. Institutional, governmental and business policies and practices need to be enhanced in order to increase such innovation. Increasing business research in Latin America and university-business partnerships is probably key in such endeavor. This special issue provides some evidence regarding these challenges at the company level, industry level, and country level. This issue also includes three cases showing Latin American company experiences with financial, marketing and new product innovations and market changes.

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## 1. Introduction

Latin American countries and companies are attempting to increase innovation but they face substantial challenges. Innovation has been an important factor in all countries that have experienced fast and dramatic economic development. Finland, Korea and the USA are examples of how innovation may enhance economic wealth and quality of life for their citizens. Research has always been a key ingredient for innovation, therefore fostering innovation involves in many ways the promotion of high quality scientific research. In this article, we provide a rapid overview of innovation and business research in Latin America. How far or close are Latin American countries from other regions in the world in terms of innovation? Are there Latin American nations that are being more successful in the promotion of innovation? How are business schools accompanying this process through the production of quality business research? This introductory article provides some insights regarding these questions and the reader can gain an overall understanding of the state of innovation and business research in Latin America. Additionally, the article provides an overview of the contributions in this special issue.

## 2. Challenges for innovation in Latin America

### 2.1. Innovation in Latin America: a comparative analysis

Most countries implement public policies and devise strategies aiming at the stimulation of growth of their economies. Some reasons for this emphasis are that economic growth is key to alleviate poverty through an increase in employment opportunities and labor productivity (Klasen, 2008; Melamed, Hartwig, & Grant, 2011) and to foster development and welfare (Jones & Klenow, 2010).

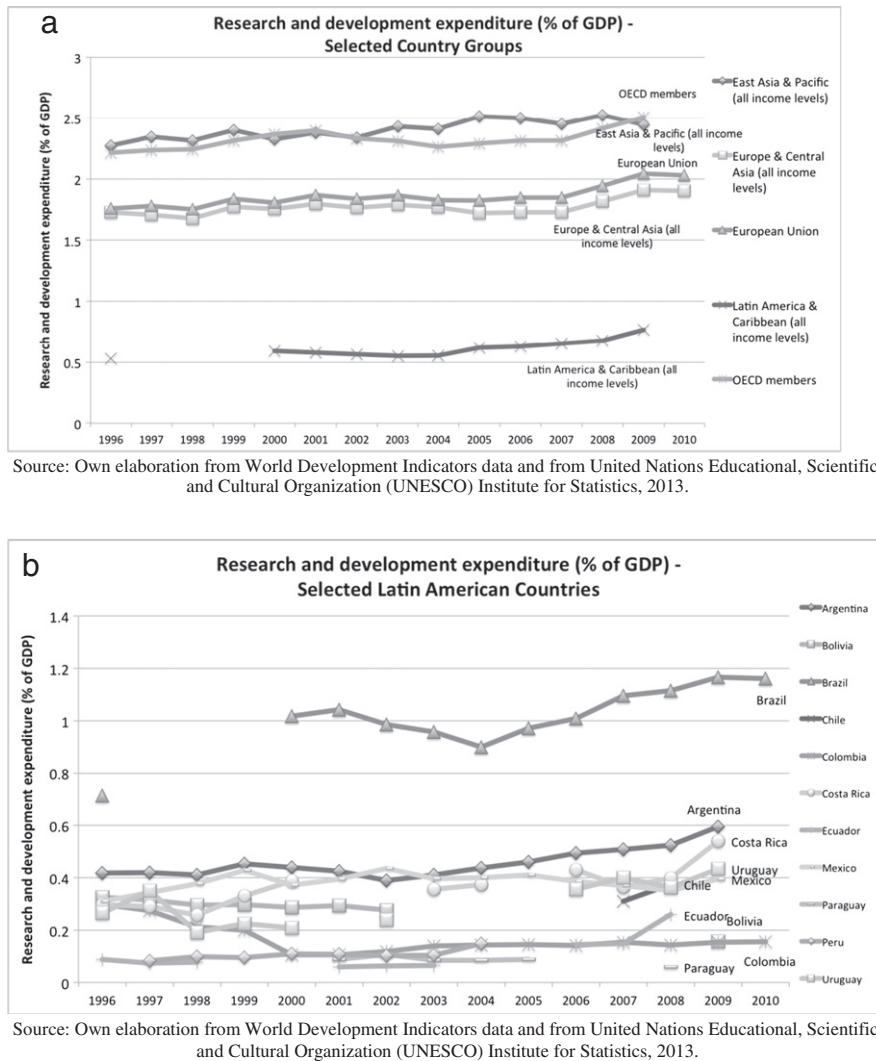
While at initial stages of country development the accumulation of capital is crucial, the economic theory and empirical evidence show that it only has a temporary effect on per capita growth. Indeed, since the seminal work of the Nobel Prize winning economist Robert Solow (1956) it is well known that long-run per capita growth is equal to the rate of technological progress (Barro & Sala-i-Martin, 2003). Hence, the real engine of long-run per capita growth is not accumulation of physical capital but innovation through research and development (R&D) that characterizes technological progress. In fact, the rise of the R&D industry-linking science and technology marks the beginning of sustained economic growth during the late 19th century (Mokyr, 2008, 2009).

Latin America today, faces important pressures to foster sustained economic growth, to reduce poverty and improve the standards of living of its population. In this context to assess the evolution and relative progress of innovation in the region becomes a key priority. In order to provide an overview of the state of innovation in Latin America we will analyze some standard indicators of innovative activity, which include (a) research inputs: amount of research and development expenditure

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**Fig. 1.** a. Research and development expenditure (% of GDP) – selected country groups. b. Research and development expenditure (% of GDP) – selected Latin American countries. Source: Own elaboration from World Development Indicators data and from United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics, 2013.

(% of GDP); and number of researchers in R&D (per million people); and (b) research outputs: number of patent applications, nonresidents; high-technology exports (% of manufactured exports); and number of Scientific and technical journal articles.

We analyze and discuss the evolution of these indicators at the global level for selected country groups (following the world Bank definitions) in East Asia & Pacific, Europe and Central Asia, European Union, OECD and Latin America & Caribbean; and at the local level considering selected Latin American countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Paraguay, Peru and Uruguay.

### 2.1.1. Research and development expenditures

Fig. 1a shows research and development expenditures, as percentage of GDP, for the selected country groups. This item considers current and capital expenditures (both public and private) on creative work undertaken systematically to increase knowledge, including the humanities, culture, and society, and the use of knowledge for new applications. R&D covers basic research, applied research, and experimental development. From this figure it can be inferred that for the period 1996–2010, East Asia & Pacific and the OECD lead R&D expenditure levels in the world reaching nearly 2.5% of the GDP on average. Europe & Central Asia and the European Union have reached nearly a 2% in recent years, while Latin America & Caribbean is still lagging well behind

not even reaching a 1% of the GDP on average. Fig. 1b also shows an important difference among the selected Latin American countries, Brazil being very close to 1.2% of the GDP spent in R&D, followed by Argentina and Costa Rica respectively, with nearly a 0.6% of GDP.

### 2.1.2. Researchers

In terms of researchers in R&D per million people for the same period, the world leaders are the OECD members, with 3500 researchers per million people, followed by the European Union and Europe & Central Asia, with about 3000 researchers per million people (Fig. 2a). East Asia & Pacific has nearly half of this number, reaching 1700 researchers in 2008, taking a fall in 2009 with about 1200 researchers, most likely due to the 2008–2009 financial crisis (this fall was also notorious for the European Countries). Latin America & Caribbean is way below on this indicator as well, reaching 500 researchers per million people, being Argentina with nearly 1100 researchers per million and Brazil with 670, the leaders in the region (see Fig. 2b). An important fact is that despite sustained efforts by countries in East Asia & Pacific (see Fig. 1a), forming advance human capital in R&D takes time; and therefore for this region to catch up with the leading countries in this matter will not occur immediately. However, the growth rate of this variable for East Asia & Pacific during this period is impressive, showing a 90% increase.

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