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## Challenges for scholarly business research in Latin America

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## ABSTRACT

Nations consider R&D a fundamental way to spur business innovation, increase the international competitiveness of domestic firms, achieve higher levels of economic growth, and increase the social welfare of its citizens. The empirical evidence indicates that, in the Latin America region, investment in R&D is comparatively low, largely depends on public funds, and is highly concentrated in academic research with limited business applications. Empirical evidence suggests a lack of connection in the region between those who produce knowledge (academia) and those who use that knowledge (business practitioners). This paper argues that business schools in the region have a role to play filling this gap by conducting more research with real-world business applications and by fostering innovative entrepreneurship among business school students.

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## 1. Introduction

Empirical evidence suggests that R&D investment promotes economic development and improves national welfare (Hounshell & Smith, 1988; Mowery & Rosenberg, 1989; Salter & Martin, 2001). The ability of a country to leverage its R&D base for sustained welfare improvements is difficult to measure (Griliches, 1995) and depends on a number of complex and interacting factors (Branscomb & Florida, 1998; Kline & Rosenberg, 1986; Rosenberg, 1994; Scherer, 1999). According to the OECD (2012), to maximize R&D investment countries should promote policies to strengthen innovative capacity in the business sector. The OECD recommendations are designed to promote stable macroeconomic conditions, create a favorable regulatory environment, enhance access to the financial system, strengthen trade, open local markets, facilitate market access and competition, and improve labor relations and taxation schemes.

These framework conditions create a knowledge-based economy (OECD, 1996) in which one of the main pillars of economic growth is enterprise development, which is based on enterprise competitive advantage (at least partially) and the application of the results of domestic R&D.

As long as R&D promotes economic development, a critical factor in its achievements is the excellence of the S&T system (Pavitt, 2001; Scherer, 1999; Stokes, 1997). Although subject to limitations, a growing tendency exists to assess the excellence of a country's S&T system by

examining (1) the quality and number of academic publications by and citations of scholars from a particular nation; (2) the number of patents obtained by businesses and scientists from a particular country, and (3) the amount of funding available for R&D initiatives and the number of active researchers at the country level (Adams, 1998; King, 2004; May, 1997).

## 2. Academic research in Latin America: little impact in business innovation and entrepreneurship

Most countries worldwide intend to foster their S&T systems by increasing the amount of money spent on R&D (at least in absolute terms) and the number of researchers and scholars working in R&D initiatives. Latin-American countries are no exception. Most countries in the region dedicate the bulk of their R&D resources to high quality basic research, implicitly assuming that this strategy will generate business innovations that will benefit society as a whole (Albornoz, Matos Macedo, & Alfaraz, 2010). Using the main indicators of S&T systems' quality and depth proposed by the Oslo Manual (OECD, 2005), Fig. 1 compares the main inputs and outputs of the S&T systems in selected Latin American countries with those of Israel, Korea, and Spain (OECD, 2005). Israel, Korea, and Spain have shown substantial improvements in economic and scientific development in the last few decades and, like most nations in Latin America, these countries also face significant hurdles with respect to language when publishing academic research or registering patents in English language-dominant international environments.

Fig. 1 shows a total of six indicators (four indicators for input intensity and two indicators for output productivity). First, for inputs, the figure depicts the gross expenditure on R&D (GERD) as a share of the

Abbreviations: S&amp;T, Science and technology.

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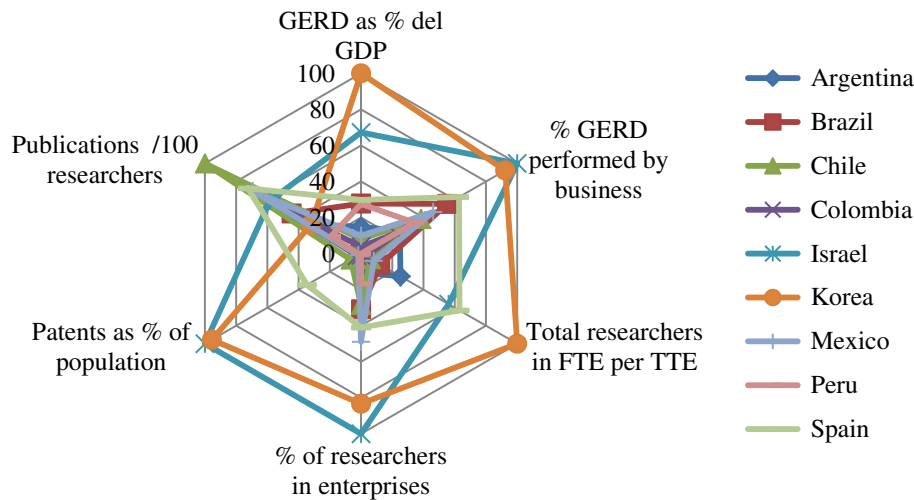


Fig. 1. Inputs and outputs of science and technology in selected countries. Sources: OECD 2012, RICYT 2012.

nation's GDP. Second, the figure reports the proportion of GERD business performance as a proxy for the amount of economic resources that businesses devote to R&D activities (as opposed to academia). Third, the figure shows the total number of researchers in full-time equivalent positions (FTE) as a fraction of total employment in a particular country. Fourth, Fig. 1 depicts the percentage of full-time equivalent researchers who work for business enterprises. For outputs, Fig. 1 shows the number of publications listed in Thomson Reuter's Science Citation Index (SCI) and the number of patent applications that appear in the Patent Cooperation Treaty (PCT) database (WIPO, 2012).

For inputs, Fig. 1 shows the low level of investment that most Latin American nations dedicate to R&D initiatives (with the notable exception of Brazil). Additionally, R&D largely depends on public funds in Latin America to a greater extent than other countries. Moreover, the S&T community in the region is small in relative terms and is concentrated in academic institutions (with the exception of Mexico).

The differences are even more dramatic for outputs. The number of patents Latin American countries register is well below those of the benchmark group. Interestingly, however, in terms of publications, the number of academic papers Latin American researchers publish in scientific journals, which has increased significantly in the last few years (RICYT, 2012), approximates the average of more developed countries (Israel, Korea, and Spain). The evidence suggests, therefore, a lack of connection between those who produce knowledge (i.e., academic institutions) and those who use that knowledge in the Latin American region (i.e., businesses), at least at the macro level.

At the micro level, the data available for Latin American research in business and engineering offer further evidence of a disconnection. For example, Nichols-Nixon, Davila-Castilla, García, and Rivera-Pesquera (2011) report that, from 1960 to 2009, only 206 articles on business in Latin America appeared in leading academic journals. The articles address a wide range of business subjects, the main subjects being business environment and policy, firm performance, and multinational enterprises. Interestingly, of the 206 articles, only 11 discuss regional entrepreneurial activity (Nichols-Nixon et al., 2011). The results of a search in a regional dataset (REDALyC, 2014) to investigate the current situation of business research in Latin America show that from the year 2005 to the year 2013, only 50 of approximately 700 articles that appeared in leading regional academic business journals address technological innovation and its business implications; most articles discuss organizational behavior and general management. A similar exercise using the Scopus database to search for engineering articles in Latin America reveals that out of a total of 622 articles published in academic

journals from the year 1963 to the year 2014, only 47 articles have implications for business or industry practice.

Additionally, in the top 100 list of the most innovative firms published by Forbes in August 2014, only four firms were from Latin America. The first Latin American company appears in the 63rd position (Falabella, a Chilean department store). The second Latin American company is a Mexican food producing firm (Bimbo), which appears in the 83rd position. In the 92nd position is BRF, a Brazilian food processing company and, finally, in the 95th position is Walmart, the filial company of Walmart in Mexico.

Hence, the evidence at the macro and micro level implies that, unfortunately, most R&D and scholarly research in the Latin American region has limited implications for business innovation and entrepreneurship.

### 3. The challenge for Latin American business schools

Many business schools worldwide (including most in Latin America) promote rigor and precision using traditional methods of education to develop students' business skills (Chia & Holt, 2008). However, in a changing world, business students and managers require creativity and innovation skills (Baker & Baker, 2012) relevant to the economic development of the countries in which they reside. A shift from traditional MBA-focused programs toward more entrepreneurial "boot camps" (Clarysse, Mosey, & Lambrecht, 2009) geared towards technology in management education may provide valuable skills. Innovation and technology management (Chesbrough, 2003) should create innovative entrepreneurs that can reduce the gap between firm needs and business school programs. Although most business schools in Latin America have entrepreneurship courses in their curricula, only some consider entrepreneurship courses relevant to the same extent as traditional business subjects such as strategy, organizational behavior, finance, and marketing. Moreover, the study of start-ups and incubators; conducting interviews with entrepreneurs and professionals; crafting real business plans for new initiatives; creating new business ideas that rely on teamwork; arranging internships (Mustar, 2009) or interviews with scholars, practitioners, and other experts with relevant industry experience, and implementing processes involving visualizing, experimenting, creating, and prototyping of models are all methods of learning that business schools in Latin America should emphasize in today's environment.

Additionally, business schools can improve the coordination among agents of national systems of innovations (mainly by promoting linkages between academia and enterprises with an emphasis on the

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