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Autores

Simón Ramírez

Juan M. Gallego


Mery Tamayo



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Simón Ramírez^{a,b}, Juan Gallego ^c and Mery Tamayo^b

^aDepartment of Economics, Emory University, Atlanta, GA, USA; ^cDepartment of Economics, Universidad EAFIT, Medellín, Colombia; ^bDepartment of Economics, Universidad del Rosario, Bogotá, Colombia

ABSTRACT

In this paper we explore the R&D–innovation–productivity linkage for the Colombian manufacturing industry, paying special attention to the role of human capital. Using data from two firm-level surveys, the Survey of Development and Technological Innovation (EDIT) and the Annual Manufacturing Survey (EAM), we extend the model of Crépon, Duguet, and Mairesse [1998. ‘Research, Innovation and Productivity: An Econometric Analysis at the Firm Level.’ *Economics of Innovation and New Technology* 7 (2): 115–158] (hereafter CDM) by including human capital at the investment decision stage. We implement an instrumental variable methodology to correct the potential endogeneity that may arise with the inclusion of human capital. Our results suggest that human capital has a causal effect on research and development (R&D) investment decisions, the innovation behavior of the firm, and increases the labor productivity of the firm. The conclusions highlight the relevance of human capital in the surrounding literature which stands in contrast to prior work that has not included this variable.

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1. Introduction

The literature on economic growth presents two fundamental alternatives as the driving force behind the output growth in an economy: the first is to put more inputs into the production process, and the second is to find new ways to produce more output while keeping the amount of inputs fixed (Rosenberg 2006). The Solow residual refers to the second as the portion of growth that cannot be explained by an increase of inputs (Solow 1956). Started with Griliches (1980), an extensive literature has related this residual with technical change and innovation. In this sense, innovation is crucial for long-term economic growth and is a strong factor explaining the competitive advantages of firms and differences in performance across companies, regions, and countries (Rouvinen 2002; Rosenberg 2006; Fagerberg 2009). Empirically, there is strong evidence from many countries on the economically significant effect of innovation on productivity; the conclusions of numerous studies indicate that innovation actually leads to better productivity performance (Hall, Mairesse, and Mohnen 2010; Hall 2011).

Having a better understanding of the innovation determinants is important because it leads to a better knowledge of what elements drive enterprises to innovate and to what extent these elements contribute to it. Human capital has been receiving special attention regarding its relationship with innovation in recent years (Busom and Vélez-Ospina 2017). In this study, we argue that human capital is essential for explaining innovation, in particular, investment decisions on R&D activities. There are solid reasons to believe that the relationship between human capital and innovation is strong (Gallego, Gutierrez, and Taborda 2015; Crowley and McCann 2018). The literature highlights