Journal Essays on Economic Policy (ESPE) - Total Factor Productivity and Efficiency of input use in Colombia

Download Keep in mind
In the journal Essays on Economic Policy (ESPE) - we disclose the results and policy proposals that arise from academic research carried out at the *Banco de la República*. When you read us, always keep in mind that the content of our articles, as well as the analyzes and conclusions derived from them, are the sole responsibility of their authors. The material disclosed in our ESPE magazine does not compromise or represent the opinion of *Banco de la República* or that of its Board of Directors.

AUTHORS AND/OR EDITORS Hamann-Salcedo, Franz Arias-Rodríguez, Fernando Gáfaro-González, Margarita María Méndez-Vizcaíno, Juan Camilo Poveda-Olarte, Andrea Paola Bejarano-Rojas, Jesús Antonio
In the *Journal Essays on Economic Policy (ESPE)* - we publish the results and policy proposals that emerge from academic research conducted at the Banco de la República. When reading us, please always keep in mind that the content of our articles, as well as the analyses and conclusions derived from them, are the exclusive responsibility of their authors. The material published in our ESPE journal does not commit or represent the opinion of the Banco de la República or its Board of Directors.

Publication Date: Thursday, 7 of February 2019
Colombia consistently exhibits one of the lowest levels of productivity in Latin America in relative terms compared to developed countries. Between 1951 and 2015, Colombia's total factor productivity is, on average, just a little more than half that of the United States. This immense gap in productivity level translates into a large income difference. What factors might be behind this gap? Why does this productivity gap seem unchanged throughout six decades?

Recently, academia has emphasized the role of public policies and institutions in explaining the large differences in productivity and income between countries. These, by distorting the relative prices of the economy, can cause large differences in productivity. Since relative prices act as signals and incentives for economic agents, these policies and institutions can cause significant distortions in the allocation of resources within an economy. Some concrete examples of such distortions are lack of law enforcement, costs to create and close a formal business, taxes on more productive firms and exemptions or subsidies to unproductive ones, barriers to competition, market frictions, monopolistic rights over some kind of economic activity, typically assigned to favor specific interests, among others.

Within this list of distortions to the functioning of the economy, there are at least two classes. One that affects all productive units homogeneously, such as criminality, and another class of distortions that fall more on certain types of productive units, for example, tax regulation. Our work advances in quantifying the relative importance of the two classes of distortions.

For this purpose, we use various sources of information at both urban and rural levels and draw on the most recent economic theories. We use statistical information from firms in cities and farms in rural areas. At the urban level, we use information contained in the Manufacturing, Trade, Services, and Micro-establishment surveys for the period between 2010 and 2016.

At the rural level, we use the National Agricultural Census, which compiles a wide variety of information at the farm level (agricultural production units). Once the urban and rural information is collected, we use two theoretical models that allow us to create two artificial economies that share certain characteristics of the Colombian economy, to perform productivity calculations and quantify the differences.

Once the urban and rural information is collected, we use two theoretical models that allow us to create two artificial economies that share certain characteristics of the Colombian economy, to perform productivity calculations and quantify the differences.

Findings

Our main finding is that, in the case of the non-agricultural sector, the effect of policies and institutions - which distort firms' decisions in an aggregate manner - on TFP is modest. In the case of individual distortions, the results for the two cases contemplated are dissimilar: when institutions that subsidize less productive firms to the detriment of more productive ones are considered, a substantial drop in TFP is obtained.

Quantitatively, affecting the most productive firms with a distortion of around 40% in magnitude translates into a 43% drop in TFP compared to the case without distortions. Thus, policies and institutions that generate distortions for the most productive firms cause a sharp drop in aggregate productivity that is not compensated by facilitating the actions of less productive firms, understood as the incentive to raise their product level. Complementary to this fact, policies and institutions that generate distortions to less productive firms and incentivize the more productive ones to compensate for the effect of such distortion, produce considerably smaller effects in terms of aggregate TFP loss.

In the case of the agricultural sector, we use the theoretical model proposed by Adamopoulos and Restuccia (2014) to quantify the contribution of different factors to the gap in agricultural labor productivity between Colombia and the United States. This gap is characterized by a value added per agricultural worker in the United States that is 12.5 times greater than the value added per worker in the sector in Colombia. Our results suggest that differences in geographical and climatic conditions between the two countries explain only a negligible portion of this gap. In contrast, factors common to all sectors of the economy, such as total factor productivity and total capital stock, explain half of the productivity gap between the two countries.

Likewise, distortions in the relative prices of factors, which vary systematically with the productivity levels of agents, explain about 90% of the remaining gap. Factors such as violence, informality in property rights, subsidy policies that favor producers with certain characteristics, failures in land and labor markets, among others, can trigger these distortions. Our way of quantifying their effect refers to a hypothetical factor that systematically affects farmers with greater productive potential. What are the specific sources of these distortions is a question that remains open for future research.

In our opinion, we have taken an important step by showing that policies and institutions that affect firms in an aggregate manner are likely not the main cause. Also, that it is likely to be those policies and institutions that go against the most productive. Additionally, we show that distortions associated with income tax are unlikely to be the cause. Although partial, our answers underscore the importance of a rigorous and detailed research agenda that tries to explain why our economy is so unproductive.

Fuente: https://www.banrep.gov.co/en/publications-research/espe/total-factor-productivity-efficiency-input