Productivity Change in an Input-output Economy: Colombia 2005 and 2011

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Productivity is at the core of economic growth and competitiveness. All major multilateral institutions related to economic development have a productivity agenda, especially directed to developing countries. Measuring productivity and identifying its main causes is therefore necessary. In this paper, we estimate productivity change for the Colombian economy at the sectorial level, from 2005 to 2011, and we infer the inputs or outputs which contribute most to that change. We include imports as a primary factor, as well as labor and capital. Imports may be a key explanatory variable for a small open economy like Colombia and can provide interesting facts about the country role in global value chains. Further, the estimated change in productivity is decomposed into efficiency change (distance to the frontier) and technical change (frontier improvements). We base our analysis on Luptacik y Mahlberg (2016), which integrate the Data Envelopment Analysis model and the Leontief input-output model to shed light on these productivity issues at the sectorial level. We extend their analysis by using the Luenbergerâ€“Hicksâ€“Moorsteen productivity indicator (Briec and Kerstens, 2004) to estimate Total Factor Productivity growth. This approach does not require the assumption of perfectly competitive factor markets or data on input shares or on prices. By identifying which commodities and primary factors are the main drivers or bottlenecks to productivity growth, we expect to improve policymaking in Colombia.