

Productivity in the Brazilian Industrial and Service Sectors, 2000-2009: A Shift-share Analysis

Topic: (3.1) Methodological Aspects of IO Analysis (1)

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This paper conducts a study of the evolution of some indicators in the Brazilian economy between 2000 and 2009 derived from Input Output tables. Historically, changes in production structures essential to development are associated with industrial sectors, or at least the source of the changes they cause in sustained output growth appears to arise in the growth of industry participation in the product.

The present debate in the literature on industrialization questions what is unique about the industry. Kaldor's Three Laws (1978) present one way to frame the peculiarities of the industrial sector: (i) the existence of a positive relationship between the growth of labor productivity in the economy and the growth of industrial output (Kaldor-Verdoorn) (ii) the positive relationship between the growth rate of industrial output and the growth rate of total output, and (iii) positive relationship between the growth rate of total output and the rate of productivity growth in the other sectors of the economy .

These laws, formulated from empirical analysis, point to productivity gains inherent in industrial activity. These productivity gains are related to the existence of economies of scale, static and dynamic, conceived as a macro phenomenon, as formulated by Kaldor (1978) and Young (1928).

According to these authors, such savings can not be broken down properly observing variations in the size of individual firms or industries, can arise because of externalities and spillovers from other sectors. If economies of scale have ceased in a given sector, this can benefit the expansion of production in other sectors of the economy.

From this perspective, economic growth is seen as a process in which productivity gains and output growth feedback into one another. Such a mechanism would be unique in the industry, particularly in the manufacturing industry. Going further, we can say that such a mechanism is developed more intensively in this sector because that is where we have a more dynamic structure of generation and diffusion of innovations.

The pioneers of development economics, namely Rosenstein-Rodan, Hirschmam, Lewis, Singer, and Nurkse, were concerned with finding the conditions that would enable developing nations to achieve the economic and social stability of developed nations. They argued that the process of industrialization brought about structural changes to the economy that lead to development. These authors emphasized three characteristics of the industrial sector: 1) the existence of external economies that would carry over into other sectors of the economy 2) the capacity to link growth to the rest of the economy, and 3) the high productivity of industrial activities.

This work begins by analyzing the theoretical literature of these pioneers of development economics, which emphasize the role of productivity gains in the industrial sector for economic

development. It then moves into an empirical study of the Brazilian economy between the years 2000 and 2009 through various productivity indicators derived from Brazilian Input-output tables, among which is a shift-share analysis to define key sectors in terms of their contributions to productivity growth within the Brazilian economy. The Brazilian Institute for Geography and Statistics (IBGE) provides the tables according to two aggregations. In one, the aggregation consists of 12 sectors. The other aggregation has 55 sectors and 110 products, using the NACE 1.0. For this

paper, the matrices from 2001 to 2004 and from 2006 to 2009 were estimated at 55 sectors using the RAS method. Both the 55 sectors classification and an aggregation composed of 19 activities were used.

The paper concludes that although a concern with the development because of an alleged deindustrialization is a careless analysis of available indicators, in fact there should be a concern to Brazilian industry since the late twentieth century. However, this loss of quality cannot be associated with loss of participation. This is not a dynamic loss in the industry due to the reduction of its range. The industry grows over the period at a similar rate as the GDP. Loss of productivity of industries must be explained by factors internal to the industry.