

TURNOVER, LEARNING BY DOING, AND THE DYNAMICS OF PRODUCTIVITY IN BRAZIL**Leandro Pereira da Rocha**

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The first decade of the 2000s was marked in Brazil by a solid economic performance, in particular in the labor market, with a significant increase in employment formalization and a decreasing trend for unemployment rate. However, there was also an increase in the labor turnover rate, which may reflect better prospects of changes for better jobs but may also reflect changes either in jobs composition or in the composition of the labor force towards worse labor relations. In the later case, it could represent some limit to productivity growth. In fact, the labor productivity in this period was practically stable, despite the positive trend in labor market, raising questions about the ability of the economy to enter in a sustainable growth cycle. Therefore, the high rate of labor turnover has been pointed as a limit to the growth of labor productivity in Brazil.

This article analyses the effect that labor turnover had on the productivity of Brazilian manufacturing firms from 1996 to 2013. The international literature indicates several determinants for productivity growth, and among them is the effect of learning.

According to the concept of "learning by doing", the longer is a worker tenure, the more (s)he accumulates experience, thus becoming more efficient in performing his task. We used the learning by doing literature, which claims that intra-firm productivity gains can occur through efficiency gains achieved via the accumulation of learning that results from the act of producing. We estimated a learning measure for capturing the loss of human capital, resulting from turnover, and the effect that this has on total factor productivity (TFP).

The basic idea is that the productivity of a firm is a function of the learning acquired over time by all of its employees. Therefore, firms with high labor turnover will have more difficulty in accumulating knowledge and, consequently, in increasing their productivity.

Using data extracted from *Relação Anual de Informações Sociais (RAIS)* and *Pesquisa Industrial Anual (PIA)*, we rigorously measured both learning and TFP. The first was measured by year through the accumulated production up to the current year, discounting a percentage related to the turnover rate. TFP was measured in three different ways according to standard methods in the literature (among them Olley-Pakes and Levinsohn-Petrin methods).

The estimated results for the relation between learning measure and productivity confirmed our hypothesis, that learning and productivity were positively correlated and statistically significant. These results were quite robust relative to the three different alternatives of productivity measures.

Regarding the magnitudes of the estimated effect of learning on firm productivity, a growth of 1% in the learning measure is associated with increase from 11% to 26% in productivity depending on how learning variable has measured.

Given the negative relationship between learning and turnover, we can say that our estimates confirm a negative relation between turnover and productivity in the Brazilian industry.