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Productivity Trends in Russian Industries: Firm-Level Evidence

The paper focuses on convergence of labor and multifactor productivity in Russia. Recent studies on productivity convergence show, that results are sensitive to the definition of the group of leaders. Using firm-level data over 2011-2016 period we obtain the similar results for Russia: for the fixed group of leaders (most productive in 2011) labor productivity convergence is observed, for the variable group of leaders (most productive in each year) labor productivity is diverging. At the same time, the initial gap between the most and the least productive firms in the Russian economy is so wide, that it is hardly possible to overcome it in the short run. In addition, we apply stochastic frontier analysis to estimate divergence parameter on industry level. Our SFA estimates confirm divergence in most industries.

1. Introduction

In recent years advanced countries experience slowdown of multifactor productivity (MFP) growth. Several hypotheses are put forward. On the one hand, secular stagnation hypothesis (Gordon, 2015) implies that productivity growth slows down since technical progress is not as intensive as it was earlier. On the other hand, another hypothesis is that the growth at the frontier remains high. The reason for aggregate slowdown of productivity growth is change in performance of non-frontier firms.

Availability of firm-level data gives an opportunity to examine, what lies behind aggregate indicator changes. The secular stagnation hypothesis implies that productivity growth at the frontier slows down. The second hypothesis implies that the gap between the leaders and laggards increases.

Andrews et al. (2016) and Cette et al. (2018) argue that conclusion, whether firms converge or diverge from the frontier, are sensitive to the definition of leaders. On the one hand, for OECD countries Andrews et al. (2016) show that productivity of leaders (top 5% of firms) in each particular year grows faster than the productivity of less productive firms. Cette et al. (2018) show the same result for France. On the other hand, for fixed group of leaders (defined as most productive in the initial period of time) convergence is observed. Moreover for both samples Cette et al. (2018) and Andrews et al. (2016) find that the initial level of productivity is negatively correlated with future growth. Thus, they show that the convergence hypothesis is not rejected.

In order to study convergence of productivity in Russia we apply several approaches. Using firm-level data we estimate regressions following Cette et al. (2018) and Andrews et al. (2016). We study how the initial labor productivity is correlated with growth rate in the next period.

We obtain results in line with studies for OECD countries and for France. At the next step we estimate the evolution productivity dispersion, which enable us to conclude about the convergence.

As further step of convergence analysis we estimate stochastic frontier models following Battese and Coelli (1991) in 173 industries. According to model estimates we identify industries which experience convergence and divergence.