

Impact of Human Capital and Spatial Concentration on Enterprise Productivity in Russia

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Abstract: We analyze how human capital and spatial concentration affect enterprise productivity, based on Russian firm level data for the period 1999–2008 provided by SPARK-Interfax. This data is augmented with regional characteristics obtained from Russian Federal State Statistics Service (Rosstat) and with investment risk index of the Analytical center 'Expert'. To observe the effect of human capital on enterprise productivity, wage is chosen as a proxy of human capital quality. Human capital is also associated with agglomeration levels, i.e. concentration of economic activity in cities and regions. Indeed, from the enterprise point of view, agglomeration of economic activities leads to better matching on the labour market, input sharing and knowledge spillovers. Agglomeration levels are subdivided into localization and diversity (urbanization) levels. We control for regional business climate and transport infrastructure, and take into account specific features of different types of firms. Panel data allows us to deal with endogeneity biases using fixed effects. These biases occur for two major reasons: unobserved heterogeneity, when unobserved factors affect both enterprise revenue and explanatory variables, and simultaneity that arises due to productivity shocks, or if firms choose their location considering potential benefits or losses from agglomeration, for example. Our results show that the effect of average regional wage on enterprise productivity is positive. Besides, we find that Russian firms benefit from localization and diversity economies in cities, as well as from home market potential, and that these benefits vary across types of firms. In line with intuition, business risk is found to produce negative effect on enterprise performance. The results emphasize importance of economic policy aimed at development of human capital; results also show that if a sufficiently large number of firms work in a city, performance of each firm improves.

Keywords: Enterprise productivity, human capital, agglomeration economies, cities, regions, Russia

1. Introduction

Territories differ in their initial opportunities and economic development. The role of human capital in success of enterprises and territories is assumed to be important, while the choice of regional policy between spatial concentration and equal distribution of economic activities depends on agglomeration effects. We shed some light on the impact of human capital and agglomeration levels on enterprise performance.

Spatial concentration of economic activity is referred to as *agglomeration* (Marshall, 1920). *Agglomeration externalities (or economies)* are effects of scale and scope resulting from spatial concentration (Neffke, 2009). They are *localization economies*, associated with concentration of economic activity in the same industry in a city, and *diversity or urbanization economies*, externalities from variety of industries or city size (Jacobs, 1969; Rosenthal and Strange, 2004). Concentration of firms in a city is interrelated with its attractiveness for *human capital* (Forslid, Ottaviano, 2003). Demand side is captured by *home market potential (HMP)* (Ottaviano and Thisse, 2004).

There is some evidence on positive localization and diversity externalities (Beaudry and Schiffauerova, 2009; Brunow and Blien, 2014). In Russia, doubling city size increases firms' productivity by 5% (Russian Manufacturing revisited, 2010). Plants in Russian urban agglomerations have 17–21% higher labor productivity (Gonchar and Ratnikova, 2012). However, excessive spatial concentration of economic activities leads to deterioration of human capital in lagging territories (Kolomak, 2014). Empirical research on human capital spillovers provides controversial results (Muravyev, 2008).

The next section is devoted to data and methodology. In section three results are discussed, and conclusion follows.