

Manufacturing clusters in the Russian Empire: estimating gains from (co-)agglomeration*

Vera Ivanova[†]

Abstract

I study the location patterns of manufacturing industries in the Russian Empire. The study is based on a novel micro-geographical dataset which stems from the 1908 manufacturing survey of plants, augmented with province-level and district-level socio-demographic indicators.

First, I construct a measure of geographic concentration of manufacturing plants in the Russian Empire based on Duranton's and Overman's (2005, 2008) methodology. I find that most industries in the Russian Empire were localized at distances less than 100-200 km. Also, I reveal coagglomerated industry pairs forming input-output linkages.

Second, I reveal so-called "cluster zones" of plants of different sectors. I find that sizes of the clusters varied a lot across sectors and depended critically upon the spatial distribution of raw sources of an industry, as well as upon the access to transportation networks. Cluster zones comprise at least 20-40 firms located no greater than 15-30 km from each other (number of firms and distance depended on industry).

Third, I argue that plants located in a cluster zone benefited from being close to plants of the same industry. Estimates of total factor productivity functions with spatial dependences reveal significant differences for plants belonging to a cluster in comparison with plants which were not in a cluster zone. I find that plants belonging to clusters were, on average, by 2-6% more efficient (in terms of firm-level TFP) than those operating outside clusters.

*The study was prepared within the framework of the HSE University Basic Research Program and funded by the Russian Academic Excellence Project '5-100'

[†]National Research University Higher School of Economics, Saint Petersburg, 190068, Russian Federation.
E-mail: viivanova@hse.ru