

## On Yet Another Cause of post-Russian-Empire Regions' Economic Heterogeneity

Заявка № 1298345

In this work I explore whether modern economic outcomes depend on the level of economic development back in the end of the 19<sup>th</sup> century. More precisely, I study how the level of industrialization of districts (*uezdy*) of the late Russian Empire affects modern economic outcomes of these territories.

The contribution of my paper is twofold. First, it is related to persistence studies, which explore whether past events explain modern economic outcomes, cultural traits etc. In this field, the most related work to my paper is Franck, Galor (2021) who found that the early industrialization is detrimental for modern economic performance using French department-level data. Second, my paper is related to a growing field of Russian economic literature, especially to long-run studies. The most related work in this field is Bugge, Nafziger (2021) who found that Russian serfdom has a long-run consequences: districts which were more enserfed in 1858 are less developed today. To the best of my knowledge, my work is the first to explore the long-run persistence of industry through the 20<sup>th</sup> century.

The main hypothesis of my research is that districts which were more industrialized in the late 19<sup>th</sup> century perform better in our days. However, there are two problems related to the unavailability of data needed to test the question directly I had to deal with. First, the data on the level of industrialization in the late Russian Empire simply does not exist. For this reason, I exploit data on the share of labor force employed in industry in 1897 on a district level as a proxy to the district's degree of industrialization taken from the First Russian Empire Census. Second, there exists a problem of administrative division mismatch: borders of the districts in the 19<sup>th</sup> century does not coincide with borders of modern districts (moreover, the former Russian Empire territory is divided between several countries as of now). To fight this problem, I utilize the level of satellite night-time luminosity as a measure of district's economic development in modern era.

To test this hypothesis, I use standard OLS regression of mean night-time luminosity in 2010 on the share of labor force employed in industry in 1897. The estimation does not reject the hypothesis: point estimates show that a 1 percentage point increase in the share of labor force employed in industry in 1897 is associated with an increase in district's mean luminosity of 1.6-2.0 percent.

This result is robust to adding a diverse set of covariates. First, I include a vast set of geographical controls such as district's latitude and longitude (in order to catch climate specifics), areal distance from district's centroid to Moscow and Saint-Petersburg (in order to control for the distance to locations of major economic power), and distance from district's centroid to the provincial capital (distance to local economic center). Second, I add provincial fixed effects to my regression, therefore, my results explain intraprovincial variation in night-time luminosity. Third, I control for literacy and education (as other important determinants of economic development), level of serfs in district (to control for pre-1897 factors), and the level of district's caloric suitability for agriculture (to control for predisposition against industrial development). All these exercises does not qualitatively change my results: the association between industrial employment and night-time luminosity is positive and statistically significant across all specifications. Moreover, the estimated effect of industrial employment in 1897 on modern night-time luminosity is quantitatively larger than that of serfdom which suggests another important channel of persistence in addition to the one shown in Bugge, Nafziger (2021).

An additional finding of my paper is that this industry persistence effect is more pronounced when using lights in 2010 and 2008 as a dependent variable compared to those of 1992 and 2004. That suggests that Soviet command economy might have reduced the investigated effect of 19<sup>th</sup> century industrialization levels due to its non-market core. After the collapse of the USSR in 1991 and the establishment of market economies in post-Soviet world the effect of pre-Soviet industrialization started to revive.

I suggest the following mechanism which explains my main finding. The industrialization in the end of 19<sup>th</sup> century was mostly associated with growing city population. Therefore, I suppose that cities which were more industrialized in the 19<sup>th</sup> century continued to grow and develop through 20<sup>th</sup> century which eventually led to their better performance in modern day. This is an illustration of a path dependence effect.

#### References

1. Buggle, Johannes C., Steven Nafziger ‘The Slow Road from Serfdom: Labor Coercion and Long-Run Development in the Former Russian Empire’\ The Review of Economics and Statistics, 103 (2021), 1–17.
2. Franck, Raphaël, Oded Galor ‘Flowers of evil? Industrialization and long run development’\ Journal of Monetary Economics, 117 (2021), 108-128.