

The effect of 5-100 program on the Russian universities: the case study of Tyumen State University

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In recent decades, national and international competition among institutes of higher education has significantly increased — not only because globalisation has deepened and there have emerged global university rankings but also because the socioeconomic relevance of universities has become widely acknowledged. Because governments express an increased interest in having their national universities at the top of global university rankings, public officials have turned to developing and implementing various programs aimed at increasing their universities' competitiveness around the world. For example, in 2014, the Japanese government launched its Super Global Universities program; South Korea has its own Brain Korea initiative; China is following suit with its 211 and 985 plans; Russia, in turn, initiated the 5-100 project in the year of 2013. Although all of the above-mentioned programs are different in duration, each of these governmental initiatives could help ensure that the country become attractive to international students and capital seeking to further both the accumulation of knowledge and innovation.

The paper represents the latest attempt to explore the 5-100 program, which is aimed at increasing the competitiveness of Russian universities. The program creates necessary conditions for 21 Russian universities to be ranked in the top-quality world rankings. We analyze the results of universities participating and not participating in the program. We extend the synthetic control approach to a setting of evaluation of 5-100 program where there are multiple treated units. We analyze the effects of the program on Tyumen State University results including the following key performance indicators: (a) position in the world rankings (general and major subject rankings); (b) number of publications of all types in the Web of Science and Scopus databases per faculty; (c) average citation rate per faculty derived from the total number of Web of Science and Scopus publications for 5 previous years, including the reporting year and etc.

That is why the main result analyzed in our paper is the publication activity of the selected universities. In this study, we use data from Web of Science from 2000 to 2017 (as on April 2019). These data accounts for published articles only (without conference papers, book chapters and etc.). In order to estimate the impact of 5-100 program on Tyumen State University, we compare the evolution of articles with and without the program. Since it is not possible to observe what

would have happened without the project, we use a statistical methodology known as counterfactual analysis.

The general objective of a counterfactual analysis for policy evaluation is to establish a cause-and-effect relationship between a particular intervention and the resulting outcomes. In this study, the intervention is the 5-100 project and the outcome is the number of articles in WoS database (total, per faculty member and number of articles in Q1 journals). Counterfactual scenarios are used to estimate the number of articles that the university would have published in the absence of the program. A retrospective analysis prior to the project is undertaken by selecting particular comparison groups that provide suitable counterfactual baselines representing the hypothetical situation without intervention. Note that our methodology is similar to a differences-in-differences approach since the counterfactual scenario corresponds to a control group, while the observed number of papers corresponds to the treatment group. As mentioned above, the program in Tyumen started in the autumn of 2015.

We consider three counterfactual scenarios. In the first counterfactual analysis, we use Tyumen Industrial University, as the comparison or baseline. The counterfactual number of articles that would have been published in case the 5-100 project had not taken place is estimated as the projected number of articles given its past trend plus a correction of the change in trend that occurred after 2015 due to factors other than the project (mainly explained by the federal education policy). This change in trend is calculated from the observed change in trend in the number of articles in Tyumen Industrial University. Our second counterfactual analysis extends the previous one by accounting for a problem common to any counterfactual analysis: the presence of potential spillover effects occurring when the comparison group is also affected by the intervention.

The third scenario used is synthetic control groups method. As well as the DiD analysis (Poldin et. al, 2017), the synthetic control method reports that, for the incentivised conditions, the program has enabled the university to improve its performance. This result is robust to alternative specifications of the synthetic control. The program helps universities in prioritizing their aims and enhancing their competitiveness in the global environment.