

PUBLICATION POTENTIAL OF RUSSIAN UNIVERSITIES AS A RESULT OF STATE SUPPORT

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Abstract

The goal was set for university personnel to advance in the world university rankings. Universities are actively stimulating publication activity, including financially, which provoked a publication "race" among scientists. To confirm the hypothesis, the authors of the article analyzed the publication activity of universities. For this, 12 Russian universities of various types were selected, operating in the four largest regions of the country. These universities are classified as federal, national research and state. The authors of the article examined in dynamics the performance of such an indicator as the number of publications indexed in the information and analytical system of scientific citation WOS, Scopus, the Russian Science Citation Index workers of a specific university. Also analyzed the number of citations of publications published over the past 6 years, indexed in the specified systems of scientific citation. The study used methods of regression analysis and analysis of statistical information. Sources of information - information and analytical materials for monitoring the effectiveness of the activities of Russian universities. All types of universities show upward publishing dynamics. The undisputed leader in achieving this result are national research universities, in second place are federal universities, in third place are state universities.

Key words: scientific and publication potential, scientific and pedagogical staff of the university, publication activity, efficiency of the university

JEL Code: O15, O38, E24

Introduction

The stage of modernization of Russian higher education began in 2008, when a decree of the President of the Russian Federation was signed on the creation of a network of federal universities. This decision was dictated by the need for staffing innovative development in the whole country. In 2009, the status of national research universities was legislated. In the future, the "new" universities had to reach the world level. The main task is to participate in large-scale projects which oriented at development of high-tech sectors of the Russian economy.

Universities, according to Russian experts, play a key role in the formation of the human capital of the territory, and this is of great importance for stimulating economic growth and innovative development of the country (Panikarova et al., 2020). In order to ensure constant state support for Russian universities and the growth of their competitiveness among the world's leading research and educational centers, the Ministry of Science and Higher Education of the Russian Federation is implementing the "5-100" project. Since 2013, thanks to the implementation of the project, university development programs have been funded. Funds are allocated annually on a competitive basis, this takes into account the degree of achievement the established performance indicators of universities (Poldin et al., 2017). The list of key performance indicators includes the number of publications in peer-reviewed international journals, as well as the citation of authors. The desire to achieve these indicators motivates the teachers of Russian universities to increase the number of publications in the short and long term (Goncharova et al., 2018). An additional incentive is material interest: the university administration pays incentive bonuses to teachers for publication activity. Thus, the scientific and publication potential of Russian universities is developing as a result of government support measures.

1 Methodology and Methods

Scientific potential can be assessed by examining the abilities and capabilities required to carry out research activities, both in the present and in the future. It is possible to assess the conditions created at universities for the development of the scientific potential of the analyzed groups of workers. To study the scientific and publication potential of universities, we can use both systemic and competency-based approaches. However, an analysis of the modern practice of assessing scientific and publication potential has shown that a scientometric approach is often used. Today the most popular indicator of scientific productivity is the number of indexed articles published in WOS and Scopus. In this case, publications are an institutional product that is used to compile university rankings. The number of indexed and peer-reviewed articles remains the only available scale for measuring R&D of universities and their divisions.

Some researchers negatively assess new approaches to university funding depending on the achievement of research performance indicators. For example, M. González and J. Luis are skeptical about a performance-based funding system which is designed to reward “high performing” institutions and stimulate “less efficient” institutions. This system only aggravates

the previously formed institutional inequality of universities (Mateos-González and Boliver, 2019).

The topic of assessing the research and publication activity of university professors remains relevant for many decades.

Many authors have noted an increase in scientific publication activity. So the number of publications in Indonesia increased from 2015 to 2019 from 8,400 to 46,000 (Pohl, 2021). Publishing results are influenced by many different factors, for example, factors of the work environment (Aboagye et al., 2021). Aghion, P. et al, comparing the effectiveness of universities in Europe and the United States, indicate that an increase in university spending on patents, which relates to the influence of environmental factors, gives more results than the number of publications (Aghion et al., 2010).

For the study of the performance of university staff, the system of criteria for evaluating the results of scientific research remains a problem (Smith, 2015). Fox (1983) notes that researchers can only be measured through results – scientific articles as one of the most important indicators of scientific performance, as well as such an indicator as recognition from colleagues.

David and Geronia (2019) a study of the academic productivity of university teachers was carried out by analyzing the number of indexed articles in the Web of Science, and in Scopus Thomson Reuters. They note that in 2013, the highest publication activity result was 1 article per 1 professor per year, and publication activity, while, in their opinion, this is only one element of scientific productivity.

To analyze the scientific and publication potential of teachers, we identified universities. Universities were sampled according to their affiliation to three types: national research universities (NRU), federal universities (FU), and state universities (SU). From 1,264 universities, we immediately removed 555 branches of universities because of the non-comparability of the data and great differences in the focus of their activities. In selecting universities, territorial location was also taken into account: we selected four federal districts (Ural, Northwestern, Volga, and Siberian) in which at least one university of the above types exists. Here we selected one university each belonging to different types: One federal, one national, and one state university. Thus, 12 universities were selected for further analysis.

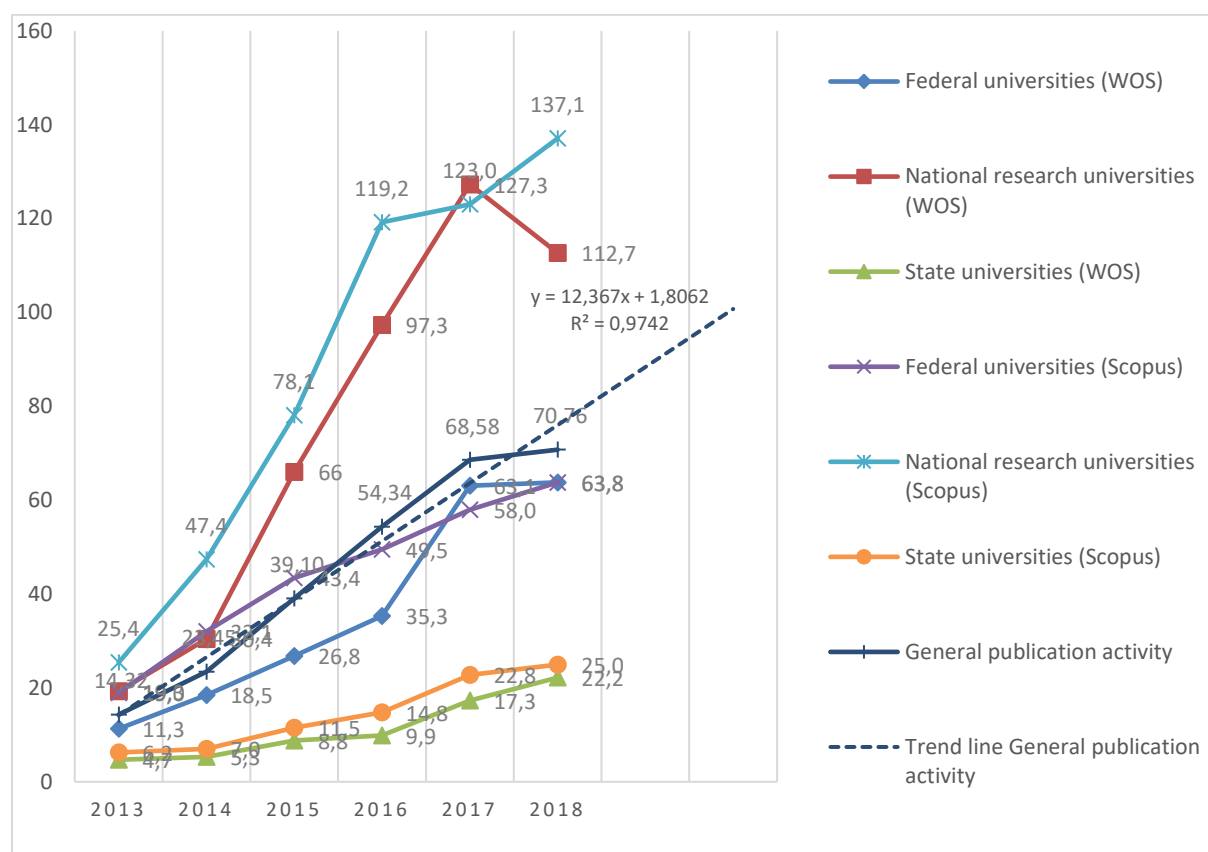
Next, we collected and analyzed statistical data on the components of the scientific and publication potential of universities. For the analysis we took such indicators as the number of publications of the organization and the number of citations per publication, indexed in the

information-analytical systems of scientific citation WOS, Scopus and the Russian Science Citation Index (RSCI), per 100 teachers in dynamics for 6 years.

2 Results and Discussions

Let us consider the practice of assessing the publication activity of scientific and pedagogical employees of Russian universities belonging to such types as federal, research, and state universities. The publication activity is analyzed by such indicators as the number of articles and the citation rate of articles. The publications placed in the scientific citation systems WOS, Scopus and RSCI are considered.

Fig. 1: The number of publications of the organization, indexed in the information-analytical system of scientific citation WOS and Scopus, per 100 teachers

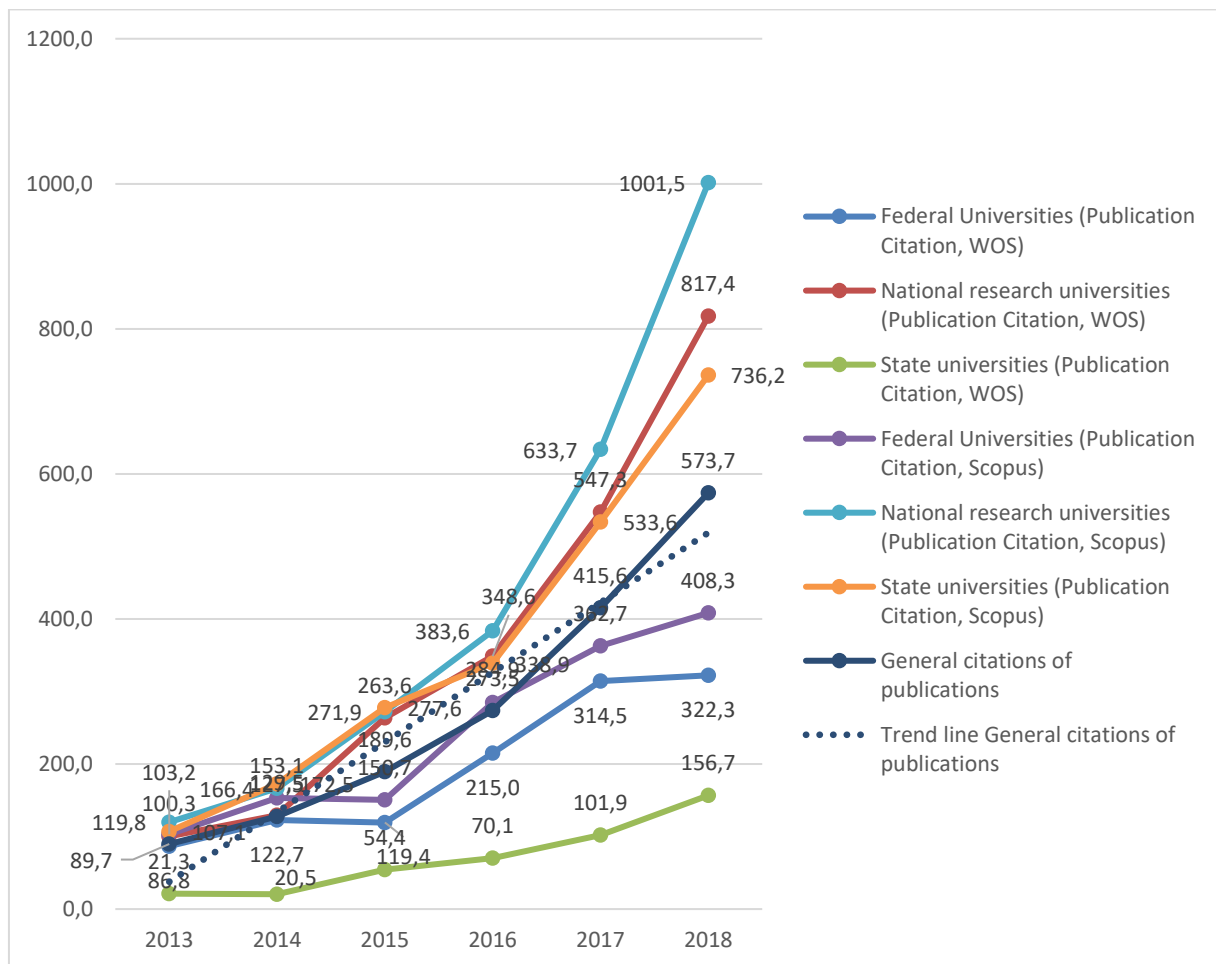


Source: Compiled and calculated by the authors

Express analysis allows us to draw the following conclusions (Fig. 1). In 2018, research universities are leading in terms of the number of WOS and Scopus publications: there are 112.7 WOS articles and 137.1 Scopus articles per 100 teachers. Federal universities are in second place in terms of the number of publications per 100 teachers.: 63.8 WOS articles and 63.8

Scopus articles. State universities are in third place: 25.0 WOS articles and 22 Scopus. It is significant that in 2018 compared to 2013, an increase in the publication activity of teachers in different types of universities was recorded: in State universities, the number of articles in WOS increased eight times, in federal and research universities six times. There is an upward trend, since overall, WOS and Scopus publications grew by 580% in six years. The graph shows the highest correlation with the power trend line ($R^2 = 0.9742$), which allows predicting an increase in the number of university articles (Fig. 2). But this is possible if the stimulation of publication activity will continue, and the teachers will still respond positively to financial incentives.

Fig. 2: Number of citations per organization's publication, indexed in the information-analytical system of scientific citation WOS and Scopus, per 100 teachers

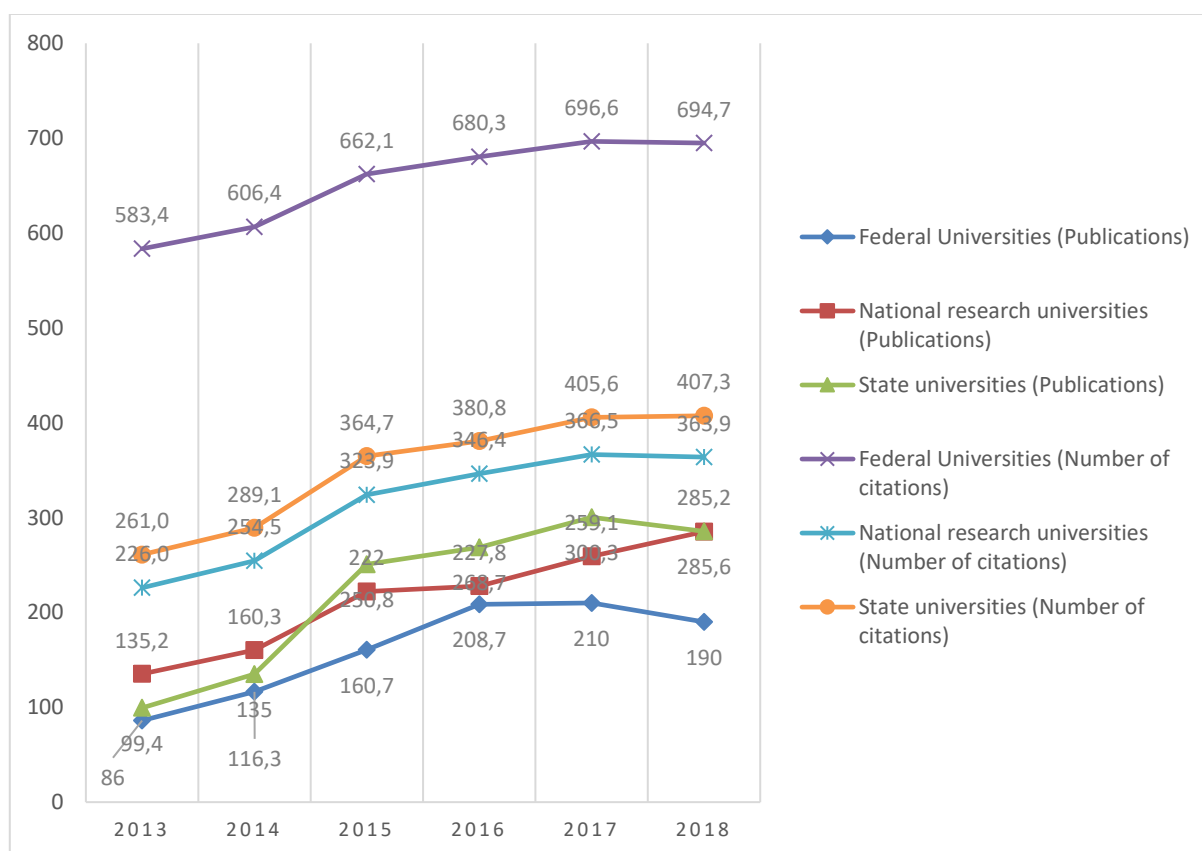


Source: Compiled and calculated by the authors

An analysis of the number of citations for publications indexed in WOS and Scopus suggests that the number of citations to the works of Russian researchers is increasing every year (Fig. 3). This testifies to the transition of Russian universities to intensive forms of

development of scientific activity. The absolute leader in the number of citations for WOS and Scopus articles are research universities. For 6 years, the growth in these indicators was more than 8 times: 817.4 links and 1001.5 links. State universities achieved a high citation rate for articles indexed in Scopus (736.2 citations), but a low citation rate for WOS articles: only 156.7 citations per 100 teachers federal universities show an average score of 322.3 links to WOS articles and 408.3 links to Scopus articles.

Fig. 3: The number of publications of the organization, indexed in the information and analytical system of scientific citation of the RSCI, per 100 teachers.



Source: Compiled and calculated by the authors

Next, let us consider the achievement by universities of such an indicator as the number of publications indexed in the Russian National Information and Analytical System (hereinafter – RSCI). This system contains 12 million publications of Russian scientists. The Elibrary platform provides citation information from more than 6,000 Russian journals. Analysis of publications indexed in the RSCI is one of the methods for assessing the performance of scientists from research and educational organizations. Accordingly, for universities, an

indicator has been established for the number of articles and the number of citations in the RSCI.

However, the stimulation of teachers with such publications is either not implemented or very insignificant, which negatively affects the results of publication activity. Accordingly, the positive trend in publication activity in relation to the RSCI is less pronounced (Fig. 3). State universities are the leaders in terms of the number of publications: 285.6 publications per 100 teachers. The teachers of these universities focus on publications in Russian journals and speeches at Russian conferences, as they do not have the resources to publish in journals indexed in the WOS and Scopus bases.

The lowest level of this indicator is in federal universities: 190 articles per 100 teachers. An unusual situation has occurred: state and research universities have the same number of publications indexed in the RSCI, but over the past 6 years, the increase in articles has been different. In state universities, the increase was 287%, and in research universities, 211%. At the same time, federal universities lag significantly behind in terms of the number of publications, but overall, the increase in publication activity was 221%. There are even greater differences in the citation rates of publications published over the past 6 years and indexed in the RSCI per 100 teachers. Federal universities are in first place in terms of the number of citations (694.7), in second place are state universities – 407.3 citations, and research universities are in third place – 363.9 citations. The growth in citations of publications over 6 years demonstrates the reverse dynamics: FU – 119%, SU – 156%, SRU – 161%. There is an assumption that, despite the classification of universities into different groups, the institutional process has not fully completed (in terms of the level of research competence).

Conclusion

Obviously, high-quality training of specialists can be provided by university teachers who have a high level of professional qualifications and are actively involved in scientific research. The effectiveness of their participation in research can be judged by their publication activity and citation. Universities, using administrative methods of influence and various incentives, form the need for teachers to publish actively in order to remain competitive in the educational environment. Among the indicators for assessing teachers are publications in scientific journals and citation of articles (indexing in the RSCI, WoS and Scopus). Russian universities are developing scientific activities in all areas, assessed by scientometric data. Comparative analysis of the publication activity of teachers of different types of universities makes it possible to rank the research and publication activities of universities, as well as to identify some trends.

Over the past six years, research universities have shown a 6-fold increase in publication activity, and federal ones – 8-fold. It is research universities that show the highest rates per 100 teachers. State universities do not have the resources for scientific mobility of teachers who are published in national journals and mostly participate in internal conferences.

The system of stimulating publication activity in international databases, which is used by Russian universities, ensures the growth of indicators, which affects the rating, and ultimately, the position within different groups of universities. This conclusion confirms the hypothesis that the mechanisms for stimulating publication activity really work.

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