HIGHLIGHTS

Highlight 1: The Position of the University of Belgrade on the Shanghai List – Convergence Towards Reality

Veljko Jeremić [1], Mladen Stamenković [2]

The phenomenon of university ranking has occupied the attention of a large number of interested actors for many years. There is a number of reasons that influenced this. Basically, in a highly competitive higher education market, a better ranking has the effect of strengthening the visibility of universities and consequently leads to an increase in the interest of future students and exquisite teachers and researchers. University ranking, as a rough measure of quality, contains important information for university owners, donors and other funders, as it shows how effectively their funds are being used.

In the aftermath of the COVID-19 pandemic, universities will face even harsher operating conditions. In addition to the already existing competition, the pandemic especially emphasized the importance of the online learning system on MOOCs platforms, which will further excite the functioning of universities in the coming period. Precisely from all the above, the ranking of universities on the leading lists will be more important than before.

The ranking whose results have the greatest impact in the public and outside the academic community is *Academic Ranking of World Universities* (ARWU). Ranking, in Serbia far better known as the Shanghai list, is the most famous research of this type in our country as well. Although criticized in numerous scientific papers for a number of methodological shortcomings (such as the choice of indicators, weighting coefficients assigned to individual indicators, favoring universities with a large number of researchers, etc.), the Shanghai list is still classified as a reference, and each result is closely monitored and it influences the decision-making of heads of universities, government agencies and ministries.

This review is a continuation of the review of the state of rank of universities in Serbia, with a special focus on the social sciences and humanities. This time, we will try to clarify the position of the University of Belgrade in great depth, but we will also touch on probably the most important topic, and that is the institutional development potential as a consequence of ranking.

1 University of Belgrade – Faculty of Organizational Sciences
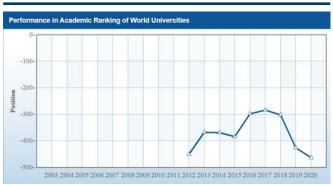2 University of Belgrade – Faculty of Economics

Position of Serbian universities on the Shanghai list

The position of universities from the Region on global lists has slightly deteriorated as a result of slower progress compared to the competition in 2020. Compared to two years ago, the universities in Belgrade, Tartu and Ljubljana dropped by about 100 places on the Shanghai list. Ljubljana thus dropped out of the top 500, while the University of Zagreb was in that group.

However, it can be assessed that there were no major and significant changes when it comes to the universities that are of interest to us. The University of Belgrade has dropped to a level comparable to Zagreb and Ljubljana, after being ranked relatively high in the previous three years. It was in the Quarterly Monitor that this was discussed two years ago, where the expected decline of the University of Belgrade was announced.

In which place can we expect the position of the University of Belgrade in the coming years? If there is no change in the way of measuring, the University should keep somewhere between 401st and 600th place. In support of this there is a detailed presentation of the category and the total number of points earned by the University of Belgrade. Not counting the three-year period 2016-2018 when we had additional points based on the work of highly cited scientists, the number of publications and academic achievements per scientist have been relatively stable since 2013.

Graph 1. Position of the University of Belgrade on the Shanghai list

It is important to point out the number of papers published in journals indexed on the SCIe and SSCI list (PUB) as an indicator for which the UB achieves excellent results. However, the number of points achieved on the PUB indicator is not enough for a better ranking than the current one. Namely, there are no points for the remaining UB criteria (Nobel laureates and Fields medalists, highly-cited authors) or they are modest (Nature and Science). Such a trend

will undoubtedly continue in the coming years, which makes the number of points achieved on the basis of published works even more important.

It is worrying that the stagnation in the number of published works results in a drop in the Shanghai list. Specifically, in order for the university to be among the best 200 according to the PUB indicator, it needed 39.66 points in 2014, while on the 2019 list it needed as much as 43.6. The same applies to the total number of points, 16.86 points were needed for position 200 in 2014, while 18.57 were needed for the same position in 2019. The conclusion is clear: stagnation in the values of indicators brings a drop in the list[3].

The ten observed CEE countries have a total of six universities among the 500 best placed on the Shanghai list, while there are 21 more universities between 501-1000 place. Observed at the global level, this result is solid for the CEE region, middle-income countries or those at the bottom of the list of highly developed countries. The placement of universities from the region was also influenced by the socialist heritage, when the educational role of the university was put in the foreground, while scientific research was extreme - especially in the case of social sciences.

Table 1. Points of the University of Belgrade by indicators for the period 2013-2020. years

Year	Former students results	Employee results	Highly quoted researchers	N&S*	Published papers	PCP**
2020	0	0	0	4,5	43,2	17,1
2019	0	0	0	4,3	43,8	21,3
2018	0	0	13,5	4,3	43,4	22,3
2017	0	0	15,4	4,5	43,6	23,1
2016	0	0	10,3	4,4	43,7	22,3
2015	0	0	0	2,5	43,3	21
2014	0	0	0	2,2	44,9	20,9
2013	0	0	0	2,1	44,4	20,4

*N&S – Nature and Science, number of papers published in the journals Nature and Science in the period 2015-2019.
** PCP – the average score on the previous criteria divided by the number of researchers at the institution

Table 2. Number of universities from CEE countries in the top 1000 on the Shanghai list in 2020

Country	1 - 500	501 - 1000
Poland	2	6
Czech Republic	1	6
Estonia	1	0
Croatia	1	0
Serbia	1	0
Hungary	0	5
Lithuania	0	1
Romania	0	1
Slovakia	0	1
Slovenia	0	1

3 https://galaksijanova.rs/beograd-pao-zbog-citata/

Table 3. Universities ranked in the top 500 from CEE countries in 2020

University	Country	Position
University of Zagreb	Croatia	401 - 500
Charles University of Prague	Czech Republic	201 - 300
University of Belgrade	Serbia	4 01 - 500
University of Warsaw	Poland	301 - 400
Jagiellonian University	Poland	401 - 500
University of Tartu	Estonia	401 - 500

When it comes to the position of the University of Belgrade, there are two important aspects that should be noted:

• A potential drop below (500th place) will cause a great public response, although positions 401-500 and 501-600 do not make a significant difference.

• It should not be forgotten that this is the rank of the University of Zagreb and Ljubljana, which are also a natural comparative criterion for the University of Belgrade

Shanghai list for scientific fields – a review of social sciences and humanities

The biggest and most important change when publishing the results in June 2020 refers to the change in methodology when ranking scientific fields. Instead of the previous criterion which represented the total number of papers in SCIe / SSCI journals, since the publication of the list for 2020, only the papers published in 25% of the best ranked journals are taken into account during the ranking.

This is entirely in the spirit of the overall ARWU ranking which focuses on excellence in research and does not come as a surprise. In this way, importance is given to the most important journals, and above all the trap of giving the same importance to papers in the journals of the first and fourth quarters is avoided. This, of course, had very negative consequences for the positioning of numerous universities from middle-developed and developing countries, including the University of Belgrade. As a reminder, two years ago, the University was among the best universities in as many as 27 of the 54 scientific research areas. This year, the change in methodology has led to the University of Belgrade being positioned within 12 scientific research areas. In addition to the University of Belgrade, for example, within veterinary sciences, the University of Novi Sad also took positions 201-300.

These 12 areas, shown in the table below, were robust to change of the methodology and in these areas we can talk about significant work within the university. Often, a good position is a consequence of the work of several

institutions, which was discussed in public when good practices were analyzed.

Table 4. Scientific areas in which the University of Belgrade records significant results

Area	Grouping	Position
Psychology	Social sciences	301-400
Physics	Science	201-300
Ecology	Science	401-500
Food technology	Technical sciences	76-100
Science and technology of instrumentation	Technical sciences	201-300
Chemical engineering	Technical sciences	401-500
Veterinary sciences	Bioscience	201-300
Agricultural science	Bioscience	401-500
Clinical medicine	Medical science	301-400
Public health	Medical science	201-300
Dentistry	Medical science	151-200
Medical technology	Medical science	301-400

It is interesting for us to take a closer look at the situation in the field of social sciences and humanities; how has the change in methodology affected the countries of Central and Eastern Europe and see if the universities comparable to us found themselves in a similar situation. We must point out that this change in methodology did not bring visible changes only in Serbia. Particularly interesting is the case of the Bucharest University of Economic Sciences, which is no longer in any scientific field within the best universities, although two years ago it was ranked in as many as three categories.

The University of Belgrade and Serbia as a country do not have a large number of representatives among the best institutions when it comes to social sciences and humanities. The exception is psychology, which remained stable on the list even after the change in methodology.

It is impossible not to point out the leader among the universities of the countries of Central and Eastern Europe. The new methodology has made the University of Ljubljana even more clearly profiled as an unequivocal leader in this region in the field of social sciences and humanities.

On one hand, we can state that the social sciences and humanities at Serbian universities are in a similar situation as in Romania or Croatia. Also, it can be seen here that some institutions cultivate excellence in several scientific fields (University of Ljubljana and Charles University) or more specialized institutions such as CEU in Budapest, which is extremely well ranked in the field of economics, political science and public administration (in all these categories ranks from 151st to 200th place).

Table 5. Number of positions within SsH groups for all CEE universities

University	Country	Positioning number	
		2018	2020
Charles University	CZE	7	6
University of Ljubljana	SLO	7	8
Masaryk University	CZE	4	2
CEU Budapest	HUN	3	4
University Eotvos Lorand	HUN	3	1
Bucharest University of Economic Studies	ROM	3	0
Prague University of Economics and Business	CZE	2	0
University of Tartu	EST	2	3
University of Zagreb	HRV	2	2
Vilnius Gediminas Technical University	LTV	2	1
University of Warsaw	POL	2	5
University of Maribor	SLO	2	2
University of Belgrade	SRB	2	1
University of Tallinn	EST	1	1
Corvinus University	HUN	1	2
Jagiellonian University	POL	1	1
SWPS University of Social Sciences and Humanities	POL	1	1
Babes-Bolyai University (Cluj)	ROM	1	0
Tallinn University of Technology	EST	0	1
Adam Mickiewicz University	POL	0	1

Where are the economy and management in the scientific research sense - a review of microdata

Given that the number of papers published in journals on the SCIe / SSCI list is the indicator that most affects the ranking of the University of Belgrade (both globally and on the list for scientific fields), it is crucial to perform an in-depth analysis of published papers. For this presentation, we will focus on, for us, particularly interesting areas such as economics and management. We are also interested in other scientific fields such as finance and business administration, but this time we will focus on the two previously mentioned. Regarding the methodology, the mappings from the categories that are within the WoS system (and which we use through the KoBSON database) and the scientific research areas defined by the Shanghai List are clearly indicated.

Table 6. Overview of the two categories from the SsH field

ARWU scientific research area	WoS scientific area
Economi cs	Economics
Management	Management Operations Research & Management Science

By direct search of microdata through the WoS database for the period from 2014 to 2018, which was also relevant when creating the ranking for 2020, we obtained the following results.

Economics

In the period of interest for ARWU ranking, 2014-2018, 286 papers were published within the SCIe / SSCI list in which one of the authors was affiliated with Serbia. The number of published papers in the selection of the most productive institutions is shown in Table 7. The number of occurrences of a certain institution among the authors is defined, so that the joint work of researchers from the Universities of Novi Sad and Belgrade is calculated as a result at both institutions. When it comes to the distribution by years, we will not list it, and we will state that in this five-year period, the number of publications is relatively uniform by year, with 2017 as the best, with 73 published papers.

Table 7. Number of papers in the field of economics in the period 2014-2018, by institutions

Institution	Number of papers
University of Novi Sad	101
University of Belgrade	87
University of Kragujevac	28
University of Nis	23
Singidunum University	16
Institute of Economic Sciences	11
Total	286

What is alluring and interesting is the question where do Serbian researchers in the field of economic sciences publish? Table 8 shows the most common journals in which researchers from Serbia were publishing in the observed period. If we exclude the field of agroeconomics, we see that the other six journals are related to this region or this part of Europe. This can certainly be related to the fact that the focus of works of our researchers is applied economics and it is mostly an economic analysis related to Central and Eastern Europe. On the other hand, as many as 13% of papers published in the same journal can be a problem if the journal loses its impact factor (as happened with another journal from Croatia) or changes its focus in the coming years.

- In total, we can draw several conclusions:
- The focus is on magazines from the region, which brings us to a number of advantages, disadvantages and risks.
- The number of papers cannot be considered negligible. However, it will be interesting to compare these numbers with the current benchmark in the part that follows.
- On one hand, it may be worrying that magazines that are not in the first quartile dominate by impact factor. However, given the scientific research focus

in the area that is focused on CEE, the choice of a journal of researchers can be considered rational

- It is noticeable that the University of Novi Sad has more published works than the University of Belgrade. The consequence of the university's policy brought promotions in multiple professional titles to formality in the SsH group.

Table 8. Overview of the most common journals which publish papers in the field of economics

The name of the journal	Number of papers	Country of issue	Category
1. Economic Research	37	Croatia	M21
2. Engineering Economics	26	Lithuania	M23
3. Custos e Agronegocio on line	24	Brazil	M23
4. Proceedings of Rijeka Faculty of Economics	19	Croatia	-
5. Amfiteatru Economic	18	Romania	M22
6. Panoeconomicus	14	Serbia	M23
7. Prague Economic Papers	11	Czech Republic	M23

Management

In the field of management, in a five-year period, 115 papers were published in Serbia, with the University of Belgrade having a slight advantage over the University of Novi Sad.

Table 9. Number of papers in the field of management in the period 2014-2018, by institutions

Institution	Number of papers
University of Belgrade	43
University of Novi Sad	37
Singidunum University	15
University of Kragujevac	11
University of Nis	5
Total	115

A large part overlaps with the results from economics because part of the journals is ranked in both categories, as we can clearly see from a more detailed review of the published papers.

Table 10. Overview of the most common journals which publish papers in the field of management

The name of the journal	Number of papers	Country of issue	Category
Amfiteatru Economic	18	Romania	M23
Journal for East European Management Studies	11	Germany	M23
Total Quality Management & Business Excellence	9	Great Britain	M22

Operational research and managerial decision making (OR&MS)

Unlike management, the field of operational research and managerial decision-making is more methodologically oriented and researchers from Serbia managed to publish papers in most relevant journals in the field in the period 2014-2018. Table 11 clearly shows the complete dominance of the University of Belgrade with 77 papers out of total of 138 papers.

The distribution by magazines is interesting. The most represented by far is *Expert Systems with Applications* with over 20% of the total number of published papers. It should be noted that this is a journal with a second-ranked impact factor in the field (impact factor for 2019 is 5,452, position 2 out of 83 journals) and coincides with the area of interest of a number of research teams, primarily in technical faculties.

Table 11. Number of papers in the field of OR&MS in the period 2014-2018, by institutions

Institution	Number of papers
University of Belgrade	77
University of Novi Sad	19
Serbian Academy of Sciences and Arts	18
University of Kragujevac	14
University of Nis	14
Total	138

Table 12. Overview of the most common journals which publish papers in the field of OR&MS

The name of the journal	Number of papers	Country of issue	Category
Expert Systems with Applications	29	Great Britain	M21a
Optimization Letters	12	Switzerland	M23
Computers & Operations Research	10	Great Britain	M21
Studies in Informatics and Control	10	Romania	M22

Although as of this year such a section without insight into the categorization of journals is not relevant to the Shanghai List issue, still, having in mind JCR-WoS as the basic measure of journal quality under Serbian legislation, it is important to review the number of published papers with two most relevant benchmarks for us - Universities in Zagreb and Ljubljana.

Table 13. Overview of published papers of the universities in Belgrade, Zagreb and Ljubljana

University	Economics	Management	OR&MS	Political Sciences
University of Belgrade	87	43	77	27
University of Zagreb	151	55	41	25
University of Ljubljana	169	126	57	64

At this point, the analysis of journal categorization would be interesting within each area. However, at this moment, even this minimal review is sufficient to see that there are areas where the University of Belgrade has a lot of room for progress and reaching the standards of the closest comparative institutions. The advantage in the field of operational research in relation to close institutions shows that this field is represented in a wider range of schools, which can be seen in a more detailed analysis of the papers. Table 13 shows the situation within the political sciences, where we really see the similarity between Zagreb and Belgrade, their achievements and a significant lag in relation to Ljubljana.

University ranking - means or goal?

The biggest objection to interpretation (and action) when publishing university rankings is that it is perceived and promoted as a result of work and the ultimate goal instead of expedient by which it is possible to see the problematic points of the system and react adequately.

The Shanghai list showed the necessity of constant work on metrics and ways of measuring scientific research work. The methodology for ranking scientific fields has been changed - instead of the entire SCIe / SSCI list from this year, only the first quartile within each scientific research field is evaluated. This change had a very negative effect on the number of scientific fields within which the University of Belgrade was ranked.

Does this necessarily mean that it would be correct to accept similar criteria? Certainly not. However, this is another clear indication that there is a significant difference in quality within WoS and that institutions that want to appreciate excellence in research work very much see that, understand that and act in line with trends. The mere acceptance of lists based on a single index (even if it is an impact factor) is increasingly being redefined. In European business schools, the dominant lists (ABS Academic Journal Guide, CNRS) are increasingly taking into account qualitative indicators and significantly reducing the initial list of journals. Of course, only journals within the relevant scientific research areas are taken into account. For example, for the area of Operations Research, CNRS takes into account only 25 journals, of which only three are classified in the best category, which is most often a condition for advancement in top business schools.

There are numerous challenges facing the University of Belgrade. The initial minimum conditions for election to the title of teacher defined by the National Council for Higher Education were included in the 2016 Rulebook by the University. This continued the continuity of conditions for election to teaching positions defined in 2008, in which, unfortunately, there is an absence

of quality parameters of the journal. The fact that authorship or co-authorship in two papers in journals (for TTN group) with an impact factor (regardless of which quartile the journals are in) is usually sufficient for advancement, has led to the situation that the dominant number of papers by the UB researchers has been published in journals from category M23. The consequence is directly reflected in the decline of the UB on the Shanghai list of scientific fields for 2020, and if the change in methodology is applied to the global ranking in August 2021, the decline of the UB is guaranteed. The situation is especially alarming when the scientific fields from the group of social sciences and humanities are taken into account. Unfortunately, referring to justified exceptions, the defined criteria for progress do not reflect the criteria of world trends, and the results of the UB in the SsH field, which could be concluded in the analysis presented here, are far from satisfactory.

The fact is that the University of Belgrade is now at the mouth of missed opportunities and that due to the lack of standards of advancement that seem to be similar to those at the leading universities of Western Europe, it pays the price by constantly moving away from universities that should be our role models. The drop in the ranking list is institutionally the smallest problem.

It is clear that the UB, as a voluntary confederation of faculties and institutes, is not able to make significant changes to the criteria without the support of its constituent members. Although the minimum criteria, as necessary and sufficient for advancement, have somewhat protected teachers and researchers from the arbitrariness of the levers of power at their home institutions, they have unfortunately also provided individuals with the opportunity to focus on achieving a bureaucratic minimum without any desire to pursue an academic maximum. . The necessary condition has become sufficient.

In the chain teacher / researcher - faculty - university, there is no place for weak links. Without raising the bar, encouraging and rewarding exceptional individuals / research groups, the UB and its institutions will not have the answer to the growing competition in the higher education market.

Conclusion

After a short and unsustainable jump of the University of Belgrade in the period 2016-2018, the previous two years marked a more realistic positioning of the university and convergence towards a meaningful position in relation to valid comparable universities.

The initial campaign that emphasized the position of the University of Belgrade within the range of 201-300 place came back like a boomerang. Any detailed analysis clearly indicated the unsustainability of that position, and clearly projected future downward movements. The big rumor about the fall of the University on the list has led to the fact that the current position seems bad, although this is a solid position, which more realistically reflects the relative performance of the University of Belgrade.

We estimate that the University of Belgrade will position itself somewhere between 400th and 600th place in the coming years. What can happen in the next two years is a drop from the top 500 to the category below. As expected, this will provoke a misdirected debate on the position itself because the University is in the top 500. And this will be a direct consequence of the messages sent from the University and the public in previous years - ranking as the purpose of ranking.

On the other hand, things should be observed from the brighter side as well. It is rational to state that this position is comparable to two valid benchmarks - the University of Zagreb and the University of Ljubljana. Seen from a realistic perspective, this is one of the few segments where we are comparable and on par with the situation in Croatia and Slovenia. Any other analysis in this and previous issues of the Quarterly Monitor speaks in support of the claim. On the other hand, the position of the University of Belgrade in the field of social sciences and humanities is unfavorable. Better placement of the BU in this area would be facilitated by tightening the criteria for selection and advancement of teachers, establishing cooperation with the world's leading universities, improving the quality of doctoral studies, etc.

The crucial thing for future analyses of such rankings is to focus on the development opportunities that this positioning indicates to us.

The biggest mistake when analyzing the ranking of universities is the connotation that competition and ranking are seen as final product. This way of reasoning makes sense for athletes at the Olympics. Working on the development of institutions is something completely different. All available rankings (and ARWU is only one of the perspectives) must be taken as a whole, analyzed and, from there conclusions for realistic and above all sustainable institutional development shall be drawn. The rankings must serve as a clear guideline for the further development of the university and the schools within it.