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VERTICAL SEGREGATION IN HIGHER EDUCATION - THE CASE STUDY OF THE REPUBLIC OF SERBIA

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The gender role hierarchy in the Republic of Serbia is an inspirational topic on several grounds: first, this is a specific issue within a wider gender equality problem, which has recently become the priority of structural reforms; second, it is a separate segment of gender segregation, the research issue unjustifiably ignored by the domestic academic community; finally, it is just a piece of the "puzzle" that reflects the situation in the gender inequality field, but exactly the one which neither national nor European statistics provide detailed information for. The above-mentioned reasons represent the basic motivation for writing this paper. In order to determine whether the position of women in science varies according to their position on the career scale, as it usually happens all over Europe, we shall examine the situation in the higher education system in the Republic of Serbia. That is why we apply the methodological procedures of descriptive statistics to the micro-data obtained from the Ministry of Education, Science and Technological Development in order to calculate the following relative indicators: the teaching staff structure by gender and grades across different fields of science and the glass ceiling index. We believe that such a relatively precise insight into the range of vertical segregation could be useful in conceiving future initiatives aimed at the systemic introduction of a gender perspective in the adoption, implementation and monitoring of public policies.

Keywords: gender equality, gender segregation, vertical segregation, horizontal segregation, higher education, the Republic of Serbia

JEL Classification: I23, I24, J16

INTRODUCTION

The actualization of gender inequality in academic studies dates back to the late 1960s and was prompted by the second wave of feminism, accusing the mainstream approaches in social sciences of their "insensitiveness" - they did not notice the diverse problems women were facing (Babović, 2010; Galić, 2011). Particularly, sociological research did not show any interest in this issue: the structural position of women was not recognized or women's experiences were deliberately ignored. That is why this approach was characterized as "malestream" (i.e. as dominantly

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male) sociology. Differences in the chances between males and females in economic science were explained by diverse human capital levels (Becker, 1985), measured by their formal qualification, work experience or women's willingness "to stop climbing just as they are getting near the peaks" (Probert, 2005, 58). Stressing, therefore, that gender segregation is caused by the individual characteristics of individuals, gender specific preferences, skills and abilities of men and women, the mainstream economy treated all of these factors as exogenous and did not analyze them within economic models (Conduto de Sousa, 2005).

The research of gender equality that was established on different grounds started in the 1970s. It was the consequence of pronounced segregation in the scientific space - the concentration of women in social and of men in natural and technical sciences. Also, it was materialized through the emergence of the prominent pro-feministic approaches (liberal feminism, postmodern feminism, feminist critical theory) that marked the transformation of the gender studies of a sociological orientation at that time (Babović, 2010). Emphasizing the fact that social relations explained the perpetuation of segregation (preferences were shaped by habits, expectations and unequal conditions), these concepts criticized the social structure based on the masculine character of the social power that "generated gender discrimination through institutions and bureaucracy" (Brstilo, 2010, 153). Such concepts, which offered a critique of the system of the domination of men and the subordination of women (historically the most persistent form of social segregation, Galić, 2011), posed new challenges for the theoretical, as well as empirical, study of this problem and encouraged various initiatives in the field of gender equality policies.

Having analyzed numerous texts, scientific databases and gender studies, we found that they did not show a research interest in certain aspects of gender segregation in Serbia. This fact determined the subject of our analysis: the study of the range of the different types of gender segregation, particularly the hierarchy of the gender roles in the field of higher education (in the literature, the most discussed sector of the economic activity). Therefore, the aim of this paper is to determine whether the position of women in science in the Republic of Serbia (RS)varies according to their position on the career scale.

In accordance with the defined subject and the stated goal, the following hypothesis was set:

H: The representation of women changes inversely to their position in the academic hierarchy.

To test it, we shall use the methodological procedures of descriptive statistics applied to the micro-data of the Ministry of Education, Science and Technological Development in order to calculate the following relative indicators: the structure of the teaching staff by gender and grades across different fields of science and the glass ceiling index. The obtained findings are expected to be useful primarily as a correct substitute for the missing data in national and European statistics, as well as the starting point in considering the extent of gender, especially hierarchical segregation, as the first iteration in creating the appropriate gender equality policies.

Bearing this in mind, the paper is divided into four parts. The introductory remarks, emphasizing the importance of gender equality exploring, are followed by the second chapter, dealing with the academic study of gender segregation (as a specific issue within a wider gender equality problem). It is meant as the analysis of the most attractive topics of the researchers and the methodological approaches they applied in their studies. In the third chapter, the available general statistics will be used to monitor and analyze the distribution of women researchers by the sectors of the economic activity. These insights will serve us to explicitly point to the reasons that have determined the deeper studying of segregation in the higher education sector. The aforementioned micro-data are used for a descriptive overview and the statistics of the representation of women at different hierarchical levels and for calculating the indicators of vertical segregation. The last, fourth part of this paper consists of the final remarks, summarizing the key insights, the methodological limitations and the suggestions for further research.

LITERATURE REVIEW

The academic research of gender equality and/or gender inequality was, as has already been mentioned, initiated by sociological studies. In addition to studying stereotypes about gender roles (Lombardo, 2003; Galić, 2011), researchers were particularly interested in the different forms of segregation (Bettio & Verashchagina, 2009; Meulders, Plasman, Rigo & O'Dorchai, 2010). The number of the published papers, irrespective of the fact whether it is horizontal segregation (which implies an uneven distribution of women or men by professions and sectors of the economic activity) or vertical, i.e. hierarchical segregation (which refers either to the over- or underrepresentation of a particular sex in the highest positions within professions or sectors of the economic activity, due to which there are gender differences in terms of income, the status, job stability), was relatively similar. For example, during the 1980s, the number of the texts dealing with horizontal segregation was constant (at the level of twenty per year) and slightly higher than the number of those devoted to vertical segregation. During the 1990s, both issues attracted equal attention, and the number of publications increased to 50 per year. A more noticeable rise in the interest was observed after 1995, particularly in this century, since the number of the works comparing to the 1990s has increased almost three times (especially those from the domain of vertical segregation).

Regardless of the type of segregation, at the beginning of this decade there was still a mild dominance of the papers focused on the conceptual study of the problem and the review of the latest literature (Meulders *et al*, 2010). Speaking of empirical research, which gained in importance during the last couple of years, they (by default) start with a descriptive review based on the available statistical data (either general or those provided by the registers of the relevant institutions). Apart from analyzing a representative sample, researchers prefer to rely on micro-data (used in nearly 40% of all of the publications on horizontal and almost one-half of the publications on vertical segregation). These data can cover the participation of both sexes at different educational levels, in different fields of science, diverse occupations and the sectors of the economic activity, along hierarchical levels, etc. Based on the available data, the degree of segregation is calculated by using a variety of methodological procedures (Bettio & Verashchagina, 2009), most often index/indicators that, *inter alia*, tracks gender differences across a sector's employment, the distribution of men and women by professions (occupations), the share of women in all academic staff compared to their share in Grade A, and so on.

The largest number of the surveys dedicated to these two forms of gender segregation were examining the problem in the higher education sector (unlike other institutional sectors - the public and the private - which were not the subject of interest in these topics), and the analysis usually began with the study of the trends that existed at the different levels of tertiary education (i.e. the share of women in the number of enrolled and graduated students). The existence of some form of spillover effects in higher education cycles was generally attributed to the potential benefits of acquiring master and doctoral degrees. However, although an increase in women's share in PhD graduates was evident in all of the fields of science, the concentration of men and women varied by the area of study (Nielsen, 2015).

The "balance of power" between the sexes had an impact on the intensity of studying the various aspects of gender segregation. Unlike Western countries, for example, in East European countries, any form of the unequal distribution of women and men attracted researchers' interest in this century. This was explained in the literature by very contradictory interpretations. It was often claimed that the share of highly qualified women in science had been high before transition (owing to the historical heritage that emphasized the importance of education), whereas horizontal segregation was less pronounced in this group of countries (European Commission, 2012), so that there were no reasons for its actualization and/or study. On the other hand, it was argued that, despite social democratization, the subordination of women was deeply rooted in the Christian culture based on the traditional division of gender roles. Top of Form In fact, this issue was not analyzed, not because

of its nonexistence, but for the reason of the fact that the key actors to whom it may concern did not actualize the problem: women were not questioning traditional ideological prejudices, they considered their positions as the natural consequence of their dual role, chose professions that were less valorized and generally exhibited low sensitivity to unequal treatment (Blagojević, Bundule, Burkhardt *et al*, 2003). Thus, despite the feminization of certain disciplines (women's concentration in social sciences, pedagogy, medicine) (Stöckelová & Linková, 2008), science continues to be the male activity (Palasik & Papp, 2008). Although women dominate among graduates, and their share grows among university staff (even in the highest rank) (European Commission, 2012), career development is very much dependent upon the field of research, so that both forms of segregation are present. On top of everything, the transition period marked the beginning of changes in the system of financing research institutions, a decrease in the number of researchers, a shift in formal and other criteria of measuring scientific productivity or in numerous legal solutions concerning the institutional structures of the education system and the like (Meulders *et al*, 2010). Although the above-mentioned things equally affected both sexes, the effects of transition were more harmful to the more vulnerable - the female population. Those segments that were "feminized" (education, health) in the era of socialism remain unchanged on their part: since they were part of the economically "poor" - state sector, they were unattractive to men who chose more profitable professions (Blagojević *et al*, 2003). Therefore, the recent interest in gender segregation is formally caused by its greater visibility and obviousness, and essentially by its deepening.

Irrespective of the above-mentioned things, in the literature on horizontal segregation, in principle, two broad areas of research have been singled out:

- the one studying the so-called educational segregation - the differences between the two sexes in the fields of study, and
- the other researching segregation in the labor market, in the scientific or research occupation and in the sectors of the economic activity.

Educational segregation implies an excessive or insufficient representation of the male or female sex in a particular field of study, which enables us to discover a possible (de)feminization or (de)masculinization of a certain scientific field. Such insights are necessary because differences in educational segregation spillover into the labor market, whereby the survival of gender segregation in science is "justified" by the gender-determined choice of studies. Hence, the phenomenon of horizontal segregation is most explored in the scientific fields where male dominance is more pronounced (such as natural or technical science).

The most available data on vertical segregation also refer to the higher education sector, particularly the academic sector. The educational achievements of women (a rise in their share in the number of graduates at all the levels of studies) did not lead to a corresponding increase in their participation in the higher positions of the academic hierarchy. On the contrary, their shares stagnate or decrease everywhere in Europe (Danell & Hjerm, 2012). These findings served as a confirmation of the fact that gender emancipation began too late in the field of higher education, where the top positions of the academic hierarchy are still male-dominated (Hargens & Long, 2002; Popović & Duhaček, 2009; Timmers, Willemsen & Tijden, 2010). In other words, the gender structure at faculties (as the most respected scientific and educational institutions) shows the slowest change (Prpić, 2003).

Although this form of the unequal distribution of women and men represents the subject matter of study in various fields of science (such as medical) (Crompton & Lyonette, 2007), as well as in certain disciplines within the scientific fields: dentistry (Murray, 2002), architecture (Caven, 2006), vertical segregation has attracted the greatest attention by social sciences. The main reason is the fact that women are dominant in these areas - sociological literature in Western countries engaged in dealing with the above issues and offered a plenty of picturesque expressions to describe it. Thus, for example, the very existence of hierarchical gender roles is commonly referred to as gender differentiation (Prpić, 2003; Marschke,

Laursen, McCarl, Nielsen & Rankin, 2007), and rarely as gender discrimination (Knights & Richards, 2003; Popović & Duhaček, 2009). In explaining the factors keeping women remain at the lower levels of the hierarchical pyramid, the term "sticky floor" (Peterson, 2014) is used; the presence of the invisible but insurmountable obstacles that prevent women from climbing along the career scale has been named as "glass ceiling"[1] (European Commission, 2015) or the labyrinth (Eagly & Carli, 2007); finally, if the consequences that induce gender differentiation and/or discrimination (the lower presence of women at the higher levels of the academic hierarchy) are analyzed, the expression "leaky pipeline" is preferred in the literature (Langberg, 2006).

Certainly, the insufficient representation of women in higher positions represents the starting point in the discussion of vertical segregation, and the research continues in one of the following directions: finding out the cause of vertical segregation (the lack of equal opportunities for both sexes) (Benschop & Brouns, 2003), the study of the mechanisms that enable its survival and perpetuation (the internal organization of universities and faculties, as well as the social factors that create an unfavorable environment "perfect" for the establishment of the vertical segregation pattern) (Bain & Cummings, 2000; Marschke *et al*, 2007 Jackson & O'Callaghan, 2009). Empirical research studies confirmed the findings about the cumulative character of the gender-biased effects. In other words, the effects of gender stratification are additive, they disproportionally affect women and deteriorate with their career advancement (Eagly & Carli, 2007).

Although the issues of both types of segregation are present in scientific databases and gender studies (mostly concentrated on the higher education sector), due to the existence of a variety of general and specific topics, most research studies have certain limitations: they are mainly focused on one country and/or one phase, not on the entire system of education (from enrollment in studies to the end of the academic career); the studies dealing with the calculation of the segregation indicators do not contain other - qualitative - indicators; the conducted research studies were neither used to study the effectiveness of the existing gender equality policies, nor were they used for their possible improvements (Bettio & Verashchagina, 2009).

Obviously, the creators of appropriate public policies in this domain need a realistic description of the actual situation - that of the insufficient representation of women either across a profession or within a particular profession along hierarchical levels. However, it turned out that the data necessary for the analysis of segregation are scarce and/or inadequate. Harmonized data sources (such as the European Research and Development Review, the UNESCO database or the OECD education database) are quite inadequate for this kind of analysis. That is why the European Union (EU) initiated the process of collecting disaggregated data on women in science and research. Even this database (Women in Science) failed to establish a complete set of data for all European countries. Since 2003, every three years, the European Commission has been publishing the reports (She Figures) that integrate Eurostat and primary data in order to explore the level of progress towards gender equality in research and innovation in Europe (European Commission, 2015). This is the main source of comparable statistical data on the representation of women and men among PhD students, researchers and academic decision-makers, and a starting point in summarizing the empirical findings about the extent of gender segregation in Europe.

EDUCATIONAL, HORIZONTAL AND VERTICAL SEGREGATION - EMPIRICAL FINDINGS

Global and European initiatives, intensified in the 1990s, have launched numerous reforms in the field of gender equality. Their results, however, are not equally good or even in all of the domains of gender inequality. Certainly, there is noticeable progress in gender balance in the pool of highly educated. The participation of women in the student population at the EU level is higher than that of men, and they finish their studies sooner and with better results.

According to the latest gender equality report published by the European Commission (European Commission, 2015), women accounted for 55% of the enrolled and 59% of all of the graduates; in addition, the share of women in the structure of those who completed PhD studies increased - to 47% at the EU -28 level, although it ranges from 40 up to 60% across the countries. According to the data of the Statistic Institute, today, women account for 55.36% of the enrolled and 57.84% of graduates at all of the levels of study in RS (in academic studies, their shares are 56.18% and 56.47%, respectively). Speaking of the higher levels of study, women's shares are 60.77% and 56.75% among the enrolled, and 60.57% and 48.04% among graduates (master and PhD, respectively). It seems that RS follows a general trend, in which the number of women studying at and graduating from almost all the levels of education exceeds the number of men (Becker, Hubbard & Murphy, 2010). At first glance, these data can be interpreted as the evidence of an improvement in gender equality in higher education, as well as an indicator of increasing chances and opportunities for women's career advancement (Danell & Hjerm, 2012).

However, the actual situation with regard to other parameters relativizes the aforementioned positive changes and prevents the adoption of unambiguous conclusions. In contrast to the feminization of the student population that is present up to the master level (when the number of women exceeds the number of men), in each subsequent iteration, the situation becomes more favorable for men (the percentage of the men/women who enrolled and/or completed their PhD studies). Even when segregation decreases at the highest level of tertiary education (by approaching the parity at the PhD level), female researchers are still insufficiently represented in the labor markets across the EU.

If we look at researchers in all of the sectors together (the higher education, public, business and non-profit sectors), in most countries the percentage of male researchers is higher (European Commission, 2015). The exceptions are Portugal and Great Britain, while in RS the share of women in the total number of researchers (in 2011) was 49.35%. In fact, men in RS show a slight dominance over women if we observe all of the sectors of the economic activity on average. However, the parity is almost achieved in the higher education sector, women are more numerous in the government sector (with the share of 55.9%), whereas in the business sector they are slightly below one-third of the total number of researchers.

The higher education sector represents the main source of the employment of researchers in the EU: of all women researchers, 64% work in this sector; men have been concentrated in this area, too (as much as 46% of all male researchers), as well as in the business sector (44%). The concentration of women in the higher education sector, as well as in the public sector in RS, is even more pronounced. Table 1 shows the distribution of women researchers in the EU and RS for the years 2012 and, respectively, across the sectors of the economic activity.

Table 1 The distribution of women researchers across the sectors of the economic activity, EU and RS

Sectors of economic activity	EU (% of women of the total number of female researchers)	Serbia (% of women of the total number of female researchers)
Business sector	22.0	3.06
Public sector	12.5	24.50
Higher education sector	64.1	72.40
Non-profit sector	1.4	0.04

Source: European Commission, 2015; Authors, according to Statistički godišnjak Republike Srbije, 2015

The largest number of female researchers in RS, as well as in the EU, work in the higher education sector - about 72.4% (which is slightly less than in 2011, when almost three quarters of all women researchers were engaged in this sector of the economy). Nevertheless,

unlike the EU average, where more than a fifth of all researchers are engaged in the business sector, the situation in RS is quite different: almost a quarter of all women researchers work in the public sector, and only 3% of them in the business sector. However, men also prefer to be engaged as researchers in the higher education sector: as many as 78% of all male sex researchers in RS work in this sector. So, if both women and men "gravitate" to the higher education sector, what do we obtain as a result of the competition between them?

Generally speaking, in the higher education sector in most European countries (including RS), it is more likely that men (rather than women) will be engaged as researchers, whereas women are more likely to work as technical and supporting staff (European Commission, 2015). The proportion of women in the total number of researchers in the higher education sector at the EU-28 level is 41%, on average. RS is better in this regard, since this percentage is 47.8%; the same conclusion can be drawn on the basis of the average annual growth rate of researchers in the higher education sector: the estimated values at the EU-28 level were 4.4% for men and 2.3% for women (in the period 2005-2012), and in RS 5.9% for men and 9.8% for women (in the period 2008-2011). In fact, in contrast to the situation in RS, where the share of women in the structure of PhDs and researchers in higher education has been relatively uniform (48.04% and 47.8%, respectively), by comparing the educational achievements of women and their position in the labor market at the EU-28 level, we have noticed a gradual defeminization. Do these trends exist when we observe top researchers?

The position of women in science at the level of the EU-28 varies according to their climbing on the career scale - the share of women is significantly being reduced at each subsequent, higher level, which is an indicator of vertical segregation (European Commission, 2015): women only account for 21% of the total number of full professors, 37% of the total number of associate professors and 45% of the total number of assistant professors; also, the share of women in the category of full professors is far better in social sciences (23.5%) than in natural and technical sciences (only 13%); the glass ceiling index, despite the downward trend, has remained at a relatively high level of 1.78.

Since European statistics do not have detailed data for RS, we started the research by analyzing the statistics of the representation of both sexes in the structure of the teaching staff.

According to the aggregate data for 2015 (Republički zavod za statistiku), the share of women in the total teaching staff was 46.67%; whereby they dominate the structure of associates (with a share of 54.25%), their participation among teachers was 43.14%. These data suggest that, in RS, as far as top researchers are concerned, some defeminization of science might exist. However, for a more detailed survey of the extent of vertical segregation in the academic sector, a descriptive overview and the statistics of the representation of both sexes at different hierarchical levels are necessary. For this purpose, our study had to rely on the micro-data obtained upon request for the purpose of this research from the Ministry of Education, Science and Technological Development. The data we had at our disposal included the following parameters: the sex, the year of birth, professional qualifications, where and when education was acquired, the institution that issued the diploma, the scientific title and the year of its acquisition, affiliation, the type of work (full-time, part-time). Based on the available data, the distribution of women in the academic hierarchy can be observed across scientific fields, faculties, for one or a larger number of universities. However, since there is no comparability of scientific grades at different institutions of higher education, nor is there any such comparability between institutions in different ownership regimes (private *versus* state faculties), we have decided to present the position of women in the academic hierarchy at the state universities in RS. We studied the presence of women in different areas of science in those positions in the academic hierarchy - a full professor, an associate professor, an assistant professor - in which they demonstrated a smaller participation in the European frameworks. Table 2 shows the shares of women in all of the mentioned grades across the following groups of sciences: natural

sciences and mathematics, medical sciences, technics and technology, social and humanistic sciences and the arts.[2] In the last row, we calculate the glass ceiling index, which compares the share of women at all of the levels in total (from assistant professors to full professors) with their share in the group of full professors.

Since this survey only provides a rough outline of the status and the positioning of women in the academic hierarchy, it is necessary to add several notes that point to the specificities within the above-mentioned areas of science.

The slight dominance of women in the field of natural sciences in the category of associate professors, especially their far better positioning among assistant professors, occurred due to the faculties not belonging to the University of Belgrade. On the other hand, at the faculties of the University of Belgrade, the presence of women at all of the analyzed grades is relatively more uniform (their shares range from 43% up to 54%).

Women have achieved parity in the ranks of associate and full professors, and have a distinctly good position among assistant professors within the corpus of medical science (in fact, their position at grade C is even better comparing to all the other science groups). The position of women is particularly good in the field of pharmacy (where they dominate at all scientific grades). Only in one case (in the field of medicine) do we have a situation where women are more present at level A than overall in academia (which means that the glass ceiling index has a value less than 1). In the field of dentistry, the proportion of women assistant professors reaches a level of 60%, whereas they still represent a minority even at grade C in veterinary science.

According to the data, the technics and technology field obviously does not represent the "most desirable" area in which women should build a career. However, there are differences between the disciplines belonging to this group of sciences. Technology and agriculture may be the right choice for them, since women on average achieve a share of approximately 40%; with the exception of the category of full professors, the same thing could be said for architecture. If we observe electrical engineering, the results significantly vary across faculties and universities, being not suitable for making unambiguous conclusions regarding women's career advancement. For certain disciplines, such as mechanical engineering, construction, and especially mining and geology, it can undoubtedly be claimed that they are predominantly male.

In the group of social and humanistic sciences women dominate in all of the grades in the field of languages (sometimes their shares go up to two-thirds); the dominance of women as associate and assistant professors is present in the field of education. Women represent a minority at the faculties of sport (with

Table 2 Women's share (all grades) across different fields of science

Grades	Natural science & mathematics	Medical sciences	Technics & technology	Social & humanistic sciences	Arts	All fields of science
Total (A, B, C)	51	53	33.4	48.9	46.1	45.1
Full professor (A)	44	49.8	25.4	43.9	39.3	38.6
Associate professor (B)	51	50.2	38.1	47.6	45.8	46
Assistant professor (C)	56.7	58.6	38.8	55.4	56.3	51
Glass ceiling index	1.16	1.06	1.31	1.11	1.18	1.17

Source: Authors, according to the micro-data of Ministry of Education, Science and Technological Development, the Republic of Serbia

the shares below 20% under the category of full professors and up to almost one-third among assistant professors). Although there are some exceptions (where the glass ceiling index has a value less than 1), in total women have not reached parity at a number of faculties in certain disciplines of social sciences, such as law, political science and the majority of the faculties of economics.

Having calculated a simple glass ceiling index that measures the share of women in all scientific grades *versus* their share among full professors, we have found that their progress towards higher positions is significantly more difficult in the field of technical sciences, whereas their ability to progress is most apparent in the field of medical sciences.

CONCLUSION

A turning point in the academic treatment of gender equality problems occurred in the studies of sociological orientation in the 1970s. Owing it, therefore, in the next decades, the research of the different aspects of gender segregation was particularly actualized. The exception to the attention given to this issue is Eastern Europe (including the Republic of Serbia), where researchers expressed an interest no sooner than at the beginning of this century. Without a desire to arbitrate the controversial argumentation of whether the delayed interest was objectively conditioned (because there was no segregation) or subjectively determined (neither women themselves, nor academics reconsidered the issue), it also led to the situation in which there was a deficit of such research studies (both in theoretical and empirical terms). Our study could represent a modest contribution to the reduction or at least mitigation of this deficit, as it represents a pioneering research study of the previously neglected problem of the distribution of women in science according to their position on the career scale. The findings can primarily be used as a correct substitute for the missing data, and as a starting point in the creation of appropriate gender equality policies as well.

Apart from the aggregate European and national statistics data, in the analysis of the actual state of affairs regarding the range of the different types of gender segregation, particularly the hierarchical one, in the field of higher education in RS, we mostly relied on the micro-data obtained from the Ministry of Education, Science and Technological Development. The main conclusions are as follows:

- The previously noticed trend of sudden women's share dropout in the subsequent education cycles (master and PhD studies) has been stopped and reversed. At the highest level of tertiary education, women could soon achieve parity: their shares in the structure of PhD graduates in the EU-28 and Serbia are 47% and 48%, respectively.

- Unlike the lower or higher degree of feminization noticed among the student population, the situation on the labor market is characterized by the first signs of masculinization (i.e. defeminization). The unequal distribution of women and men being employed as researchers in the higher education sector is, however, more evident at the EU-28 level than in RS (the relative shares of women are 41% and 47.8%, respectively).

- The underrepresentation of women becomes more pronounced with every subsequent iteration along their careers. Still, the situation in RS is better when lower scientific grades are subjected to analysis: women are slightly dominant in the category of assistant professors (with a share of 51%), whereas in the category of associate professors, they slowly approach parity (with a share of 46%). The respective values in the EU-28 are 45% and 37%. However, these comparisons should be taken precautiously, since the definitions of the grades C and B (assistant professors and associate professors) vary among countries. The most appropriate is the comparison at Level A, as it corresponds to the rank of full professors in most countries.

- The academic career of women in the EU is characterized by strong vertical segregation: their share at grade A is only 21% and the glass ceiling index is still high - 1.78. Although this

type of segregation in RS is not extreme to that extent, since the share of women in the category of full professors (for all scientific fields) is 38.6%, and the glass ceiling index has a value of 1.17, we have proved our hypothesis about the underrepresentation of women at the highest scientific level of the academic hierarchy.

The fact that the educational achievements of women in RS did not lead to a corresponding increase of their participation in appropriate positions in the academic hierarchy goes beyond the issues of hierarchical segregation *per se*. The underrepresentation of women in higher ranks, in fact, points to the insufficient and/or inadequate utilization of resources (human capital). As a result, previous educational investments have not been fully materialized, and the problem of the defeminization of science is becoming even harder, with its potentially wider economic and social consequences.

Our analysis contains a couple of limitations. Some of them are objectively conditioned, such as the method of categorizing scientific fields, which could have a certain impact on the comparability of the data for RS with those for the EU. The rest of them are inherent and similar to any other research of such a type: given the fact that the study is focused on state universities, it offers an incomplete picture of the position of women in the entire higher education system in RS; in addition, it does not deal with the educational segregation that would allow the recognition of regularity regarding the spillover of defeminization from the level of tertiary education (due to the choice of study fields) to the existence of more or less pronounced vertical segregation in certain scientific fields. Therefore, some next research study of gender segregation should be directed towards the above-mentioned issues, so that the omissions noticed in this study could be eliminated.

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ENDNOTES

1 This index moves within a range from zero to infinity. If it is 1, it means there is no difference between women and men in terms of chances for career advancement. If its value is less than 1, this means that women are more present in the group of full professors than in academia; if the glass ceiling index is above 1, it indicates that women are less present among full professors than in the structure of the teaching staff. In other words, the higher the value of this index, the greater the effect of the glass ceiling index, meaning that it is more difficult for women to "move up" to higher positions.

2 European statistics monitor the representation of women and men in the following fields of science: natural sciences, medical sciences, engineering and technology, agriculture, social sciences and humanities. Our categorization of scientific fields is somewhat different and is determined not only by the limitations of the available micro data, but also by the fact that other state universities in Serbia (Kragujevac, Niš, Novi Sad, Novi Pazar, Priština-Kosovska Mitrovica) do not classify faculties into scientific fields. Therefore, we have opted for the categorization that exists at the University of Belgrade, classifying the faculties within the above-mentioned groups.

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VERTIKALNA SEGREGACIJA U VISOKOM OBRAZOVANJU - STUDIJA SLUČAJA REPUBLIKE SRBIJE

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Hijerarhija rodnih uloga u visokom obrazovanju u Republici Srbiji je značajna tema po više osnova: kao specifično pitanje u okviru šireg problema rodne ravnopravnosti, koji je poslednjih godina postao prioritetno područje strukturnih reformi na ovim prostorima; kao zaseban segment rodne segregacije, neopravdano prenebregavan kao istraživačko pitanje domaće akademske javnosti; kao segment koji oslikava razmere rodne nejednakosti, ali upravo onaj koji kako nacionalne, tako ni evropske statistike ne nude potpunije podatke. Navedeni razlozi, pojedinačno i sveukupno, predstavljaju osnovnu motivaciju za pisanje ovog rada. Da bismo ustanovili da li položaj žena u nauci varira prema njihovoj poziciji na karijernoj lestvici, proučićemo stanje u sistemu visokog obrazovanja u Republici Srbiji. U analizi se koriste metodološki postupci deskriptivne statistike, kako bi, na osnovu mikropodataka Ministarstva prosvete, nauke i tehnološkog razvoja, izračunali sledeće relativne pokazatelje: strukturu nastavnog kadra po polu i zvanjima u različitim naučnim oblastima; i indeks staklenog plafona. Smatramo da bi takav, relativno precizan, uvid u razmere vertikalne segregacije mogao biti od koristi pri koncipiranju budućih inicijativa usmerenih na sistemsko uvođenje rodne perspektive u donošenje, sprovođenje i praćenje javnih politika.

Ključne reči: rodna ravnopravnost, rodna segregacija, vertikalna segregacija, horizontalna segregacija, visoko obrazovanje, Republika Srbija

JEL Classification: I23, I24, J16

UVOD

Aktualizovanje problema rodnih nejednakosti u akademskim proučavanjima datira od kasnih 1960-ih, i podstaknuto je drugim talasom feminizma koji je optužio tada vladajuće pristupe u društvenim naukama da su rodno „neosetljivi" jer ne uočavaju raznolike probleme sa kojima se suočavaju žene (Babović, 2010; Galić, 2011). Konkretno, sociološka istraživanja u to vreme nisu pokazala dovoljno interesovanja za ovu problematiku: strukturalni položaj žena nije prepoznat ili su ženska iskustva namerno ignorisana, te je ovakav pristup okarakterisan kao *malestream* (odnosno, dominantno muška) sociologija. U ekonomskoj nauci su razlike u šansama između dva pola objašnjavane različitim nivoima ljudskog kapitala koji poseduju žene i

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muškarci (Becker, 1985), mereno nivoom formalne kvalifikacije, radnog iskustva, ili „nespremnošću žena da nastave uspon duž lestvice unapređenja čim se približe vrhu iste" (Probert, 2005, 58). Tvrdeći, dakle, da je rodna segregacija uzrokovana individualnim karakteristikama pojedinaca, polno specifičnim preferencijama, veštinama i sposobnostima muškaraca i žena, mainstream ekonomija je faktore zbog kojih bi se ista mogla pojaviti tretirala kao egzogene i nije ih analizirala u okviru ekonomskih modela (Conduto de Sousa, 2005).

Na drugačijim temeljima postavljeno istraživanje rodne ravnopravnosti otpočinje 1970-ih godina. Ono je predstavljalo posledicu izražene segregacije u naučnom prostoru - koncentracije žena u društvenim, a muškaraca u prirodno-tehničkim naukama, i materijalizovalo se u vidu pojavljivanja markantnih profeminističkih pristupa (liberalni feminizam, postmoderni feminizam, feministička kritička teorija), koji su obeležili preoblikovanje rodnih studija sociološke orijentacije tog vremena (Babović, 2010). Naglašavajući da društveni odnosi objašnjavaju perpetuiranje segregacije (preferencije su oblikovane navikama, očekivanjima i neravnopravnim uslovima), ovi koncepti kritikuju društvenu strukturu zasnovanu na maskularizovanom karakteru društvene moći, koja „posredstvom institucija i birokratije generiše rodnu diskriminaciju" (Brstilo, 2010, 153). Prodorom ovakvih koncepata, koji su ponudili kritiku sistema dominacije muškaraca i subordinacije žena (kao istorijski najtrajnijeg oblika društvene segregacije), (Galić, 2011), postavljeni su izazovi za teorijsko, a potom i empirijsko, izučavanje ovog problema i podstaknute različite inicijative u domenu kreiranja politika rodne ravnopravnosti.

Uvidom u radove, naučne baze i rodne studije, ustanovili smo da u istima nije iskazano istraživačko interesovanje za određene aspekte rodne segregacije u Republici Srbiji (RS).

Ova činjenica je, kao predmet naše analize, opredelila proučavanje razmera različitih vidova rodne segregacije, posebno onih u domenu hijerarhije rodnih uloga u oblasti visokog obrazovanja (u literaturi najdiskutovanijeg sektora ekonomske aktivnosti).

Cilj ovog rada je da ustanovi da li položaj žena u nauci u RS varira prema njihovoj poziciji na karijernoj lestvici.

Shodno opredeljenom predmetu i navedenom cilju istraživanja, postavljena je sledeća hipoteza:

H: Zastupljenost žena se menja obrnuto proporcionalno njihovoj poziciji u akademskoj hijerarhiji.

Da bismo testirali postavljenu hipotezu, korišćeni su metodološki postupci deskriptivne statistike, kako bi, na osnovu mikropodataka Ministarstva prosvete, nauke i tehnološkog razvoja, izračunati su sledeći relativni pokazatelji: struktura nastavnog kadra po polu i zvanjima u različitim naučnim oblastima, i indeks staklenog plafona. Dobijeni nalazi mogli bi biti upotrebljivi prevashodno kao korektan supstitut za nedostajuće podatke u nacionalnim i evropskim statistikama, koji su polazna tačka u sagledavanju razmera rodne, a naročito hijerarhijske, segregacije, kao prve iteracije u kreiranju odgovarajućih politika rodne ravnopravnosti.

Imajući navedeno u vidu, rad je strukturiran u četiri celine. Nakon uvodnih razmatranja, u kojima je potenciran značaj proučavanja rodne ravnopravnosti, u drugom poglavlju ćemo se baviti akademskim proučavanjem rodne segregacije (kao specifičnog pitanja u okviru šireg problema rodne ravnopravnosti), odnosno, posebnim temama koje su interesovale istraživače, te metodološkim pristupima koje su oni koristili u svojim proučavanjima. U nastavku rada ćemo, na osnovu dostupnih statističkih podataka opšteg karaktera, pratiti i analizirati distribuciju žena istraživača po sektorima ekonomske aktivnosti. Dobijeni uvidi će poslužiti da eksplicitno ukažemo na razloge koji su nas opredelili da problem segregacije dublje analiziramo u sektoru visokog obrazovanja. Deskriptivni pregled i statistika zastupljenosti žena na različitim hijerarhijskim nivoima su, potom, prikazani na osnovu već pomenutih mikropodataka, koje koristimo i pri izračunavanju indikatora vertikalne segregacije. Četvrtu celinu ovog rada čini zaključak, u kojem se sumiraju ključni uvidi, metodološka ograničenja i predlozi za dalja istraživanja.

PREGLED LITERATURE

Akademsko proučavanje rodne ravnopravnosti i/ili rodne nejednakosti je inicirano zahvaljujući sociološkim studijama. Među pitanjima koja su posebno zainteresovala istraživače, pored proučavanja stereotipa o rodnim ulogama (Lombardo, 2003; Galić, 2011), kao najfrekventnija se spominju ona koja tangiraju različite oblike segregacije (Bettio & Verashchagina, 2009; Meulders, Plasman, Rigo & O'Dorchai, 2010). Kretanje broja objavljenih radova, bilo da je reč o horizontalnoj segregaciji (koja podrazumeva neravnomernu distribuciju žena ili muškaraca po profesijama i sektorima ekonomske aktivnosti), ili o vertikalnoj tj. hijerarhijskoj segregaciji (koja se odnosi na prekomernu zastupljenost ili podzastupljenost određenog pola na najvišim pozicijama unutar profesija, ili sektora ekonomske aktivnosti, zbog koje postoje razlike između polova u pogledu dohotka, statusa, stabilnosti posla), je relativno slično. Tako je, na primer, tokom 80-ih godina XX-og veka broj radova o horizontalnoj segregaciji bio konstantan (na nivou od dvadesetak godišnje), i neznatno veći nego za pitanja vertikalne segregacije. Tokom 1990-ih su oba pitanja privlačila podjednaku pažnju, a broj publikacija se na godišnjem nivou povećao na pedesetak. Primetnije povećanje interesovanja uočeno je nakon 1995, a naročito u XXI-om veku, budući da se broj radova u odnosu na 1990-te uvećao skoro tri puta (naročito onih iz domena vertikalne segregacije).

Bez obzira o kom tipu segregacije je reč, u literaturi se tvrdi (Meulders i drugi, 2010) da je početkom ove decenije još uvek postojala blaga dominacija radova fokusiranih na konceptualno proučavanje problema i pregled najnovije literature. Kad je reč o empirijskim istraživanjima, koja su u poslednjih nekoliko godina dobila na značaju, ona (po pravilu) započinju deskriptivnim pregledom koji se zasniva na dostupnim statističkim podacima (bilo opšteg karaktera ili onih koje nude registri odgovarajućih institucija). Osim analize reprezentativnog uzorka, istraživači preferiraju oslanjanje na mikro podatke (koji se koriste u skoro 40% svih publikacija o horizontalnoj, te skoro polovini publikacija o vertikalnoj segregaciji). Ti podaci mogu pokrivati udele oba pola na različitim obrazovnim nivoima, u različitim naučnim oblastima, po različitim zanimanjima i sektorima ekonomske aktivnosti, duž raznolikih hijerarhijskih nivoa i slično. Na osnovu raspoloživih podataka, vrši se izračunavanje stepena segregacije korišćenjem raznolikih metodoloških postupaka (Bettio & Verashchagina, 2009), najčešće indeksa/indikatora koji, između ostalog, prate razlike između polova u zapošljavanju po sektorima, distribuciju muškaraca i žena po profesijama (zanimanjima), udele žena u svim nastavnim zvanjima u poređenju sa njihovim udelom u najvišem zvanju i slično.

Najveći broj istraživanja posvećenih bilo kom od ova dva vida rodne segregacije pomenuti problem proučava u sektoru visokog obrazovanja (za razliku od drugih institucionalnih sektora - javnog i privatnog - koji nisu predmet interesovanja za ove teme), a analize otpočinju proučavanjem trendova koji egzistiraju na različitim nivoima tercijarnog obrazovanja (o udelima žena u broju upisanih i diplomiranih studenata). Postojanje nekog oblika *spillover* efekta u višim ciklusima obrazovanja generalno se pripisuje potencijalnim koristima od sticanja master i doktorskih diploma. Međutim, iako je porast udela žena u strukturi doktoranada očigledan u svim poljima nauke, koncentracija žena i muškaraca se razlikuje po oblastima studija (Nielsen, 2015).

Odnos snaga među polovima imao je uticaja i na intenzitet proučavanja različitih vidova rodne segregacije. Tako su, na primer, za razliku od zapadnih zemalja, u Istočnoevropskim zemljama pitanja bilo kog oblika nejednake distribucije žena i muškaraca počela da interesuju istraživače tek u XXI-om veku. U literaturi se to obrazlaže vrlo oprečnim tumačenjima. S jedne strane se tvrdi da je udeo visokokvalifikovanih žena u nauci i pre tranzicionog perioda bio veliki (zbog istorijskog nasleđa koje je potenciralo važnost obrazovanja), usled čega je barem horizontalna segregacija bila manje izražena u ovoj grupi zemalja (European Commission, 2012), te nije bilo razloga za njeno aktualizovanje i/ili proučavanje. S druge strane, objašnjava se da je, uprkos društvenoj demokratizaciji, podređenost žena duboko ukorenjena u hrišćanskoj kulturi koja je bazirana na

tradicionalnoj podeli rodnih uloga. Faktički, za razliku od zapadnih zemalja, ovo pitanje se ne analizira, ne zato što rodna segregacija ne postoji, već zbog toga što ključni akteri kojih se to tiče nisu aktualizovali dati problem: žene ne preispituju tradicionalna ideološka predubeđenja, „pomirile" su se sa svojom pozicijom kao prirodnom posledicom njihove dualne uloge, te biraju zanimanja koja se manje valorizuju i generalno ispoljavaju nisku senzitivnost na nejednak tretman (Blagojević, Bundule, Burkhardt i drugi, 2003). Otuda, uprkos feminizaciji pojedinih disciplina (žene su skoncentrisane u društvenim naukama, pedagogiji, medicini), (Stöckelová & Linková, 2008), nauka i dalje muška aktivnost (Palasik & Papp, 2008). Mada žene dominiraju među diplomcima, a njihov udeo raste i među univerzitetskim osobljem (čak i onim najvišeg ranga), (European Commission, 2012), razvoj karijere vrlo mnogo zavisi od polja istraživanja, te su oba vida segregacije prisutna. Pored toga, tranzicioni period je označio početak izmena u sistemu finansiranja istraživačkih institucija, smanjenju broja istraživača, promenama formalnih i ostalih kriterijuma kojima se sagledava naučna produktivnost, brojnim zakonskim rešenjima koja su se ticala insitucionalne strukture sistema obrazovanja i slično (Meulders i drugi, 2010). Iako su ove promene podjednako uticale na oba pola, posledice tranzicije su bile pogubnije za osetljiviju - žensku populaciju. Oni segmenti koji su u doba socijalizma bili feminizirani (školstvo, zdravstvo), ostali su takvi: budući da predstavljaju deo ekonomski siromašnog državnog sektora, neatraktivni su za muškarce koji se odlučuju za isplativija, profitabilnija zanimanja) (Blagojević i drugi, 2003). Stoga je skorašnje interesovanje za rodnu segregaciju prouzrokovano formalno njenom većom vidljivošću i očitošću, a suštinski njenim produbljivanjem.

Nezavisno od svega navedenog, u literaturi o horizontalnoj segregaciji su se, načelno, izdvojila dva šira područja istraživanja:

- obrazovna segregacija - razlika između dva pola po oblastima studija; i
- segregacija na tržištu rada, u naučnim ili istraživačkim zanimanjima i sektorima ekonomske aktivnosti.

Obrazovna segregacija podrazumeva preveliku ili premalu zastupljenost muškog ili ženskog pola u određenom polju studija, što nam omogućava da otkrijemo eventualnu (de)feminizaciju ili (de) maskulanizaciju određene naučne oblasti. Ovakvi uvidi su neophodni jer se razlike ispoljene u slučaju obrazovne segregacije prelivaju i na tržište rada, usled čega se opstajanje rodne segregacije u nauci objašnjava rodno opredeljenim izborom studija. Otuda je fenomen horizontalne segregacije najviše istraživan u naučnim oblastima, u kojima je dominacija muškog pola naglašenija (poput prirodnih ili tehničkih nauka).

Većina raspoloživih podataka o vertikalnoj segregaciji se, takođe, odnosi na sektor visokog obrazovanja, naročito akademski sektor. Obrazovna dostignuća žena (porast njihovog udela u broju diplomiranih na svim nivoima studija), nisu vodila korespondirajućem povećanju njihovog učešća na pozicijama u akademskoj hijerarhiji. Naprotiv, njihov udeo stagnira, ili se smanjuje svuda u Evropi (Danell & Hjerm, 2012). Ova saznanja su poslužila kao potvrda stava da je rodna emancipacija nekako najkasnije ostvarena u oblasti visokog obrazovanja, u kojoj na top pozicijama akademske hijerarhije još uvek dominira jači pol (Hargens & Long, 2002; Popović i Duhaček, 2009; Timmers, Willemsen & Tijden, 2010), odnosno da se polna struktura na fakultetima (kao statusno najcenjenijim naučno-nastavnim ustanovama) najsporije menja (Prpić, 2003).

Iako je ovaj oblik nejednake distribucije žena i muškaraca predmet izučavanja u različitim poljima nauke, poput medicinskih (Crompton & Lyonette, 2007), ili po pojedinim disciplinama u okviru naučnih oblasti: stomatologija (Murray, 2002), arhitektura (Caven, 2006), pitanjima vertikalne segregacije je najveća pažnja posvećivana u polju društvenih nauka. Osnovni razlog za to leži u činjenici da su žene u ovim oblastima dominantne, te se sociološka literatura u zapadnim zemljama angažovala u bavljenju pomenutom problematikom, nudeći obilje slikovitih izraza za opisivanje celine, ili segmenata iste. Tako je, na primer, samo postojanje hijerarhijskih rodnih uloga najčešće nazivano polnom diferencijacijom (Prpić, 2003; Marschke, Laursen, McCarl, Nielsen & Rankin, 2007), a u retkim situacijama i polnom

diskriminacijom (Knights & Richards, 2003; Popović i Duhaček, 2009). Pri objašnjavanju faktora usled čijeg dejstva žene ostaju na nižim nivoima hijerarhijske piramide, upotrebljava se izraz klizav pod (*sticky floor),* (Peterson, 2014), prisustvo nevidljivih, ali nepremostivih, prepreka koje sprečavaju uspon žena duž karijerne lestvice označava se terminom stakleni plafon (*glass ceiling*) (European Commission, 2015)[1] ili metaforom lavirint (Eagly & Carli, 2007), a ukoliko se analiziraju konsekvence koje inducira polna diferencijacija i/ili diskriminacija (sve manje prisustvo žena na višim nivoima akademske hijerarhije) u literaturi se preferira naziv iščezavanje (kao relativno pogodna zamena za prevod engleskog izraza *leaky pipeline*) (Langberg, 2006).

Svakako, nedovoljna zastupljenost žena na višim pozicijama je startna tačka u diskusijama o vertikalnoj segregaciji, a istraživanja nadalje teku u nekom od sledećih smerova: ustanovljavanje uzroka vertikalne segregacije (nepostojanje jednakih prilika za oba pola) (Benschop & Brouns, 2003; Probert, 2005), proučavanje mehanizama zahvaljujući kojima ona opstaje i perpetuira se (unutrašnja organizacija univerziteta i fakulteta, ali i društveni faktori (poput neprilagođenosti kulturnog obrasca), koji kreiraju destimulativno okruženje pogodno za etabliranje obrasca vertikalne segregacije (Bain & Cummings, 2000; Marschke i drugi, 2007; Jackson & O' Callaghan, 2009). Empirijska iskustva potvrđuju i nalaze o kumulativnom karakteru efekata rodne pristrasnosti. Drugim rečima, efekti rodne stratifikacije su po prirodi aditivni, disproporcionalno utiču na žene i pogoršavaju se sa njihovim napredovanjem u karijeri (Eagly & Carli, 2007).

Iako su pitanja oba vida segregacije prisutna u naučnim bazama i rodnim studijama, a proučavanja su skoncentrisana na sektor visokog obrazovanja, zbog postojanja mnoštva opštih i onih specifičnih tema, većina istraživanja sadrži izvesna ograničenja: uglavnom su usredsređena na jednu zemlju i/ili na jednu fazu, a ne celokupan sistem obrazovanja (od upisa na studije do kraja akademske karijere), studije koje se bave izračunavanjem indikatora segregacije ne sadrže druge (kvalitativne) pokazatelje, sprovedena istraživanja nisu upotrebljavana za proučavanje efikasnosti postojećih politika rodne ravnopravnosti, niti za njihova eventualna unapređenja (Bettio & Verashchagina, 2009).

Izvesno je da je kreatorima valjanih javnih politika u ovom domenu neophodan realni opis stvarnog stanja - o nedovoljnoj reprezentativnosti žena ili po zanimanjima ili unutar određene profesije po hijerarhijskim nivoima. Ispostavilo se da su podaci koji omogućavaju analizu segregacije oskudni i/ili neodgovarajući. Harmonizovani izvori podataka (poput Evropskog pregleda o istraživanju i razvoju, baza podataka Unesco ili OECD o obrazovanju), su najčešće neadekvatni za ovakav tip analize. Da bi vlade bile u stanju da razviju adekvatne i efikasne politike u ovoj oblasti, Evropska unija (EU) je inicirala prikupljanje disagregiranih podataka o ženama u nauci i istraživanju, na osnovu kojih je nastala baza podataka o ženama u nauci (*Women in Science*). Međutim, ni ova baza nije uspela sa uspostavljanjem kompletnog skupa podataka za sve evropske zemlje. Stoga je, od 2003, Evropska komisija na svake tri godine počela da objavljuje izveštaje (pod nazivom *She Figures*) koji objedinjuju podatke Eurostata (Statističke službe EU) i primarne podatke u cilju istraživanja nivoa napretka u pravcu ravnopravnosti polova u istraživanju i inovacijama u Evropi (European Commission, 2015). To je glavni izvor uporedivih statističkih podataka o zastupljenosti žena i muškaraca među doktorandima, istraživačima i akademskim donosiocima odluka i polazna tačka u sumiranju empirijskih nalaza o razmerama rodne segregacije na evropskom tlu.

OBRAZOVNA, HORIZONTALNA I VERTIKALNA SEGREGACIJA - EMPIRIJSKI NALAZI

Globalne i evropske inicijative, intenzivirane devedesetih godina XX-og veka, pokrenule su brojne reforme u oblasti rodne ravnopravnosti. Njihovi rezultati, ipak, nisu podjednako dobri, niti ujednačeni u svim domenima ove problematike. Naime, primetan je nesumnjiv napredak u pogledu izbalansiranosti polova na nivou visokoobrazovanog

pula. Učešće žena u studentskoj populaciji na nivou EU veće je od učešća muškaraca, a one brže i sa boljim rezultatima završavaju studije. Prema najnovijem izveštaju o jednakosti polova koje objavljuje Evropska komisija (European Commission, 2015), žene su činile 55% upisanih i 59% svih diplomiranih studenata. Pored toga, povećalo se učešće žena u strukturi onih koji završavaju doktorske studije - one su na nivou EU-28 činile 47% svih doktora nauka, mada ova veličina po zemljama varira od 40 do 60%. Prema podacima Republičkog zavoda za statistiku, žene danas čine 55,36% upisanih na sve nivoe studiranja u RS, te 57,84% diplomiranih studenata (na osnovnim akademskim studijama ove veličine iznose 56,18% i 56,47%, respektivno). Kad je reč o master i doktorskim studijama, njihovi udeli su u kategoriji upisanih 60,77% i 56,75%, a u kategoriji onih koji su stekli diplome pomenutih studija, učešće žena iznosi 60,57% i 48,04% (master i doktorati). Čini se, dakle, da RS sledi ono što je u literaturi opisano kao opšti trend, po kojem broj žena koje studiraju i diplomiraju na skoro svim nivoima obrazovanja nadmašuje broj muškaraca (Becker, Hubbard & Murphy, 2010). Na prvi pogled, ove podatke možemo tumačiti kao dokaz povećanja jednakosti polova u visokom obrazovanju, te kao indikator povećanja šansi, prilika i mogućnosti na planu karijere žena (Danell & Hjerm, 2012).

Ipak, činjenično stanje po pitanju drugih parametara relativizira navedene pozitivne promene i onemogućava donošenje jednoznačnih zaključaka. Za razliku od feminizacije studentske populacije, koja je prisutna zaključno sa master nivoom (kad broj žena premašuje broj muškaraca), u svakoj narednoj iteraciji situacija se menja u korist muškaraca (broj upisanih na doktorske studije, procenat muškaraca/žena koji su okončali doktorske studije). Čak i kada se segregacija smanjuje na najvišem nivou tercijarnog obrazovanja (kroz približavanje paritetnom odnosu između polova među doktorandima), na tržištu rada je nedovoljna zastupljenost istraživača ženskog pola i dalje očigledna širom EU.

Ako posmatramo istraživače u svim sektorima zajedno (visoko obrazovanje, javni, biznis i neprofitni sektor), u najvećem broju zemalja udeo muškaraca istraživača je veći u odnosu na žene (European Commission, 2015). Izuzetak su Portugalija i Velika Britanija, dok u Srbiji udeo žena u ukupnom broju istraživača (u 2011) iznosi 49,35%. Faktički, muškarci u RS ispoljavaju blagu dominaciju u odnosu na žene ukoliko posmatramo privredu u celini (sve sektore zajedno) i situaciju u sektoru visokog obrazovanja, žene su brojnije u vladinom (javnom) sektoru (gde njihovo učešće iznosi 55,9%), dok u biznis sektoru one čine nešto ispod trećine ukupnog broja istraživača.

Sektor visokog obrazovanja predstavlja glavni izvor zapošljavanja istraživača u EU: od svih žena istraživača, njih 64% radi upravo u ovom sektoru; muškarci su se, takođe, dosta skoncentrisali u ovoj oblasti (čak 46% svih muških istraživača), ali i u biznis sektoru (44%). Koncentracija žena u sektoru visokog obrazovanja, ali i u javnom sektoru u RS je još izraženija. Tabela 1 prikazuje distribuciju žena istraživača u EU i RS za 2012. i 2013, respektivno, po sektorima ekonomske aktivnosti:

Tabela 1 Distribucija žena istraživača po sektorima ekonomske aktivnosti, EU i Srbija

Sektori privrede	EU (% žena od ukupnog broja istraživača ženskog pola)	Srbija (% žena od ukupnog broja istraživača ženskog pola)
Biznis sektor	22.0	3.06
Javni sektor	12.5	24.50
Sektor visokog obrazovanja	64.1	72.40
Neprofitni sektor	1.4	0.04

Izvor: European Commission, 2015; Autori, na osnovu podataka Statističkog godišnjaka Republike Srbije, 2015.

Najveći broj istraživača ženskog pola u RS, kao i u EU, radi u sektoru visokog obrazovanja - približno 72,4% (što je nešto manje nego 2011, kad je skoro tri četvrtine svih žena istraživača bilo angažovano u ovom sektoru privrede). Ipak, za razliku od proseka EU, gde je više od petine svih žena istraživača angažovano u biznis

sektoru, u RS je situacija posve drugačija: skoro četvrtina svih žena istraživača radi u javnom sektoru, a samo 3% njih u biznis sektoru. Međutim, i muškarci preferiraju da budu angažovani kao istraživači u sektoru visokog obrazovanja: čak 78% svih istraživača muškog pola u RS radi u pomenutom sektoru. Dakle, ukoliko i žene i muškarci inkliniraju zapošljavanju u sektoru visokog obrazovanja, šta dobijamo kao rezultat konkurencije između njih?

Generalno govoreći, u sektoru visokog obrazovanja u većini zemalja Evrope (uključujući i RS), verovatnije je da će muškarci (nego žene) biti angažovani kao istraživači, dok žene imaju veće šanse da se uposle kao tehničko i osoblje podrške (European Commission, 2015). Prosek EU-28 je 41%, koliko iznosi udeo žena u ukupnom broju istraživača u sektoru visokog obrazovanja. RS je ovde bolja od proseka EU, jer taj procenat iznosi 47,8%, što se može zaključiti i na osnovu prosečne godišnje stope rasta istraživača u sektoru visokog obrazovanja: procenjene vrednosti su na nivou EU-28 iznosile 4,4% za muškarce i 2,3% za žene (u periodu 2005-2012), a u RS 5,9% za muškarce i 9,8% za žene (u periodu 2008-2011). Faktički, za razliku od situacije u RS, u kojoj je udeo žena u strukturi doktoranada i istraživača u visokom obrazovanju relativno ujednačen, na nivou EU-28 poređenjem obrazovnih dostignuća žena i njihove pozicije na tržištu rada se uočava postepena defeminizacija. Da li su ovakvi trendovi prisutni i kad je reč o vrhunskim istraživačima?

Ukoliko posmatramo položaj žena u nauci na nivou EU-28, primetno je da on varira prema njihovoj poziciji na karijernoj lestvici - udeo žena se značajno smanjuje na svakom narednom, višem nivou, što je indikator stepena vertikalne segregacije (European Commission, 2015). Žene čine tek 21% ukupnog broja redovnih profesora, odnosno 37% od ukupnog broja vanrednih profesora i 45% ukupnog broja docenata; takođe, udeo žena u kategoriji redovnih profesora je daleko bolji u društvenim naukama (23,5%) u odnosu na prirodne i tehničke nauke (gde isti iznosi svega 13%); indeks staklenog plafona se, uprkos tendenciji smanjivanja, zadržao na relativno visokom nivou od 1,78.

Budući da evropske statistike ne raspolažu podrobnim podacima za RS, da bismo ustanovili kakvo je stanje na planu hijerarhije rodnih uloga, istraživanje smo otpočeli analizom statistike zastupljenosti oba pola u strukturi nastavnog osoblja.

Prema agregatnim podacima za 2015, učešće žena u ukupnom nastavnom osoblju je iznosilo 46,67%, pri čemu one dominiraju u strukturi saradnika (sa udelom od 54,25%), dok je njihovo učešće u strukturi nastavnika 43,14% (Republički zavod za statistiku, 2015). Ovi šturi podaci nagoveštavaju da se i u RS, kad je reč o vrhunskim istraživačima, primećuje izvesna defeminizacija nauke. No, za podrobnije istraživanje razmera vertikalne segregacije u akademskom sektoru, neophodni su deskriptivni pregled i statistika zastupljenosti oba pola na različitim hijerarhijskim nivoima. U tu svrhu se naša studija morala osloniti i na mikro podatke, dobijene na zahtev za potrebe ovog istraživanja od Ministarstva prosvete, nauke i tehnološkog razvoja. Podaci kojima smo raspolagali uključivali su sledeće parametre: pol, godina rođenja, profesionalne kvalifikacije, gde i kada je stečeno obrazovanje, institucija koja je izdala diplomu, naučno zvanje, godina sticanja zvanja, afilijacija, vrsta posla (puno radno vreme, honorarni posao). Na osnovu raspoloživih podataka, distribucija žena u akademskoj hijerarhiji može se posmatrati po naučnim oblastima, fakultetima, za jedan ili više univerziteta. No, budući da ne postoji uporedivost naučnih zvanja u višem i visokom obrazovanju, niti između institucija u različitim svojinskim režimima (privatni vs državni fakulteti), opredelili smo se da prikažemo položaj žena u akademskoj hijerahiji na državnim univerzitetima u RS. Proučavali smo prisustvo žena u različitim oblastima nauke, upravo na onim pozicijama u akademskoj hijerarhiji (A, B i C, respektivno redovni profesor, vanredni profesor, docent), na kojima one u evropskim okvirima iskazuju manja učešća. Tabela 2 prikazuje procentualne udele žena u pomenutim zvanjima po grupacijama prirodno-matematičkih, medicinskih, tehničko-tehnoloških, društveno-humanističkih nauka i u polju umetnosti.[2] U poslednjem redu izračunavamo indeks staklenog plafona, koji poredi udeo žena na svim nivoima ukupno (od docenta do redovnog), sa udelom žena u grupaciji redovnih profesora.

Tabela 2 Udeli žena (u svim zvanjima, pojedinačno i ukupno), u različitim naučnim oblastima

Zvanja	Prirodne nauke	Medicinske nauke	Tehničke nauke	Društveno-humanističke nauke	Umetnost	Sve naučne oblasti
Ukupno (A, B, C)	51	53	33,4	48,9	46,1	45,1
Redovni profesor (A)	44	49,8	25,4	43,9	39,3	38,6
Vanredni profesor (B)	51	50,2	38,1	47,6	45,8	46
Docent (C)	56,7	58,6	38,8	55,4	56,3	51
Indeks staklenog plafona	1,16	1,06	1,31	1,11	1,18	1,17

Izvor: Autori, na osnovu mikro podataka Ministarstva prosvete, nauke i tehnološkog razvoja Republike Srbije

Pošto ovaj tabelarni pregled pruža tek grubu skicu stanja i pozicioniranja žena u akademskoj hijerarhiji, neophodno je dodati nekoliko napomena, koje ukazuju na specifičnosti unutar pomenutih oblasti nauke.

Neznatna dominacija žena iz oblasti prirodnih nauka u kategoriji vanrednih profesora, a posebno njihova izražajnija prisutnost u zvanju docenta, dogodila se zahvaljujući fakultetima koji ne pripadaju Univerzitetu u Beogradu. S druge strane, na fakultetima Univerziteta u Beogradu, prisustvo žena na svim nivoima je relativno više ujednačeno (nema ekstrema među zvanjima, njihov procenat se kreće između 43% i 54%).

Žene su dosegle paritet u zvanjima vanrednog i redovnog profesora, te imaju izrazito dobru poziciju u docentskom zvanju unutar korpusa medicinskih nauka (faktički, u najnižem nastavničkom zvanju njihova pozicija je bolja u odnosu na sve druge grupacije nauka), položaj žena je naročito dobar u oblasti farmacije (gde dominiraju u svim naučnim zvanjima). Samo u jednom slučaju (iz oblasti medicine), imamo situaciju u kojoj su žene prisutnije na nivou A nego ukupno u strukturi nastavnika (što znači da indeks staklenog plafona ima vrednost manju od 1). U oblasti stomatologije udeo žena u docentskom zvanju dostiže nivo od 60%, dok one još uvek predstavljaju manjinu čak i u tom zvanju u oblasti veterine.

Sudeći po podacima, tehničko-tehnološke nauke očigledno ne predstavljaju najpoželjniju oblast u kojoj bi žene trebalo da grade karijeru. Međutim, postoje razlike između disciplina koje pripadaju ovoj grupaciji nauka. Tehnologija ili poljoprivreda mogu biti pravi izbor za njih, budući da (u proseku) žene dostižu udeo od oko 40%; sa izuzetkom kategorije redovnih profesora, ista tvrdnja bi se mogla izreći i za arhitekturu. Ako posmatramo elektrotehniku, rezultati se razlikuju po fakultetima i univerzitetima, te nisu pogodni za iznošenje nedvosmislenih zaključaka u pogledu karijernog napredovanja žena. Za izvesne discipline, poput mašinstva, građevine i posebno rudarstva i geologije, nesumnjivo se može tvrditi da su dominantno muške.

U korpusu društvenih i humanističkih nauka žene dominiraju u svim zvanjima na području jezika (ponekad do nivoa od dve trećine); dominacija žena je prisutna u zvanjima vanrednog profesora i docenta u oblasti obrazovanja. Žene su u manjini na sportskim fakultetima (sa udelima ispod 20% u kategoriji redovnih profesora do približno trećine u zvanju docenta). Iako postoje neki izuzeci (gde indeks staklenog plafona ima vrednost manju od 1), ukupno posmatrano žene nisu dostigle paritet na izvesnom broju fakulteta u određenim disciplinama društvenih nauka, poput prava, političkih nauka i većine ekonomskih fakulteta.

Izračunavanjem jednostavnog indeksa staklenog plafona, koji meri udeo žena u svim naučnim zvanjima naspram njihovog udela u zvanju redovnog profesora, ustanovili smo da je ženama kretanje ka višim pozicijama znatno otežano u oblasti tehničkih nauka, a da je njihova mogućnost napredovanja najizglednija u polju medicinskih nauka.

ZAKLJUČAK

Zaokret u akademskom tretiranju problema rodne ravnopravnosti dogodio se 70-ih godina XX-og veka u studijama sociološke orijentacije. Zahvaljujući tome, u narednim decenijama je proučavanje različitih vidova rodne segregacije posebno aktualizovano. Izuzetak u pogledu pažnje koja je ovom pitanju posvećivana su istočnoevropske zemlje (uključujući i Republiku Srbiju), u kojima su tek početkom XXI-og veka istraživači ispoljili zainteresovanost za ovu temu. Bez želje da arbitriramo u vezi sa oprečnom argumentacijom da li je zakasnelo interesovanje objektivno uslovljeno (zato što segregacije nije bilo), ili je subjektivno determinisano (ni žene uopšte, a ni naučna javnost nisu to preispitivali), činjenica je da je isto uzrokovalo situaciju u kojoj postoji deficit ovakvih istraživanja (i na teorijskom i na empirijskom planu). Ova studija bi, u tom smislu, mogla predstavljati skroman doprinos da se pomenuti deficit smanji, ili barem ublaži, budući da predstavlja pionirski poduhvat u proučavanju prenebregnutog problema distribucije žena u nauci prema njihovoj poziciji na karijernoj lestvici. Dobijeni nalazi se mogu upotrebiti, prevashodno, kao korektan supstitut za nedostajuće podatke, te kao takvi poslužiti kao polazna osnova u kreiranju odgovarajućih politika rodne ravnopravnosti.

Analizirajući faktičko stanje u pogledu razmera različitih vidova rodne, a pogotovo hijerarhijske segregacije u oblasti visokog obrazovanja u RS, osim agregatnih podataka iz evropskih i domaće statistike, u najvećoj meri smo se oslonili na mikropodatke Ministarstva prosvete, nauke i tehnološkog razvoja o pregledu zvanja na visokoškolskim institucijama. Osnovni zaključci do kojih smo došli su sledeći:

- Ranije izražen trend naglog osipanja udela žena u narednim ciklusima obrazovanja (master i doktorskim studijama) je zaustavljen i danas poprima potpuno drugačiji tok. I na najvišem nivou tercijarnog obrazovanja žene bi uskoro mogle postići paritet: njihovi udeli u strukturi doktora nauka na nivou EU-28 i RS iznose 47% i 48%, respektivno.

- Za razliku od manjeg, ili većeg stepena feminizacije studentske populacije, situaciju na tržištu rada karakterišu prvi znaci maskulanizacije (tj. defeminizacije). Nejednaka distribucija žena i muškaraca pri zapošljavanju u sektoru visokog obrazovanja je, ipak, očitija na nivou EU-28 nego u RS (respektivni udeli žena iznose 41% i 47,8%).

- Podzastupljenost žena postaje izraženija u svakoj narednoj iteraciji duž karijerne lestvice, samo su njene razmere različite. Situacija u RS je bolja kada je reč o nižim naučnim zvanjima: žene blago dominiraju u kategoriji docenata (sa udelom od 51%), a u kategoriji vanrednih profesora se polako približavaju paritetu (sa udelom od 46%); na nivou EU ove veličine iznose 45% i 37%, respektivno; ipak, ova poređenja treba uzeti sa rezervom, pošto se definicije nivoa C i B (docenata i vanrednih profesora) razlikuju među zemljama; najmerodavnije je poređenje na nivou A, pošto isti korespondira rangu redovnih profesora u najvećem broju zemalja.

- Akademsku karijeru žena u EU karakteriše snažna vertikalna segregacija: udeo žena u kategoriji redovnog profesora iznosi 21%, a indeks staklenog plafona je 1,78. Iako razmere ovog vida segregacije u RS nisu u toj meri ekstremne, budući da je udeo žena u strukturi redovnih profesora (posmatrano za sve naučne oblasti), 38,6%, a indeks staklenog plafona 1,17, dokazali smo našu hipotezu o podzastupljenosti žena u najvišem naučnom zvanju akademske hijerarhije.

Činjenica da obrazovna postignuća žena u RS nisu vodila korespondirajućem povećanju njihovog učešća na odgovarajućim pozicijama u akademskoj hijerarhiji prevazilazi pitanja hijerarhijske segregacije *per se*. Podzastupljenost žena u višim zvanjima, zapravo,

ukazuje na nedovoljnu i/ili neadekvatnu iskorišćenost resursa (ljudskog kapitala), usled čega se prethodna obrazovna ulaganja ne materijalizuju u potpunosti, te problem defeminizacije nauke prerasta u pitanje sa potencijalno širim ekonomskim i društvenim konsekvencama.

Analiza sadrži određena ograničenja. Neka od njih su objektivno uslovljena, poput načina kategorizacije naučnih oblasti, što je moglo imati izvesnog uticaja na uporedivost podataka za RS sa onima za EU. Druga su svojstvena istraživanjima sličnog karaktera: budući da je fokusirana na državne univerzitete, studija nudi nepotpunu sliku o poziciji žena u celokupnom sistemu visokog obrazovanja u RS; pored toga, ona se ne bavi obrazovnom segregacijom na način koji bi omogućio uočavanje zakonitosti u pogledu prelivanja efekta defeminizacije sa nivoa tercijarnog obrazovanja (usled izbora polja studija) na postojanje manje ili više izražene vertikalne segregacije u određenim naučnim oblastima. Stoga bi neko naredno istraživanje pitanja rodne segregacije valjalo usmeriti tako da se navedeni propusti otklone.

ZAHVALNICA

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ENDNOTE

1 Raspon ovog indeksa je od nula do beskonačno. Ukoliko iznosi 1, to znači da nema razlike između žena i muškaraca u pogledu šansi za unapređenje. Ukoliko je manji od 1 to znači da su žene više prisutne u grupaciji redovnih profesora nego u sva tri zvanja ukupno, a ukoliko je veći od 1 to indicira da postoji efekat staklenog plafona - žene su manje prisutne među redovnim profesorima nego ukupno u strukturi nastavnog osoblja. Drugim rečima, što je veća vrednost ovog indeksa, veći je efekat staklenog plafona i ženama je teže da se „kreću" ka višim pozicijama.

2 Evropske statistike prate zastupljenost žena i muškaraca u sledećim naučnim oblastima: prirodne nauke, medicinske nauke, inženjering i tehnologija, poljoprivreda, društvene i humanističke nauke. Naša kategorizacija naučnih oblasti je nešto drugačija i determinisana je ne samo ograničenjima raspoloživih mikro podataka, već i činjenicom da drugi državni univerziteti u Srbiji (Kragujevac, Niš, Novi Sad, Novi Pazar, Priština-Kosovska Mitrovica) ne razvrstavaju fakultete po naučnim oblastima. Stoga smo se opredelili za kategorizaciju koja egzistira na Univerzitetu u Beogradu, a koja fakultete svrstava unutar gore pomenutih grupacija.

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VERTICAL SEGREGATION IN HIGHER EDUCATION - THE CASE STUDY OF THE REPUBLIC OF SERBIA

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The gender role hierarchy in the Republic of Serbia is an inspirational topic on several grounds: first, this is a specific issue within a wider gender equality problem, which has recently become the priority of structural reforms; second, it is a separate segment of gender segregation, the research issue unjustifiably ignored by the domestic academic community; finally, it is just a piece of the "puzzle" that reflects the situation in the gender inequality field, but exactly the one which neither national nor European statistics provide detailed information for. The above-mentioned reasons represent the basic motivation for writing this paper. In order to determine whether the position of women in science varies according to their position on the career scale, as it usually happens all over Europe, we shall examine the situation in the higher education system in the Republic of Serbia. That is why we apply the methodological procedures of descriptive statistics to the micro-data obtained from the Ministry of Education, Science and Technological Development in order to calculate the following relative indicators: the teaching staff structure by gender and grades across different fields of science and the glass ceiling index. We believe that such a relatively precise insight into the range of vertical segregation could be useful in conceiving future initiatives aimed at the systemic introduction of a gender perspective in the adoption, implementation and monitoring of public policies.

Keywords: gender equality, gender segregation, vertical segregation, horizontal segregation, higher education, the Republic of Serbia

JEL Classification: I23, I24, J16