GENDER INEQUALITIES IN REMUNERATION OF SOCIAL WORKERS – CLUSTERS OF SELECTED EU COUNTRIES

Rodové nerovnosti v odmeňovaní – klastre vybraných krajín EÚ

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ABSTRAKT

Problematika rodových rozdielov má v histórii hlboké korene. Tieto problémy sa ďalej premietajú do sociálneho prostredia a jednotlivých sociálnych vzťahov. Muž je na základe svojich fyzických daností vnímaný ako vodca, žena je prirodzene chápaná ako podriadená svojmu vodcovi. Toto tvrdenie pretrváva v mnohých krajinách ešte aj v 21. storočí a spôsobuje nerovnosti v sociálnom prostredí. Skúmanie rodových diferencií je preto stále aktuálna téma, dotýkajúca sa nerovnosti žien a mužov na pracovisku s čím súvisí ich nerovnomerné a často diskriminujúce odmeňovanie. Príspevok je zameraný na zhlukovanie vybraných krajín EÚ vzhľadom na vybraný ukazovateľ, ktorý odzrkadľuje rozdiel v odmeňovaní mužov a žien. Téma rodových rozdielov a jeho reflexia v sociálnej práci patrí stále k aktuálnym témam, ktorým je potrebné venovať pozornosť. Problematika rodových rozdielov je súčasťou sociálnej práce, kde existuje stále priestor na realizovanie výskumov a štúdií venovanej tejto problematike.

Kľúčové slová: Rodová nerovnosť. Diskriminácia. Klastrovanie. Odmeňovanie. Sociálna práca.

ABSTRACT

Gender differences are deeply rooted in history and are also reflected in the social environment and individual social relationships. Based on his physical abilities, a man is perceived as a leader whereas a woman is naturally understood as being subordinate to her leader. This claim persists in many cultures even in the 21st century and it causes social inequalities. The present research on gender differences is therefore a topical issue, touching on inequality between women and men in workplaces manifested in their unequal remuneration, often discriminatory to women. The present study focuses on the clustering of selected EU countries in relation to a specific indicator that reflects the remuneration reflecting gender inequalities. Since this topic is included in social work, it needs to be addressed and further explored.

Key words: Gender Inequality. Discrimination. Clustering. Regarding. Social work.

INTRODUCTION

Enhancing the economic status of women worldwide is a global challenge. Quite a few studies show that merely 50% of women at their working age are employed and earn 24% on average less than men. Moreover, working women are excessively busy because they also perform household chores meaning they work almost two and a half times more when compared to men. Cultures or communities consciously adhere to the tradition according to which a woman ought to be a homemaker. Unfortunately, in some countries, there is no political will to diminish gender inequalities. The issue has been included in global political agenda as gender discrimination hampers the economic development. We have been exploring this issue for a long time. In the present research, we first decided to find out in which cluster

Slovakia could be included with regard to the gender wage gap. The performance of economies and the involvement of men and women in the economic activities have been beyond the scope investigation. The present paper introduces the clustering, which will be further elaborated with regard to the specific economies in a shared cluster.

1 Gender inequality and its impact on women

Most companies define men and women differently. They identify the concept of gender with that of sex. Although these two concepts are seemingly identical, scholars perceive them differently. Jandourek (2003) argues that men and women differ in two aspects. The former one concerns biological and physiological differences determined by an individual's genetic predispositions and these differences are pre-determined. The latter one concerns cultural and social circumstances which are changeable and created by individuals themselves. Gender socialization is a process taking place over an individual's lifespan (Jandourek 2003). On the other hand, sex is a biological concept based on biological characteristics (Saughton 2017), such as the difference in genitals between men and women. Gender however is primarily related to the personal, social and cultural perception of sexuality (Saughton 2017). It is therefore understood as the identification of socially anticipated roles fulfilled by men and women and the distinctions resulting from these characteristics. Gender identity is rooted in an individual's consciousness, whether they are male or female, given their biology and social role. Unfortunately, the superiority of the males over females dates back to the distant past and in some countries it is still applied (Kiczková a Kobová 2017).

In 1980, cultural anthropologist Hofstede, in identifying cultural dimensions, described how social classes in various cultures are affected by gender differences. These determine the social roles assigned to men and women. The women's, as his research showed, is solely that of a caretaker. Thus, the essential qualities attributed to women include obedience, responsibility and caring nature. On the other hand, men are encouraged to pursue their goals, independence and individuality. In many cultures, this perception was passed all the way down to the present generation and associated the women's role with their home and men's role with their workplace (Hofstede 1980). This perception has not been overcome therefore, women feel often frustrated by the lack of interest in their personalities. Their abilities are generally underestimated, as a result of which they tend to choose less demanding or menial jobs, despite their qualifications. There are very few women in governmental positions, e.g. women are under-represented in decision-making bodies and processes, especially in high-profile jobs. At present, women represent only 7.5% of the chairpersons of boards and 7.7% of the CEO's. In the *European Parliament*, women make up 39% of all MEPs and account for only 22% of AI programmers (*European Commission* 2020a). Even the results of the Special Eurobarometer survey confirm that up to 44% of Europeans think that the most important role of a woman is to take care of their home and family (*European Commission* 2017).

Frustration that women feel may often make them seek a sociotherapist's assistance so that they should not get into an emotionally strained situation. Dobšovič (2011) claims that the universal goal of sociotherapy should be the improvement of a person's quality of life by promoting their social security, independence, enhancing communication and re-engaging in their social network. The reason why this is to be stated is that sociotherapy means providing assistance to women in their career life, e.g., when they are victims of mobbing (so-called emotional abuse), bossing/staffing, or when they experience conflicts in their workplace; sociotherapy is also helpful in fixing dysfunctional interpersonal relationships. All of the abovementioned issues affect work performance, employee turnover, and loyalty. Gender equality is a key principle of *the European social rights*, a fundamental right and an essential value of *the European Union*. All the major challenges that the European Union currently faces are related to gender issues. In order

to achieve gender equality, it is necessary to include the gender perspective into all policies and processes of *the European Union* (*European Commission* 2020a). Currently, in the EU, women (*European Commission* 2020b) carry out 75% of unpaid care and domestic work. Another challenge concerns inequality in remuneration because there is still a significant pay gap between women and men (Heine 2015). Women in the EU earn 16% on average less per hour than men, and women's pensions are 30.1% on average lower than men's (*European Commission* 2020b).

The above-given aspect was the primary concern of the present research. Its main objective is to create clusters of countries and identify which cluster the *Slovak Republic* belongs to in terms of gender inequality and lower remuneration of women.

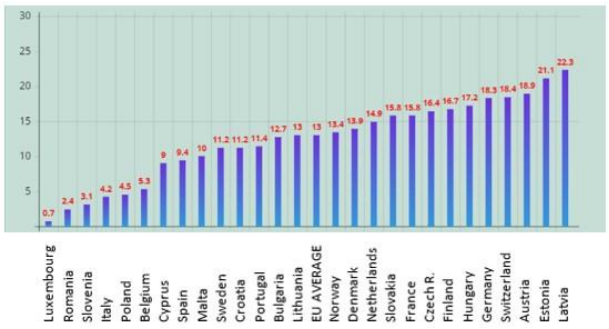
2 Research objectives and methods

The aim of the research was to identify clusters for selected EU countries in relation to a chosen indicator that reflects the gender pay gap. In addition to general logical methods, we used hierarchical agglomerative cluster analysis to meet the set objective. We chose the Ward's method as the clustering method. Ward's method of minimal dispersion is an agglomerative (merging) hierarchical method. With this method, the similarity of objects or clusters is measured as the sum of squares between objects from two clusters, summed across all attributes of the given objects. The uniqueness of the method lies in minimizing the amount of dispersion across all newly formed clusters. This means that we tried to create clusters for each generation in such a way as to maintain the highest possible degree of coherence within particular clusters. In order to determine the optimal number of clusters, we used a heuristic approach supplemented by a graphical assessment while using *Screeplot*. The data were extracted from *Eurostat* 2022 databases.

3 Results

In the analysis, as an indicator, we used an index measuring the difference between the average gross hourly earnings of male and female employees as a **percentage of the average gross hourly earnings of males**. The indicator provides an overall picture of gender inequalities in terms of remuneration and thus measures a concept that is broader than the concept of equal pay for equal work. The research included all employees working in companies with ten or more employees, while age differences and working hours in the selected EU countries were not taken into account. We analyzed the period 2010 – 2020 (see Figure 1 and/or Table 1).

Figure 1: Gender pay gap



Source: Data analyzed according to *Eurostat* (2022)

Tabel 1: Analyzed variables

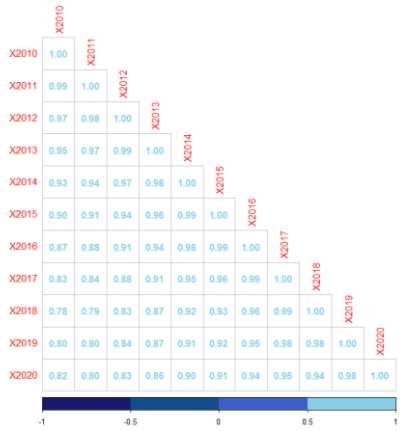
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
European Union - 27 countries (from 2020)	15,8	16,2	16,4	16	15,7	15,5	15,1	14,6	14,4	13,7	13
Euro area - 19 countries (from 2015)	17	17,3	17,6	17,1	16,8	16,5	16,2	15,7	15,3	14,6	14,1
Belgium	10,2	9,4	8,3	7,5	6,6	6,4	6	5,8	5,8	5,8	5,3
Bulgaria	13	13,2	15,1	14,1	14,2	15,5	14,6	14,3	13,9	14,1	12,7
Czech R.	21,6	22,6	22,5	22,3	22,5	22,5	21,5	21,1	20,1	19,2	16,4
Denmark	17,1	16,4	16,8	16,5	16	15,1	15,1	14,8	14,6	14	13,9
Germany	22,3	22,4	22,7	22,1	22,3	21,8	21,1	20,4	20,1	19,2	18,3
Estonia	27,7	27,3	29,9	29,8	28,1	26,7	24,8	24,9	21,8	21,7	21,1
Spain	16,2	17,6	18,7	17,8	14,9	14,1	14,8	13,5	11,9	9,4	9,4
France	15,6	15,7	15,6	15,5	15,5	15,6	15,9	16,3	16,7	16,2	15,8
Croatia	5,7	5,9	6,5	7,7	8,7	9,2	11,6	12,3	11,4	11,5	11,2
Italy	5,3	5,7	6,5	7	6,1	5,5	5,3	5	5,5	4,7	4,2
Cyprus	16,8	16,1	15,6	14,9	14,2	13,2	12,3	11,2	10,4	10,1	9
Latvia	15,5	14,1	14,9	16	17,3	18,4	19,7	19,8	19,6	21,2	22,3
Lithuania	11,9	11,5	11,9	12,2	13,3	14,2	14,4	15,2	14	13,3	13
Luxembourg	8,7	7,9	7	6,2	5,4	4,7	3,9	2,6	1,4	1,3	0,7
Hungary	17,6	18	20,1	18,4	15,1	14	14	15,9	14,2	18,2	17,2
Malta	7,2	7,7	9,5	9,7	10,6	10,7	11,6	13,2	13	11,6	10
Netherlands	17,8	18,8	18	17,2	17	16,1	15,6	15,1	14,7	14,6	14,2
Austria	24	23,5	22,9	22,3	22,2	21,8	20,8	20,7	20,4	19,9	18,9
Poland	4,5	5,5	6,4	7,1	7,7	7,3	7,1	7	8,5	6,5	4,5
Portugal	12,8	12,9	15	13,3	14,9	16	13,9	10,8	8,9	10,9	11,4
Romania	8,8	9,6	6,9	4,9	4,5	5,6	4,8	2,9	2,2	3,3	2,4
Slovenia	0,9	3,3	4,5	6,3	7	8,2	8,1	8,4	9,3	7,9	3,1
Slovakia	19,6	20,1	20,8	18,8	19,7	19,7	19,2	20,1	19,8	18,4	15,8
Finland	20,3	19,1	19,2	18,8	18,4	17,5	17,5	17,1	16,9	16,6	16,7
Sweden	15,4	15,6	15,5	14,6	13,8	14	13,3	12,5	12,1	11,8	11,2
Iceland	17,7	17,8	17,7	19	16,7	17,5	15,8	15,3	13,8	14,2	13
Norway	16,1	15,7	14,7	15,5	14,5	16	14,5	13,7	13,2	13,2	13,4
Switzerland	17,8	17,6	17,4	17,6	17,4	17,9	17,4	17,6	18,6	18,6	18,4
United Kingdom	23,3	21,8	22,6	21	20,9	21	20,7	20,8	19,8	19,9	19,6

Source: Data analyzed according to *Eurostat* (2022)

A prerequisite for conducting cluster analysis is the examination of dependencies

between particular variables. The starting point for the present research was the correlation matrix, which contains Pearson correlation coefficients.

Figure 2: Correlation matrix



Source: data processed by R software

From the results of the correlation matrix, it is possible to determine the relationship between the variables. It is worth noting that for some variables this dependence is higher and for some other ones it is lower, e.g., there is a high direct linear dependence between the x2010 variable and x2011 variable, which applies to other variables. This means that there may be a problem with clustering in a cluster analysis. Therefore, it is necessary to perform the analysis of the main components. In doing so, a type of main component analysis was used that works with standardized variables. In order to identify the number of significant components, the proportions of component variability to the total variability of the data were calculated from which the given components were calculated.

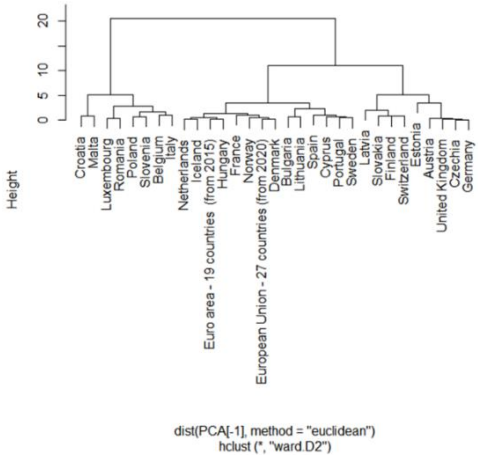
Table 2: Selected component statistics

Indicator	PC1	PC2	PC3	PC4	PC5	PC6	PC7	...	PC11
Standard deviation	3.187291	0.7824053	0.3379624	0.2079143	0.1818286	0.1176741	0.09936456	...	0.0345258
Proportional part of the variance	0.923530	0.0556500	0.0103800	0.0039300	0.0030100	0.0012600	0.0053200	...	0.0001100
Cumulative	**0.923530**	**0.9791800**	**0.9895600**	**0.9934900**	**0.9965000**	**0.9977600**	**0.9971000**	**...**	**1**

Source: data processed by R software

The previous table shows that the first component explains the most of variability and the last one explains the least of variability. Two components were sufficient for clarifying 97.91% variability of the original file. Thus, it is possible to conclude that the research outcome complies with the rule requiring that the number of major components explain at least 70% of the total data variance. Subsequently, the explanation of the variability of the original file was also graphically displayed by components using *Screeplot*, in which the variance of the main components is explained and in which a break in the graph was found.

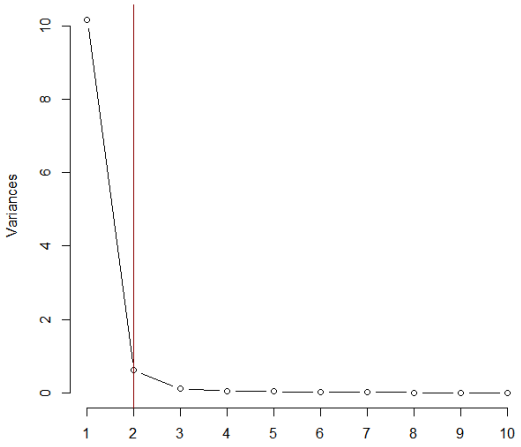
Figure 3: Screeplot main components



Source: data processed by R software

In this graph, the break in the second component can be seen, which explains 97.91% of the variability of the total data variance. Based on the selection of two components for cluster analysis, a hierarchical tree, also referred to as a dendrogram, was generated.

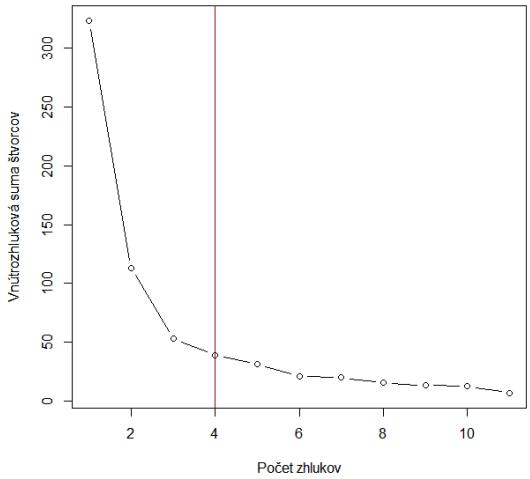
Figure 4: Hierarchical tree of clustering countries



Source: data processed by R software

The next step was to select the number of clusters of countries in the present analysis. Based on a heuristic approach, a set of countries were put into four clusters. However, *Screenplot* was also applied, in which the number of clusters is displayed on the x-axis and the sum of squares inside is displayed on the y-axis. The decisive criterion was to minimize the inside of the cluster sum of squares, which is the optimal state.

Figure 5: Cluster Screeplot



Source: data processed by R software

The dividing line defining the 4 clusters represents the optimal state, i.e., when the inside of the cluster sum of squares has the optimal value. If more clusters were used, the inside cluster number of squares would decrease the number of countries in the cluster. Contrariwise, a small number of clusters would cause an increase in the values of the inside cluster sum of squares. The number of countries in each cluster is shown in the following table.

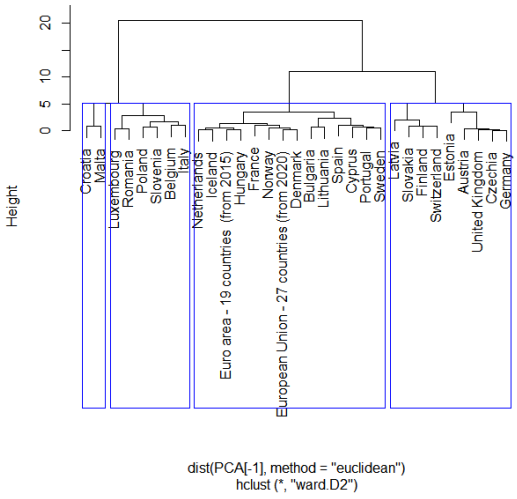
Table 3: Number of countries in individual clusters

Cluster	Countries
1	14
2	6
3	9
4	2

Source: data processed by R software

Subsequently, the clusters were represented by a hierarchical tree, in which the clusters are marked. Each country has a name tag. Four clusters were formed and they are heterogeneous when compared to one another, however, the countries within each cluster are homogeneous. This means that countries in one cluster have similar characteristics of the gender pay gap indicator and, at the same time, have different characteristics of indicators when compared with the countries in other clusters.

Figure 6: Hierarchical clustering tree



Source: data processed by R software

From the above dendrogram, it is possible to conclude that the set of the selected 32 countries was divided into four clusters by means of cluster analysis. The largest cluster comprised 14 countries, the smallest one 2 countries.

CONCLUSION

Based on a hierarchical agglomeration cluster analysis, we identified clusters for the selected countries in relation to a chosen indicator that reflects the gender pay gap. The cluster analysis allowed for the use of a larger volume of available statistical data. It is also possible to create clusters manifesting several years and monitor their development throughout the period, or include a specific factor in a cluster, in the present study it was a specific country (Kožiak et al. 2014). We used a measure of distance using Euclidean distance and opted for Ward's method as the clustering method. Using the main components method, we created clusters of countries that were represented in the dedrogram, which classified the selected countries on the basis of chosen financial indicators. The countries were thus arranged into clusters with similar characteristics and had different features from those in other clusters. Before clustering, we examined the relationships between the variables. In the present research, the characteristics of the countries represent the features of the selected indicator. In order to determine the optimal number of clusters, we used a heuristic approach supplemented by a graphic assessment using *Screeplot*, in which the numbers of clusters and the inside cluster sum of squares were shown. The result is the identification of four clusters in terms of gender pay gap indicator. The *Slovak Republic*, along with *Finland* and *Switzerland*, were categorized in the same cluster, regardless of the performance of these countries' economies.

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