Gender Inequality Issue and Economic Consequences of the Representation of Women in State Authorities

MARYNA TATAR
Faculty of Economics, Department of Finance,
Technical University of Košice,
Nemcovej 32, 04001, Košice,
SLOVAK REPUBLIC

Abstract: - The purpose of this study is to determine the role of women's political and labor activity in the formation of countries' economic indicators. The Global Gender Gap Index in the world and Europe, and more specifically in the Slovak Republic, was analyzed. ANOVA results show a statistically significant difference in the Global Gender Gap Index across European country groups. The results of correlation analysis show that there is a strong positive relationship between GDP per capita and the proportion of seats held by women in national parliaments. There is a moderate positive relationship between GDP and the female labor force. The impact of the representation of women in state authorities on economic indicators was determined based on the panel data method. The modeling results of the final estimations of the impact of the representation of women in authorities on the GDP per capita and gross savings showed that the representation of women in parliament has a more significant impact on the GDP level than only the presence of a female labor force. The obtained results can be explained by the fact that women in parliament often advocate for policies that support education, healthcare, and family welfare. These policies can lead to a healthier, better-educated workforce, which is beneficial for long-term economic growth. Women are also more likely to pursue inclusive policies, which can lead to an increase in economic indicators as a result.

Key-Words: - countries' economic development, gender gaps, gender inequality, government savings, impact, panel data, representation of women in authorities, women's political and labor activity, women's policy orientation.

Received: September 11, 2024. Revised: March 8, 2025. Accepted: March 29, 2025. Published: April 25, 2025.

1 Introduction

Gender inequality is a pressing global issue with huge ramifications not just for the lives and livelihoods of girls and women but, more generally, for human development, labor markets, productivity, GDP growth, and inequality. According to McKinsey Global Institute report $12 trillion could be added to global GDP by 2025 by advancing women's equality, [1]. The reasons for gender inequality lie in religious denominations, where certain religions oppress the role of women in socio-economic life, thereby forcing women to engage in housework and raising children. Media and advertising also play an important role in the formation of gender orientation and impact human behavior. Also, the idea of gender equality in politics is more supported by women themselves. When surveyed, men were roughly equally divided between those who approve of the idea of greater involvement of women in politics (34%) and those who do not approve of it (34%), and another 32% of respondents hesitated to answer. On the other hand, the interviewed women unequivocally expressed their support for the active participation of women in local self-government (58%), in contrast to 17% of the interviewed women who do not support this idea. At the same time, women are more risk-averse and inclined to save, which helps reduce the level of debt of the state and local budget if it is headed by a woman. For example, the budget program for supporting small and medium-sized businesses was analyzed in the city of Munich. The information obtained as a result of the analysis made it possible to make quite serious changes in priorities when providing such support to entrepreneurs – women and men. As the analysis showed during the analyzed year: 102 people (39% are women, 61% are men) received support from the Fund. The given data demonstrate the results of the analysis of their success in starting their own business: 12% of women and 29% of men stopped their activities during this time; 5% of female founders and 21% of male founders were unable to repay loans; the profitability that female entrepreneurs received in

the first year was 12%, and male entrepreneurs – 9%; 57% of female founders and 50% of male founders were able to operate on their own income already one year after opening their enterprises, [2].

2 Literature Review

The issue of gender inequality is so pressing that in 2023, Claudia Goldin became a Nobel laureate thanks to her research on gender inequality in the labor market. The results of her long-term research have demonstrated that women are vastly underrepresented in the global labor market and, when they work, they earn less than men, [3]. The emergence of COVID-19 and the socio-economic isolation have led to a worsening of the problem of gender inequality, as confirmed by [4].

Women's access to leadership positions varies depending on the country they reside in. There is a notable disparity in the degree of gender inequality within power structures between democratic nations and totalitarian regimes. For example, the results of [5] show that female conditions in the labor market are the best in Scandinavian countries and Ireland, while many Eastern and Southern European countries are at the bottom of the classification. In [6], the author emphasizes that for a series of African countries, a surprisingly high female-to-male ratio for the labor force was found, and a series of Islamic states are all denoted peculiar due to rather low indicator values for the female seats in parliament and female participation in the labor force. Due to the inherent nature of partial ordering, incomparabilities between countries prevail.

It is also important to study trends in gender inequality and women's representation. Research dating back to 1996 shows that gender inequality in administrative occupations is greater in higher GNP nations and lower where women's educational enrollment is high. By contrast, high rates of female labor force participation – but not high levels of women's educational attainment – decrease male predominance in national parliaments. Thus, neither high levels of economic prosperity nor the development of women's "human capital" through education and employment necessarily results in greater access to authority positions for women, [7].

Some more recent studies have found that higher female representation in parliaments is associated with better economic outcomes, such as higher GDP per capita and improved economic growth rates. Other studies suggest that the impact can vary depending on the country's level of development, cultural context, and existing gender norms. In [8], the author writes that despite substantial progress, gender gaps persist in many developing countries and explores the impact of gender inequality on economic performance in these countries.

In the study [9], the authors conclude that countries with a higher proportion of female parliamentarians experience higher economic growth. Other studies also point to a positive correlation between economic development and women's political participation, [10], [11]. In [10], the authors analyze the relationship between economic growth and gender factors in a sample of 127 countries. They conclude that high fertility in women has negative effects on economic growth. However, when women have greater access to secondary education and the labor market in conditions of equality, the effects are positive. Similarly, the access of women to active political participation has significant effects on economic growth. In [12], the author shows that GDP growth is positively related to gender wage inequality, in contrast to recent work which suggests that income inequality slows growth. Evidence also indicates that part of the impact of gender wage inequality on growth is transmitted through its positive effect on investment as a share of GDP.

In [13], the authors empirically examine the impact of gender-based inequalities in both education and employment on economic performance using the dataset of Turkey for the period 1975–2018 using dynamic ordinary least squares (DOLS) and fully modified ordinary least squares (FMOLS) estimation methods. The results reveal that improvements in gender equality in both education and employment have a strong and significant impact on real gross domestic product (GDP) per capita in the long term. In [14], the researchers examine the dynamic association between economic growth, gender inequality, trade openness, and labor force participation in Malaysia from 1980 to 2019. The results of the autoregressive distributed lag revealed that trade openness and female labor force participation have considerable and significant effects on economic growth. Their findings suggest that more female labor force participation, a better gender parity index, and greater trade openness contribute to rapid economic growth. In [15], the authors present a model examining the relationship between gender inequality and economic growth, focusing on how women allocate their time between market work, household tasks, child-rearing, and child education. The study demonstrates that enhancing gender equality can significantly boost economic growth by altering women's time distribution and encouraging

the development of human capital. The findings indicate that eliminating gender inequality could increase total income by approximately 6.6% after one generation and 14.5% after two generations compared to the baseline economy. Moreover, per capita income would rise by 30.6% and 71.1% over the same periods in a hypothetical economy with full gender equality. This is largely due to reduced fertility and population growth as women engage more in the labor force.

The gender-based behavioral differences can impact overall consumption, savings, and consequently, macroeconomic outcomes. Her analysis indicates that increasing women's decision-making power influences aggregate productivity, as women tend to prioritize goods and services that enhance children's human capital, such as education, nutrition, and healthcare. Additionally, women generally show a greater preference for saving, exhibit lower risk aversion, and are more inclined to invest in productive ventures, [16].

In [17], the authors examine the role of gender equality in promoting economic growth by improving the allocation of female labor. They hypothesize that reducing gender inequality should lead to greater benefits for industries where women make up a larger portion of the workforce compared to others, as it allows female labor to be utilized more efficiently. The results of their study demonstrate that gender inequality has a tangible impact on real economic outcomes.

In [18], the authors argue that cross-national diversity in women's concentration in the public sector explains a substantial part of the cross-national variation in the gender gap in job authority based on data from 26 countries represented in the 2005 International Social Survey Program module on Work Orientation. The authors find that in countries with high levels of women's concentration in the public sector, the gender gap in job authority is wider than in countries with lower levels of public sector feminization.

For the past five decades, the U.S. government has made efforts to narrow the gender pay gap in the workforce. However, this disparity continues to exist across various sectors and levels of authority. The study [19] examines how gender and authority profiles influence the salary differences among city managers in the United States. Utilizing ordinary least squares (OLS) regression analysis, the research aims to understand the correlation between a city manager's gender, their authority profile, and their annual salary. The findings indicate that being male and holding higher authority roles are both significant predictors of salary. On average, female city managers earn only 73% of their male counterparts' salaries, while they manage 60% fewer employees and oversee 62% of the annual budget compared to male city managers.

In [20], the authors conduct an annotated analysis of the literature about the effects of gender equality on economic development in Europe (Table 1, Appendix).

In the Slovak Republic, the issue of gender equality is considered both at the government decision level and is studied by scientists. In particular, one of the objectives of the National Strategy for Gender Equality in the Slovak Republic 2014–2019 was to reduce gender inequalities in the participation of women and men in decision-making positions, [21]. The next documents, the National Strategy for Equality between Women and Men and Equal Opportunities in the Slovak Republic 2021–2027 and Action Plan for Equality between Women and Men and Equal Opportunities 2021–2027, aimed at establishing equal opportunities for men and women, [22]. The strategic areas of these documents are violence against women; reconciliation of family and work life; education; labor-market and pay inequality; political participation of women, etc., [23].

Slovak scientists are also concerned with the issue of women's representation in government structures and the economic consequences of such representation. In [24], the authors analyze the numerical representation of women mayors in 2,926 Slovak municipalities between 2002 and 2022, spanning six election cycles and considering the size of the municipalities. Their study reveals a noticeable increase in the number of women mayors over time, though municipal size plays a significant role. Using logistic analysis, the relationship between female mayorship and various socio-economic, demographic, political, and geographic factors is examined. Findings from logit and probit models confirm the hypothesis that women are less likely to serve as mayors in larger municipalities, showing a decline in the number of women mayors as municipality size increases. This negative correlation stems from a higher proportion of women mayors in smaller municipalities, while larger ones remain predominantly led by men, reinforcing the expectation that men continue to dominate leadership in larger municipalities.

In [25] the author tried to confirm the hypothesis that the higher the proportion of women in politics, the lower the level of corruption. The paper moves away from the assumption of a simple negative linear relationship between women in politics and corruption, proposing instead a non-

linear model that takes into account the varying economic and political starting points across EU countries. The study analyzes data from 27 EU nations over the period of 2001 to 2021, dividing them into sub-groups of newer and older EU members. The findings reveal that a certain threshold of female political representation is necessary for their influence on corruption to be realized, with similar patterns observed in the newer EU member states.

At the micro level, the research [26] indicates that companies with active female board members tend to achieve stronger financial performance. The author examines the global landscape, with particular attention to the situation in the Czech Republic and the Slovak Republic, framed within the broader European context. But, the author states the fact that the representation of women on corporate boards remains quite low in most developed countries, despite women comprising over half of university graduates and a significant portion of the labor force.

In [27], the authors explore the similarities and differences among EU countries based on the Global Gender Gap Index, utilizing multivariate statistical techniques such as cluster analysis and discriminant analysis. They investigate changes in index values and examine the relationships between selected gender and economic indicators, including the Global Competitiveness Index and GDP per capita, over the period from 2006 to 2016. Particular focus is given to the Visegrad Group countries within the broader EU framework.

In [28], the researchers outline the difference in gender inequality among regions in Slovakia and show the relationship between them. In results showed that in most cases, women's unemployment rates were higher than those of men. Gender inequality varied depending on the region, with lower inequality observed in Eastern Slovakia, while Western Slovakia exhibited higher levels of inequality, disproportionately affecting women.

Despite the presence of research in this thematic area, there is still little empirical evidence on the relationship between not only gender inequality but also the representation of women in state authorities and the economic development of a country. There is a gender gap in education, health, and life expectancy, legal and economic equality in society and marriage, in the labor market, and the degree of women’s empowerment, etc. In this article, we focus on the labor market and women's representation in state authorities and the economic consequences of such representation.

3 Problem Formulation

The evolution of social processes is closely linked to gender issues, particularly the quest for equal opportunities for individuals regardless of their gender, age, social status, or nationality. Gender inequality stems from various factors, but a primary concern is the ongoing disparity in employment and wages between genders. Despite notable advancements in gender equality within the labor market in recent years, numerous challenges persist.

The debate continues not only around equal gender opportunities in the labor market but also regarding the socio-economic implications of such equality. Key questions include:

– What effects does women's presence in influential governmental positions have?

– How will macroeconomic indicators shift due to increased female representation in government, particularly considering that women tend to prioritize savings, exhibit lower risk tolerance, and are less inclined to increase debt?

So, the research purpose of this study is the determination of the role of women's political and labor activity in the formation of countries' economic indicators.

This research will be useful and informative for policymakers to understand gender dynamics and enhancing governance; for researchers in fields of economics, sociology, political science, and gender studies to analyze trends and impacts related to gender in economic and political contexts; for companies looking to improve diversity and inclusion may benefit from insights on gender representation in leadership and its effects on organizational performance; for activists and organizations focused on women's rights and gender equality, who can use findings of this research to support their initiatives and campaigns; individuals, interested in social justice, equality, and democratic representation, etc.

4 Methodology and Data

The research is based on the confirmation of the following empirical hypotheses:

Hypothesis 1. Greater economic growth is expected with higher representation of women in state leadership positions.

Hypothesis 2. The countries’ economic indicators are influenced not so much by the presence of the female labor force as such but by the presence of women in leading government structures.

Hypothesis 3. Women's economic activity in the Slovak Republic is lower than men's.

The research implements an analysis of 38 European countries for the period 2010−2022 using such indicators as GDP per capita (GDP); gross savings (GSG); the proportion of seats held by women in national parliaments (WNP); labor force female (LFF); wage and salaried workers female (WSF).

The impact of the representation of women in state authorities (WNP, LFF, and WSF) on economic indicators (GDP and GSG) was determined based on the panel data method. Data were taken from the World Bank [29], [30]. Descriptive characteristics of the indicators are presented in Table 2.

Table 2. Descriptive characteristics of the indicators

Characteristic	GDP	GSS	WNP	LFF	WSF
Min.	2125	3.922	8.00	28.09	38.30
1st Qu.	13567	18.598	20.00	44.99	85.99
Median	23757	23.197	27.86	46.45	89.72
Mean	33091	22.974	27.89	45.94	86.37
3rd Qu.	47713	27.213	37.43	47.78	91.74
Max.	133712	49.487	47.62	53.57	97.91

Source: own processing

One of the problems with using panel data is the problem of choosing the type of model (ordinary regression, fixed or random effect). To identify the most appropriate specification of the panel model, the estimate was performed for both the fixed effects and random effects models. The fixed effects model treats each. α_i as a constant in the regression, while the random effects model treats α_i As a component of random disturbance.

The existence of specific effects for each country is contrasted using an F-test (for the fixed effects model) or the Breusch-Pagan test (for the random effects model). In both cases, the null hypothesis is that α_i is equal for all countries. If that hypothesis is not rejected, then it is a classic regression model and can be estimated by ordinary least squares (OLS). In other words, the Breusch and Pagan test and F-test indicate, respectively, the extent to which the random effects model and the fixed effects model are better than the grouped or merged data model.

The choice of panel data model tools was determined by the following advantages of using these models in empirical economic research:
– the possibility of taking into account the heterogeneity of objects;
– the possibility of building more complex models, since panel data combines the cross-sectional variation dimension with the time dimension;
– the possibility to take into account the dynamics of processes;
– the possibility of reducing biases in aggregated data;
– The possibility of increasing the information base, since panel data provides a wider variation in the data, which reduces the threat of multicollinearity and significantly increases the degrees of freedom, and increases the efficiency of parameter estimates.

5 Results

During the research, we analysed the Global Gender Gap Index in the world and Europe, and more specifically in the Slovak Republic. Similar research is being conducted by scientists like [27], [28], [31], etc., but their research covers an earlier period.

5.1 Analyses of Gender Inequality from a Global and European Perspective

Gender inequality remains a significant challenge worldwide, affecting economic opportunities, education, health, and political representation. In Table 3 (Appendix), we demonstrated the regional performance of the Global Gender Gap Index 2023.

Across all subindexes, Europe has the highest gender parity of all regions at 76.3%, with one-third of countries in the region ranking in the top 20 and 20 out of 36 countries with at least 75% parity. Iceland, Norway, and Finland are the best-performing countries, both in the region and in the world, while Hungary, the Czech Republic, and Cyprus rank at the bottom of the region. Overall, there is a decline of 0.2 percentage points in the regional score based on the constant sample of countries. Out of the 35 countries in 2022 and 2023, 10 countries, led by Estonia, Norway, and Slovenia, have made at least a 1 percentage-point improvement since the last edition. Ten countries show a decline of at least 1 percentage point, with Austria, France, and Bulgaria receding the most. At the current rate of progress, Europe is projected to attain gender parity in 67 years. At 69.7% parity in Economic Participation and Opportunity, Europe stands third behind North America and East Asia, and the Pacific on this dimension. Gender parity has receded by 0.5 percentage points compared to last year, based on the constant sample of 102 countries. Norway, Iceland, and Sweden have the highest parity in Economic Participation and Opportunity, while Italy, North Macedonia, and Bosnia and Herzegovina have the lowest. In comparison with 2022, 13 countries (including populous France and Germany) have declined by at least 1%, and eight

countries have improved by at least 1 percentage point. The shares of senior officer positions held by women have decreased in 17 out of 35 countries that have data. Only 10 countries have at least 60% parity in senior officer positions, yet 28 out of 36 countries have full parity in women's share of technical roles.

On Educational Attainment, the region is almost at parity, and all countries score more than 97%. There is full parity in enrolment in tertiary education, while 20 out of 35 countries reach parity in secondary education and 21 countries in primary education.

On Health and Survival, 97% parity is achieved. The trend, however, is negative. There has been a 0.6 percentage-point decline since 2015, driven by the reduction in gender parity in healthy life expectancy by at least 1 percentage point in 23 out of 36 countries. On sex ratio at birth, 20 out of 36 countries are at full parity, and the other countries are close to parity. Gender parity in Political Empowerment had been consistently increasing; in 2023, it stood at 39.1%. Based on the constant sample of countries, there has been a decline of 0.5 percentage points since 2022. Overall, Iceland, Norway, and Finland have the highest score on the Political Empowerment subindex, while Romania, Cyprus, and Hungary are at the bottom of Figure 1 (Appendix). Led by Estonia, Slovenia, and Latvia, 15 out of 35 countries have had at least a 1 percentage-point improvement while 13 countries have seen at least 1 percentage-point decline, [32]. The Global Gender Gap Index in Europe is presented in Figure 1 (Appendix).

We divided the European countries into 3 groups depending on the Global Gender Gap Index level. The first group included such countries as Iceland, Norway, Finland, Sweden, Germany, Lithuania, Belgium, Ireland, Latvia, the United Kingdom, Albania, and Spain. The average Global Gender Gap Index value for this group of countries is 0.82 (Figure 2). The second group included Switzerland, Estonia, Denmark, Netherlands, Slovenia, Portugal, Serbia, France, Luxembourg, Austria, Croatia, Poland, and the average index value for these countries is 0.76. The third group included the Slovak Republic, Bulgaria, Montenegro, Malta, North Macedonia, Italy, Bosnia and Herzegovina, Romania, Greece, Hungary, the Czech Republic, and Cyprus, and the average index value is 0.702. In the context of ANOVA, a large F-statistic indicates a large difference between group means, and p-values indicate whether the observed differences in means are statistically significant (Table 4, Appendix). Means and confidence intervals for country groups are presented in Table 5 (Appendix).

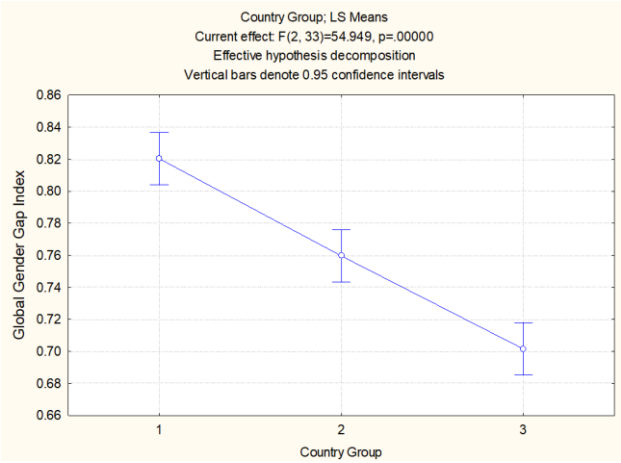

Fig. 2: Plot of means between country groups
Source: own processing

The sum of squares (SS) for Country Group (0.08462) shows the variability in the Global Gender Gap Index explained by different country groups. The F-value (54.95) is quite large, meaning that the variation between groups is much greater than the variation within groups. The p-value indicates that the differences between country groups are statistically significant at any reasonable significance level ($\alpha = 0.05$ or 0.01).

So, there is a statistically significant difference in the Global Gender Gap Index across country groups ($p < 0.001$). The effect size is meaningful, as indicated by the high F-value for Country Group (54.95).

The Global Gender Gap Index in Eurasia and Central Asia is shown in Figure 3.

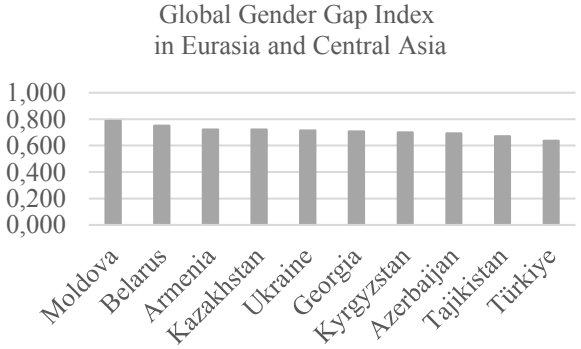

Fig. 3: Global Gender Gap Index in Eurasia and Central Asia
Source: own processing based on [32]

5.2 Analyses of Gender Inequality in the Slovak Republic and Comparison with International Trends

The subindexes of the Global Gender Gap Index for the Slovak Republic are presented in Table 6.

Table 6. Subindexes of Global Gender Gap Index for the Slovak Republic

Subindexes	Year			
	2020	2021	2022	2023
Political Empowerment	0.231	0.184	0.189	0.183
Economic Participation and Opportunity	0.663	0.682	0.699	0.718
Educational Attainment	1.000	1.000	1.000	1.000
Health and Survival	0.980	0.980	0.980	0.980

Source: own processing based on [32]

So, the most problematic area in the Slovak Republic is Political Empowerment.

For comparison of the Slovak Republic with countries in the Europe region, the mean, minimum, and maximum values were calculated (Figure 4).

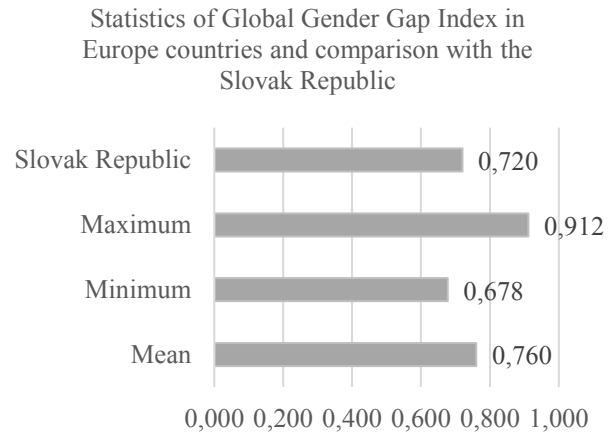

Fig. 4: Statistics of the Global Gender Gap Index in European countries and comparison with the Slovak Republic

Source: own processing based on [32]

The Global Gender Gap Index value in the Slovak Republic is 0.040 lower than the average value for European countries. The maximum value for Europe was 0.912 (in Iceland), while for the Slovak Republic, it was 0.720, i.e. 0.192 lower than the maximum in Europe.

Also, the features of the country's demography were examined in more detail. Characteristics of the population of the Slovak Republic are presented in Table 7 (Appendix). The female population consistently remained higher than the male population, but the percentage of females in the total population gradually declined from 51.46% in 2005 to 51.10% in 2022. The results showed that gender differences already appear at the level of life expectancy, which is 6.73 years longer (in 2022) for women than for men. The female population is larger than the male population; in particular, 51.10% are women. At the same time, women's economic activity is 10.9% lower than men's, according to 2022 data. Although this trend tends to decline, since 2005, the economic activity of women has been 17.1% lower than that of men.

The ratio of female and male labor activity in the Slovak Republic is presented in Table 8 (Appendix). In the Slovak Republic, labor force participation rates exhibit notable differences between genders. The data in Table 8 (Appendix) highlight a persistent disparity in labor market engagement between men and women in the Slovak Republic.

Men's economic activity rate remained relatively stable, fluctuating between 66.6% and 68.4%.

Women's economic activity rate showed gradual growth, from 51.3% in 2005 to 56.4% in 2022.

Men's employment rate increased from 64.6% in 2005 to 75% in 2022. Women's employment rate improved significantly, from 50.9% in 2005 to 67.6% in 2022.

The employment rate of men is 7.4% higher than that of women, although again this figure has decreased significantly compared to 2005, when the employment rate of men was higher than that of women by 13.7%, and in 2006 by 15.1%.

Men's unemployment rate fell from 15.3% in 2005 to 5.9% in 2022. Women's unemployment decreased from 17.2% in 2005 to 6.4% in 2022. So, the unemployment rate for women was 1.9% higher than for men in 2005 and has fallen to 0.5% in 2022. The gap between male and female unemployment rates has also decreased over time.

The share of women in the total labor force increased from 44.8% in 2005 to 47.07% in 2022.

Based on the analysis of statistical data from Table 8 (Appendix), the following trends can be identified:

− gender gap reduction because women's participation in the workforce has increased steadily, reducing the economic activity gap;

− employment rates for both men and women have improved significantly;

− declining unemployment (both male and female unemployment rates have decreased, though women still face slightly higher unemployment);

– The share of women in the total labor force has grown, indicating progress toward gender inclusivity.

5.3 Assessment of the Impact of Women's Representation in State Authorities on Economic Indicators

The correlation matrix of the indicators is shown in Table 9 (Appendix).

The results of correlation analysis show that there is a strong positive relationship between GDP per capita and the proportion of seats held by women in national parliaments. There is a moderate positive relationship between GDP and the female labor force.

For analyzing the impact of the representation of women in authorities on economic indicators, the panel data method was used. This methodology makes it possible to consider latent unobservable effects specific to each country (individual effects).

$$GDP_{it} = \alpha_i + \beta_1 \times WNP_{it} + \beta_2 \times LFF_{it} + \beta_3 \times WSF_{it} + \varepsilon_{it}, \quad (1)$$

$$GSG_{it} = \alpha_i + \beta_1 \times WNP_{it} + \beta_2 \times LFF_{it} + \beta_3 \times WSF_{it} + \varepsilon_{it}, \quad (2)$$

where: i denotes the countries considered (i = 1,…,38); t are the years (t = 2010,…,2022); GDP is GDP per capita (current US$); GSG – gross savings (% of GDP); WNP – proportion of seats held by women in national parliaments (%); LFF – labour force, female (% of total labour force); WSF – wage and salaried workers, female (% of female employment); α_i – the specific individual effect of each country; $\beta_1, \beta_2, \beta_3$ – model parameters that measure the effects of a change in an independent variable in the period t for the i-th country; ε_{it} – the error term.

The modeling results of the final estimations of the impact of the representation of women in state authorities on the GDP per capita and gross savings are shown in Appendix in Table 10 and Table 11, respectively. GDP and gross savings are influenced not only by the factors we analyzed but also by many others. 48% of the total variability of the dependent variable GDP per capita and 42% of the total variability of the dependent variable gross savings can be explained by these models.

The results of the research showed that the representation of women in parliament has a more significant impact on the GDP level than the presence of a female labour force. Women in parliament often advocate for policies that support education, healthcare, and family welfare. These policies can lead to a healthier, better-educated workforce, which is beneficial for long-term economic growth. So, emphasis on education and healthcare leads to the development of human capital, which is a critical factor in economic development.

Women are also more likely to pursue inclusive policies. Female lawmakers are more likely to support policies that promote gender equality, which can lead to increased female labor force participation and, consequently, higher economic productivity. Also, female politicians may be less likely to engage in corruption, leading to more transparent and effective governance. Better governance can improve investor confidence and economic stability. A parliament that includes more women can result in more comprehensive and innovative policy solutions, addressing a wider range of economic challenges. Policies that support work-life balance, such as parental leave and childcare, can encourage more women to enter and remain in the workforce, increasing the overall labour supply and economic output.

Gender wage gaps mean that women generally earn less than men. Lower income levels directly reduce the capacity to save, as a larger proportion of income is likely to be spent on necessities.

The proportion of seats held by women in national parliaments can positively impact gross savings by influencing policy priorities, improving governance, and promoting economic participation. Through these channels, increased female representation can create a more stable and equitable economic environment, conducive to higher savings rates.

6 Conclusion

The Global Gender Gap Index in the world and Europe, and more specifically in the Slovak Republic, was analyzed. The results of correlation analysis show that there is a strong positive relationship between GDP per capita and the proportion of seats held by women in national parliaments. There is a moderate positive relationship between GDP and the female labor force. The impact of the representation of women in state authorities on economic indicators was determined based on the panel data method. The results of the final estimations of the impact of the representation of women in authorities on the GDP per capita and gross savings showed that the representation of women in parliament has a more significant impact on the GDP level than only the presence of a female labor force. While the presence

of women in national parliaments alone is not a silver bullet for economic performance, it is a crucial factor that can lead to more inclusive, equitable, and sustainable economic policies. Increasing female representation in political decision-making bodies can contribute to a more balanced and holistic approach to economic development. Reducing gender inequality can positively impact gross savings by increasing women's income levels, enhancing their access to financial services, and empowering them in household financial decision-making. These changes contribute to higher overall savings rates, which are crucial for investment and economic growth.

To reduce gender inequality and increase the number of women in power, such initiatives should be taken:
− information campaigns to support women in politics;
− gender monitoring of the activity of political forces, the quality of the political activity of men and women;
− support of a new generation of female politicians;
− working with men to support women's active participation in politics;
− protection of society from information that discriminates based on gender;
− improvement of gender statistics;
− balanced distribution of time between the professional and private lives of both women and men;
− gender budgeting and gender analysis of state decisions;
− adopt and implement temporary special measures, including the establishment of quotas, to ensure real gender equality in areas where women are underrepresented or disadvantaged, in particular at higher decision-making levels, in the electoral process;
− strengthen work aimed at eliminating entrenched gender stereotypes that are discriminatory towards women, in particular through information and educational campaigns dedicated to the equal status and responsibilities of women and men in the private and public spheres;
− encourage mass media to refuse the distribution of stereotypical materials that discriminate against women and to create a positive image of women.

The obtained results confirm the conclusions of other scientists, particularly [10], [14], [15], [17], etc. that gender inequality and the presence of women in leadership positions influence real economic indicators at both the macroeconomic and microeconomic levels since women are less inclined to take risks, more inclined to save, inclined to implement inclusive policies, etc.

A key innovation of this study lies in its comparative approach, analyzing gender disparities across European country groups and evaluating their distinct economic implications. By demonstrating that women's parliamentary representation has a stronger effect on GDP per capita and gross savings than female labor force participation alone, this research challenges traditional economic models that primarily emphasize workforce integration without considering political influence. This study contributes by empirically establishing the direct impact of women's political and labor participation on macroeconomic indicators. Furthermore, the study highlights the policy-making tendencies of female politicians – such as prioritizing education, healthcare, and social welfare – as mechanisms driving economic growth.

During the research, the following limitations were identified. Firstly, the difficult task is the selection of indicators that determine gender inequality and their equal determination in the World and European databases, as well as ensuring the proportionality of the sample. In this regard, there are methodological limitations, such as the need to develop a valid, universal, and comparative information and analytical research base. To eliminate the inclusion of similar indicators, it is necessary to check the correlation of the indicators selected for the study. Secondly, the lack of comparable data for all European countries led to the need to exclude some countries from the sample; in particular, Albania, Andorra, Bosnia and Herzegovina, San Marino, Liechtenstein, Monaco, and Montenegro were excluded. Also, the study provides data for constructing panel data models for the period 2010-2022 (taking into account the available data for all countries), but for the analysis of the Global Gender Gap Index, 2023 was taken (taking into account the latest issue of the Global Gender Gap Report).

Besides, such issues remain controversial as examining how social media and digital platforms impact women's political engagement and the spread of gender equality narratives, exploring how younger generations perceive gender roles and their influence on political engagement and policy preferences. Our further research will be aimed at assessing the effectiveness of existing gender equality initiatives in various countries and regions

to identify successful strategies. We plan to research the long-term impacts of women's participation in government on policy outcomes and societal change. In particular, we plan to analyze (at the level of municipal governments in the Slovak Republic) how the representation of women in mayoral positions affects the local government debt level, corruption level, the level of local government savings, and the social orientation of the budget in the region where a woman governs.

Acknowledgement:
The paper was funded by the EU NextGenerationEU through the Recovery and Resilience Plan for Slovakia under Project No. 09I03-03-V01-00157 and the Scientific Grant Agency of the Ministry of Education, Science, Research and Sport of Slovakia, and the Slovak Academy of Sciences within the project VEGA 1/0646/2023.

Declaration of Generative AI and AI-assisted Technologies in the Writing Process

The author wrote, reviewed and edited the content as needed and the author has not utilised artificial intelligence (AI) tools. The author takes full responsibility for the content of the publication.

References:

[1] McKinsey Global Institute Report, 2015, [Online]. https://www.mckinsey.com/featured-insights/employment-and-growth/how-advancing-womens-equality-can-add-12-trillion-to-global-growth (Accessed Date: May 22, 2024).

[2] City of Munich. Munich Business, [Online]. https://www.munich-business.eu/en/munich-business.html (Accessed Date: May 22, 2024).

[3] The Nobel Prize. Claudia Goldin, [Online]. https://www.nobelprize.org/prizes/economic-sciences/2023/goldin/facts/ (Accessed Date: May 22, 2024).

[4] Fisher, A. N., & Ryan, M. K. Gender Inequalities during COVID-19. *Group Processes & Intergroup Relations*, No. 24(2), 2021, pp. 237-245. https://doi.org/10.1177/1368430220984248.

[5] Castellano, R., & Rocca, A. Gender Gap and Labour Market Participation: A Composite Indicator for the Ranking of European Countries. *International Journal of Manpower*, No. 35(3), 2014, pp. 345-367. https://doi.org/10.1108/IJM-07-2012-0107.

[6] Carlsen, L. Gender Inequality and Development. *Sustainability Science*, No. 15(3), 2020, pp. 759-780. https://doi.org/10.1007/s11625-019-00767-9.

[7] Moore, G., & Shackman, G. Gender and Authority: A Cross-national Study. *Social Science Quarterly*, Vol. 77, No. 2, 1996, pp. 273-288. https://www.jstor.org/stable/42863466.

[8] Klasen, S. The Impact of Gender Inequality on Economic Performance in Developing Countries. *Annual Review of Resource Economics*, No. 10, 2018, pp. 279-298. https://doi.org/10.1146/annurev-resource-100517-023429.

[9] Jayasuriya, D. S., & Burke, P. J. Female Parliamentarians and Economic Growth: Evidence from a Large Panel. *Applied Economics Letters*, No. 20(3), 2013, pp. 304-307.

[10] Cabeza-García, L., Del Brio, E. B., & Oscanoa-Victorio, M. L. Gender Factors and Inclusive Economic Growth: The Silent Revolution. *Sustainability*, No. 10(1), 2018, pp. 121. https://doi.org/10.3390/su10010121.

[11] Mishra, P. K., Mishra, S. K., & Sarangi, M. K. Do Women's Advancement and Gender Parity Promote Economic Growth? Evidence from 30 Asian Countries. *Millennial Asia*, No. 11(1), 2020, pp. 5-26. https://doi.org/10.1177/0976399619900603.

[12] Seguino, S. Gender Inequality and Economic Growth: A Cross-country Analysis. *World Development*, No. 28(7), 2000, pp. 1211-1230. https://doi.org/10.1016/S0305-750X(00)00018-8.

[13] Esen, Ö., & Seren, G. Y. The Impact of Gender Inequality in Education and Employment on Economic Performance in Turkey: Evidence from a Cointegration Approach. *Equality, Diversity and Inclusion: An International Journal*, No. 41(4), 2022, pp. 592-607. https://doi.org/10.1108/EDI-04-2021-0099.

[14] Akhtar, R., Masud, M. M., Jafrin, N., & Shahabudin, S. M. Economic Growth, Gender Inequality, Openness of Trade, and Female Labour Force Participation: a Nonlinear ARDL Approach. *Economic Change and Restructuring*, No. 56(3), 2023, pp. 1725-1752. https://doi.org/10.1007/s10644-023-09488-7.

[15] Kim, J., Lee, J. W., & Shin, K. A Model of Gender Inequality and Economic Growth. *Asian Development Bank Economics Working*

Paper Series, No. 475, 2016, pp. 1-29, [Online]. https://ecommons.cornell.edu/server/api/core/bitstreams/89fbf5b8-954f-496c-8e8c-bea20ef2d555/content (Accessed Date: May 22, 2024).

[16] Stotsky, J. G. Gender and its Relevance to Macroeconomic Policy: A Survey. *IMF Working Paper*, No. 06/233, 2006, pp. 1-68. https://papers.ssrn.com/Sol3/papers.cfm?abstract_id=941295

[17] Bertay, A. C., Dordevic, L., & Sever, C. Gender Inequality and Economic Growth: Evidence from Industry-level Data. International Monetary Fund, 2020, [Online]. https://www.imf.org/en/Publications/WP/Issues/2020/07/03/Gender-Inequality-and-Economic-Growth-Evidence-from-Industry-Level-Data-49478 (Accessed Date: May 30, 2024).

[18] Yaish, M., & Stier, H. Gender Inequality in Job Authority: A Cross-national Comparison of 26 Countries. *Work and Occupations*, No. 36(4), 2009, pp. 343-366. https://doi.org/10.1177/0730888409349751.

[19] Alkadry, M. G., Bishu, S. G., & Bruns Ali, S. Beyond Representation: Gender, Authority, and City Managers. *Review of Public Personnel Administration,* No. 39(2), 2019, pp. 300-319. https://doi.org/10.1177/0734371X17718030.

[20] Litmeyer, M. L., Bender, L., Happel, S., Peusch, A., Spory, N., & Hennemann, S. The Effects of Gender Equality on Economic Development in Europe. *Erdkunde,* Vol. 76, No. 1, 2022, pp. 21-40. https://doi.org/10.3112/erdkunde.2022.01.02.

[21] National Strategy for Gender Equality in the Slovak Republic 2014-2019, [Online]. https://www.gender.gov.sk/en/files/2015/06/Strategy_EN.pdf (Accessed Date: May 30, 2024).

[22] National Strategy for Equality between Women and Men and Equal Opportunities in the Slovak Republic 2021–2027 and Action Plan for Equality between Women and Men and Equal Opportunities 2021–2027, [Online]. https://rokovania.gov.sk/RVL/Material/25845/1 (Accessed Date: May 30, 2024).

[23] European Institute for Gender Equality. Slovakia, 2024, [Online]. https://eige.europa.eu/gender-mainstreaming/countries/slovakia (Accessed Date: May 30, 2024).

[24] Lukáčová, J., & Maličká, L. Women Mayors in the Slovak Republic in the Last Two Decades: The Municipalities Size Category Perspective. *Geografický časopis (Geographical Journal)*, No. 75, 2023, pp. 177-195. https://doi.org/10.31577/geogrcas.2023.75.2.09.

[25] Maličká, L. More Women, Less Corruption, but How Many Women are Needed? *Ad Alta: Journal of Interdisciplinary Research*, No. 14(1), 2024, pp. 108-113, [Online]. https://www.magnanimitas.cz/ADALTA/1401/papers/A_malicka.pdf (Accessed Date: May 18, 2024).

[26] Křečková, Z. Women on Boards: the Perspective of Czech and Slovak Republics within European Context. *Management: Science and Education*, No. 1(1), 2013, pp. 40-42.

[27] Řezanková, H., & Křečková, Z. Selected Gender Gap Indicators – Comparison of V4 Countries within EU Context. *In 20th International Scientific Conference Applications of Mathematics and Statistics in Economics*, Szklarska Poręba, Poland, 30 August – 3 September 2017, pp. 373-386, [Online]. https://dbc.wroc.pl/dlibra/publication/edition/39144/content (Accessed Date: May 18, 2024).

[28] Faďoš, M., & Bohdalová, M. Unemployment Gender Inequality in Regions of Slovakia. *In International Conference on Gender Research*, Porto, Portugal, 12–13 April 2018, pp. 128-135.

[29] World Bank Open Data, 2024, [Online]. https://data.worldbank.org/indicator (Accessed Date: May 30, 2024).

[30] Women, Business and the Law, 2024, [Online]. https://wbl.worldbank.org/en/wbl (Accessed Date: May 30, 2024).

[31] Koca, G. Ş. The Classification of World Countries in Terms of Global Gender Gap with Using Cluster Analysis. *Women's Studies International Forum*, Vol. 92, No. 3, 2022, pp. 102592. https://doi.org/10.1016/j.wsif.2022.102592.

[32] Global Gender Gap Report, 2023, [Online]. https://www3.weforum.org/docs/WEF_GGGR_2023.pdf (Accessed Date: May 30, 2024).

[33] Statistical Yearbook of the Slovak Republic, 2023, [Online]. https://slovak.statistics.sk/wps/portal (Accessed Date: May 30, 2024).

APPENDIX

Table 1. The effects of gender equality on economic development in Europe

Variable	Description	Influence
GDP per capita	Gross domestic product at market prices in euros per inhabitant	
Explanatory variables		
Employment rate	Relationship between the employment rate of women aged 25-64 and the employment rate of men aged 25-64 years	Positive
Total fertility rate	Total fertility rate	Negative
Formal childcare	Proportion of children under 3 in formal child care with more than 30 hours of use per week	Positive
GPG	Ratio of median total net equivalised income of women to median total net equivalised income of men in purchasing power standards of persons aged 15-64 years	Positive and negative
Self-employed	Relation of self-employed women with tertiary education between the ages of 15 and 64 to the ratio of self-employed men with tertiary education between the ages of 15 and 64 years	Positive
Female board members	Proportion of female board members in the largest listed companies	Positive
Parliament members	Proportion of seats held by women in national parliaments and governments	Positive
Part-time	Ratio between the share of part-time employment among women aged 20-64 and the share of part-time employment among men aged 20-64 years	Positive
Tertiary-level education	Ratio of women with tertiary-level education to men with tertiary-level education	Positive

Source: [20]

Table 3. Regional performance of the Global Gender Gap Index 2023, by subindex, %

Region	Overall Index	Subindexes			
		Economic Participation and Opportunity	Educational Attainment	Health and Survival	Political Empowerment
Eurasia and Central Asia	69.0	68.8	98.9	97.4	10.9
East Asia and the Pacific	68.8	71.0	95.5	94.9	14.0
Europe	76.3	69.7	99.6	97.0	39.1
Latin America and the Caribbean	74.3	65.2	99.2	97.6	35.0
Middle East and North Africa	62.6	44.0	95.9	96.4	14.0
North America	75.0	77.6	99.5	96.9	26.1
Southern Asia	63.4	37.2	96.0	95.3	25.1
Sub-Saharan Africa	68.2	67.2	86.0	97.2	22.6
Global average	68.4	60.1	95.2	96.0	22.1

Source: [32]

Table 4. ANOVA results

Univariate Tests of Significance for Global Gender Gap Index (Spreadsheet1) Sigma-restricted parameterization Effective hypothesis decomposition					
	SS	Degr. of Freedom	MS	F	p
Intercept	20.81793	1	20.81793	27036.09	0.000000
Country Group	0.08462	2	0.04231	54.95	0.000000
Error	0.02541	33	0.00077		

Table 5. Means and confidence intervals for country groups

Country Group; LS Means (Spreadsheet1) Current effect: F(2, 33)=54.949, p=.00000 Effective hypothesis decomposition				
Country Group	Global Gender Gap Index Mean	Global Gender Gap Index Std.Err.	Global Gender Gap Index -95.00%	Global Gender Gap Index +95.00%
1	0.820250	0.008010	0.803953	0.836547
2	0.759583	0.008010	0.743286	0.775881
3	0.701500	0.008010	0.685203	0.717797

Source: own processing

Table 7. Characteristics of the population of the Slovak Republic

Years	Population, thous. persons	Female, thou. persons	Female population, %	Male life expectancy at birth, years	Female life expectancy at birth, years
2005	5389	2773	51.46	70.11	77.90
2006	5394	2775	51.45	70.40	78.20
2007	5401	2778	51.43	70.51	78.08
2008	5412	2782	51.40	70.85	78.73
2009	5425	2788	51.39	71.27	78.74
2010	5435	2793	51.39	71.62	78.84
2011	5404	2773	51.31	72.17	79.35
2012	5411	2775	51.28	72.47	79.45
2013	5416	2777	51.27	72.90	79.61
2014	5421	2779	51.26	73.19	80.00
2015	5426	2780	51.23	73.03	79.73
2016	5435	2784	51.22	73.71	80.41
2017	5443	2787	51.20	73.75	80.34
2018	5450	2789	51.17	73.71	80.35
2019	5458	2793	51.17	74.31	80.84
2020	5460	2793	51.15	73.47	80.17
2021	5435	2777	51.09	71.16	78.13
2022	5429	2774	51.10	73.57	80.30

Source: own processing based on [33]

Table 8. Indicators of the ratio of female and male labor activity in the Slovak Republic

Years	Men's economic activity rate, %	Women's economic activity rate, %	Men's employment rate 15–64, %	Women's employment rate 15–64, %	Men unemployment rate, %	Women unemployment rate, %	Labour force, female (% of total labour force)
2005	68.4	51.3	64.6	50.9	15.3	17.2	44.80
2006	68.2	50.7	67	51.9	12.2	14.7	44.51
2007	67.7	50.5	68.4	53.1	9.8	12.5	44.61
2008	68.3	51.1	70	54.4	8.4	11.1	44.61
2009	68.1	50.3	67.6	52.8	11.4	12.9	44.31
2010	67.8	50.8	65.2	52.3	14.2	14.6	44.63
2011	68.1	50.1	66.1	52.5	13.6	13.6	44.20
2012	68.4	50.7	66.7	52.7	13.5	14.5	44.32
2013	68.1	51	66.4	53.3	14.0	14.5	44.55
2014	68.2	51.1	67.7	54.3	12.9	13.6	45.00
2015	67.9	52	69.4	55.9	10.3	12.9	45.05
2016	68.1	52.5	71.4	58.3	8.8	10.7	45.23
2017	67.7	52.7	72	60.3	7.9	8.4	45.40
2018	67.8	52.3	73.9	61.2	6.2	7.0	45.18
2019	67.6	52.3	74.4	62.4	5.6	6.0	45.24
2020	66.7	51.9	73.3	61.7	6.4	7.1	45.40
2021	66.6	55.4	73.3	65.6	6.7	7.0	46.99
2022	67.3	56.4	75	67.6	5.9	6.4	47.07

Source: own processing based on [33]

Table 9. Correlation matrix of the indicators

	GDP	GSS	WNP	LFF	WSF
GDP	1	0.3107	0.8956	0.3254	0.4014
GSS	0.3107	1	0.7866	0.3631	0.5650
WNP	0.8956	0.7866	1	0.2589	0.1577
LFF	0.3254	0.3631	0.2589	1	0.4011
WSF	0.4014	0.5650	0.1577	0.4011	1

Source: own processing

Table 10. The modeling results of the impact of the representation of women in authorities on the GDP per capita

Balanced Panel: n = 38, T = 13, N = 494

Residuals:

Min.	1st Qu.	Median	3rd Qu.	Max.
-44996	-13024	-3686	7390	90508

Coefficients:

	Estimate	Std. Error	t-value	Pr(>|t|)	
WNP	1008.0	103.6	9.731	< 2e-16	***
LFF	621.4	290.3	2.141	0.0328	*
WSF	775.3	100.2	7.739	5.78e-14	***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 22560 on 490 degrees of freedom
R-Squared: 0.4808
Adj. R-Squared: 0.4764
F-statistic: 63.76 on 3 and 490 DF, p-value: < 2.2e-16

Source: own processing

Table 11. The modeling results of the impact of the representation of women in authorities on the gross savings

Balanced Panel: n = 38, T = 13, N = 494

Residuals:

Min.	1st Qu.	Median	3rd Qu.	Max.
-22.0149	-3.8332	0.2422	4.0779	21.6568

Coefficients:

	Estimate	Std. Error	t-value	Pr(>|t|)	
WNP	0.33710	0.07444	4.528	7.47e-06	***
LFF	0.16763	0.02656	6.312	6.18e-10	***
WSF	0.22145	0.02569	8.621	< 2e-16	***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 5.784 on 490 degrees of freedom
R-Squared: 0.4206
Adj. R-Squared: 0.4158
F-statistic: 46.23 on 3 and 490 DF, p-value: < 2.2e-16

Source: own processing

Fig. 1: Global Gender Gap Index in Europe
Source: own processing based on [32]

Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)
All elements of the article were written by Maryna Tatar.

Sources of Funding for Research Presented in a Scientific Article or Scientific Article Itself
The paper was funded by the EU NextGenerationEU through the Recovery and Resilience Plan for Slovakia under Project No. 09I03-03-V01-00157 and the Scientific Grant Agency of the Ministry of Education, Science, Research and Sport of Slovakia, and the Slovak Academy of Sciences within the project VEGA 1/0646/2023.

Conflict of Interest
The author has no conflicts of interest to declare that are relevant to the content of this article.

Creative Commons Attribution License 4.0 (Attribution 4.0 International, CC BY 4.0)
This article is published under the terms of the Creative Commons Attribution License 4.0
https://creativecommons.org/licenses/by/4.0/deed.en_US