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## ЕКОНОМІЧНА АКТИВНІСТЬ ЖІНОК ТА ДИНАМІКА ВВП НА ДУШУ НАСЕЛЕННЯ В КРАЇНАХ-ЧЛЕНАХ ЄС

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# FEMALE ECONOMIC PARTICIPATION AND DYNAMICS OF GDP PER CAPITA IN EU MEMBER-STATES

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Анотація. У статті розглядається емансипація жінок у країнах-членах ЄС, які є магнітом для України завдяки їхньому рівню життя та цінностям. Метою статті є аналіз економічної активності жінок та динаміки ВВП на душу населення в країнах-членах  $\epsilon$ С. Гендерна рівність  $\epsilon$  невід  $\epsilon$ мною частиною внутрішньої та зовнішньої політики ЄС та потужною концепцією, що охоплює багато вимірів, включаючи економічний. ЄС концентрується на залученні більшої кількості жінок на офіційний ринок праці із гарантуванням рівних із чоловіками зарплат, підтримці балансу між роботою та особистим життям, добровільних та обов'язкових гендерних квотах у бізнесі та політиці, забезпеченні безпеки жінок вдома та на робочих місцях. Широкий спектр публікацій намагається переконати, що існує взаємозв'язок між емансипацією жінок та економічним розвитком, демонструючи, що гендерна рівність є лише новим методом, що гарантує додатковий прибуток для корпорацій та податкові надходження для урядів. Автори цього дослідження застосовують коефіцієнт Спірмена, щоб визначити, чи існує якась залежність між економічним зростанням і покращенням економічних можливостей жінок, а саме між ВВП на душу населення в поточних ринкових цінах та значеннями субіндексу економічного гендерного розриву у країнах-членах ЄС у 2016-2020. Середній приріст ВВП на душу населення в країнах-членах ЕС у 2016-2020 рр. становив 11,6 відсотки. Ірландія продемонструвала максимальний відносний приріст у 29,1 відсотки, тоді як Греція, Італія, Іспанія та Швеція зазнали зниження. Середній гендерний розрив в економічній участі та можливостях у країнах-членах ЄС зменшився на 0,018 пунктів у 2016-2020 роках. Розрахунки показують, що коефіцієнт кореляції Спірмена є статистично незначущим. Отже, економічна гендерна рівність сама по собі є недостатньої для стимулювання економічного зростання, та її слід розглядати як безперечне право людини та поєднувати зі сприянням гендерній рівності в інших сферах, таких як освіта, охорона здоров'я та політика.

**Ключові слова**: економічний розвиток, економічна участь та можливості, країни-члени ЄС, гендерна рівність, гендерний розрив, ВВП на душу населення.

Формули: 6; рис.: 0; табл.: 4, бібл.: 16

Annotation. The article sheds light on female emancipation in EU member-states being the magnet for Ukraine due to their living standards and values. The aim of the article is to analyze the economic activity of women and the dynamics of GDP per capita in EU member states. Gender equality is the integral part of EU internal and external policies being an overwhelming concept embracing many dimensions, including the economic one. The EU concentrates on engaging more females in the official labor market with guarantees of equal with males salaries,

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supporting work-life balance, voluntary and compulsory gender quotas in business and politics, ensuring safety for women at home and workplaces. A wide range of publications tries to persuade that there is a correlation between female economic emancipation and national economic advancement demonstrating that gender equality is only a new method guaranteeing additional profits for corporations and tax revenues for governments. The authors of this research paper apply Spearman coefficient to determine whether there is any correlation between economic growth and economic participation and opportunities for women, namely GDP per capita at current market prices and values of economic gender gap sub-index of EU member-states in 2016-2020. The average growth of GDP per capita in EU member-states equaled 11.6 percent in 2016-2020. Ireland showed the maximum relative increase of 29.1 percent, while Greece, Italy, Spain, and Sweden experienced the decline. The average gender gap in economic participation and opportunity in EU member-states decreased by 0.018 points in 2016-2020. The calculations show that the Spearman correlation coefficient is statistically insignificant. Therefore, economic gender equality by itself is not enough for stimulating economic growth and should be viewed as an indisputable human right and accompanied by fostering gender equality in other spheres, such as education, health care and politics.

**Key words:** economic development, economic participation and opportunity, EU member-states, gender equality, gender gap, GDP per capita.

Formulas: 6; fig.: 0; tabl.: 4; bibl.: 16

*Introduction*. The European Union is an integration block of countries that reached high level of socioeconomic development and human rights protection which makes it a desired place for living and working for the people from less successful destinations. As stated in Consolidated version of the Treaty on European Union, these 27 European countries united to pursue their aim of building a peaceful society based on common values and fostering prosperity for all their citizens. Thus, we can state that values are a corner stone of the EU and adherence to them should be an everyday guideline for its institutions and member-states. As engraved in the article 2 of the above mentioned Treaty on the European Union, those values include for human dignity, respect democracy, equality, the rule of law and respect for human rights, including the rights of persons belonging to minorities. Equality between women and men is a fundamental European value, therefore, it is an important part of its external and internal policy.

The EU aims at achieving A Union of Equality by 2025 via a mechanism of Gender Equality Strategy 2020-2025 which will provide women and men with equal opportunities to participate, succeed and lead in European society [4]. The two key components of this strategy are gender mainstreaming and intersectionality. Mainstreaming is supposed to make equality between men and women a common belief shared by most EU citizens. Intersectionality means that the implementation of this strategy goes in horizontal manner being introduced to

all common European policies, actions, and spheres of life, as well as external affairs, for example, development aid. The European Gender Institute is a separate body in the EU which has an important mission of monitoring and addressing challenges faced in the progress towards achieving gender equal society. Its expertise serves not only European Union member-states, but also European Union institutions and potential enlargement countries.

The key objectives mentioned by the European Commission in the sphere of achieving equality between men and women are within eradicating gender-based violence; challenging gender stereotypes; gender gaps in EU labor market; achieving equal participation across different sectors of the economy; addressing the gender pay and pension gaps; closing the gender care gap and achieving gender balance in decision-making and politics. The European Commission has also prepared a draft legislation on binding pay transparency measures that are supposed to be an efficient tool for eradicating discrepancies in remuneration of men and women. This directive proposes to give employees access to pay information, guarantees equal pay for the same work and work of equal value for men and women and oblige companies with 250+ employees to publish their pay gap reports regularly [2]. Thus, the economic prism is an important element of this overwhelming Strategy proving the relevance and actuality of this article.

Literature review. There is an excessive body of literature on different aspects of gender equality. For example, Kabeer [10] sheds light on patriarchal constrains that hinder the progress in gender equality and in economic growth, defining the similarity and diversity. Mitra, Bang, and Biswas [11] investigate the concept of equality in the overwhelming way, going from equality of opportunity to equality of outcomes, thus highlighting the possible shift meritocracy concept to support for unjustified privileges for women.

Portalatin J. [12] discloses the possible influence of technological progress on the jobs market, underlining the higher risk for women in losing their jobs.

Agarwal [1] highlights the importance of achieving gender equality as UN Sustainable Development Goal, because it fosters the progress of other SDGs, namely ending poverty and hunger. Johnson, Kovarik, Meinzen-Dick, Njuki, and Quisumbing [9] showed how women-owners of assets in agricultural areas managed to increase the income of their households Theriault, Smale, and Haider [13] demonstrated that destroying the stereotype that women are incapable managers and giving them proper access to financing helps to rise sustainability of agriculture

In our previous publications we investigated a wide range of potential correlations, namely between gender equality and gross domestic product per capita [15], political emancipation and gross national income [16], gender equality and innovative competitiveness [14] in EU member-states.

Thus, this article focuses on the finding out whether there is any link between female economic emancipation and welfare growth in EU member-states.

The purpose of the article is to determine the level of correlation between gender gap in economic participation and opportunity and GDP per capita at current market prices in the EU member-states.

*Aims.* The aim of the article is to analyze the economic activity of women and the dynamics of GDP per capita in EU member states.

Results. Gender Gap in Economic Participation and Opportunity is one of the dimensions of The Global Gender Gap Index introduced by the World Economic Forum in 2006 to monitor gender imbalances all over world. It covers four main spheres, namely economic, education, health and political gender gaps. The economic dimension includes gender rates in labor participation; wage equality for similar work; estimated earned income; percentage of employment as legislators, senior officials and managers; and percentage of employment as professional and technical workers.

Table 1 indicates that the average growth of GDP per capita at current market prices in EU member-states equalled 11.6 percent in 2016-2020. Ireland showed the maximum relative increase – 29.1 percent, while Greece, Italy, Spain, and Sweden experienced decline.

Table 2 shows that the average gender gap in economic participation and opportunity in EU member-states decreased by 0.018 points in 2016-2020.

We use Spearman's rank correlation coefficient to estimate the strength and direction of connection between GDP per capita and gender gap in economic participation and opportunity in EU memberstates. Table 3 contains ranks assigned to attribute Y (GDP per capita) and factor X (gender gap in economic participation and opportunity).

Table 4 reflects the reshaped matrix, as the previous table contained the same rank numbers.

Table 1
GDP per Capita in EU Member-states at current market prices in 2016-2020, in euros

Period	2016	2017	2019	2020	Average	Change, %	Ranking
Austria	40920	41990	44780	42300	42498	3.4	6
Belgium	37960	39130	41460	39110	39415	3.0	9
Bulgaria	6820	7400	8780	8750	7938	28.3	27
Croatia	11170	11920	13340	12170	12150	9.0	25
Cyprus	22230	23410	25270	23400	23578	5.3	14
Czech Republic	16790	18330	21140	20120	19095	19.8	18
Denmark	49420	51140	53370	53600	51883	8.5	3
Estonia	16670	18130	21220	20440	19115	22.6	17
Finland	39580	41080	43510	42940	41778	8.5	7
France	33430	34250	36140	34040	34465	1.8	10
Germany	38070	39440	41510	40120	39785	5.4	8
Greece	16170	16470	17110	15490	16310	-4.2	19
Hungary	11830	12960	14950	13940	13420	17.8	23
Ireland	57020	62550	72260	73590	66355	29.1	2
Italy	28210	28940	29980	27780	28728	-1.5	11
Latvia	12940	13890	15900	15430	14540	19.2	22
Lithuania	13560	14950	17470	17510	15873	29.1	21
Luxembourg	93930	95170	102200	101640	98235	8.2	1
Malta	23190	25010	26920	24630	24938	6.2	12
Netherlands	41590	43090	46880	45870	44358	10.3	5
Poland	11110	12170	13900	13640	12705	22.8	24
Portugal	18060	19020	20800	19660	19385	8.9	16
Romania	8630	9580	11510	11290	10253	30.8	26
Slovakia	14920	15540	17220	16770	16113	12.4	20
Slovenia	19590	20820	23170	22010	21398	12.4	15
Spain	23980	24970	26430	23690	24768	-1.2	13
Sweden	46990	47730	46390	45850	46740	-2.4	4
Average	27955	29225	31615	30584	29845	11.6	X

Source: authors' own calculations and compilation based on [3]

Table 2

Gender Gap in Economic Participation and Opportunity in EU Member-states in 2016-2020

Period	2016	2017	2019	2020	Average	Change, %	Ranking
Austria	0.660	0.658	0.659	0.665	0,661	0.005	24
Belgium	0.716	0.714	0.714	0.709	0,713	-0.007	13
Bulgaria	0.710	0.708	0.715	0.738	0,718	0.028	11
Croatia	0.689	0.681	0.674	0.666	0,678	-0.023	19
Cyprus	0.679	0.679	0.681	0.694	0,683	0.015	25
Czech Republic	0.643	0.651	0.657	0.662	0,653	0.019	7
Denmark	0.728	0.734	0.735	0.736	0,733	0.008	6
Estonia	0.726	0.729	0.736	0.754	0,736	0.028	4
Finland	0.793	0.786	0.788	0.806	0,793	0.013	17
France	0.683	0.685	0.691	0.710	0,692	0.027	10
Germany	0.720	0.734	0.723	0.706	0,721	-0.014	20
Greece	0.670	0.684	0.675	0.672	0,675	0.002	22
Hungary	0.675	0.680	0.672	0.669	0,674	-0.006	9
Ireland	0.710	0.725	0.732	0.733	0,725	0.023	27
Italy	0.571	0.592	0.595	0.609	0,592	0.038	1
Latvia	0.798	0.807	0.810	0.822	0,809	0.024	5
Lithuania	0.749	0.765	0.795	0.808	0,779	0.059	15
Luxembourg	0.667	0.693	0.721	0.691	0,693	0.024	26
Malta	0.610	0.614	0.621	0.656	0,625	0.046	16
Netherlands	0.657	0.698	0.702	0.713	0,693	0.056	14
Poland	0.702	0.706	0.711	0.705	0,706	0.003	8

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Portugal	0.730	0.721	0.726	0.746	0,731	0.016	18
Romania	0.698	0.705	0.728	0.723	0,714	0.025	12
Slovakia	0.662	0.657	0.663	0.682	0,666	0.020	23
Slovenia	0.801	0.795	0.797	0.803	0,799	0.002	3
Spain	0.657	0.660	0.681	0.699	0,674	0.042	21
Sweden	0.809	0.808	0.790	0.810	0,804	0.001	2
Average	0.700	0.706	0.711	0.718	0,709	0.018	X

Source: authors' own calculations and compilation based on [4-8]

Table 3

# **Ranking of EU Member-states**

Gender gap (X)	GDP per capita (Y)	Rank X, dx	Rank Y, dy
0.661	42498	4	22
0.713	39415	15	19
0.718	7938	17	1
0.678	12150	9	3
0.683	23578	10	14
0.653	19095	3	10
0.733	51883	21	25
0.736	19115	22	11
0.793	41778	24	21
0.692	34465	11	18
0.721	39785	18	20
0.675	16310	8	9
0.674	13420	6	5
0.725	66355	19	26
0.592	28728	1	17
0.809	14540	27	6
0.779	15873	23	7
0.693	98235	12	27
0.625	24938	2	16
0.693	44358	12	23
0.706	12705	14	4
0.731	19385	20	12
0.714	10253	16	2
0.666	16113	5	8
0.799	21398	25	13
0.674	24768	6	15
0.804	46740	26	24

Source: authors' own calculations

Table 4

## **Reshaped Ranking Matrix**

reshaped ranking was in				
Rank X, dx	Rank Y, dy	$(dx - dy)^2$		
4	22	324		
15	19	16		
17	1	256		
9	3	36		
10	14	16		
3	10	49		
21	25	16		
22	11	121		
24	21	9		
11	18	49		
18	20	4		
8	9	1		
6.5	5	2.25		
19	26	49		

1	17	256
27	6	441
23	7	256
12.5	27	210.25
2	16	196
12.5	23	110.25
14	4	100
20	12	64
16	2	196
5	8	9
25	13	144
6.5	15	72.25
26	24	4
Sum: 378	Sum: 378	Sum: 3007

Source: authors' own calculations

The checksum calculation proves the correctness of the matrix:

$$\sum x_{ij} = \frac{(1+n)n}{2} = \frac{(1+27)27}{2} = 378 \qquad (1)$$

The checksum equals the sum of the columns of the matrix proving the correctness of matrix composition. Due to several identical values among x and y resulting in associated ranks, we calculate use the following formula to calculate the Spearman coefficient:

$$\rho = 1 - 6 \frac{\sum 6d^2 + A + B}{n^3 - n} \tag{2}$$

where:  

$$A = \frac{1}{12} \sum (A_j^3 - A_j)$$
 (3)  

$$B = \frac{1}{12} \sum (B_k^3 - B_k)$$
 (4)

$$B = \frac{1}{12} \sum (B_k^3 - B_k)$$
 (4)

j - numbers of bundles in order for the attribute x;

A<sub>j</sub> - the amount of identical ranks in the jth bundle in x:

k - numbers of bundles in order for the attribute y;

 $B_k$  – the amount of identical ranks in the kth bundle in y.

$$\rho = 1 - \frac{6 * 3007 + 1}{27^3 - 27} = 0.0821$$

It means that the connection between attribute Y and factor X is weak and direct.

We determine the critical point as follows:

$$T_{critical} = t(\alpha, k) * \sqrt{\frac{1 - \rho^2}{n - 2}}$$
 (5)

Where:

n – the sample size;

 $\rho$  – the Spearman's rank correlation coefficient;

 $t(\alpha,k)$  – the critical point of the two-sided critical region, which is found from the table

of critical points of the Student's distribution, according to the significance level  $\alpha$  and the number of degrees of freedom k = n-2.

If  $|\rho| < T_{critical}$ , then we do not reject the null hypothesis, and the rank correlation is not significant. If  $|\rho| > T_{critical}$ , then the null hypothesis is rejected, and the rank correlation is significant. According to the Student's table, we find  $t(\alpha/2, k) = (0.05/2;$ (25) = 2.385.

$$T_{critical} = 2.385 * \sqrt{\frac{1 - 0.0821^2}{27 - 2}} = 0.48$$

 $T_{critical} > \rho$ , we accept the null hypothesis.

Conclusions. Our calculations have shown that the rank correlation coefficient of GDP per capita and gender gap in economic participation and opportunity of EU memberstates is statistically insignificant. Therefore, there is no connection between these two phenomena, namely we conclude economic gender equality by itself is not enough for stimulating economic growth, additional measures should be undertaken to bridge gender gap in other dimensions, such as educational attainment, political empowerment, as well as health and survival. It is worth mentioning that EU member-states are economically developed and enjoy relatively high levels of gender equality. Similar calculations for developing countries where women need more efforts to unlock their potential could show absolutely different results forming agenda for future investigations.

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