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Article

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Article

Understanding the Macroeconomic Effects of Female Participation in the Labour Market [†]

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Abstract: Throughout history, women have struggled to find their place in the labour market. Their participation in the labour market is usually characterised by worse working conditions; they tend to work in lower-paid jobs, under worse social conditions, and in the vast majority of cases their work in the household is not credited. Women make up half of the world's population, and their non-participation in the labour force has negative consequences for economic growth. Therefore, this paper examines the impact of women's participation in the labour market on living standard in the European Union. Data on women's participation in entrepreneurship and politics were also analysed as part of this work. Panel data analysis was conducted for the period 2009–2022 for 27 members of the European Union, using fixed and random effects. The results show that long-term unemployment has a negative impact on GDP per capita. Moreover, a higher share of women in parliament and better education of women is confirmed to be crucial for GDP per capita growth. Failure to include women could have serious consequences for economic growth. The key to success is education and social change that enable women to play the same role as men in the labour market.

Keywords: labour market; women's participation; economic growth



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1. Introduction

Although women are diligent workers, their status in the labour market throughout history has not reached the status enjoyed by men. The reason for this is the gendered division of roles in the private and public spheres. Women's status could be recognised as mother and wife, but also as scientist, teacher, doctor, or soldier. Especially in Europe, great strides were made in terms of suffrage, education, labour law, and property rights. However, most domestic work is still carried out by women. Women often opt for less demanding jobs or part-time work and are less likely to run large companies or get involved in politics. This would not be the case if women were freed from some of the responsibilities in the family. [Sadik \(1986\)](#) shows that women's economic activity is generally underestimated, and women do not enjoy equal status; they are not paid equally to men in either sector of the economy. In developing countries, the majority of women are employed in agriculture or help out in family enterprises, and in developed countries, the highest employment levels of women are present in the service sector. Usually, their work is mixed with family activities during the day. Even though the research was conducted more than three decades ago, the position of women has not progressed sufficiently, as recent research shows. [World Bank \(2022\)](#) has estimated lower participation of women in the labour force and in employment than men. It is not entirely comparable internationally because of different social, demographic, and cultural trends that determine whether some of women's activities are regarded as economic activities. However, in most of the high-income economies, the number of highly educated women has increased. It has resulted in women becoming better compensated and having longer-term careers. Despite these changes in trends,

women remain unequal in many occupations. Labour-force statistics disaggregated by gender are important to monitor gender inequalities in employment and unemployment. [Jayachandran \(2021\)](#) points out that social norms are a major barrier for women in some developing countries. Therefore, governments have the opportunity to create more equality in the labour market by reducing the privileges of men in the workplace and removing the barriers that prevent women from actively participating in the labour market. Recognising women's contribution to development is key to the success of national development ([Sadik 1986](#)). The regions with the largest gender gaps would experience growth benefits by reducing these inequalities. Women's labour efficiency would increase, and they would be more motivated to work if their working conditions were improved. Recent studies, by [Akhtar et al. \(2023\)](#) and [Omran and Bilan \(2022\)](#), also confirmed the importance of female participation in the labour market, indicating the positive and statistically significant effect on economic growth in the long run.

As women make up half of the European population, their participation in the labour market is essential for the sustainability and growth of the economy. The aim of this paper is, therefore, to examine the macroeconomic aspects of women's participation in the labour market. More specifically, the study aims to answer the question of how women's long-term unemployment and precarious employment affect GDP per capita and acts as an indicator of economic growth. It also asks how the proportion of women in national parliaments or their participation in education and training is related to economic growth. This research also analyses their participation in entrepreneurial and managerial activities. The panel data analysis with fixed and random effects was conducted for 27 EU Member States over the period 2009–2022.

The paper is organized as follows. After the Introduction, in Section 2, overview on gender disparities in the labour market are presented, as well as women's participation in entrepreneurship and politics. The methodology and data are described in Section 3, while research results and discussion are given in Section 4. Section 5 sets the concluding remarks on the topic.

2. Exploring the Gender Disparities in the Labour Market

Participation in the labour market should not depend on gender, race, or age, but on the individual's knowledge and ability to perform the required work to the best of his or her ability. In practise, however, there is no complete and perfect equality, and the differences between the genders are very evident. In some regions, the differences are more pronounced than in others, so the gender equality policies are crucial to reduce gaps. Therefore, [López-Marmolejo and Rodríguez Caballero \(2023\)](#) suggest that improvement of gender equality policies leads to an increase in female participation in the labour market and, consequently, to an increase in economic activity. Since women make half of the world's population ([Statista 2023](#)), their non-participation in the labour market can have a negative impact on sustainable economic growth. Sustainability is being promoted by the United Nations within the Sustainable Development Goals, where gender equality and women's empowerment are set as one of the main goals. Within this framework, the aim is to reduce potential inequalities related to professional and social aspects of women's life.

The issues related to gender inequalities and women's participation in labour force have been subject to numerous studies. [Urama et al. \(2022\)](#) examined the impact of women's participation in the labour force in Sub-Saharan African countries and concluded that female participation supports economic growth. [Euwals et al. \(2011\)](#) suggest that the participation of women in the labour market will be higher if childcare facilities are available and affordable. Furthermore, their research confirmed the importance of women's education—one sixth of the total increment in the female participation rate in the Netherlands between 1992 and 2004 has been caused by an increased level of education. Moreover, [Sundström and Stafford \(1992\)](#) concluded that policies have an important role in stimulating women to combine both families and careers. Parental leave programmes and availability of childcare, as well as flexible working hours motivate more women not to

choose between being a mother and developing their careers. Gender gaps and inequalities in the labour market should be reduced through the application of effective policies. [Luci \(2009\)](#) affirmed that policies in developing countries should improve decent and productive opportunities for women and prevent them from dropping out of the labour market. Furthermore, [Tsani et al. \(2013\)](#) emphasise the importance of effective policies that promote women's labour-force participation and point to the economic benefits that accrue from their participation. Since the share of women in the labour market is smaller, it is to be expected that the role of women in economic growth is smaller than that of men. [Thévenon \(2013\)](#) concludes that the increase in employment in the service sector and the rise in part-time work have had a positive impact on women's labour-force participation. Women acquire higher education and actively participate in the labour market. This means that they successfully combine family responsibilities and careers. [Altuzarra et al. \(2019\)](#) found that as the economy develops, women's participation in the labour market increases. They also confirmed the importance of women's education for their participation in the labour force. Increasing female-labour-force participation has important implications in four dimensions: social, economic, fiscal, and demographic. Women are more integrated into formal production and increase their economic activity and GDP through their work. In addition, higher labour-force-participation rates contribute to the fiscal sustainability of the welfare state ([Euwals et al. 2011](#)).

Gender equality is one of the fundamental human rights and as such, along with women's empowerment, is the most important issue of the present. Efforts are being made at the global level to eliminate the gender gap in the labour market. It is mostly reflected in the disparities in salaries, the unequal representation of women and men in certain sectors of the economy, the presence of women in lower-paid occupations, and their lack of inclusion in the labour market. However, progress varies from region to region and country to country. Within the framework of the Sustainable Development Goals, gender equality is, therefore, one of the most important issues. The main focus is on reducing gender discrimination and increasing women's participation in the political, economic, and public spheres. Like the rest of the world, the European Union is striving to create equal opportunities for women and men and to reduce gender gaps in the labour market. The novelty of this study is, therefore, the in-depth analysis of women's participation in vulnerable employment, their long-term unemployment, as well as their political activities, and participation in education and training for economic development. The specificity of the time frame is significant, which was marked by two major economic crises that had a significant negative impact on the labour market in Europe and thus on the position of women in the labour market.

Despite these efforts to reduce the gender gap in employment rates and the gender pay gap, this is still a reality. Over the period 2009–2022, the employment rate of the total population aged 15–64 in the EU-27 is projected to increase by 11.1%. More precisely, it increased from 62.8% to 69.8% ([Eurostat 2023a](#)). During the same period, the female employment rate increased slowly but steadily, reaching 64.9% in 2022. Although the female employment rate increased by 14.5% over the observed period, the gender employment gap persists in the European Union and varies between Member States. According to [Eurostat \(2023a\)](#), the smallest gap was recorded in Lithuania (1.4 percentage points) and Finland (2.0 percentage points), while the largest gap was recorded in Romania (20.1 percentage points) and Greece (19.8 percentage points). This situation is due to the lower participation of women in the labour market. Table 1 shows data on employment rates aged 15–64 from 2009 to 2022 in the 27 EU member states.

As presented in Table 1, female employment rates have increased by 14.50% in the EU27 from 2009 to 2022. Women's employment rates have increased more than men's employment rates by 6.1 percentage points in the EU27 over the same period. One possible reason for the narrowing of the gap could be due to the improvement of women's education and training skills. Stereotypes and attitudes regarding the role of women in society have changed and many households rely on a double income to cover the cost of living. A better

picture of the changes in women's employment rates is provided by Figure 1, which shows the percentage changes in women's employment rates.

Table 1. Employment rates, for age 15–64, by gender, in EU27, in %.

Year	Employment Rates EU27		
	Total	Males	Females
2009	62.8	68.9	56.7
2010	62.6	68.5	56.8
2011	62.8	68.5	57.1
2012	62.6	67.9	57.2
2013	62.5	67.6	57.3
2014	63.2	68.3	58.2
2015	64.1	69.2	59
2016	65.2	70.3	60.1
2017	66.4	71.5	61.2
2018	67.3	72.5	62.2
2019	68.1	73.2	62.9
2020	67	72.1	62
2021	68.3	73.3	63.4
2022	69.8	74.7	64.9
Change 2009–2022 p.p.	11.10	8.40	14.50

Source: Author according to [Eurostat \(2023a\)](#).

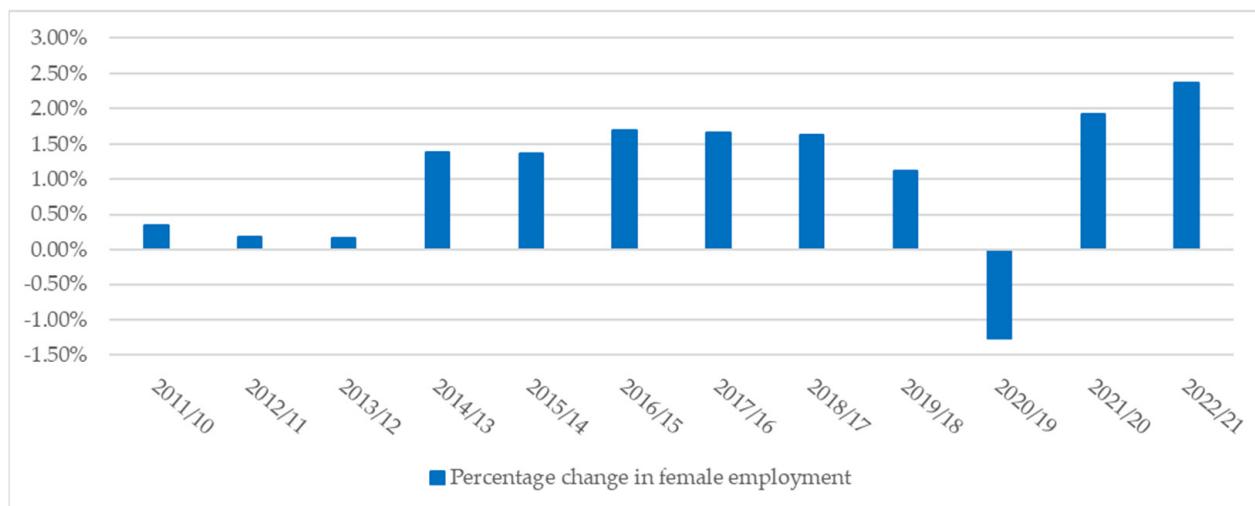


Figure 1. Yearly changes in women's employment rate, for age 15–64, by gender, in EU27 (in %).

In 2009–2011, the slow increase in women's employment in the EU27 was the result of the economic crisis, which took a few years to recover from. Also, recovery of the labour market was not equal across the European Union, resulting in the stagnation and slow progress of female employment. After recovering from the economic crisis, women's employment rates in the EU27 have increased every year, reaching an annual growth of 1.5%. The exception was 2020, when the pandemic COVID-19 caused shocks in the labour market, and the effect could be seen through the significant drop in women's employment rate. The occupational areas with the higher proportion of female workers were occupations related to office work, sales, education, and science ([Eurostat 2023b](#)). According to [ILO \(2022\)](#), the labour-force participation rate globally for women in 2022 was 47% and 72% for men, a difference of 25 percentage points, with the difference reaching 50 percentage points in some regions. The highest gaps are related to the Middle Eastern countries, North African countries, and some Latin American countries. In the EU27, the labour-force participation rate for women in 2022 was 64.9% and for men 74.7%.

[Euwals et al. \(2011\)](#) believe that an increase in real wages may encourage women to participate more in the labour market. The average difference between the amount of money paid to women and men who are working represents the gender pay gap. There are several reasons for the gender pay gap such as inequalities women face in their access to work, possibilities of progress and rewards, sectoral segregation, work-life balance, glass ceiling, and discrimination. Traditionally, women are overrepresented in relatively lower paying sectors like care and education. Moreover, women are more likely to be part of vulnerable unemployment, characterised by shorter working hours, underpaid working hours, and jobs without social and health protection. According to the [ILO \(2022\)](#), women typically work fewer hours than men, but spend more than three times as many hours on unpaid domestic and care work. Women usually take all domestic work that might affect their career choices. However, the [European Commission \(2023\)](#) found that women make up around 32% of board members of the largest listed companies in the EU, an increase of 2 percentage points on the previous year, indicating that women are increasing their participation in the labour market and fighting to reduce the gender gap in employment and pay. Therefore, Figure 2 represents the gender pay gap in the European Union in 2021.

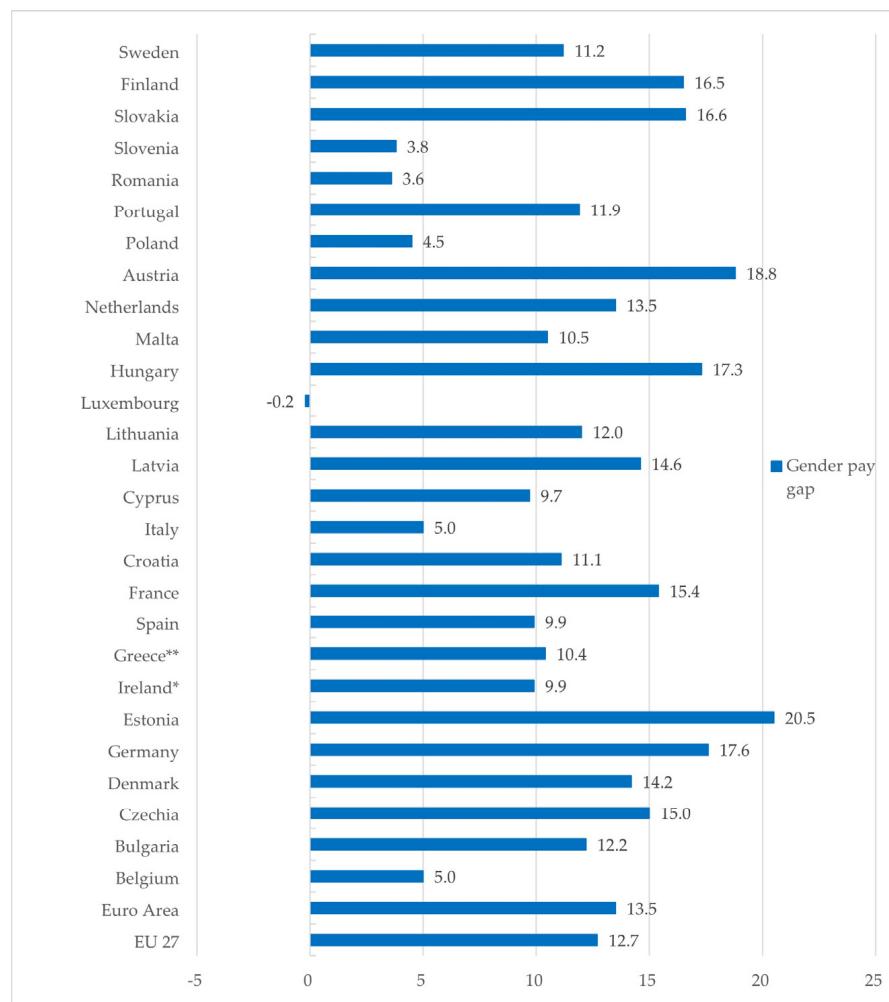


Figure 2. Gender pay gap in EU27, in 2021, in %. * data for 2020, and ** data for 2018.

Across the European Union, women's gross hourly earnings are lower than those of men. In 2021, it was on average 12.7% lower than that of men in the European Union (EU-27). The gender pay gap ranged from 3.6% in Romania to 20.5% in Estonia ([Eurostat 2023c](#)). In Croatia, the gender pay gap was lower than the EU27 average, due to the otherwise low wages in Croatia, for both men and women. Furthermore, the [Eurostat](#)

(2023d) reported that gender pay gap is more prevalent in the private sector than in the public sector, varying from 8.1% in Belgium to 22.1% in Germany.

When looking at the wage gaps between countries, it can be seen that there is no pattern to conclude why certain groups of countries have a low or high gender pay gap, e.g., the former socialist countries Romania and Estonia have the lowest and highest percentage of the gender pay gap. Furthermore, Romania, with a GDP of EUR 15,010 per capita on the scale, has the lowest percentage of differences between men and women, while Germany, with a real GDP of EUR 46,260 per capita on the scale, has a gender pay gap of 17.6%. Among married couples, there is a discrepancy between education level and income. According to research by the IFS (2017), 25.3% of husbands are married to women who have a higher level of education than they do. The National Centre for Education Statistics (2023) also reports that 58% of university students are women. However, 73% of men have a higher income than their wives. Although women's education has been given as much importance as men's education in recent decades, and the number of highly educated women has increased significantly, this has not been sufficiently reflected in higher female-labour-force participation. Doepke and Tertilt (2019) suggest that by decrementing the discrimination against women in terms of education they could extract a positive impact on economic development.

2.1. Entrepreneurial Activity and Managerial Positions

The Global Entrepreneurship Monitor project (GEM) provides the comparability of the level of entrepreneurial activity in different economies. Its conceptual framework was derived from the assumption that the economic growth of each country is the result of the capabilities and skills of an individual to pursue entrepreneurial activity. However, this process is also affected by environmental factors in each country that can support or demotivate entrepreneurs (GEM 2017). Entrepreneurial activity is measured with the TEA indicator—Total Entrepreneurial Activity. It combines the number of adults between the age of 18 and 64 who started a business, a nascent entrepreneur and owner-manager of a new business, which is less than 42 months old. It is actually the number of entrepreneurially active people in both categories, according to 100 surveyed residents aged up to 64 years. According to data published by GEM (2017), looking globally, the highest average female TEA rates¹ in 2016 were in Latin America (17%) and Africa (14.9%), while they were lowest in Europe² (6.1%). In Croatia, male TEA was 11.2% and female TEA 5.6%. According to the research (GEM 2018), the entrepreneurial activity of women in Croatia measured using the TEA indicator³ amounted to 7.1% and had increased compared to 2016, when it was 5.6%, and 2017, when it was 6.4%. At the same time, gender (un)balance of entrepreneurial activities measured by the TEA indicator is at the level of 2 in 2016, 1.8 in 2017, and 1.7 in 2018, which means that men were about twice as enterprisingly active as women. Such a ratio of entrepreneurial activity between men and women is at the level of the EU average for the countries that amount to 1.8, 1.7, and 1.8, respectively. Greater gender balance is usually more prevalent in countries with high unemployment, so in Bulgaria, in 2016, it was the most balanced (1.1), and in Spain in 2018 (1.1), but it is also present in highly developed countries, such as the Netherlands (1.1 in 2017). For comparison, in 2019 female TEA in Croatia was 9.3% and male 16.1%, indicating a better entrepreneurial climate. In Germany, female TEA was 4.4%; in Italy 0.9%; Austria 5.3%; and Greece 6.7%. On the share of women in managerial positions, out of the total number of such positions, Eurostat (2023d) published data for EU27 countries from 2008 to 2022. Not all countries participate in the survey every year, and for some countries, the data are marked as confidential or low reliability. According to these data, the largest share of women in managerial positions in 2022 was in Malta (77.8%) and Poland (69.4%), while the EU27 average was 42.8%. The average share of women in managerial positions in the EU27 fell from 48.5% in previous year. In 2014, the profession with the biggest differences in hourly earnings were managers, with 23% lower earnings for women than for men. While mean hourly wages of men in the European Union in managerial positions amounted to EUR 32, for women it amounted

to EUR 22.8. In Croatia, there is a negligible difference in mean hourly wages between men (13.3 EUR) and women (12.9 EUR). The share of women in managerial positions in the EU27 in the period from 2008 to 2019 was slightly declining, from 45.5% to 41.0%. Comparing the EU countries (although there are no data for all years and all EU countries), the data show that the lowest share of women in managerial positions with pronounced large oscillations are in Italy (2008 = 31.1%, 2017 = 43.9%, 2019 = 26.7%). In the Czech Republic, Switzerland, Ireland, and Norway, they are the largest. The downward trend is present in Switzerland and Ireland. The latest data ([Eurostat 2020](#)) show that in 2019 only one manager out of three in the EU was a woman. According to the Eurostat, there are more than 6.7 million persons holding a managerial position in the European Union—63% are men and only 37% are women. Moreover, women account for about 28% of board members in publicly listed companies in the EU and around 18% of senior executives. Although women represent approximately half of all employed persons in the EU, they continue to be underrepresented among managers. [Lawless and Fox \(2010\)](#) find the reason for the low representation of women among decision makers in the economic and political spheres is the constraints arising from the different preferences of women; women think they are less qualified to run than men, find it more difficult to run and compete for leadership positions, and are less politically ambitious.

2.2. Women in Parliament

The [Inter-Parliamentary Union \(IPU\) \(2023\)](#) reported that the share of women in national parliaments was 26.5%, with the yearly growth of 0.4 percentage points indicating that there is slow and formidable progress. Published data on women's participation in parliament in 1995, 2000, 2005, 2010, 2015, and 2020 are presented in Figure 3. According to the data the average of women in parliaments in the world doubled between 1995 and 2020. More precisely, it has risen from 11.3% to 24.9%. In Europe, the average participation of women in parliaments in 1995 was 13.2%, and in 2020 29.9%.

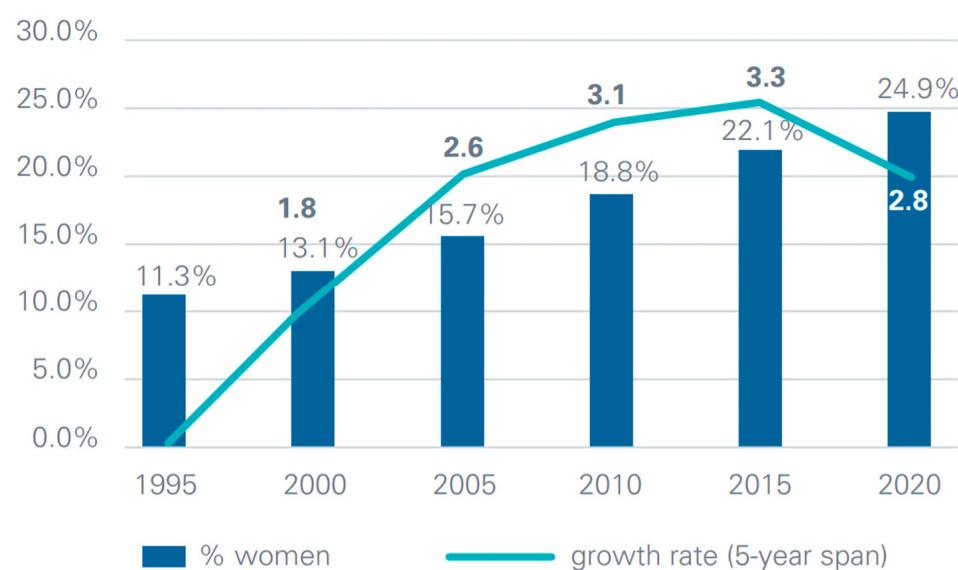


Figure 3. Women in national parliaments, the world average 1995–2020.

However, [Milazzo and Goldstein \(2017\)](#) stated that in the political sphere, women remain largely underrepresented. In 2018, Rwanda was the country with the highest share of women in their parliament—over 61%. The second place was taken by Cuba (53.2%), and the third was Bolivia (53.1%). In Europe, the highest share of women in parliaments was in Sweden with 47.3% women. The increase in the number of women in parliaments since the mid-1990s is the result of the adoption of gender quotas. This often happens under international pressure. Even though women hold places in political office this does not

automatically grant them influence. They are often assigned to less-strategic policy areas that are considered more “feminine”, like social welfare, culture, or family, and women’s affairs. Still, there is extremely high underrepresentation of women in powerful positions in finances, foreign affairs, and the justice system ([Inter-Parliamentary Union \(IPU\) \(2015\)](#)).

The latest data on women’s participation in national parliaments can be seen in the Figure 4, which suggests that the number of women in national parliaments worldwide has doubled in the last twenty years, from 11.3% to 26.5% in 2023. All regions of the world have come a long way in including women in policymaking and understanding their qualities and capabilities.

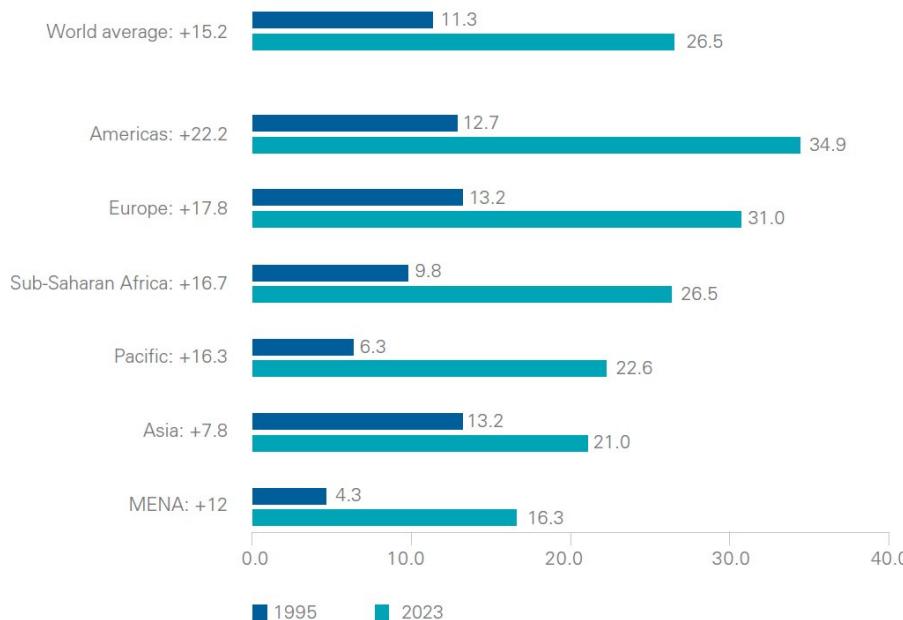


Figure 4. World and regional averages of women in parliaments in 1995 and 2023.

3. Methodology

Using a sample of 27 European Union countries, the position of women in the labour market and their relationship with economic growth in the European Union over the period 2009–2022 was analysed. The panel data analysis was conducted with fixed and random effects for 27 EU Member States over a 13-year period. This selected period is characterised by the two economic crises that had a severe impact on the labour market in the European Union. Therefore, in order to determine the relationship between women’s participation in the labour market and economic growth, the following research hypotheses were formulated:

H₁. *Women’s long-term unemployment and their participation in vulnerable employment had a negative impact on economic growth in the European Union during the period observed.*

H₂. *Women’s participation in education and training led to an improvement in economic activity during the period observed in the European Union.*

H₃. *Women’s political engagement led to an improvement in economic activity over the period observed in the European Union.*

The data used for the study comes from Eurostat and the World Bank. GDP per capita is used as the dependent variable as an indicator of economic growth and development. In addition, the proportion of women in national parliaments, female unemployment, female participation in education and training, and female vulnerable employment risk are a set of independent variables to examine the position of women in the labour market. The variables with abbreviations and description are listed in Table 2.

Table 2. List of variables.

Abbreviation	Variable	Description of the Variable	Source
gdppc	GDP per capita	Measures economic activity per capita, expressed in current prices, EUR per capita	Eurostat (2023f)
FEparl	Women in parliament	Percentage of women in national parliaments—proportion of seats held by women	World Bank (2023a)
FEunemp	Long-term unemployment—female	Number of women unemployed for 12 months or more in the total number of active persons in the labour market (thousands of persons, women from 15–74)	Eurostat (2023g)
FEeduc	Participation in education and training—female	The participation of women in formal and non-formal education and training, (women from 25 to 64)	Eurostat (2023h)
FEvlnempl	Vulnerable employment of women	Vulnerable employment of women (% of total female employment) is characterized by inadequate earnings and working conditions	World Bank (2023b)

Source: Authors.

Table 3 summarizes the descriptive statistics. For each variable, the mean, standard deviation, minimum, and maximum values were calculated. Analysis includes 351 observations.

Table 3. Descriptive statistics.

Variable	Units	Category	Mean	Std.Dev.	Min.	Max
gdppc	euro	overall	28,429.5	19,703.93	4930	119,230
		between		19,270.65	7304.286	95,722.86
		within		5449.074	7559.497	69,839.5
FEparl	percentage	overall	27.29124	10.11128	8.695652	47.27794
		between		9.475492	10.80402	45.35407
		within		3.943241	11.89441	42.09734
FEunemp	thousands	overall	137.7831	230.6355	1	1448
		between		221.0298	1.642857	956.5143
		within		77.6094	−315.4312	629.5688
FEeduc	percentage	overall	12.05344	9.351463	0.9	43.2
		between		9.127115	1.85	36.46429
		within		2.649187	2.032011	20.55344
FEvlnempl	percentage	overall	9.399697	5.721605	3.543942	33.65941
		between		5.518812	3.781373	26.62972
		within		1.823108	−6.180725	17.1774

Source: Authors.

The average value of GDP per capita within the observed period in the 27 EU countries was EUR 28,429.5. In the same period, the lowest value was recorded in Bulgaria in 2009 and the highest in Luxembourg in 2022. The highest proportion of women in national parliaments in the observed period was recorded in Sweden in 2019, while the lowest was recorded in Malta in 2009. On average, the share of women in national parliaments in the observed period was 27.3%. In 2022, Sweden still has the highest proportion of women in its national parliament (46.4%), followed by Denmark (43.6%) and Spain (42.9%). Regarding female unemployment, on average 137,000 women were unemployed in the European

Union in the observed period. The highest number of unemployed women was recorded in Spain in 2014 and the lowest in Cyprus in 2009. In the European Union, on average 12% of women participated in training and education before taking up employment. The highest proportion was recorded in Sweden in 2022 and the lowest in Romania in 2018. In the European Union, the average share of women in vulnerable employment is 9.4%, with the highest share recorded in Romania in 2010 and the lowest in Denmark in 2018. By comparing the results, it can be concluded that the countries with the lowest GDP per capita and a socialist legacy have the lowest participation of women in the labour market and education. Moreover, women in these countries tend to be in vulnerable employment, where they face poor working conditions and low wages. On the other hand, the Scandinavian countries have integrated women into the labour market by promoting their education, providing good working conditions, and supporting gender equality.

The correlation coefficients were calculated between independent variables in order to check multicollinearity. This is the measure of the association between two variables (Wooldridge 2015). Correlation coefficients are presented in Table 4.

Table 4. Correlation coefficients.

	FEparl	FEunemp	FEeduc	FEvulnempl
FEparl	1.0000			
FEunemp	0.0357	1.0000		
FEeduc	-0.2782	-0.0062	1.0000	
FEvulnempl	0.1882	-0.1407	-0.0339	1.0000

Source: Authors.

The results show a negligible positive correlation between women's unemployment and the proportion of women in vulnerable employment and women's participation in national parliaments. Furthermore, a negligible negative correlation was found between women's participation in education and training and the share of women in parliaments and with women's unemployment. A negligible negative correlation was also found between the proportion of women in vulnerable employment, women's unemployment, and women's participation in education and training. It can be concluded that there is no multicollinearity between the independent variables.

The regression analysis for panel data was conducted using fixed and random effects. Afterwards, the Hausman test was performed (Gujarati 2014; Wooldridge 2015). The following model was developed:

$$gdppc = \alpha + \beta_1 FEparl_{it} + \beta_2 FEunemp_{it} + \beta_3 FEeduc_{it} + \beta_4 FEvulnempl_{it} + e_{it} \quad (1)$$

where GDP per capita (gdppc) is the dependent variable and measures the economic development of the country. Other variables are independent. e_{it} is the error term involved in using the linear model to predict the value of the dependent variable. α is the intercept of the slope, and β_1 , β_2 , β_3 , and β_4 are the coefficients of the independent variable (Kamki 2017).

4. Results and Discussion

The estimates of the fixed and random effects are presented in Table 5. The Hausman test was conducted in order to detect which estimator is more suitable. The H_0 states that random effects are consistent and more efficient than a fixed effect estimator. According to the test results, H_0 cannot be rejected, and the random effects give more appropriate results. More precisely, this indicates that individual specific effects are distributed independently of explanatory variables in the model (Wooldridge 2015).

Table 5. Regression results.

	Fixed Effects		Random Effects	
	Coefficients	p-Value	Coefficients	p-Value
FEparl	366.6108	0.000	365.459	0.000
FEunemp	−9.704005	0.001	−9.545445	0.001
FEeduc	532.2304	0.000	548.5291	0.000
FEvulnempl	−40.97183	0.739	−63.86555	0.595
constant	13,322.49	0.000	13,353.77	0.001
Tests for model significant				
F-statistic (fixed effects)	28.98			
p-value > F-statistic	0.000			
Wald statistic (random effects)			126.28	
p-value > Wald-statistic			0.000	
Observations	351		351	
Minimum	13		13	
Maximum	13		13	
Average	13		13	
Hausman test		Fixed vs. Random effects		
Test statistic		1.13		
p-value > test statistic		0.8902		
Decision			random effects	

All three hypotheses were confirmed within the research. First, the negative impact of women's long-term unemployment and participation in vulnerable employment on economic growth are found. More precisely, a statistically significant and negative relationship was found between long-term female unemployment and GDP per capita. An increase in female unemployment by one percentage point led to a EUR 9.54 decrease of GDP per capita. This result is to be expected as women make up a significant proportion of the working-age population in the European Union, and their participation in the labour market has increased in importance in recent years. Furthermore, increase in women's vulnerable employment by one percentage point led to a decrease of GDP per capita by 63.87 euros. However, this result was found not to be statistically significant. Vulnerable employment exacerbates the problem of poverty, especially for young women without tertiary education who are forced to work in underpaid jobs without sufficient social and health insurance.

Therefore, participation in education and training before employment has shown a positive and statistically significant relationship with GDP per capita, confirming the second research hypothesis. If women participate in any kind of education and training before employment, GDP per capita would increase by 548.53 Euros. Results are aligned with the previous research by [Oztunc et al. \(2015\)](#) and [Thévenon \(2013\)](#) who discovered the importance of female participation in the labour market and in education in achieving higher economic growth. Moreover, [Hassan and Cooray \(2015\)](#) suggested that investments in female education cause increase in female employment and promote faster economic growth. This confirms the importance of lifelong learning in a rapidly changing environment where individuals need to adapt to new research, technologies, and work practises. Finally, the proportion of women in national parliaments had a positive and statistically significant impact on GDP per capita, confirming the third research hypothesis. If the proportion of women in national parliaments increased by one percentage point, GDP per

capita would have increased by 365.46 euros. Similarly, a positive relationship between GDP growth and female participation in national parliaments was confirmed by [Mirziyoyeva and Salahodjaev \(2023\)](#), [Hasanah and Pratiwi \(2020\)](#), [Saengchaia et al. \(2020\)](#), and [Ngwakwe \(2019\)](#).

This paper has shown the positive impact of women's participation on economic growth, as women constitute 51% of the EU population ([Eurostat 2023a](#)). Therefore, women's long-term unemployment and participation in vulnerable employment is a serious problem that could not only reduce GDP per capita and jeopardise economic development, but also deepen gender inequalities and discrepancies. As a rule, women are underpaid for their work or they work as unskilled labour. Most of their work in households and families is not paid at all or counted as work. Therefore, education plays a crucial role in this process. It is definitely important that women can achieve a higher level of education, because that is the key to success. However, there are many obstacles. Deeply ingrained gender norms about the place and role of women in society lead to inequalities in terms of earning, earning one's resources, and property. Material security is the starting point that can lead to greater independence of women. Gender differences that arise most often from informal norms of patriarchal society represent limitations that seek to reinforce the power imbalance in favour of men, which characterizes many cultures around the world. One of the possibilities for solving the problem of women's representation in senior management would be the application of the so-called "Norwegian model". Under this model in Norway, they have introduced a quota for women on corporate boards of all public limited companies, and companies that do not have a quota of at least 40% representation of women can be dissolved on the stock exchange. This model proved effective because the representation of women increased in the short run, from 2002 to 2008, from 6% to 39.6%. Following the example of the Norwegian model for female board quotas, some European countries have managed to achieve higher female representation on boards of directors, such as Spain in 2007, Iceland in 2010, France, the Netherlands, Belgium, and Italy in 2011. Unlike the "Norwegian model", which legalized the quota for women, the Council of Europe proposed voluntary quotas to be met in gender balance. Despite the proposal, changes are slow and unequal between European countries. Women usually have to choose between career and family. Because of the family care responsibilities most often attributed to women, women traditionally take them on, and they often have to choose between a career and a family. Either of these two choices have both positive and negative consequences for the family, the woman, the economy, and society as a whole. Therefore, it is necessary to create not only an institutional environment that will allow women to choose both family and society but also a radical change of awareness (both for women and men) that women have the right and obligation to position themselves as equal members of society, in addition to services that reduce the responsibilities of women in the family, such as in kindergartens to care for children, homes for the elderly to care for elderly family members, the use of paternity leave or family leave, a radical change in society's attitude to the role of women as fully equal to men, while respecting their natural differences. Greater efforts are needed to realize women's rights in the labour market by constantly pointing to problem solving in order to avoid the consequences.

5. Conclusions

Gender equality and women's participation has become an ongoing topic in the economic and social studies of the last decade. Although women make up 51% of the total EU population, the gaps between women and men are still significant and visible. In the European Union, 46% of women aged 30–34 have completed tertiary education, which is 11 percentage points more than men. Women are hard workers and today work in many different fields that used to be "manly" jobs. However, there are still gaps in the employment rate. A total of 67% of women aged 20–64 are employed, while the employment rate of men is 79%. The data about earnings is not better, because women are paid less than men across the whole European Union—around 15% less than men are paid.

The aim of this research was to see how women's participation in the labour market affects economic growth and standard of living. The panel data analysis was employed using fixed and random effects. The observed period was 2009–2022 for 27 European countries. The results showed significant and negative impact of long-term female unemployment on economic growth. Moreover, a positive and significant relationship was found between the participation of women in national parliaments and their participation in education and training with economic growth. These results once again confirm the importance of women's inclusion in the labour market. Family care responsibilities are usually associated with women, so they usually have to choose between a career and family. In order to increase inclusivity, the institutional environment should encourage women to adjust their career and family obligations and become equal members of society.

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Notes

- 1 Female TEA is the number of entrepreneurially active women per 100 surveyed adult female population.
- 2 The study included EU countries other than Belgium, Czech Republic, Denmark, Lithuania, Malta, and Romania, and also included Macedonia, Russian Federation and Switzerland.
- 3 The analysis of the prevalence of entrepreneurial activity by gender and age in 2018 is based only on indicators of early entrepreneurial activity (business ventures up to 3.5 years of age—TEA).

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