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# Assessment of Factors Affecting Unemployment in Selected European Union Countries: A Gender Perspective

This paper aims to assess the impact of factors on unemployment in selected European Union (EU) countries from a gender perspective. The study covers three EU countries – the Czech Republic, Spain, and Lithuania – and spans the period from 1997 to 2022. The results show that education has no statistically significant impact on unemployment among women and men in any of the analysed countries. The results obtained using gross domestic product indicate that this factor has little or no effect on unemployment in almost all models, except for the Lithuanian male unemployment model, where an increasing effect was found. Unemployment benefits are the only variable with a statistically significant increasing effect on unemployment for both men and women in all countries analysed. Meanwhile, the effects of other factors – foreign direct investment, inflation and population growth – on unemployment vary between countries and by gender.

**Keywords:** gross domestic product, population growth, inflation, unemployment benefit, unemployment, foreign direct investment, secondary education.

Šio darbo tikslas – įvertinti veiksnių poveikį nedarbui pasirinktose Europos Sąjungos šalyse lyties aspektu. Tyrimas apima tris Europos Sąjungos šalis: Čekiją, Ispaniją ir Lietuvą, tyrimo laikotarpis – 1997–2022 m. Rezultatai rodo, jog išsilavinimas visose analizuotose šalyse nedaro statistiškai reikšmingos įtakos moterų ir vyrų nedarbui. Gautas rezultatas su bendruoju vidaus produktu (BVP) rodo, jog šis veiksnys neveikia arba labai mažai veikia nedarbą beveik visuose modeliuose, išskyrus Lietuvos vyrų nedarbo modelį – nustatytas didinantis poveikis. Nedarbo išmokos yra vienintelis kintamasis, darantis statistiškai reikšmingą didinantį poveikį tiek vyrų, tiek moterų nedarbui visose analizuotose šalyse. Tuo tarpu kitų veiksnių – tiesioginių užsienio investicijų, infliacijos ir gyventojų skaičiaus augimo – poveikis nedarbui skiriasi tiek tarp šalių, tiek lyties aspektu.

**Raktiniai žodžiai:** bendrasis vidaus produktas, gyventojų skaičiaus augimas, infliacija, nedarbo išmoka, nedarbas, tiesioginės užsienio investicijos, vidurinis išsilavinimas.

## Introduction

Unemployment is an important macroeconomic phenomenon that affects not only the economic and social well-being of individuals but also that of countries as a whole. From an economic standpoint, it results in the underutilization of a country's productive potential, which can hinder economic growth. High unemployment rates may also indicate dissatisfaction with economic policies

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or social stability, potentially leading to social unrest. The economic policies of most countries aim to reduce unemployment by stimulating economic growth, ensuring social stability, and improving the living conditions of the unemployed and society (Shiferaw, 2020). Therefore, the topic of unemployment is relevant in many areas, including economic performance, social stability, mental health, and income inequality. Numerous scientific and policy-focused literature sources underscore the multifaceted importance of understanding and addressing unemployment. Taking a gender-based approach to examining unemployment is particularly important, as males and females often have different experiences in the labour market due to structural, cultural, and economic factors. Gender inequality manifests in wage differences and varying levels, durations, and consequences of unemployment. These differences affect personal well-being, social justice, and economic productivity. Therefore, it is crucial to understand the factors affecting male and female unemployment. This paper addresses **the problem:** what effect do these factors have on female and male unemployment?

**The object of this paper** is the impact of factors on unemployment from a gender perspective. The aim of the paper is to assess the impact of these factors on male and female unemployment in selected European Union countries. This assessment is based on a theoretical analysis of the factors affecting unemployment and uses a developed methodology. To achieve this, the paper addresses **the following objectives**:

1. To review the empirical research on factors affecting unemployment, including the gender aspect.
2. To develop a methodology for studying the impact of factors on unemployment.
3. To assess the impact of these factors on male and female unemployment in the selected European Union countries using the developed methodology.

**Research methods** include a comparative analysis of scientific literature and econometric regression analysis using a multiple regression model and the least squares method.

The paper is structured as follows: a literature review, a description of the methodology, the results of the research, and conclusions.

## Literature review

A literature review is being conducted to examine the impact of various factors on unemployment. This paper focuses on six key factors: foreign direct investment (FDI), educational attainment, gross domestic product (GDP), unemployment benefits, inflation, and population growth. These are the factors that have been most widely analysed in scientific literature.

Various authors have examined the impact of FDI on unemployment in different countries. Most studies (Daniyal & Iftikhar, 2023; Hasan & Sasana, 2020; Kiaušienė & Vidrevičienė, 2015) indicate that investment reduces unemployment in the short term. However, K. Nelson and F. Christopher (2022) obtained contrasting results in their study using correlation analysis for the period from

1980 to 2020. In Uganda, they found a positive relationship between the youth unemployment rate and foreign direct investment; an increase in foreign direct investment was found to lead to an increase in the country's unemployment rate. Thus, while most authors conclude that FDI reduces unemployment, some studies have found different results.

Education is one more factor affecting unemployment. A. Mahdali (2022) found that the usual length of schooling in Indonesia had a significant impact on the unemployment rate up to 2022, and that a longer period of schooling could have a greater impact on the country's unemployment rate. However, even with longer periods of schooling, the unemployment rate may remain high because expanding public schools does not guarantee a stable labour force. A. A. M. Rayhan and H. Yanto (2020), however, found that education was not a significant predictor of unemployment rates in Asian countries between 2000 and 2018. Nevertheless, they also found that education has a negative effect on unemployment. Z. Zhou (2023) studied the determinants of unemployment rates in the United States of America over the period 1990–2018 and found that education is an important job requirement; the higher the level of education, the lower the unemployment rate in a country. Thus, the impact of education on the unemployment rate varies by country, but higher levels of education generally reduce unemployment.

One more factor that is often studied for its influence on unemployment in countries is gross domestic product. V. Ristanović (2023) found a slight impact of GDP on unemployment rates in the Eurozone between 2000 and 2021. Z. Hasan and H. Sasana (2020), however, found that GDP had a significant negative impact on unemployment rates in Asian countries. A. R. D. Prayitno and D. Kusumawardani (2022) obtained the same result to that found by V. Ristanović (2023). P. Teye, Y. Luu and M. Akamba (2019) found that the unemployment rate affects real GDP growth in Ghana over the period 1999-2018. They found that an increase in the unemployment rate leads to a decrease in GDP. T. Zhorzholiani (2024) obtained the same result, finding that the unemployment rate and GDP growth are inversely proportional. The author notes that during a similar period to that studied by P. Teye et al. (2019), namely from 1998 to 2022, rising unemployment in Georgia reduced personal income and consumer spending, which subsequently affected GDP growth. However, it is worth noting that these authors used different methods: P. Teye et al. (2019) employed a quantitative research approach and Pearson's correlation, whereas T. Zhorzholiani (2024) utilized regression analysis. Based on these studies, one could argue that GDP and unemployment rates influence each other: an increase in the unemployment rate leads to a decrease in GDP, and an increase in GDP leads to a decrease in the unemployment rate.

Unemployment benefits are often associated with the unemployment rate. L. T. Tung (2019) conducted a study of the unemployment rate in Vietnam, employing ordinary least squares and descriptive statistics based on data from 2008 to 2010. The author concluded that unemployment insurance policies, which include unemployment benefits, positively impact the unemployment

rate by reducing its average annual unemployment rate. However, L. J. Rotar and S. Krsnik (2020) found that unemployment benefits actually increase the unemployment rate. They performed a regression analysis on panel data from European Union countries between 2006 and 2018, using the coefficient estimates of the regression analysis. P. Fredriksson and M. Söderström (2008) obtained a similar result. The authors examined the Swedish unemployment rate using an empirical analysis and data from 1970 to 2002. They found that higher unemployment benefits can lead to higher unemployment rates. Thus, despite dealing with different countries, using different methodologies and covering different time periods, the latter two studies' results show that unemployment benefits increase the unemployment rate.

Population growth is also a factor affecting unemployment. M. S. Dalmar, A. Y. Sheikh Ali and A. A. Ali (2017) investigated the determinants of unemployment in Somalia between 1995 and 2014 using ordinary least squares regression. They concluded that population growth has a significant positive relationship with unemployment. K. Nelson and F. Christopher (2022) obtained a similar result using a different approach: youth unemployment increases with population growth. However, A. Mahdali (2022) found the opposite when using the same method as M. S. Dalmar et al. (2017): he found that population growth negatively affects unemployment, albeit not in a statistically significant way. Thus, the results of the studies were mixed. Nevertheless, the majority showed that an increase in population growth leads to an increase in unemployment.

Inflation is often linked to unemployment. A. A. M. Rayhan and H. Yanto (2020) conducted a quantitative study analysing data from Asian countries from 2000 to 2018 and found that inflation significantly impacts unemployment rates. This study identified inflation as the most important factor contributing to unemployment. K. Nelson and F. Christopher (2022) obtained similar results in a study of Uganda between 1980 and 2020. They found that rising inflation increased youth unemployment. However, Z. Hasan and H. Sasana (2020) found that inflation negatively impacted youth unemployment in Asian countries between 2001 and 2017, as revealed by their least squares analysis. V. Ristanović (2023) analysed data from Euro area countries from 2000 to 2021. He found that the correlation between inflation and unemployment was initially negative and moderately strong, but weakened during the crisis and strengthened again after the recovery. A. R. D. Prayitno and D. Kusumawardani (2022) carried out a study in East Java. Using data from 2006 to 2017, they found that inflation had a negative and significant effect on the open unemployment rate. While these studies demonstrate that inflation tends to reduce the unemployment rate, the results of some empirical studies differ.

As this paper seeks to analyse the gender aspect of unemployment, it is important to review some empirical research results regarding this. Using a logistic regression approach, L. P. Himali (2020) proved that the odds of being female unemployed are 1.2 times higher than those of being male unemployed. A. Salama and O. Judit's (2019) research showed that the determinants of male

and female unemployment differ. The determinants of female unemployment are import, government revenues, GDP, trade, employment in services, the education index, and economic freedom. These determinants differ from those of male unemployment. The determinants of male unemployment are import, government revenues, the education index, and economic freedom. The latter research employed the random-effects GLS regression method.

Thus, the most common finding is that unemployment falls as foreign direct investment, education levels, GDP, and inflation increase, while rising unemployment benefits and population growth cause unemployment to rise. In summary, although the authors used different methods in their empirical studies, it was observed that the ordinary least squares method was the most common. The authors examined different countries and time periods but focused primarily on single-country analyses of unemployment. Relatively few authors have examined the relationship between unemployment benefits and unemployment. Regarding gender differences, some scientific papers revealed that different factors affect female unemployment and male unemployment.

## Methodology

**Research sample.** This study covers three European Union countries: the Czech Republic, Spain, and Lithuania. Based on available data, Spain had the highest unemployment rate in 2022 and 2023 compared to the rest of the European Union. One of the main reasons for Spain's high unemployment rate is its strict labour market regulations. The country has developed a dual labour market with two types of employment contracts being the most common: regular open-ended contracts and fixed-term temporary contracts. This creates many complications for employers when hiring or firing workers (Lahiri, 2024). The Czech Republic has had a low unemployment rate compared to other European Union countries for the last eight years (2016-2023). However, this rate is due to a shortage of workers, which is a concern for the Czech industry (Hutt, 2022). Compared to other European Union countries, Lithuania has neither a low nor a high unemployment rate. Therefore, these countries were chosen for comparison: Spain has the highest unemployment rate, the Czech Republic has the lowest rate in the EU, and Lithuania has an average rate. This allows for a comparison of different unemployment scenarios between countries with high and low rates.

**Research period.** The period from 1997 to 2022 was chosen as it contains the most recent available data on all the factors included in the study. No older data is available. It is also the longest period available for analysis.

**Research variables**. The following variables were chosen for the assessment of factors affecting female and male unemployment: unemployment rate as a percentage of female and male unemployment; Gross Domestic Product (GDP) per capita (in US dollars at current exchange rates); Foreign Direct Investment (FDI) as a percentage of GDP;

education, measured as the total number of pupils enrolled in secondary education in public and private schools; population growth, measured as annual population growth (%); unemployment benefit - expenditure on unemployment benefits as a percentage of GDP; inflation, measured as the annual average consumer price index (%). Data for this study were collected from World Bank (2025a, 2025b, 2025c, 2025d, 2025e, 2025f, 2025g, 2025h) and Eurostat (2025) databases.

**Research hypotheses.** After analyzing scientific literature, six hypotheses were proposed:

*H1: As FDI increases, unemployment decreases for both males and females.*

FDI has a negative impact on unemployment in the short term. FDI creates new jobs, boosts incomes, increases employment, and reduces poverty. Thus, this contributes to a reduction in both female and male unemployment (Daniyal & Iftikhar, 2023).

*H2: As educational attainment increases, unemployment decreases for both males and female.*

The number of students in secondary education significantly impacts the unemployment rate because secondary education increases productivity and labour absorption. As A. A. M. Rayhan and H. Yanto (2020) argue, education negatively impacts unemployment. Once a person has acquired sufficient skills and knowledge, male or female is more likely to enter the labour market or create jobs, reducing the unemployment rate.

*H3: As GDP rises, female unemployment falls, but male unemployment remains unaffected.*

Rising GDP has a significant and negative impact on unemployment rates because more economic activity creates more jobs (Hasan & Sasana, 2020). However, as proven by A. Salama and O. Judit's (2019), GDP only affects female unemployment, not male unemployment.

*H4: As unemployment benefits increase, so does unemployment for both males and females.*

An unemployed person who receives unemployment benefits has less motivation to reintegrate into the labour market than a person without benefits (Rotar & Krsnik, 2020).

*H5: As inflation rises, unemployment falls for both males and females.*

As Z. Hasan and H. Sasana (2020) argue that inflation has a negative and significant impact on youth unemployment. Similarly, A. R. D. Prayitno and D. Kusumawardani (2022) substantiated that an increase in inflation results in an increase in demand and a decline in the unemployment rate.

*H6: As the population grows, unemployment increases for both males and females.*

A rapidly growing population increases the unemployment rate in a country because the economy cannot efficiently employ an ever-growing labour force (Nelson & Christopher, 2022). A study by M. S. Dalmar et al. (2017) showed that population growth impacts unemployment, implying that population growth causes unemployment in a country.

**The research models**. To analyse the impact of the selected factors on male and female unemployment, regression equations were constructed (see Equations 1 and 2):

$$Female\_unemployment = \beta0 + \beta1 \times FDI + \beta2 \times Education + \beta3 \times Unemployment\ benefit + \beta4 \times Population + \beta5 \times GDP + \beta6 \times Inflation + u, \quad (1)$$

$$Male\_unemployment = \beta0 + \beta1 \times FDI + \beta2 \times Education + \beta3 \times Unemployment\ benefit + \beta4 \times Population + \beta5 \times GDP + \beta6 \times Inflation + u, \quad (2)$$

where: Female_unemployment: female unemployment as a percentage of female labor force; Male_unemployment: male unemployment as a percentage of male labor force; FDI: net inflows of foreign direct investment (% of GDP); Education: the number of pupils completing upper secondary education; Unemployment benefit: expenditure on unemployment benefits (% of GDP), Population: population growth (annual percentage); GDP: GDP per capita (in US dollars at the current exchange rate); Inflation: consumer price index (annual average percentage); β0: constant; β1, ..., β6: coefficients of the regression model; u: error term.

These equations will be assessed separately in all three countries using the ordinary least squares (OLS) method. This method was used in previous unemployment research by L. T. Tung (2019), M. S. Dalmar et al. (2017), etc. OLS is a parametric method used to test for a linear relationship between a continuous dependent variable and one or more independent predictor variables, which can be continuous or categorical. The core idea of this method is to minimise the sum of squared residuals (Zdaniuk, 2014).

The empirical **research process** involves the following steps:

1. Analysis of scatter plots.

2. Testing for outliers using the standardised residuals method, normality of residuals using the Shapiro-Wilk test, multicollinearity using the variance inflation factor (VIF) method, and autocorrelation using the Durbin-Watson (DW) d statistic and the Durbin h statistic.

3. Assessing the model and finding the coefficients of the regression model using the ordinary least squares method, as well as the coefficient of determination. The statistical significance of the coefficients is determined using a Student's t-test, while the statistical significance of the model is determined using a Fisher's F-test.

Thus, the research will be carried out based on this methodological approach.

## Results of the research

The econometric analysis revealed more details about the effect of factors on male and female unemployment. These factors include gross domestic product, foreign direct investment, population growth, secondary education, unemployment benefits, and inflation. Following the empirical research process, the scatter plots analysis was performed first. The results showed that in the Czech Republic, the female unemployment rate increases with an increase in FDI and the number of secondary education students but decreases with an increase in GDP per capita and population. The relationship with inflation and spending on unemployment benefits is unclear. Similar results were found for Czech males. In Spain, female unemployment increases with spending on benefits and

the number of pupils, but decreases with FDI, GDP, population, and inflation. The same results apply to male. In Lithuania, the number of pupils drives up female unemployment, while GDP, population growth, and inflation drive it down. The relationship with FDI and benefits is unclear. Unemployment trends for men align with those for women.

The standardized residuals method was used to check for outliers in the data, and none were found in any model (all values were lower than 3 in absolute terms). The Shapiro-Wilk normality test confirmed the normal distribution of the residuals. The results of this test show that the residuals in all models are normally distributed (the p-values are all greater than the significance level of 0.05). However, in Lithuania's models only, the VIF value of the GDP variable is greater than 5, indicating a problem. In this case, GDP is highly correlated with secondary education because the bivariate correlation coefficient between the two variables is above 0.8. Therefore, two separate models were constructed for Lithuania to eliminate multicollinearity: one without the "GDP" variable and one without the "secondary education" variable. This resulted in four equations (see Equations 3, 4, 5, and 6):

Factors affecting unemployment of Lithuanian female (excluding the GDP variable):

$$Female\_unemployment = \beta_0 + \beta_1 \times TUI + \beta_2 \times \times education + \beta_3 \times unemployment\_benefit + + \beta_4 \times population + \beta_5 \times inflation + u \quad (3)$$

Factors affecting unemployment of Lithuanian female (excluding the secondary education variable):

$$Female\_unemployment = \beta_0 + \beta_1 \times TUI + \beta_2 \times \times unemployment\_benefit + \beta_3 \times population + + \beta_4 \times GDP + \beta_5 \times Inflation + u \quad (4)$$

Factors affecting unemployment for Lithuanian male (excluding the GDP variable):

$$Male\_unemployment = \beta_0 + \beta_1 \times TUI + \beta_2 \times \times education + \beta_3 \times unemployment\_benefit + + \beta_4 \times population + \beta_5 \times inflation + u \quad (5)$$

Factors affecting unemployment for Lithuanian male (excluding the secondary education variable):

$$Male\_unemployment = \beta_0 + \beta_1 \times TUI + + \beta_2 \times \times unemployment\_benefit + \beta_3 \times population + + \beta_4 \times GDP + \beta_5 \times Inflation + u \quad (6)$$

The new model equations eliminate the problem of multicollinearity.

The Durbin-Watson d test was used to determine if there is autocorrelation in the models. This problem was found in all models, so a lagged dependent variable was added to each model. The p-values obtained after testing for statistical significance are all below α (more precisely, below 0.001) for all models, indicating that the models are statistically significant.

Table 1 presents the results of the models.

Coefficient values with a statistical significance below 0.05 are considered statistically significant, meaning they have a statistically significant effect on the dependent variable (i.e. the variable on the left-hand side of the equation). Coefficients with a positive sign increase unemployment, whereas those with a negative sign decrease it.

The Spain model with male unemployment has the highest coefficient of determination, indicating that this

*Table 1.* **Coefficient of determination and regression model coefficients**

| Model | Coefficient of determination | Coefficients and their statistical significance |
|---|---|---|
| The Czech Republic (female) | 0.943 | Female_unemployment = 1.703 [0.575] – 0.116 [0.171] × FDI + 0 [0.866] × Education + 11.600 [0.001] × Unemployment benefit – 0.489 [0.155] × Population + 0 [0.008] × GDP + 0.049 [0.457] × Inflation + 0.478 [0.009] × Lagged_Female_unemployment |
| The Czech Republic (male) | 0.918 | Male_unemployment = 1.287 [0.614] – 0.077 [0.276] × FDI + 0 [0.987] × Education + 10.755 [0.001] × Unemployment benefit – 0.230 [0.402] × Population + 0 [0.016] × GDP + 0.007 [0.897] × Inflation + 0.728 [0.001] × Lagged_Male_unemployment |
| Spain (female) | 0.941 | Female_unemployment = 4.948 [0.721] – 0.230 [0.442] × FDI + 0 [0.250] × Education + 3.902 [0.001] × Unemployment benefit + 0.924 [0.526] × Population + 0 [0.541] × GDP – 0.372 [0.057] × Inflation + 0.905 [0.001] × Lagged_Female_unemployment |
| Spain (male) | 0.966 | Male_unemployment = 24.999 [0.053] + 0.071 [0.798] × FDI + 0 [0.013] × Education + 3.685 [0.001] × Unemployment benefit – 1.228 [0.420] × Population + 0 [0.068] × GDP – 0.434 [0.025] × Inflation + 0.661 [0.001] × Lagged_Male_unemployment |
| Lithuania (female; model excluding GDP variable) | 0.822 | Female_unemployment = -4.995 [0.030] – 0.291 [0.022] × FDI + 0 [0.002] × Education + 7.705 [0.001] × Unemployment benefit – 0.668 [0.184] × Population – 0.128 [0.118] × Inflation + 0.779 [0.001] × Lagged_Female_unemployment |
| Lithuania (female; model excluding the secondary education variable) | 0.919 | Female_unemployment = 4.278 [0.019] – 0.365 [0.002] × FDI + 8.803 [0.001] × Unemployment benefit – 0.708 [0.094] × Population – 0 [0.001] × GDP + 0.039 [0.561] × Inflation + 0.728 [0.001] × Lagged_Female_unemployment |
| Lithuania (male; model excluding GDP variable) | 0.780 | Male_unemployment = -7.855 [0.075] – 0.433 [0.079] × FDI + 0 [0.015] × Education + 11.947 [0.003] × Unemployment benefit – 1.545 [0.125] × Population – 0.087 [0.566] × Inflation + 0.732 [0.001] × Lagged_Male_unemployment |
| Lithuania (male; model excluding the secondary education variable) | 0.882 | Male_unemployment = 6.154 [0.015] – 0.588 [0.003] × FDI + 15.358 [0.001] × Unemployment benefit – 1.733 [0.024] × Population – 0.001 [0.001] × GDP + 0.190 [0.115] × Inflation + 0.657 [0.001] × Lagged_Male_unemployment |

*Notes:* The statistical significance of each coefficient is provided in square brackets and in bold next to the relevant coefficient. Lagged dependent variables were created to eliminate autocorrelation.

model best explains the variation in the dependent variable. However, the high coefficient of determination for all models shows that they are all good.

Table 2 presents the results of hypotheses testing based on the regression model coefficients obtained.

In summary, the results show that education does not affect unemployment in any of the analysed countries, i.e., education does not affect the unemployment rates of females and males in Lithuania, the Czech Republic, or Spain. The results regarding GDP show that this factor has little to no statistically significant effect on unemployment in almost all of the analysed countries' models. However, the results for the Lithuanian male model are

*Table 2.* **Hypotheses testing results**

| Hypothesis | Models that support the hypothesis | Opposite result than expected | Statistically insignificant result or 0 effect |
|---|---|---|---|
| H1: As FDI increases, unemployment decreases for both males and females. | Lithuanian models, except male model, excluding GDP. | – | Czech and Spanish models. Lithuanian male model, excluding the GDP variable. |
| H2: As educational attainment increases, unemployment decreases for both males and female. | – | – | All models*. |
| H3: As GDP rises, female unemployment falls, but male unemployment remains unaffected. | – | Lithuanian male model. | Czech and Spanish models. Lithuanian female model. |
| H4: As unemployment benefits increase, so does unemployment for both males and females. | All models. | – | – |
| H5: As inflation rises, unemployment falls for both males and females. | Spanish male model. | – | Lithuanian, Czech and Spanish female models. |
| H6: As the population grows, unemployment increases for both males and females. | – | Lithuanian male model. | Czech, Spanish and Lithuanian female models. |

*Notes:* While the regression coefficient is statistically significant in some models, it is 0 (or very close to it), meaning it has no effect on the dependent variable.

not as expected: GDP growth increases male unemployment. Despite this result, it is worth noting that the coefficient is low at only 0.001; thus, although the effect is statistically significant, it is very small. Foreign direct investment reduces the unemployment rate in almost all of the Lithuanian models; however, the effect is not statistically significant in the Czech Republic and Spain. Rising inflation lowers male unemployment in Spain. However, the effect of inflation on female and male unemployment in the other models is statistically insignificant. In Lithuania, population growth decreases male unemployment, while in the other models, it has no statistically significant effect. Unemployment benefits are the only variable with a statistically significant effect on male and female unemployment in all the analysed countries. This variable increases unemployment.

## Conclusions

A review of the research shows that rising foreign direct investment, educational attainment, and GDP lead to falling unemployment, while rising unemployment benefits and population growth lead to rising unemployment. The authors used various methods in their empirical studies, the most common of which is the ordinary least squares method. They also examined different countries and time periods, focusing more on single-country unemployment analysis.

This paper covers the period from 1997 to 2022 and three European Union

countries: the Czech Republic, Spain, and Lithuania. Six factors were chosen: GDP per capita, foreign direct investment, the number of secondary school students, unemployment benefits, population growth, and inflation. The study performed an econometric analysis using multiple regression. The regression model was constructed by analysing scatter plots, checking for outliers and multicollinearity, addressing autocorrelation issues, analysing the coefficient of determination, and testing the statistical significance of the model and its parameters. A total of eight models were performed due to the analysis of three countries, male and female unemployment, and the inclusion of lagged dependent variables in order to eliminate the problem of autocorrelation.

The results show that the H1 hypothesis, which states that as foreign direct investment increases, unemployment decreases for both men and women, is only confirmed in the Lithuanian models, except for the male model, excluding gross domestic product. The H5 hypothesis, which states that as inflation rises, unemployment falls for both men and women, is only confirmed in the Spanish male model. The H4 hypothesis, which states that as unemployment benefits increase, so does unemployment for both men and women, is confirmed in all models.

The study's findings suggest that policymakers should prioritise enhancing the quantity and quality of foreign direct investment, given that its positive impact on unemployment has been confirmed in Lithuania and could produce comparable results in other contexts. Governments should also review the design of unemployment benefits in order to maintain social protection while reducing potential disincentives to work. Improving employability and reducing structural unemployment requires strengthening education systems, especially secondary and vocational education. Due to the country- and gender-specific implications of the outcomes, labour market policies should be tailored to national conditions and demographic characteristics, rather than applying uniform strategies across the European Union. Furthermore, future studies should expand their analytical scope to include additional variables and longer time periods in order to capture lagged effects. They should also use cross-border panel analysis to better understand the complex dynamics of unemployment drivers.

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## NEDARBĄ LEMIANČIŲ VEIKSNIŲ VERTINIMAS PASIRINKTOSE EUROPOS SĄJUNGOS ŠALYSE: LYTIES ASPEKTAS

**Santrauka**

Nedarbas yra vienas iš svarbiausių socialinių ir ekonominių iššūkių, su kuriais susiduria Europos Sąjunga. Šis reiškinys tiesiogiai veikia gyventojų gyvenimo kokybę, ekonominę gerovę bei visuomenės stabilumą. Atsižvelgiant į tai, svarbu nuolat atnaujinti ir analizuoti statistinius duomenis, kad būtų galima stebėti nedarbo lygio pokyčius. Be to, būtina įvertinti poveikį nedarbui galinčius turėti veiksnius, tokius kaip ekonomikos augimas, investicijos, išsilavinimo lygis ir nedarbo išmokos. Tai gali prisidėti prie atitinkamų nedarbo mažinimo sprendimų priėmimo. Šio tyrimo problema – koks veiksnių poveikis moterų ir vyrų nedarbui. Tyrimo tikslas – įvertinti veiksnių poveikį nedarbui pasirinktose Europos Sąjungos šalyse lyties aspektu. Tyrimo objektas – veiksnių poveikis nedarbui. Tyrimo metodai: mokslinės literatūros analizė, ekonometrinė daugialypė regresinė analizė (metodas – mažiausių kvadratų). Regresijos modelis buvo sukurtas analizuojant sklaidos diagramas, tikrinant išskirtis ir multikolinearumą, sprendžiant autokoreliacijos problemas, analizuojant determinacijos koeficientą ir tikrinant modelio bei jo parametrų įverčių statistinį reikšmingumą. Tyrimas apima tris Europos Sąjungos šalis: Čekiją, Ispaniją ir Lietuvą, o tyrimo laikotarpis – 1997–2022 m. Pasirinkti šeši veiksniai, darantys poveikį nedarbui: BVP vienam gyventojui, tiesioginės užsienio investicijos, vidurinę mokyklą baigusių mokinių skaičius, nedarbo išmokos, gyventojų skaičiaus augimas ir infliacija. Šie veiksniai pasirinkti atlikus literatūros apžvalgą ir, remiantis ja, suformuluotos šešios hipotezės: H1: didėjant tiesioginėms užsienio investicijoms (TUI), mažėja tiek vyrų, tiek moterų nedarbas; H2: didėjant išsilavinimo lygiui, mažėja tiek vyrų, tiek moterų nedarbas; H3: didėjant BVP, moterų nedarbas mažėja, tačiau vyrų nedarbas išlieka nepakitęs; H4: didėjant nedarbo išmokoms, didėja ir vyrų, ir moterų nedarbas; H5: didėjant infliacijai, mažėja tiek vyrų, tiek moterų nedarbas; H6: augant gyventojų skaičiui, didėja tiek vyrų, tiek moterų nedarbas.

Apibendrinant tyrimo rezultatus galima teigti, jog išsilavinimas neturi statistiškai reikšmingos įtakos nedarbui nė vienoje iš analizuotų šalių, t. y. išsilavinimas neturi statistiškai reikšmingos įtakos moterų ir vyrų nedarbo lygiui Lietuvoje, Čekijoje ar Ispanijoje. BVP rezultatai rodo, kad šis veiksnys beveik visuose analizuotų šalių modeliuose statistiškai reikšmingo poveikio nedarbui beveik neturi arba visiškai neturi. Tačiau Lietuvos vyrų nedarbo modelio rezultatai ne tokie, kokių tikėtasi: dėl

BVP augimo didėja vyrų nedarbas. Nepaisant šio rezultato, verta paminėti, kad koeficientas yra tik 0,001. Taigi, nors poveikis statistiškai reikšmingas, jis labai mažas. Tiesioginės užsienio investicijos mažina nedarbo lygį beveik visuose Lietuvos modeliuose, tačiau Čekijoje ir Ispanijoje poveikis nėra statistiškai reikšmingas. Didėjant infliacijai mažėja vyrų nedarbas Ispanijoje. Tačiau infliacijos poveikis moterų ir vyrų nedarbui kituose modeliuose statistiškai nereikšmingas. Lietuvoje augant gyventojų skaičiui mažėja vyrų nedarbas, o kituose modeliuose jis neturi statistiškai reikšmingo poveikio. Nedarbo išmokos yra vienintelis kintamasis, turintis statistiškai reikšmingą poveikį vyrų ir moterų nedarbui visose analizuotose šalyse. Dėl šio kintamojo didėja nedarbas.