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InTraders International Trade Academic Journal, 5 (2), 211-229. DOI: 10.55065/intraders.1202498
Conference Article
Received: November 10, 2022 & Accepted: December 10, 2022

Has the Great Recession and the Pandemic been one of the Triggers for the rise in Unemployment? A Comparative Analysis: Türkiye & EU27[1]

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Abstract

In 1999 the European Council celebrated in Helsinki, on a proposal by the Commission, made Türkiye a candidate country for EU membership. To make further progress in the process, several reforms, both political and economic, had to be implemented. The aim of this paper is twofold. First, to study the evolution of one of the leading macroeconomic indicators: unemployment. Secondly, through the estimation of dynamic econometric models, to analyze the possible differences in the evolution of unemployment in Türkiye and the EU27, depending on variables such as per capita income, population, inflation, investment, or public debt. Furthermore, what has been the effect that relevant events such as the Great Depression of 2008 and the pandemic have had on unemployment?

Keywords: Unemployment rate; Great Recession, COVID-19, macroeconomic variables, labor market policies.

JEL Codes: E20, E24, J08, J40

[1] Presented at The 8th InTraders International Conference on Social Sciences and Education Abstract Book, 24-28 October 2022, İstanbul, Türkiye

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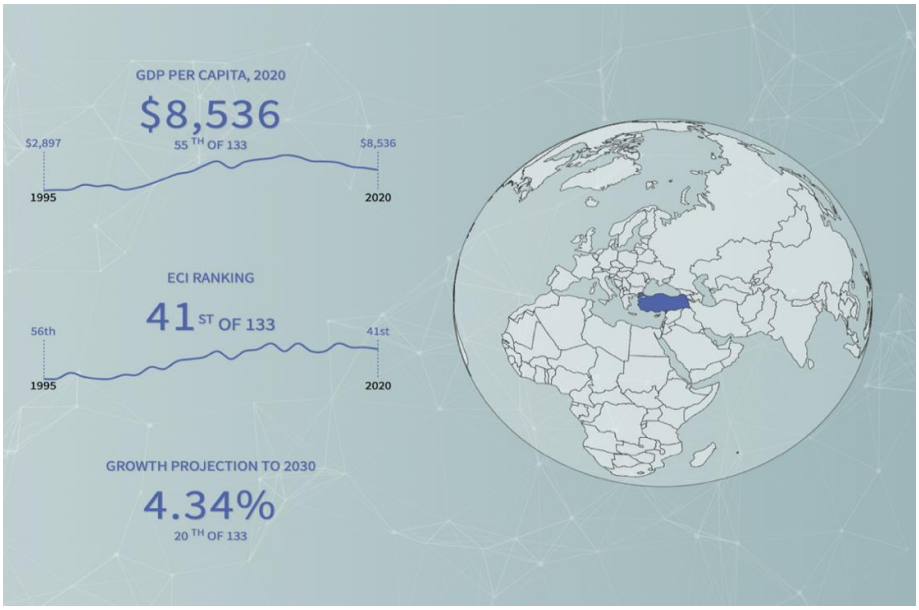
Introduction

According to the latest United Nations Human Development Report, Türkiye ranks 48th among the world's economies in terms of human development index (HDI), being part of the group of nations with the highest level of human development. This position has not changed since 2021 (UNDP, 2022:272). Its Gross National Income per capita in 2021 was 31.033 (2017 PPP $), ranking 45th in the world. It is also the 19th largest economy in the world, with a GDP of roughly US$720 billion (World Bank, 2022). As a result, Türkiye is now considered one of the world's leading emerging economies. Related to data from Harvard University's Atlas of Economic Complexity, in 2020 it ranked 55th out of 133 in terms of GDP pc of the economies studied[6]. As can be seen in Figure 1, Harvard analysts estimate that the Turkish economy will grow at a rate of 4.34% per annum in the coming years, allowing it to improve its ranking, possibly reaching 20th place in the next decade.

Figure 1. Evolution of Türkiye 's GDP pc and ECI (1995-2020)



Source: Atlas Economic Complexity (2021)

[6] As they explain on their web page, the Atlas of Economic Complexity is a data visualization tool that allows people to explore global trade flows across markets, track these dynamics over time and discover new growth opportunities for every country. Built at the Harvard Kennedy School of Government, the Atlas places a country's industrial capabilities and know-how at the heart of its growth prospects, where the diversity and complexity of existing capabilities heavily influence how growth happens.

This good outlook is partly explained by the improved sophistication of the Turkish economy. Compared to the previous decade, and according to ECI ranking data, it has improved by one place, thanks to the diversification of its exports. The Turkish economy is more complex than expected, given its per capita income level.

However, Türkiye and its economy still have room for improvement. This paper aims to present a model that explains the evolution of the unemployment rate in the Turkish economy over the 21st century and to compare it with the European case. To this end, this paper has been divided into three sections. The first section analyses the evolution of the Turkish economy in the European context. Secondly, the econometric model that explains the evolution of unemployment based on a series of macroeconomic variables, both in Turkey and in the EU27, is presented[7]. Finally, based on the results obtained, an explanation of the model for the Turkish case and recommendations for improving the evolution of unemployment are offered.

Türkiye and the EU27: a 21st-century economic analysis

The process of Turkey's accession to the EU27, apart from the geostrategic and political issues, requires the fulfillment of a series of political, economic, and administrative requirements. These are known as the accession criteria or Copenhagen criteria[8]:

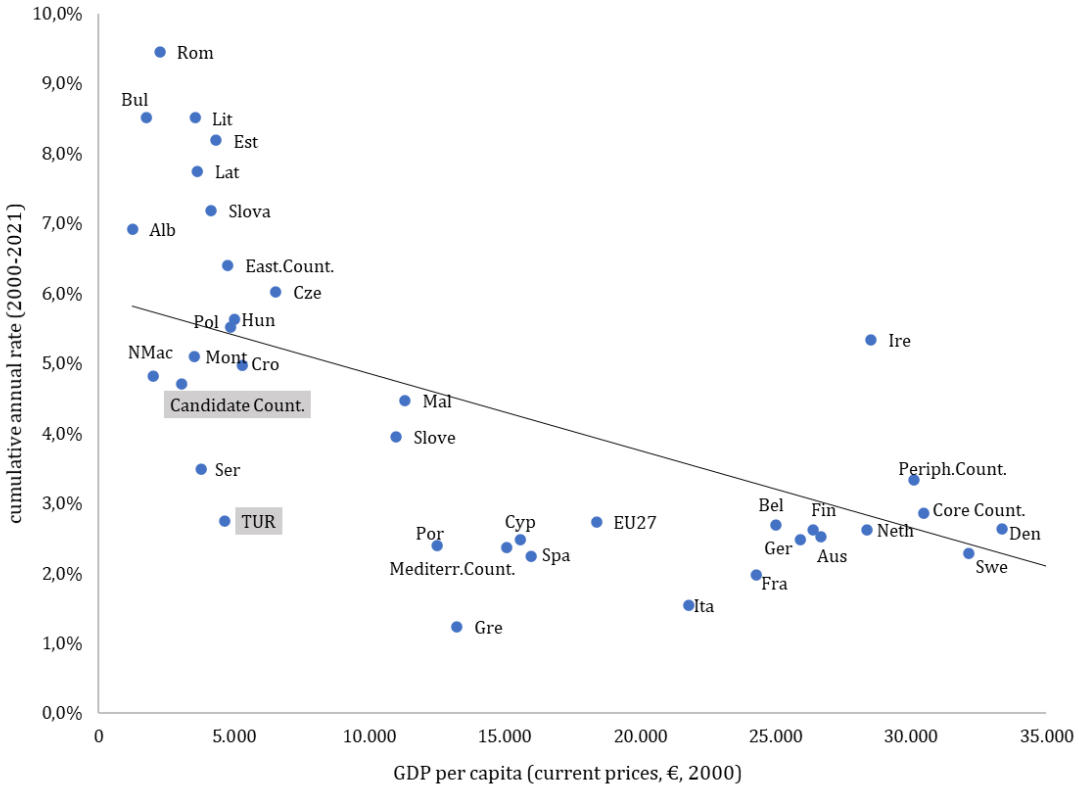
- Political criteria: stability of institutions guaranteeing democracy, the rule of law, human rights, and respect for and protection of minorities.
- Economic criteria: a functioning market economy and the capacity to cope with competition and market forces.
- Administrative and institutional capacity to effectively implement the EU acquis (body of common rights) and ability to take on the obligations of EU membership.

For this reason, and before developing the model on the evolution of unemployment in Turkey, we wanted to analyze some relevant variables that give us a clearer picture of its capacity to function in a market economy, more specifically, how its economic evolution has affected Türkiye 's unemployment rate, as an indicator of real convergence with the Member States.

[7]All data have been obtained from EUROSTAT.
[8] European Council, Copenhagen 21, 22 June 1993.

The analysis of GDP per capita is among the variables that determine this real convergence. Figure 2 shows the low level of per capita income in 2000 for all the candidate countries. However, unlike the others, Türkiye has maintained an average growth rate of 2.7% over the last 21 years, almost half that of the other countries that have applied for EU membership. However, its growth capacity is not comparable to that of the Eastern European countries, which have grown at 6.4%, showing a more substantial beta convergence than Turkey and the other candidate countries.

Figure 2. Real beta convergence in GDP per capita (current euros, 2000-2021)



Source:

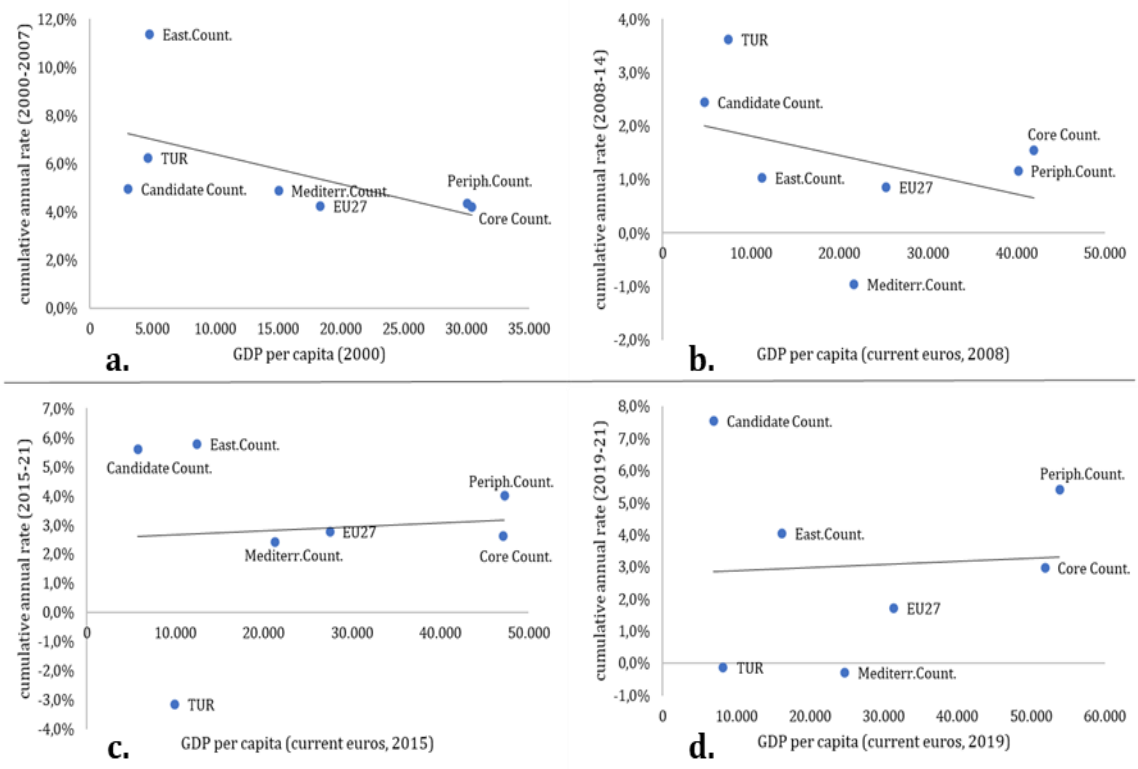
Own elaboration based on Eurostat database (2022)[9].

Luxembourg had 52.600€ in 2000 and grew at a rate of 3,7% in those 21 years.

[9] Mediterranean countries (Mediterr.Count.): Greece, Spain, Italy, Cyprus, Malta, Portugal.
Eastern countries (East.Count.): Bulgaria, Czechia, Estonia, Croatia, Latvia, Lithuania, Hungary, Poland, Romania, Slovenia, Slovakia
Core Countries (Core Count.): Belgium, Germany, France, Luxembourg, Netherlands, Austria
Peripheral Countries (Periph.Count.): Denmark, Ireland, Finland, Sweden
Candidate Countries (Candidate Count.): Montenegro, North Macedonia, Albania, Serbia, Turkey

In the first years of the 21st century, even during the Great Recession, Türkiye maintained high GDP per capita growth rates (Figures 3a and 3b). Between 2008 and 2014, it achieved growth rates of 3.6%, higher than the other candidates and even the Eastern European countries (which were the best performers in the EU between 2000 and 2007). However, since 2015 the Turkish economy has experienced negative growth of -3.2% between 2015 and 2021. In the pandemic years (2019-21), it has been - 0.1%. This has reduced Turkish GDP per capita from €8,210 in 2019 to €8,190 in 2021, as shown in graphs 3c and 3d. Only the Mediterranean economies performed worse between 2019 and 2021 (Figure 2d).

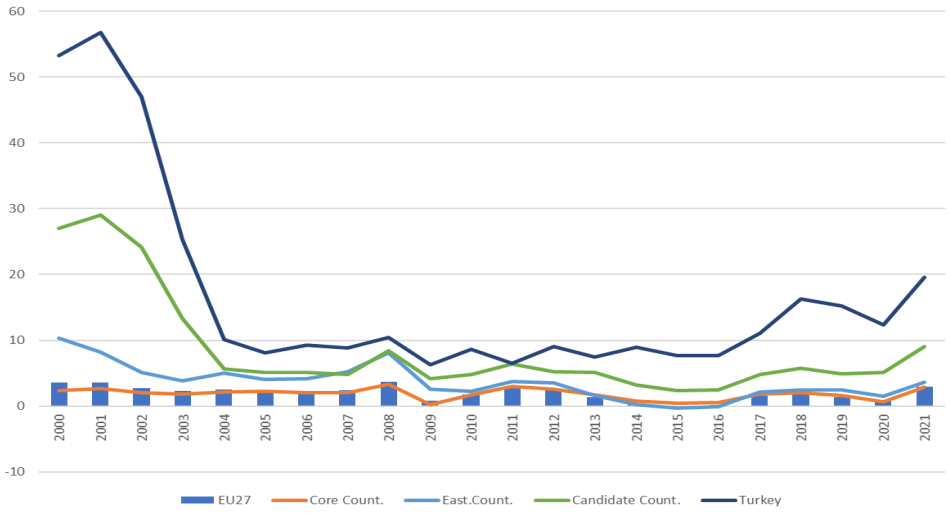
Figure 3. Real beta convergence in GDP per capita of Türkiye with the main groups of EU countries (current euros)



Source: Own elaboration based on Eurostat data, 2022.

This slow process of real convergence has been accompanied by insufficient nominal convergence, as shown by the case of the harmonized index of consumer prices. While it is true that Türkiye has abandoned the price growth levels of the beginning of the century, close to 60%, rapidly approaching European standards, since 2017, it exceeded double digits and in 2021, it stood at 19.6% (Figure 4).

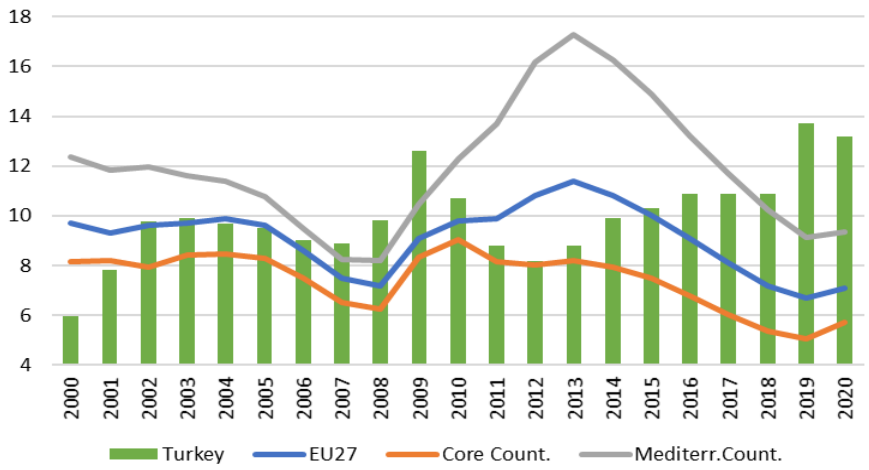
Figure 4. Harmonized Index of Consumer Prices (annual percentage changes, %)



Source: Own elaboration based on Eurostat data, 2022.

However, high unemployment rates have not been accompanied by high inflation rates. Throughout the period under review, Türkiye's unemployment levels have remained close to those of the EU27, even lower between 2011 and 2014. Since 2014, however, they have been moving further apart, reaching a differential of 7 percentage points in 2019 (Figure 5). Despite the economic recovery since 2021, inflation is affecting lower-income households the most, as they spend a larger share of their income on commodity purchases (World Bank, 2022).

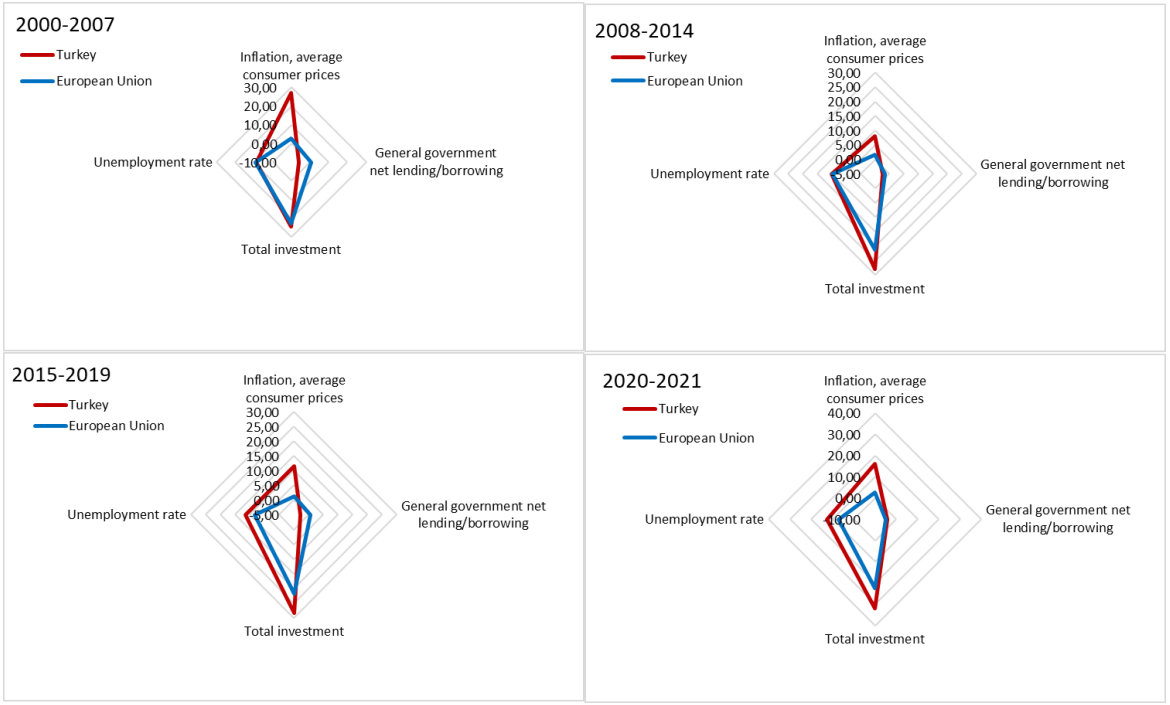
Figure 5. Unemployment rate (percentage of the labor force)



Source: Own elaboration based on Eurostat data, 2022.

Based on the data analyzed, we want to compare nominal and real convergence in the different stages of these two decades of the 21st century. In Figure 6, we have differentiated the 4 periods into which we can divide these twenty years: 2000-07, characterized by economic expansion in the EU; 2008-2014, the years of the Great Recession; 2015-2019, when economic recovery begins in almost all Member States; and 2020-21, the years of the pandemic.

Figure 6. Nominal versus real convergence



Source: Own elaboration based on Eurostat data, 2022.

From Figure 6, it is possible to observe a greater real convergence of Türkiye between 2000 and 2008 in unemployment and investment[10]. However, since then, the nominal convergence variables - inflation and public deficit - have been moving away from the EU average, as have the actual convergence variables - unemployment and investment - apart from the behavior of unemployment during the Great Recession and of the public deficit in the years of the collapse of the pandemic.

Given this performance, the fundamental question is whether Turkey is ready to join the most ambitious integration bloc. With the increased pressure of competition between domestic firms and foreign direct investment. With the need to accelerate the process of integration into the euro monetary framework by the candidate states. Moreover, the exercise of a market made up of large competitive economies can ultimately damage the growth process necessary for the new candidates.

[10] The choice of the investment variable is determined by its influence on employment generation and economic growth in the country. In turn, it allows us to analyze whether it leads to a higher government deficit (as it is mainly public investment) and whether it leads to price growth or not.

Unemployment rate modeling for EU27 and Türkiye. Results

There are other studies to analyze unemployment using other macroeconomic variables (Aktar & Öztürk, 2009; Berument *et al*. 2009; Doğan, 2012). However, in this case, to establish which are the main variables that are influencing both the unemployment rate in EU27 and Türkiye, as well as the possible similarities and differences between them, the following model is going to be estimated:

$$\text{Unemployment rate}_{ti} = \beta_{0i} + \beta_{1i}\text{Unemployment rate}_{(t-1)i} + \beta_{2i}\text{LGDPpc}_{ti} + \beta_{3i}\text{Inflation}_{ti} + \beta_{4i}\text{LPopulation}_{ti} + \beta_{5i}\text{Investment}_{ti} + \beta_{6i}\text{Gross debt}_{ti} + \beta_{7i}\text{Crisis}_{ti} + \beta_{8i}\text{COVID}_{ti} + u_t$$

$$u_t \sim \text{iid}\ (0, \sigma^2)$$

Where:

- β_0 is the constant of the model, β_j (j=1,...,8) is the parameter used to indicate how each explanatory variable influences the unemployment rate in EU27 or Türkiye, *ceteris paribus*.
- i=1,2; depending on EU27 or Türkiye.
- Crisis is a dummy variable included in the model to estimate how unemployment rates have been affected by the Great Recession. It is a variable that takes a value 1 in 2008, 2009 and 2010 and zero in the rest of the years.
- COVID is a dummy variable included in the model to determine whether COVID-19 has influenced the unemployment rate in EU27 and Türkiye. This variable takes value 1 in the years 2020 and 2021 and zero in the rest of the cases.
- Finally, the term reflects the stochastic nature of the relationship between the unemployment rate and the explanatory variables. It is assumed to be independent and identically distributed with zero mean and constant variance (σ^2).

The model has been estimated with generalized least squares to correct the autocorrelation and heteroskedasticity problems. The estimation has been realized using the PcGive module of Oxmetrics (Doornik & Hendry, 2013; Wooldridge, 2009).

Table 1. Estimated results for the Unemployment rate in UE27 and Türkiye

	UE27			TÜRKIYE		
	Estimated Parameter	**t-value**	**p-value**	**Estimated Parameter**	**t-value**	**p-value**
Unemploym. rate_1	0.7030	8.30	0.0000	0.21140	0.856	0.4087
Constant	26.110	1.39	0.1912	25.4971	1.41	0.1846
LGDPpc	-19.824	-3.12	0.0089	-0.3909	-0.07	0.9381
Inflation	0.437084	4.36	0.0009	-0.05542	-1.41	0.1846
LPopulation	79.4204	1.92	0.0794	17.0403	0.988	0.3426
Investment	-0.69946	-6.05	0.0001	-0.2684	-2.17	0.0506
GB _Gross debt	-0.05575	-1.38	0.0916	0.0373	0.576	0.5754
Crisis	0.030803	0.121	0.9054	1.07996	1.73	0.1091
COVID	0.958237	2.91	0.0130	1.41894	1.56	0.1450
	R^2=0.9861			R^2=0.8668		
Statistics	AR 1-2 test: F(2,10)=2.0913 [0.1743]			AR 1-2 test: F(2,10)=0.2267 [0.8011]		
	ARCH 1-1 test:F(1,19)=0.3213 [0.577]			ARCH 1-1 test:F(1,19)=8.7e-05 [0.99]		
	Normality test:Chi^2(2)= 0.072 [0.96]			Normality test:Chi^2(2)= 1.21 [0.5439]		
	Hetero test:F(14,6)= 0.29668 [0.9714]			Hetero test:F(14,6) = 0.62388 [0.7815]		
	RESET23 test:F(2,10)=0.667 [0.5345]			RESET23 test:F(2,10)= 1.204 [0.3398]		

The p-value is in brackets.

Source: Own elaboration based on Eurostat data.

These results show that, for a significance level of 5%, there are no problems of heteroscedasticity (Hetero test) or autocorrelation (AR 1-2) since the p-value (shown in square brackets in each of the statistics) is more significant than the significance level. Therefore, the null hypothesis of the absence of both problems is accepted, and the parameter estimates will be efficient.

The reliability of the estimated model is excellent since both coefficients of determination (R^2) and adjusted coefficient of determination are high and close to one, respectively, 0.98 and 0.97 for EU27; 0.86 and 0.77 for Türkiye. This implies that the estimated model fits the unemployment rate quite well (see Figures 6 and 7); therefore, the residuals or errors (differences between the observed and estimated unemployment rate) are tiny.

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Figure 6. Observed vs. estimated unemployment rate for EU27. Residuals

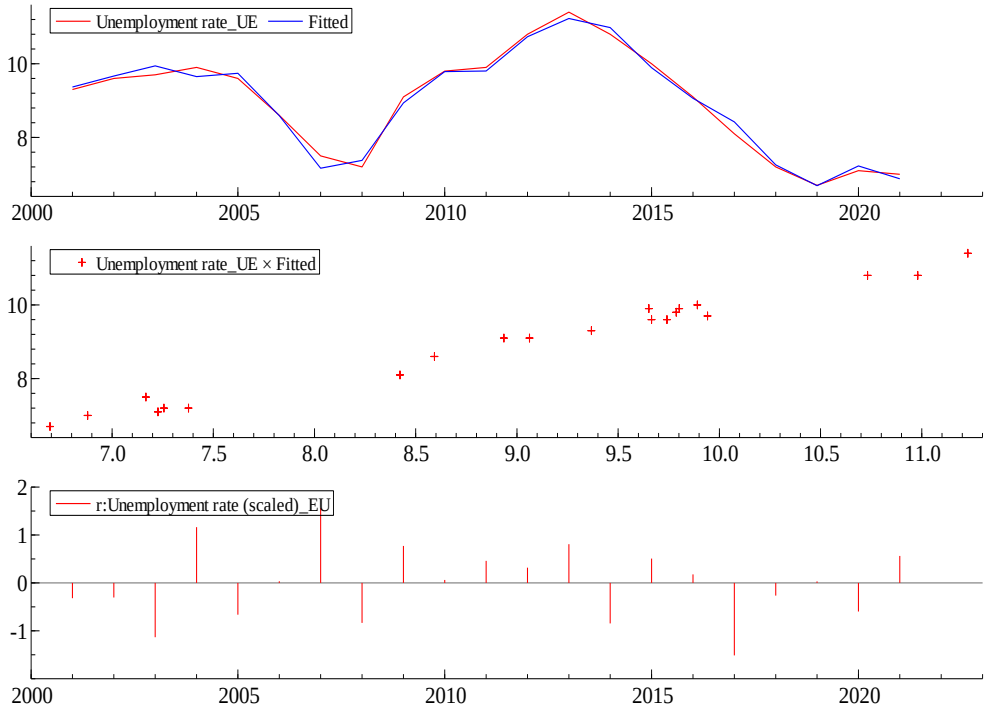
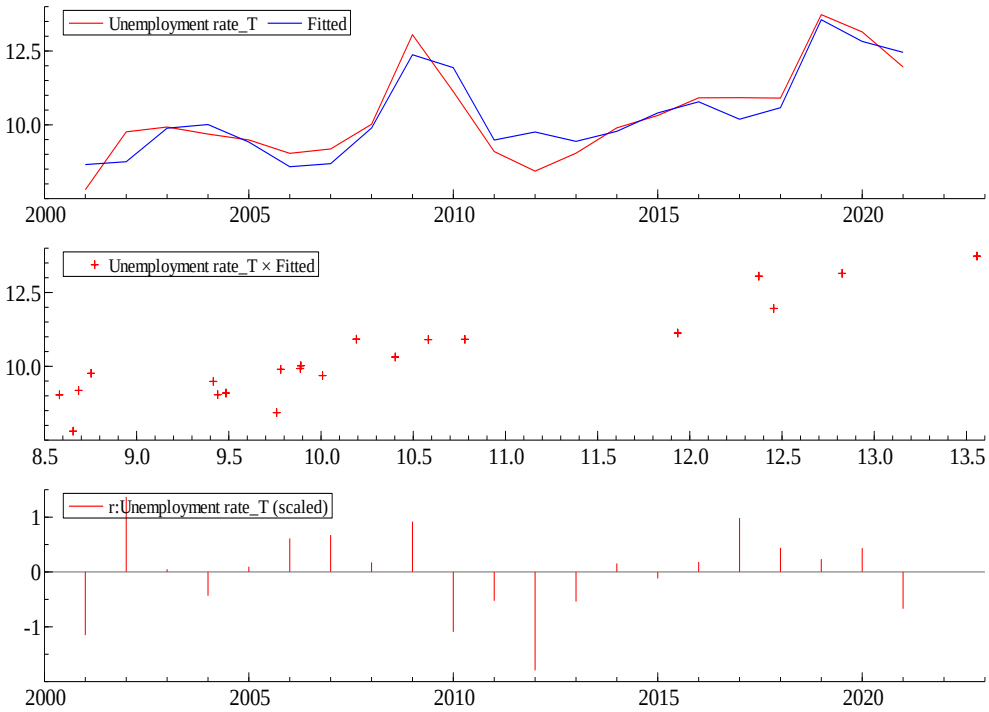


Figure 7. Observed vs. estimated unemployment rate for Türkiye. Residuals

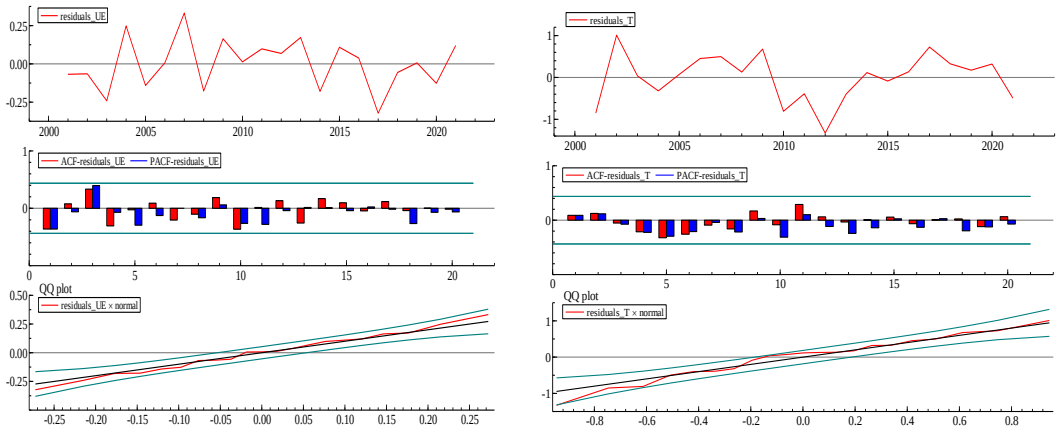


Furthermore, the analysis of simple autocorrelation functions (ACF) and partial autocorrelation functions (PACF) estimated for residuals (see Figure 8) show that they are white noise since, for a significance level (α) of 5%, there is no statistically significant value.

On the other hand, observing the graphs corresponding to the histogram of the residuals and the QQ-plot, it can be stated that the residuals follow a normal distribution. Moreover, the Jarque Bera statistic (for EU: Normality test: Chi^2(2) = 0.072941 [0. 9642] and for Türkiye: Chi^2(2) = 1.2181 [0.5439]) confirms these results, since the p-value (0.96 and 0.54 respectively) is more significant than 0.05=α, and therefore, the null hypothesis of normality of the residuals is accepted. This implies that the contrast statistics used to analyze the significance of the explanatory variables follow a t-Student distribution and are correct.

Figure 8. Residual plots of the estimated model for the EU and Türkiye

8. a UE27 8b. Türkiye



Analyzing the obtained results for the explanatory variables of the model, for a significance level of 10%, it can be said that, while for the EU27, all the explanatory variables of the model (except crisis) are statistically significant; in the case of Türkiye, only investment and crisis are statistically significant.

A detailed analysis of the variables included in the model allows us to group them into those that are influencing the decrease in the unemployment rate in both the EU27 and Türkiye; those that are contributing to its increase; and, finally, those that have different behavior for the EU27 and Türkiye.

The population is one of the most critical variables causing the unemployment rate to rise in EU27. In the case of Türkiye, it is not statistically significant. This implies that the larger the population, the higher the unemployment rate in EU27. It should be noted that this increase is considerably higher in the EU27 than in Türkiye. This may be due to the different population growth rates in the sample period analyzed since, although both have increased, this increase has been more significant in the EU27. Moreover, this increase has not increased access to the labor market, which implies an increase in the number of people out of work and, therefore, in the unemployment rate.

- On the contrary, among the variables contributing to a decrease in the unemployment rate in both countries, GDP pc and investment stand out since these variables have a negative estimated parameter. This may be because growth in both implies a greater possibility of work and, therefore, a decrease in the unemployment rate. In both cases, the influence has been more significant in the case of EU27 than in Türkiye.
- Regarding those with a different influence in both cases, inflation and Gross debt can be highlighted. Regarding inflation, it should be noted that in the case of the EU27, it contributes to an increase in the unemployment rate (since the estimated parameter is positive and significant). While in the case of Türkiye, the opposite is true since the estimated parameter is negative (although not statistically significant).

  Analyzing gross debt, although in the case of the EU27, the estimated value of the parameter is negative (approximately -0.05) and in the case of Türkiye, it is positive (approximately 0.03), neither is statistically significant. This would imply that it would not influence the two unemployment rates analyzed.

- Regarding how the Great Recession (crisis) has affected both unemployment rates, it can be affirmed that, although in neither case has it been statistically significant, observing the estimated values of the parameters, the influence has been more significant in the case of Türkiye than in the case of the EU27. In the first case, there has been an average unemployment rate increase of 1.07%, while in the EU27, it has been 0.03%.
- Concerning COVID, it can be stated that while in the case of the EU27, it has been positive and statistically significant (which has implied an average unemployment rate increase of 0.95%), in the case of Türkiye, it has not been statistically significant. Perhaps the reason

is the importance of the informal economy in the Turkish case. It will be analysed in more detail in the following section.

- Finally, it should be noted that there is inertia between the unemployment rate between two consecutive periods since, in both cases, the estimated parameter of the unemployment rate in (t-1) is positive and significant. However, this inertia is greater in the case of the EU27 than in the case of Türkiye.

In short, the dynamic models estimated for the EU27 and Türkiye show the causal relationship between certain macroeconomic variables and the unemployment rate in the sample period analyzed.

Analyzing the Turkish case: Labor market weaknesses and recommendations

The Turkish labor market has been affected by two major shocks in the period under analysis: the 2009 crisis and COVID-19, reaching the highest unemployment rates in recent years with the pandemic. Undoubtedly, the economic slowdown that Turkey has suffered in the last 3 years because of COVID-19 has led to a reversal of the progress achieved in its labor market in the years prior to the pandemic with respect to the creation of higher quality jobs and an improvement in welfare and social cohesion.

The pandemic increased structural challenges related to Türkiye's high unemployment, low labor force participation and the informal sector. As mentioned in the previous section, this could explain why it was not statistically significant in the estimated model. Even so, measures implemented by the Turkish government to retain employment, such as encouraging short-time work and government-paid leave arrangements, succeeded in maintaining employment above what it would have been without these government policies. Also, online work and e-commerce, especially in export and retail activities, allowed for relative maintenance of employment [11].

Among the groups most affected by the pandemic are workers employed in small informal activities and the self-employed. Also, the COVID-19 crisis has contributed to an increase in the gender gap in the Turkish labor market, as well as in youth unemployment (World Bank, 2022).

[11] Telework has helped maintain employment in Türkiye during the pandemic, although it varies considerably across Turkish regions, ranging from 14% in Anatolia to 30% in Istanbul (OECD, 2020).

The high rate of informal employment in the Turkish labor market can be explained by two reasons. First, high labor costs result from high taxes on labor. This fact causes the minimum wage/average wage ratio to be among the highest in the OECD. Secondly, due to high firing costs and Türkiye's rigid labor regulations, both for temporary and permanent workers, which are also among the most rigid in the OECD.

In addition, the pandemic primarily affected young people, such that the proportion of young people neither studying nor working increased from 24% in May 2019 to 29% in September 2020. This increase highlights the necessary adoption of active policies by the Turkish government focused on reducing labor costs on less skilled workers, vocational training, and entrepreneurship so that young people have more significant opportunities to access the labor market (OECD, 2021a).

Another group severely affected by the crisis was women. The pandemic drastically reduced the sharp increase in women's labor force participation, driven by various policy initiatives in previous years, to 32% in 2020 compared to 70% for men, according to the Turkish Statistical Institute (TurkStat). This has resulted in most women remaining inactive or working as unpaid family employees. The low participation rate of women in the labor force and employment is due to cultural customs[12], as well as a lack of adequacy of women's training with respect to labor requirements, a shortage of childcare facilities and minimal maternity leave conditions. The pandemic affected women's employment to a greater extent than men's, in contrast to the 2008 crisis, which resulted in greater job losses among men because it was a crisis that mainly affected construction[13]. The health crisis affected Turkish women more than men because they were more present in service sectors and in so-called informal employment, in addition to assuming their responsibilities of caring for children and the elderly during confinement.

All these weaknesses in the Turkish labor market must be corrected by adopting structural reforms that are key to recovery and increasing future welfare[14]. First, reforms should be undertaken to increase flexibility in the labor market, reducing the enormous non-wage labor costs that many companies suffer from and that prevent net job creation. Also, the legal

[12] The low participation of women in the Turkish labor market is due to the low education of women and the fact that they are engaged in housekeeping and childcare (Berument *et al*, 2009; Bildirici *et al*, 2012).
[13] See a detailed study of the impact of the 2008 crisis on the Turkish economy and labor market in OECD (2017).
[14] The latest OECD report on Turkey presents a full chapter on the economic policies needed to make the Turkish labor market more flexible (OECD 2021b).

minimum wage should be reduced to facilitate job creation in the formal sector, and labor regulations and social protection for permanent and temporary workers should be modernized. In addition, the pandemic has highlighted the lag in the digitization of many Turkish companies, so the Turkish government should encourage digital transformation and reduce the digital divide between large and small companies, as well as strengthen adult learning in digital applications.

Finally, there is a need to boost education and skills among the Turkish population. Despite the significant progress made in recent years in secondary and tertiary education, the Turkish government should allocate more public spending to education. It is necessary to improve the quality of education at all levels with a greater allocation of resources per student, to strengthen the relationship between universities and companies to improve the employability of young people in higher productivity activities, and to promote training for women to increase their participation in the Turkish labor market.

Conclusion

The enormous potential of the Turkish economy has been weighed down in recent years by the outbreak of the COVID 19 pandemic. In this paper, an explanatory model of the evolution of unemployment in Türkiye in the 21st century has been developed, comparing it with that experienced by the EU27. Considering quantitative variables such as population, inflation, per capita income, investment, or public expenditure, as well as two dummy variables such as the Great Recession or COVID 19.

The results show that in both cases, the EU27 and Türkiye, the unemployment rate has undergone a process of hysteresis. The estimated model shows that both the European and Turkish economies have not been able to create employment at the same level as population growth. On the other hand, GDP pc or investment has contributed to lower unemployment, and the influence of inflation is different in both cases (in the EU, the higher the inflation, the higher the unemployment and in Türkiye, the opposite, although the parameter is not significant).

However, there are differences since, on the one hand, in the EU27, the influence of the variables used to explain unemployment is more significant than in Türkiye. On the other hand, while European unemployment has been more affected by the pandemic, Turkish unemployment has suffered more from the consequences of the 2008 crisis. It is worth noting

the great weight of the informal economy in Türkiye, which could explain why COVID has not been statistically significant in that country.

Finally, it will be seen whether structural differences in the two labor markets may have influenced both unemployment rates. To summarize, active employment spending policies must be implemented to encourage job creation, reduce informal work, incentivize employment, and penalize existing employment inequalities. As the 2001 Nobel laureate in economics, George Akerlof, says: "For me, unemployment has always been a terrible thing (...). A jobless person loses not only income but often also the sense of fulfilling his or her duty as a human being" (Loungani, 2011: pp. 3).

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