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Unemployment in Greece and Cyprus in the 21st Century: An Analysis from a European Perspective

Desempleo en Grecia y Chipre en el siglo XXI: un análisis desde una perspectiva europea

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Abstract

One of the main concerns facing societies today is unemployment, although its evolution is not the same in all economies. Moreover, it is one of the variables that can not only delay but also prevent real convergence between the Member States of the European Union. This is the reason why it is necessary to know the determinants of the evolution of the unemployment rate. The aim of this paper is to present an explanatory model of unemployment since the beginning of the 21st century in two Mediterranean economies, Greece and Cyprus, which have important historical, cultural and economic ties. The identification of variables that may influence unemployment makes it possible to determine whether the response of the Greek and Cypriot authorities to reduce it has been adequate.

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

Resumen

Una de las principales preocupaciones de las sociedades actuales es el desempleo, si bien su evolución no es la misma en todas las economías. Además, es una de las variables que pueden no sólo retrasar sino también impedir la convergencia real entre los Estados miembros de la Unión Europea. Es por ello por lo que resulta necesario conocer los factores determinantes de la evolución de la tasa de desempleo. El objetivo de este trabajo es presentar un modelo explicativo del desempleo desde principios del siglo XXI, en dos economías mediterráneas, Grecia y Chipre, que presentan importantes lazos históricos, culturales y económicos. La identificación de variables que pueden influir en el desempleo permite determinar si la respuesta de las autoridades griegas y chipriotas para reducirlo ha sido adecuada.

Palabras clave: tasa de desempleo, variables macroeconómicas, políticas del mercado de trabajo, Gran Recesión, COVID-19.

JEL Classification/ Clasificación JEL: E24, J08, C13, C22.

1. Introduction

If anything characterized the growth of the world economy from the mid-1980s to the beginning of the 21st century, it was the stability of the main macroeconomic variables. Therefore, during these years, when investment grew spurred by low levels of risk and uncertainty, they were described as the years of the Great Moderation. This term, coined by Stock and Watson (2003), was popularised by Ben S. Bernanke, Governor of the US Federal Reserve, at a conference in 2004. However, despite this economic boom, signs of a possible financial crisis were accumulating. The lack of regulation of financial institutions in the US, coupled with the fall in interest rates in the early 2000s, encouraged the creation of a housing bubble in the US. Moreover, the main banking institutions had begun to securitise mortgage and consumer loans into marketable securities. As Martín Aceña and Pons (2011) point out, the system rested on the existence of cheap credit and on the growth of house prices. This clearly unstable equilibrium broke down when real estate prices began to fall, leading to an increase in delinquency. The bubble had burst in the US, which spread to the rest of the world, giving rise to the Great Recession. A crisis that shook all economies with an intensity not seen since the Great Depression of 1929. In Europe, the Mediterranean economies were the hardest hit by the crisis[1].

The aim of this paper is to analyse what factors have affected the evolution of the unemployment rate in Greece and Cyprus over the last 20 years, as both have been hit first by the Great Recession and then by the outbreak of the SARS-COVID 19 pandemic. Both economies provide a very interesting example for analysis, as they share important cultural, economic, and political ties. Moreover, they are part of the EMU, which makes it possible to investigate how the adoption of the single currency has affected them.

The study is relevant because Cyprus is one of the 3 microstates of the European Union (hereafter EU), together with Malta and Luxembourg. On most occasions it is difficult to extrapolate economic decisions between the different nations that make up the EU, and even more so when we try to compare any of the *three smalls* with the rest. In one aspect alone, such as population, the former represents only 0.46% of the EU, compared to 46.9% for the latter.

1 Considering within the bloc of *Mediterranean countries* Cyprus, Spain, Greece, Italy, Malta, and Portugal.

Therefore, the comparison between Cyprus and Greece may be interesting to see if they share patterns of behaviour in terms of unemployment.

This paper is organised as follows: after this introduction, in the next section, a brief account will be given of the economic evolution of Greece and Cyprus in the European context since the beginning of this century. In the third section, the model will be estimated for both countries and the similarities and differences between them will be analysed. Sections 4 and 5 will review the main labour market and unemployment policy reforms implemented in both economies, based on the result obtained by the proposed model. Finally, conclusions will be drawn.

2. Greece and Cyprus: two economies with disparate developments and important historical ties

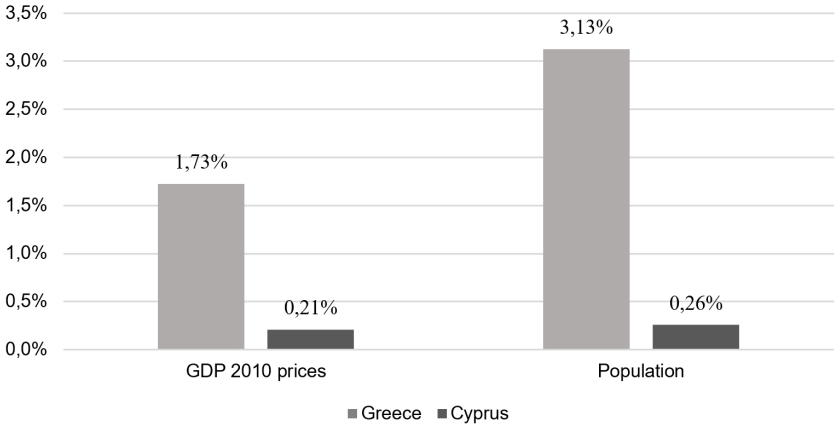
Greece joined the European Union in 1981 and has been a member of the euro area since 1 January 2001. Cyprus' accession was delayed until 2004, however, due to the island's troubled political situation, which was marked by the conflict between Cypriots of Greek and Turkish origin, two peoples with different traditions, cultures and religions who shared the same geographical area. After centuries of occupation by other nations, Cyprus adopted its constitution in 1960. The new Republic was never a unitary state, as the two Cypriot communities, although politically equal, were treated differently in terms of executive and legislative power (Algora Weber, 2002). Tensions continued in the following years. In 1974, supporters of annexation to Greece staged a coup d'ētat and, after a brief period of stability, continued demands for independence by the Greek Cypriots provoked a reaction from the Turkish side of the island. On 15 November 1983 they proclaimed the Turkish Republic of Cyprus, which was recognised only by Turkey. In 1990, Cyprus formally applied to begin the EU accession process, a process rejected by the island's Turkish community. It was at the EU Summit in Luxembourg (1997) that the European authorities agreed to start the process. This process culminated in full membership seven years later, along with nine other countries, in what was the EU's most ambitious enlargement[2] . In 2008 Cyprus adopted the euro as its currency.

But in economic terms, what role do Greece and Cyprus play in the Monetary Union (EMU) as a whole? According to Eurostat data (2022), in 2020 Greece ranked eleventh in terms of GDP at 2010 prices in the EMU as a whole and seventh in terms of population[3] . On the other hand, Cyprus is one of the countries with the smallest population in the EMU (only Luxembourg and Malta have a smaller population) and in terms of GDP it is second only to

2 In the same year, the Czech Republic, Slovakia, Slovenia, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, and Slovakia also joined.

3 The EMU is composed of Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, Spain, Estonia, France, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, and the Netherlands.

Figure 1. Ratio of GDP and population of Greece and Cyprus to EMU (2020)



Source: Eurostat (2022).

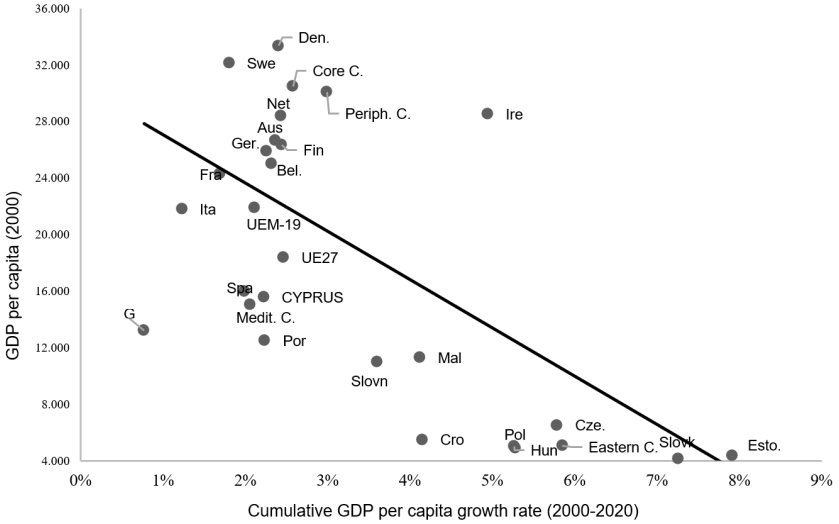
Estonia and Malta. In relative terms and as can be seen from figure 1, Greek GDP accounts for 1.73% of total EMU GDP, while Cypriot GDP accounts for 0.21%. In population terms, 3.13% of the EMU population lives in Greece, while the Cypriot population is only 0.26% of the total.

In 2020, the GDP per capita (in constant 2010 prices) of both nations was below the EMU average of 29,290 euros. While Cyprus's was 23,840 euros, Greece's was significantly lower (16,180 euros). They had only grown by 0.85% and -0.37%, respectively in cumulative rates compared to 2000, and 0.5% for the Eurozone[4] . This shows us the scarce convergence βeta[5] that both economies have had with the rest of the countries, which we can analyse in figure 2. Starting from low levels of GDP per capita in 2000, their growth rates have not been as high as the rest of the Mediterranean countries such as Portugal or Malta. Compared to Slovenia, Poland, or the Czech Republic, which started from lower levels of GDP per capita, they have been able to grow at higher rates than Greece or Cyprus (fulfilling the concept of βeta convergence).

The divergence between the two nations has only widened since the outbreak of the Great Recession, as can be seen in figure 3. However, the 2008 crisis hit Greece harder than Cyprus; GDP per capita in both fell more than the average for the EMU nations. Cypriot GDP per capita has been recovering relative to the EMU average since 2014. In contrast, Greek GDP per capita has been falling, reaching its lowest point in 2020. It now accounts for little more than half of the euro area (55.2%). In 2021, in fact, the largest difference

4 At current prices, these rates of change are somewhat higher at 2.2%, 0.8% and 2.1% for Cyprus, Greece, and the euro area, respectively.
5 Convergence βeta refers to the ability of countries in a worse position to grow faster in the variable under analysis, compared to those in a better position.

Figure 2. βeta Convergence in GDP per capita (2000-2020)



Source: Own elaboration based on Eurostat (2022)*.

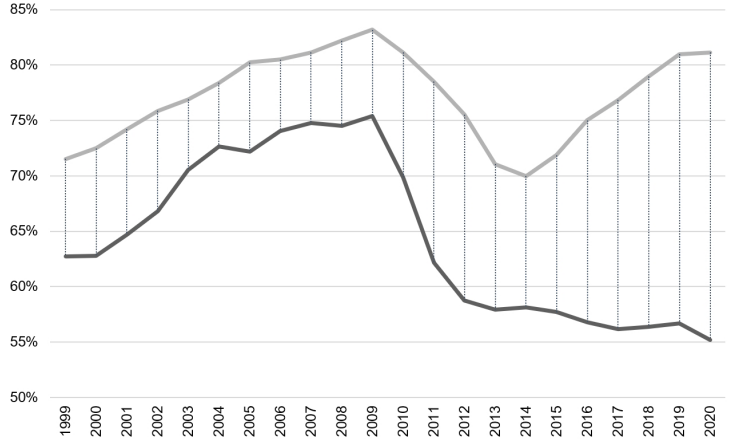
* This analysis has grouped the EU27 countries into four groups: the *Mediterranean Countries*, which include Greece, Spain, Italy, Cyprus, Malta, and Portugal. The *Core Countries* are Germany, France, Belgium, Luxembourg, the Netherlands, and Austria. The *Peripheral Countries* include Denmark, Ireland, Sweden, and Finland. And the *Eastern Countries* are Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Croatia, Hungary, Poland, Romania, Slovakia, Slovenia, and Estonia.

between the GDP per capita of the two economies was recorded (almost 26 percentage points), compared with the smallest difference recorded in 2004.

The turning point in the evolution of both economies is to be found precisely in the Great Recession and their exit from it. In 2016, the Cypriot economy was still 5% below pre-crisis levels in 2011, while Greek GDP was still 22% below 2009 levels, when the international crisis erupted in that country (Hardouvelis and Gkionis, 2016). In 2016, GDP per capita was €1,569 lower than in 2011, while Greek GDP had plummeted by €5,263, with cumulative growth rates of -1.2%, compared to growth in Cyprus, the EMU, or the EU itself of, respectively, 2.2%, 1.1% and 1.5%. This rules out βeta convergence with the countries of the Monetary Union, nor with the EU, as can be seen in figure 4.

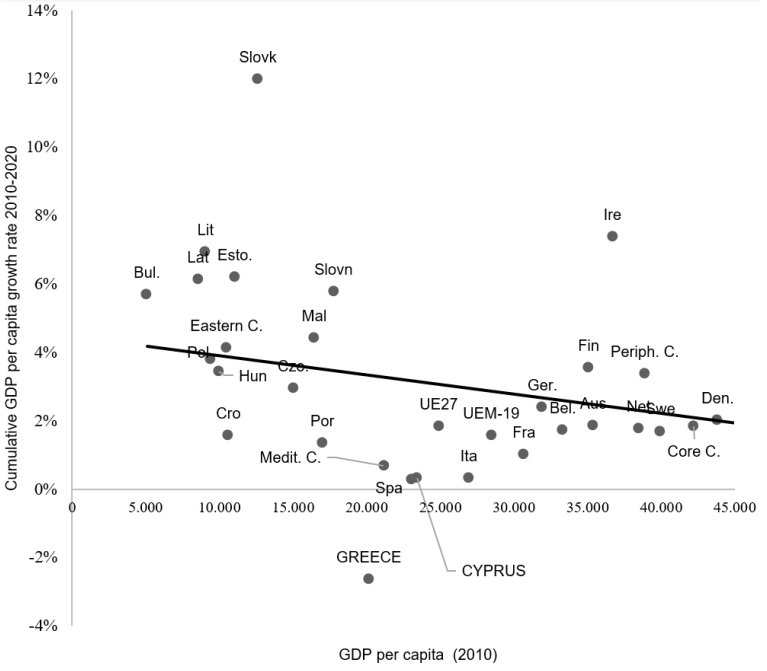
This disparate evolution of growth rates has not been accompanied by higher job creation, but rather, starting from a position of high unemployment in 2010, the differential with the 2020 data increased in both economies (more so in Greece, which increased by 3.6 percentage points (p.p.), than in Cyprus, where the difference was 1.2 p.p.), as can be seen in figure 5. The great disparity is in the performance of the EMU, which reduced its average unemployment rate by 2.3 p.p., from 10.1% in 2010 to 7.8% in 2020, from 10.1% in 2010 to 7.8% in 2020.

Figure 3. Evolution of GDP per capita at 2010 prices for Greece and Cyprus as a percentage of the EMU (1999-2020)



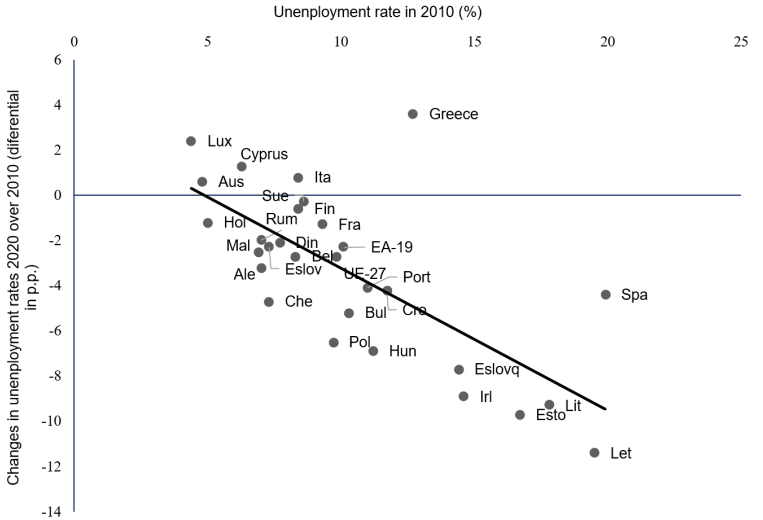
Source: Eurostat (2022).

Figure 4. βeta Convergence in GDP per capita (2010-2020)



Source: Own elaboration based on Eurostat (2022).

Figure 5. Convergence in unemployment rates in euro area countries (2020-2010, p.p. and %)*



Source: Own elaboration based on Eurostat (2022).

*In figure 5, the further to the right, the higher the starting unemployment rates in 2010. The further downwards, the greater the reduction in the unemployment rate in 2020 compared to the starting level in 2010.

In Cyprus, unemployment levels were already at pre-crisis levels, while in Greece it was 12 points higher than in the first four months of 2010. Why? It cannot be ignored that the preconditions in each country were different before the crisis. In fact, the outbreak of the Great Recession in Cyprus should be placed in March 2013 (almost 3 years after it started in Greece). As can be seen in figure. 6, Greece's largest divergence occurs in that year when it stands at 27.5% (15.5 p.p. more than the euro area; and almost 12 with respect to Cyprus). It is true that it gradually corrected its behaviour in the following years, until reducing these differences to approximately 8 p.p. with both.

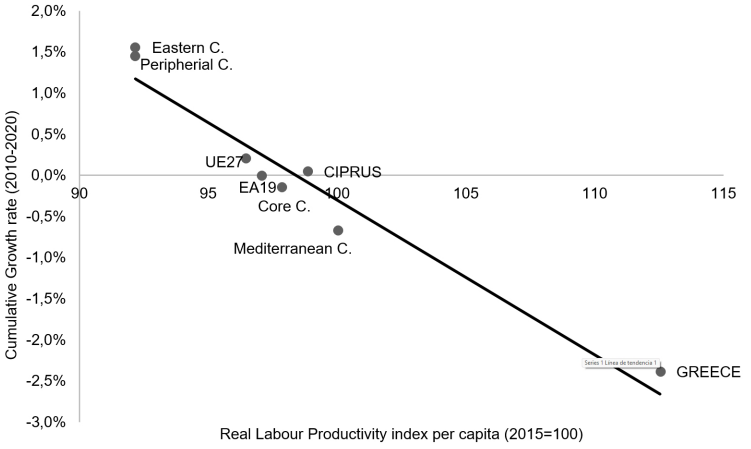
It was also a fundamentally banking crisis. But the difference also lies in the different economic policy response - discussed in the next section - of the two countries and in the different pro-cyclical nature of these economies, as we can see in Hardouvelis and Gkionis (2016).

Behind this erratic behaviour we can find the evolution of real labour productivity (figure 7). In the case of Greece, it has been gradually declining since 2007, from an index of 122.5 to 88.4 in 2020. The cumulative decrease has been 2.4% during this decade, considerably less than that experienced by the rest of the Mediterranean countries (0.7%), or Cyprus, with zero growth during these years, remaining at a level of 99.3.

Figure 6. Unemployment performance in Greece, Cyprus, and EMU in the main years of the 21st century (% of labour force)

Source: Own elaboration, based on Eurostat data (2022).

Figure 7. Evolution of the real labour productivity index per person (2015 = 100)



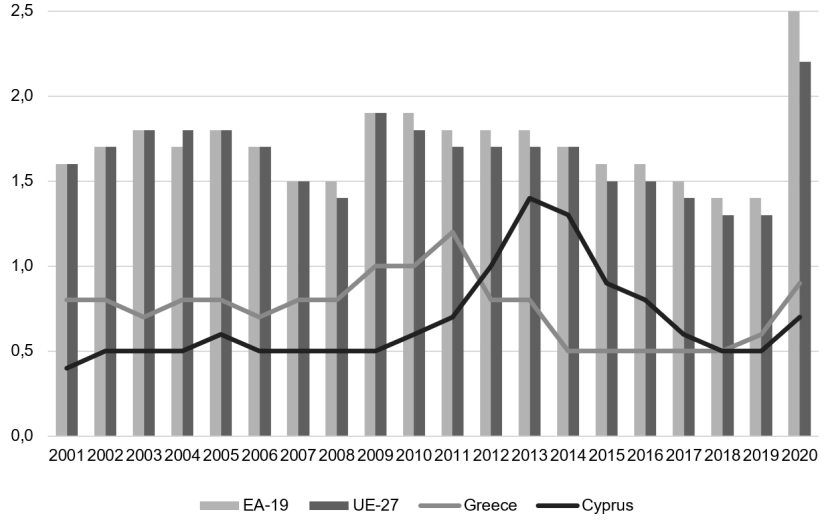
Source: Own elaboration based on Eurostat (2022).

The trajectory of labour productivity throughout the period under analysis was not particularly favourable to the Greek economy, which saw its better position vis-à-vis the EMU - with a differential of up to 25 points - gradually diminish until it fell behind the euro area and the Cypriot economy in 2020. This may be responsible not only for the slower economic growth, but also for the reduced capacity for job creation and rising unemployment.

It should also be borne in mind that the behaviour of the latter, unemployment, is linked to the evolution of the active population, which in the case of the economies analysed has hardly varied throughout the period analysed, with cumulative growth rates below 1% in the case of Greece and the euro area and around 2% in Cyprus. If the contribution of the working-age population is very low, the chances of more people being willing to find a job are more limited. In fact, a variable such as labour costs, which could serve as a stimulus to encourage people to participate in the labour force, have been at the same levels as in the eurozone since 2016[6] , with no substantial changes since 2010 in either Cyprus or Greece, while in the EMU they have grown by an average of almost 2% over the decade.

Moreover, the level of unemployment rates in the Mediterranean countries under study has had serious consequences for state spending - as a percentage of GDP - on unemployment. It has been higher in the case of Greece until 2011 and, since then, it is Cyprus that has begun to allocate a larger part of the public budget to cover the expenses derived from the increase in unemployment. From 2019 onwards, both countries converge (figure 8). However, despite these developments, both Cyprus and Greece maintain their rates at levels well below those of the euro area and the EU-27, at 2.2% and 2.5% in 2020, respectively, compared to 0.9% in Greece and 0.7% in Cyprus.

Figure 8. Evolution of public expenditure on unemployment (% GDP)



Source: Eurostat (2022).

6 Labor costs, taken as compensation of employees with taxes net of subsidies, for industry, construction, and services, and benchmarked to 2016 = 100, put Cyprus at 110.6, Greece at 110.0 and EMU at 110.1.

Once both economies have been analysed in the European context, an explanatory model of the evolution of their unemployment rates since 2000 will be proposed, which will make it possible to compare their evolution and explain their different behaviour.

3. Methodology

3.1 Model for the unemployment rate in Greece and Cyprus

To assess which are the main variables that are influencing both the Greek and the Cypriot unemployment rates, the following model has been estimated for each country using the Oxmetrics PcGive (Doornik and Hendry, 2013; Wooldridge, 2009).

$$\text{Unemployment rate}_t = \beta_0 + \beta_1 \text{LGDPpc}_t + \beta_2 \text{LProductivity}_t + \beta_3 \text{Llabour costs}_t + \beta_4 \text{Unemployment expenditure/GDP}_t + \beta_5 \text{Inflation}_t + \beta_6 \text{Llabour force}_t + \beta_7 \text{DUEM}_t + \beta_8 \text{D2008}_t + \beta_9 \text{DCOVID}_t + u_t$$

Where:

- β_0 is the constant of the model, β_i $(i = 1,...,9)$ is the parameter indicating how each of the explanatory variables influences the unemployment rate.
- DUEM, is a dummy variable introduced in the model to estimate whether the effective entry of the euro in Greece and Cyprus. For Greece it takes the value 1 from 2002 to the end of the sample and the rest of the values 0. For Cyprus it takes the value 1 from 2008 to the end of the sample and the rest of the values or.
- D2008, is a dummy variable that tries to measure the effect that the Great Recession has caused in both countries. It takes a value of 1 between 2008 and 2016 and 0 for all other values.
- DCOVID is a dummy variable created to try to reflect whether the unemployment rate has been affected by the global health crisis because of COVID-19. It takes value 1 in the years 2019 and 2020 and the rest of the values 0.
- Finally, u_t is the model disturbance that is assumed to be independent and identically distributed with zero mean and constant variance (that is: $u_t \sim iid\ (0, \sigma^2)$).

3.2 Results of the estimated model

To obtain efficient parameter estimates, the model has been estimated using generalised least squares to correct for the autocorrelation and heteroscedasticity problems detected. The following estimation results are given in table 1:

Table 1. Results of the estimated model for the unemployment rate in Greece and Cyprus. Sample period (1999-2020)

	Greece			Cyprus		
	Estimated parameter	Statistic t	p-value	Estimated parameter	Statistic t	p-value
Constant	-214.97	-1.21	0.2510	-36.45	-0.17	0.8660
LGDPpc	-57.82	5.67	0.0001	-35.03	-1.97	0.0723
LProductivity	46.91	2.51	0.0272	10.82	0.1	0.6133
Llabour costs	19.89	1.29	0.2215	13.95	1.25	0.2343
Unemployment expenditure/GDP	-3.38	-1.17	0.2628	6.35	1.98	0.0711
Inflation	-0.52	-1.48	0.1638	-0.30	-1.38	0.1925
Llabour Force	57.55	1.96	0.0739	39.05	1.23	0.2436
DUEM	1.24	0.51	0.6197	3.77	3.51	0.0043
D2008	1.42	1.22	0.2461	3.31	3.27	0.0068
DCOVID	-1.96	-1.08	0.3026	2.56	1.93	0.0776
	R^2 = 0.9728			R^2 = 0.9608		
Statistics	F(9,12) = 47.83 [0.000]** AR 1-1 test: F(1,9) = 1.2685 [0.2892]. ARCH 1-1 test: F(1,20) = 1.17 [0.2914]. Normality test:Chi^2(2) = 0.710 [0.701]. Hetero test: F(15,6) = 3.3266 [0.0730].			F(9,12) = 32.76 [0.000]** AR 1-2 test:F(2,10) = 0.24691 [0.7858]. ARCH 1-1 test:F(1,20) = 0.663 [0.4248]. Normality test:Chi^2(2) = 3.057 [0.216]. Hetero test: F(15,6) = 0.98345 [0.5488].		

** H_o is rejected at 5% significance level. The p-value is in square brackets.

Based on the estimated results, it can be stated that not all the variables included in the model exert the same influence on the unemployment rate in both countries. Thus, considering a significance level of 10%, it can be affirmed that variables such as labour costs and inflation do not exert a significant influence on either the Greek or the Cypriot unemployment rate. If we compare the behaviour of the rest of the macroeconomic, labour and population variables (which are significant for at least one of the two countries), we can say that:

- GDP affects the unemployment rate in both countries. In both cases the estimated value of the parameter is negative, which implies that if GDP per capita increases, the unemployment rate decreases. This decrease is larger for Greece than for Cyprus.
- Productivity is statistically significant only in the case of Greece. However, in both cases the estimated value of the parameter is positive, implying that the higher the productivity the higher the unemployment rate. This increase is significantly larger in the case of Greece than in the case of Cyprus.

- Unemployment expenditure as a share of GDP is only statistically significant in the case of Cyprus with a positive relationship, indicating that the increase in unemployment led to an increase in spending on unemployment-related policies. In the case of Greece, it has not been found to be statistically significant, given that Greece allocated very little budget to employment policies, making it a variable that does not explain Greek unemployment.
- The labour force is not exerting the same influence on the unemployment rates of the two countries, since, although the estimated values of the parameters in both cases are positive, it is only statistically significant in the case of Greece. The results show that the higher the number of people of working age, the higher the unemployment rate in both countries (however, this influence is stronger in the case of the Greek unemployment rate than in the Cypriot one). This implies that the working age population is not finding a job and therefore the unemployment rate is increasing.

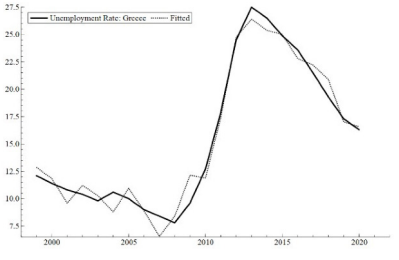
Finally, analysing the coefficients of the dummy variables created to explain whether certain relevant events, such as the circulation of the euro in the country after joining the EMU, the financial crisis of 2008, or the health crisis because of COVID-19, have influenced the unemployment rate, it can be highlighted that:

- Whereas in Cyprus there has been a significant average increase (around 3.77%) since the euro currency started circulating in the country. In Greece this increase has been smaller (around 1.24%) and not statistically significant.
- This is like the Great Recession between 2008 and 2016. The Cypriot unemployment rate has been more affected than the Greek rate (respectively, an average increase of approximately 3.31% and 1.42%, without considering the effect of other variables).
- The effect caused by COVID-19 in the two countries is different, while in Cyprus the unemployment rate has increased in Greece the opposite has happened.

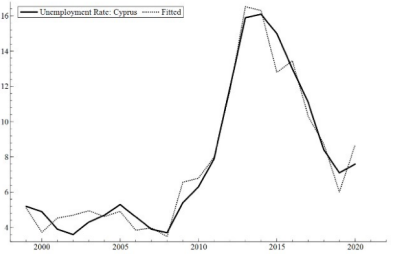
Therefore, the analysis carried out for Greece and Cyprus reveals which macroeconomic or labour variables are most influencing their unemployment rate, as well as the similarities and differences between them. Moreover, since the p-values of the statistics that allow us to detect the possible existence of autocorrelation and heteroskedasticity (AR 1-2 and Hetero test, respectively) are greater than the 5% significance level, it can be affirmed that the parameter estimates are efficient. It should also be noted that the fit achieved with the estimated models is very good (see figures 9A. and 9B. for Greece and Cyprus respectively). For this reason, the residuals of the model are small and its reliability, measured through the coefficient of determination (R^2), is high. Specifically for Greece, the R^2 is equal to 0.972 and for Cyprus 0.960.

Figure 9. Observed vs. estimated unemployment rate

9A. For Greece



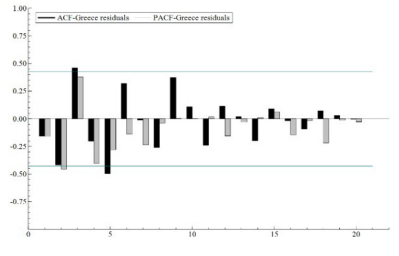
9B. For Cyprus



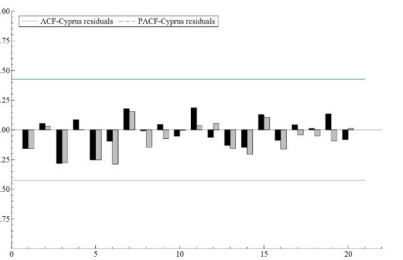
Moreover, for both countries, the residuals are white noise (see figures 10A. and 10B. of the simple (ACF) and partial (PACF) autocorrelation functions), as there are no statistically significant values at the 5% significance level. Moreover, the Jarque Bera statistic (Hetero test: F(15,6) = 3.3266 [0.0730] for Greece and Hetero test: F(15,6) = 0.98345 [0.5488] for Cyprus, see Table 1) show that the null hypothesis of normality of the residuals can be accepted, which validates the tests used to analyse the significance of the variables included in the model.

Figure 10. Residuals from the estimated model

10A. For Greece



10B. For Cyprus



However, the unemployment rate is also conditioned by other factors of a structural nature that characterise the labour market as a whole and which have not been studied in this paper, but which need to be considered to give a broader view of the unemployment problem. In fact, as will be discussed below, the Cypriot labour market, despite the recovery in recent years (excluding 2020 and 2021 marked by COVID-19), still faces important challenges that need to be addressed to improve the flexibility of the labour market. This highlights the need to adapt public employment services to EU best practices,

to encourage new hires to be more than just short-term, to reduce undeclared work and to penalise gender inequality in employment, among others.

Finally, reforms of education and training systems face considerable challenges. Improving educational attainment and skills, as well as increasing participation in adult learning and vocational education and training are essential to foster sustainable growth in the future[7]. Thus, in the light of the results obtained, the labour market reforms undertaken by both countries, as well as their spending policies, will be analysed below, which would explain, in part, their disparate developments.

4. Greece vs. Cyprus: different approaches to labour market reform

As discussed above, the sovereign debt crisis had a significant negative impact on the Greek economy which recorded a cumulative decline in output of 21% in real terms, over the period 2010- 2013. This led to an increase in the unemployment rate from 12.7% in 2010 to 27.5% in 2013, with the number of unemployed reaching 1.3 million in 2013 (from 639,400 in 2010). Over the same period, employment fell from 4.4 million at the beginning of 2010 to 3.5 million at the end of 2013. The fall in output and rise in unemployment stand out when compared with the evolution of output and unemployment in the EU, and in other southern European countries, which were also hit hard by the sovereign debt crisis[8] .

Rising unemployment and the need to address various structural inefficiencies in the labour market led the Greek government to adopt major labour market reforms with a twofold objective: first, to reduce labour costs and boost competitiveness, and second, to increase the ability of firms to adapt more flexibly to external shocks or disturbances. The main post-crisis reforms consisted of measures that decentralised the wage bargaining system and reduced firing costs and thus employment protection for permanent workers. In addition, the setting of the minimum wage was transferred to the government, to the detriment of the social partners. Regarding collective bargaining, to increase flexibility and the ability of firms to adjust to the downturn in economic activity, the procedures for concluding company-level agreements were simplified, allowing for less favourable wage, and working conditions than any other sectoral/professional agreement.

In relation to procedures, restrictions on the size of the company in which an agreement can be signed were relaxed and the need for a trade union to exist in the company was removed[9] . As regards dismissal costs, the severance

7 For a more detailed analysis, see the report on the economy of Cyprus by the European Commission (2020).

8 See detailed analysis in D' Amuri et. al. (2015), Izquierdo and Jimeno (2015) and Izquierdo et al (2017).

9 This allowed company representatives and an employee representation or association to sign a company-level agreement if the association had at least three-fifths of the company's employees. As a result, the number of company-level agreements increased significantly and wage freezes and downward wage adjustments of between 10 and 40 per cent were allowed (Bank of Greece, 2013).

pay for dismissal without notice was reduced, the notice period for the termination of employment contracts was reduced and the minimum threshold for triggering the rules on collective dismissals was increased.

Finally, a new system was introduced in the national minimum wage. Previously, the minimum wage was the result of a negotiation process between the social partners, but following the changes, the minimum wage is now set by law after consultation with the social partners and wages below the minimum wage apply for workers under 25 years of age. Moreover, in 2012, to reduce labour costs, a new 22% lower national minimum wage (and 32% lower for those under 25) was legislated. This downward adjustment of the minimum wage together with the abolition of various allowances (such as those for computer use or language skills) was reflected in the evolution of wage costs, as the wage index decreased from 114.5 in 2009 to 89.9 in 2013.

The Cypriot economy was also negatively affected by the Great Recession, which revealed structural problems in the economy, such as low value-added production and lack of investment in innovation and new technologies, which subsequently led to low productivity, a rigid economy vulnerable to external *shocks* and a low-skilled labour force. In addition, the exposure of Cyprus' banks to Greece increased the cost of capital and had a negative impact on the supply of credit, making it more difficult to finance SMEs. This led to a significant contraction in their economic activity - which fell by as much as 5.4% in 2013 - as the operating environment for businesses was also constrained by tight lending conditions and relatively high interest rates. However, the introduction of fiscal consolidation, together with the restructuring of the banking system and the gradual introduction of structural reforms in the context of the Macroeconomic Adjustment Programme in April 2013, contributed to the gradual stabilisation of the Cypriot economy and the steady recovery of confidence.

Moreover, the global nature of the economic crisis and the fact that some countries were more severely affected than others caused large migration flows between Member States. Cyprus experienced a disproportionate influx of EU workers (mainly low-skilled or unskilled) who were attracted by Cyprus' good employment situation and good economy, which exacerbated the unemployment problem.

In the labour market, unemployment rose to unprecedented levels, reflecting the effect of a prolonged slowdown in economic activity. Specifically, the unemployment rate rose from 3.7% in 2008 to 16% in 2015, while the euro area had a much lower unemployment rate. The most affected segment was the young and long-term unemployed. To address the problem of youth unemployment, the Council of Ministers adopted, at the end of 2014, a National Action Plan for Youth Employment (NAP), which combined measures targeting young people aged 15-29 who faced multiple barriers to labour market integration and were exposed to longer periods of unemployment. In

addition to these youth-specific measures, other schemes aimed at improving the employability of workers were established [10] .

5. How have employment spending policies been implemented in Greece and Cyprus?

Finally, for a more quantitative analysis of the employment policies undertaken by these countries in the years before and after the 2009 crisis, it is possible to assess what has been the spending policy, both active and passive measures, in the labour market. To do so, we use the European Commission's Labour Market Policy (LMP) database, which provides information on government labour market interventions[11] , classifying them by type of action into services, measures and supports, in the following categories: labour market services (covering interventions that provide temporary support to disadvantaged groups in the labour market and aim to activate the unemployed, help people move from involuntary inactivity into employment or maintain the jobs of people threatened by unemployment), training, employment incentives, integration of the disabled, direct job creation and incentives for business start-ups. These last five actions correspond to what are known as active policies, which are those measures aimed at changing the situation of the unemployed by focusing on the training deficit or aid and incentives for employment and business creation. These active policies aimed at job creation are contrasted with measures adopted within passive policies, which aim to compensate the unemployed for lost wages, support them during their job search (i.e., mainly unemployment benefits) or facilitate early retirement. Thus, within this category we include two items: public expenditure on income maintenance and support due to lack of work and early retirement.

Firstly, it is possible to study employment policy spending in both countries in comparative terms with respect to EU spending, to have a first approximation of whether spending in Cyprus and Greece is in line with that of other European countries.

Table 2 shows the expenditure on all employment policies (%GDP) in some of the European countries, both in 2009 and in 2018, which is the latest year with available data. The data show that expenditure on the employment policy mix as a percentage of GDP in Greece and Cyprus has been among the lowest in the whole EU (only the Czech Republic and Romania are behind), both in 2009 and 2018, with a rate of 0.70% and 0.52% respectively in Cyprus

10 See the National Reform Plans Sent by the Government of Cyprus to the European Commission detailing all labor market reform measures implemented in the aftermath of the financial crisis. See Cyprus Presidency (2012) and (2013).

11 The scope of the LMP database is limited to interventions that explicitly target groups of people with difficulties in the labor market: the unemployed, people in employment but at risk of involuntary job loss and people who are currently considered inactive but wish to enter the labor market. LMP statistics are one of the data sources for the monitoring of the Employment Guidelines (part II of the Europe 2020 Integrated Guidelines) through the Europe 2020 Joint Assessment Framework.

Table 2.- Public expenditure on employment policies in the European Union (% of GDP)

	Labour market services		Active policies		Passive policies		Total Expenditure		Total expenditure on active policies per point of unemployment rate		Total expenditure per unemployment rate point	
Countries	2009	2018	2009	2018	2009	2018	2009	2018	2009	2018	2009	2018
Belgium	0,22	0,33	1,19	0,89	2,38	1,25	3,79	2,15	0,151	0,093	0,480	0,358
Spain	0,13	0,105	0,65	0,70	2,96	1,45	3,75	2,15	0,036	0,036	0,208	0,141
Portugal	0,12	0,04	0,63	0,24	1,31	0,97	2,06	1,31	0,059	0,043	0,194	0,181
EU	0,14	0,13	0,48	0,51	1,15	0,69	1,77	1,20	0,06	0,07	0,230	0,210
Italy	0,03	0,02	0,34	0,38	1,39	1,15	1,75	1,53	0,043	0,034	0,224	0,144
Greece	0,01	0,01	0,21	0,21	0,69	0,52	0,91	0,73	0,022	0,011	0,096	0,038
Malta	0,10	0,21	0,03	0,30	0,37	0,04	0,51	0,35	0,004	0,026	0,073	0,093
Cyprus	0,04	0,03	0,07	0,10	0,59	0,42	0,70	0,52	0,013	0,008	0,131	0,062
Czech R.	0,13	0,12	0,09	0,32	0,44	0,15	0,66	0,46	0,014	0,090	0,090	0,211
Romania	0,03	0,03	0,04	0,05	0,38	0,04	0,46	0,09	0,006	0,006	0,006	0,021

Source: Eurostat (2022), Labour Market Policy. Expenditure and Participants.

and 0.91% and 0.73% in Greece, compared to an EU average of 1.77% and 1.20% in 2009 and 2018. These data also reflect that a higher percentage of expenditure was devoted to employment policies in 2009 compared to 2018 due to the financial crisis. Analysing by major spending components, resources in most countries are mainly concentrated on employment protection policies (passive policies) as opposed to active policies (Destefanis et al, 2020). The case of Greece is striking, even with an unemployment rate very similar to that of Spain in 2009, it allocates very little budget as a percentage of GDP to employment policies and, above all, to active policies.

Table 3 provides a detailed overview of how budgetary expenditure on employment policies has evolved since 2007, and which specific items of active versus passive policies have been the most heavily invested in.

Table 3 shows that spending on protection policies after the crisis is accentuated because of the increase in the unemployment rate in both countries. In the years of greatest increase in unemployment, spending on passive measures increases in Cyprus by more than 10 points, with 90% of the budget allocated to maintaining the income of the unemployed and only 7.12% in 2013 to active employment measures. In the case of Greece, in 2007, with low unemployment, 30% of the budget was allocated to promoting various active measures for job creation and 66% to passive measures. In the following years, because of the increase in spending on unemployment protection, Greece has considerably reduced the employment incentive budget to only 1% in 2019. Moreover, in the case of Cyprus, the budget allocation to

worker training and skills is maintained at around 4% on average throughout the period under consideration.

Table 3. Public expenditure on employment policies (Millions of euros and % of total)

	2007				2009				2019			
	CYPRUS	%	GREECE	%	CYPRUS	%	GREECE	%	CYPRUS	%	GREECE	%
1. Labour market services	6,68	7,10	37,57	3,3	6,03	4,05	23,88	23,88	6,33	5,36	10,90	0,63
2. Training	3,39	3,61	127,39	11,2	3,27	2,2	39,77	39,77	5,23	4,43	36,45	2,11
3. Employment incentives	8,46	9,00	135,23	11,8	24,81	16,66	240,97	240,97	1,40	1,19	183,20	10,61
4. Supported employment and rehabilitation (integration of the disabled)	0,98	1,04	0,15	0,0	0,86	0,58	:	:	0,29	0,29	0,00	0,00
5. Direct job creation	:	:	15,00	1,3	:	:	:	:	:	:	392,74	22,75
6. Start-up incentives	0,03	0,03	66,99	5,9	0,01	0,01	217,56	10,18	0,02	0,02	43,69	2,53
7. Out-of-work income manteinance and support	74,49	79,22	758,99	66,5	114,00	76,56	1615,09	75,56	104,74	104,74	1.034,67	59,95
8. Early retirement	:	:	0,18	0,0	:	:	0,15	0,01	:	:	24,35	1,41
Total active measures (2-6)	12,86	13,68	344,76	30,2	28,95	19,44	498,29	23,31	6,95	6,95	656,09	38,01
Total passive measures (7-8)	74,49	79,22	759,17	66,5	114,00	76,56	1615,23	75,57	104,74	104,71	1.059,02	61,36
Total measures (1-8)	94,03	100	1.141,5	100	148,99	100	2.137,41	100	118,02	100	1.726,01	100

(:) data not available.
Source: Own elaboration based on data from Eurostat, Labour Market Policy. Expenditure and Participants (2022).

Another important difference between the spending policies of Cyprus and Greece to tackle unemployment can be found in the incentives for business start-ups, a measure rarely used in the case of Cyprus since 2007 until the latest available Eurostat data for 2019, and very much used by Greece during 2009 and 2010, around 10%, but representing in 2019 only 2.5%.

Finally, labour market services or public employment services play a minor role in the Cypriot labour market with a figure of around €6 million, which remains unchanged over the period studied, compared to Greece whose budget allocation to these public employment services has been reduced since the economic crisis of 2009, despite having one of the highest unemployment rates in Europe. Although jobseekers in Greece are more likely to contact the public employment service (OAED) because of the number of unemployed, it encounters a lower proportion of jobseekers. The OAED has long suffered from a lack of resources, with too few well-trained staff and poor information systems (Millán et al, 2017 and Bulman, 2020).

6. Conclusions

The analysis of the evolution of unemployment carried out in this paper shows that there are differences and similarities between Greece, and Cyprus, since the beginning of the 21st century. From the results obtained, it can be concluded that, as macroeconomic variables such as GDP per capita increases, the unemployment rate decreases, and this decrease is greater in the case of Greece than in Cyprus. On the other hand, the higher the productivity, the higher the unemployment rate (again, the increase being significantly higher in the Greek case). As for unemployment expenditure as a share of GDP, it exerts a greater significant influence in the case of Cyprus than in Greece. Finally, and according to the results obtained, as it increases, *ceteris paribus, it* increases the unemployment rate in both economies (the increase being significantly higher in the case of Greece). *The* labour force has exerted the same influence on unemployment in both economies, since, although the parameters in both cases are positive, they are statistically significant only in the case of Greece. Therefore, the proposed model makes it possible to show which macroeconomic or labour market variables have had the greatest influence on the unemployment rates of both economies, as well as the aspects in which they are similar and those in which they differ.

Regarding the adoption of the single currency, the Great Recession and the SARS-COVID 19 pandemic, it can be concluded that the unemployment rate increased significantly since the adoption of the single currency. However, this increase was more significant for Cyprus than for Greece. Similarly, the Great Recession affected the Cypriot unemployment rate more than the Greek one (an average increase of 3.31% compared to 1.42%, without considering the effect of other variables). Finally, the two economies have been affected differently by COVID-19: while the unemployment rate has increased in Cyprus, the opposite has happened in Greece.

To complete the results obtained with the model, we have analysed the labour market reforms in both economies, which may have influenced their capacity to generate employment. This analysis shows that the institutional factor not only explains the disparate behaviour of unemployment in Greece and Cyprus but is also essential to put the unemployment problem into perspective.

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References

Algora Weber, M. D. (2002). El conflicto de Chipre en perspectiva histórica. *Boletín de Información 273,* 27-46. Ministerio de Defensa: Centro Superior de Estudios de la Defensa Nacional.

Bank of Greece (2013). *Annual Report 2012*. Athens.

Bernanke, B. S. (2004). *The Great Moderation*. Federal Reserve Board.

Bulman, T. (2020). Rejuvenating Greece's Labour Market to Generate More and Higher-Quality Jobs, *Economics Department Working Papers, 1622*. https://doi.org/10.1787/18151973

Cyprus Presidency (2012). *Cyprus National Reform Programme 2012*. Planning Bureau.

Cyprus Presidency (2015). *Cyprus National Reform Programme 2015*. Unit for Administrative Reform, April.

D'Amuri, F., Fabiani, S., Sabbatini, R., Tartaglia-Polcini, R., Venditti, F., Viviano, E. and Zizza, R. (2015). Wages and Prices in Italy during the Crisis: The Firms' Perspective, *Bank of Italy, Occasional Paper, 289*.

Destefanis, S., Fragetta, M., Mastromatteo, G. and Ruggiero, N. (2020). The Beveridge Curve in the OECD Before and After the Great Recession. *Eurasian Economic Review 10*, 411–436. https://doi.org/10.1007/s40822-019-00140-2.

Doornik, J. A., and Hendry, D. F. (2013). Empirical Econometric Modelling Using PcGive (7th ed., Vol. I). London: Timberlake Consultants Press.

European Commission (2020). Country Report Cyprus 2020 Accompanying the Document Communication from The Commission to The European Parliament, the European Council, the Council, the European Central Bank and the Eurogroup. *Commission Staff Working Document 512 final*. Brussels, 26.2.2020.

Eurostat (2022). Database. Retrieved May 17, 2022, from https://ec.europa.eu/eurostat/web/lfs/data/database.

Hardouvelis, G. A. and Gkionis, I. (2016). A Decade Long Economic Crisis: Cyprus versus Greece. *Cyprus Economic Policy Review*, 10(2), 3-40.

Izquierdo, M., Jimeno, J.F., Kosma, T., Lamo, A., Millard, S., Room, T. and Viviano, E. (2017). Labour Market Adjustment During the Crisis: Microeconomic Evidence from the Wage Dynamics Network, *European Central Bank, Occasional Paper.*

Izquierdo, M. and Jimeno, J.F. (2015). Employment, Wage and Price Reactions to the Crisis in Spain: Firm-Level Evidence from the WDN Survey, *Bank of Spain, Occasional Paper*, *1503*.

Martín Aceña, P. and Pons Brías, M.A. (2011). La Gran Recesión: orígenes y desarrollo. In *Colección Mediterráneo Económico*, 19, coordinated by José Pérez and José Carlos Díez. 61-76. Cajamar.

Millán, N., Ovadiya, M. and Isik-Dikmelik, A. (2017). Portraits of Labor Market Exclusion 2.0: Country Policy Paper (CPP) for Greece, *The World Bank Group Social Protection and Labor Global Practice*, Washington, DC.

Stock, J. H., and Watson, M.W. (2003). Has the Business Cycle Changed and Why? NBER Macroeconomics Annual 2002. *National Bureau of Economic Research, Inc. 17*, 159-230. https://www.journals.uchicago.edu/doi/epdf/10.1086/ma.17.3585284 .

Wooldridge, J. M. (2009). *Introductory Econometrics: A Modern Approach*. Fifth edition. South-Western. USA.