Employment in the EU countries: a panel data analysis

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Abstract. *This paper examines the evolution of some important macroeconomic indicators for the EU analysing the changes caused by the crisis in the last years and tries to find which one of them is affecting the employment rate. We therefore employ a panel data approach, considering the 27 countries. The econometric results showed that the variables considered in the model are statistically significant and the estimators are robust (with only one exception – the trade openness variable, which was excluded from the robust estimation).*

1. Introduction

The impact of the current crisis on the labour market varied considerably among countries worldwide. Economic structure and exposure to certain vulnerable sectors (such as construction) has increased job losses in some cases. Eichhorst et al. (2010) argue that countries that were able to rely on a strong internal flexibility could better control job losses and rising unemployment. Moreover, they argue that this was possible due to the market protection of the core labour force, through strict rules on employment and adjustments to working hours and wages, and not through layoffs.

One has to make the difference between economic recovery and labour market recovery. Although apparently global economies began to show signs of recovery, labour market conditions continue to deteriorate. A report by the ILO (International Labour Organization, 2012) mentions that in early 2012 the labour market reality is cruel: one in three persons from the working population is either unemployed or is poor. In other words, the data show that from the total labour force of 3.3 billion, 200 million are unemployed and 900 million are living with their families below the poverty line of $2 per day. The most affected segment of the population is the young, 75 million of them being unemployed. Globally, youth are three times more likely to become unemployed (compared to the adults) and this can lead to long-term deterioration of the labour market (ILO, 2011).

2. Literature review

The globalization played and still plays an important role on employment in contemporary economic policy. Although workers in developing countries see globalization as a threat (since the traditional jobs disappear or are relocated), employment growth in developing countries that is generated through globalization is thought to lead to poverty reduction (Jenkins, 2006).

There are a variety of ways in which globalization affects labour, foreign direct investment (FDI), increased trade openness and international technology transfer being the most mentioned.

Trade is an important factor in economic development. In a report of the European Commission (2010) three major benefits of trade openness were listed:

(1) economic growth: the completion of all on-going free trade negotiations would add more than 0.5% to the EU's GDP; progress regarding services and regulatory issues with major trading partners could push this value to over 1% of EU's GDP;

(2) consumer benefits: trade brings a variety of goods and services to consumers and companies at low prices. Only consumer benefits are estimated at EUR 600 per year;

(3) employment: 7.2% of EU employment depends directly or indirectly on exports. If we take into account all the effects of trade (exports, imports, productivity, income effects, etc.) about 18% of the EU workforce depends on trade performance.

In these circumstances it is easy to conclude that trade openness of an economy is an important lever for developing countries to get out of poverty.

In this context, there is a debate regarding the indicator measuring the degree of openness. The two categories that were imposed are based, on one hand, on the tools of trade (tariff and non-tariff) and, secondly, the result of trade (the ratio of trade to GDP). Each of these measures has advantages and disadvantages, none of them being perfect.

The most cited theories linking trade to labour market are those of Heckscher-Ohlin-Samuelson and Stolper-Samuelson, on the one hand, and on the other the Ricardian models (Hiebert and Vansteenkiste, 2007). The first two theories assumes that comparative advantage is due to different intensities with which inputs are used (countries export goods that use intensively the factors of production which are abundant and import goods for which inputs required are rare). The third theory assumes that comparative advantage is due to differences in technology. Despite these differences these theories argue that trade liberalization facilitates international specialization in production and should lead to higher real incomes and a higher welfare (OECD, 2005).

In the long term it is expected that the effect of trade on employment to be positive, but short-term adverse effects might appear, due, among other things, to frictional unemployment (associated with the re-location of workers across sectors). Furthermore, women and men, and workers with different backgrounds are affected differently by trade liberalization.

Sen (2008) examined the effects of trade on employment in India, using several methods. He used data on manufacturing industry for the period 1975-1999, the results being different. On the one hand, the growth method showed a negligible effect of trade on employment in the manufacturing sector during 1975-1985 and 1995-1999; but during 1985-1995 one million jobs were created. Econometric modelling showed no effect on employment from import or export. The main conclusion is that the impact of trade on employment in manufacturing was minimal.

For the case of South Africa, Jenkins and Sen (2006) and Jenkins (2008) examined employment in manufacturing industry for the period 1970-2001. The results of these authors are also different according to the period and

method used. For example, econometric analysis showed that imports had a negative effect, but the growth approach indicated that in the periods 1970-1990 and 1996-2001 were created jobs (200,000 and 70,000, respectively) and during 1990 – 1995 18,000 jobs were destroyed.

Jayanthakumaran (2006) analyses the impact of trade on employment in Australia for the period 1989/1990-2000/2001. The author uses as the dependent variable annual employment growth for each of the sectors analysed. As independent variables he uses two variables that capture the effects of trade liberalization – trade (the ratio of exports and imports to GDP) and the effective rate of protection (report of domestic added value and world added value), two variables capturing the earning influence, an index of technology, and marginal trade between industries (defined as the difference between total trade flows and changes in net trade). His results indicate that the impact of earnings is significant and positive in the manufacturing industry, while technology has a negative impact. The influence of the effective protection rate is significant and positive, while trade openness is negatively correlated with employment. The intra-industry marginal trade has a positive impact, but statistically insignificant.

Remittances are considered a way of development because they can increase income and reduce poverty in developing countries. The remittances are seen as a compensation for emigration since the country suffer a reduction of the workforce, concomitant with a decrease in human capital, especially if migrants were employed and had secondary and/or tertiary education.

Also, remittances represent an amount of money received that can be spent on education or health services (Orrenius et al., 2010). In addition to these positive effects that the remittances exert on recipients, remittances can also have a negative role in that they can increase income inequality and reduce labour supply. However, when taking into account other factors such as exchange rate, it is possible that the actual effect is much reduced.

Orrenius et al. (2010) argue that remittances would have a significant long-term impact if they would be used for investments in agriculture, education or entrepreneurial activities, rather than for consumption.

Regarding the effect of remittances on the labour market, they can influence both earnings and employment.

Blouchoutzi and Nikas (2010) analysed the impact of remittances on three Balkan countries: Albania, Bulgaria and Romania. Remittances represent 5.5% of GDP in Romania, 8.6% of GDP in Bulgaria and 27% in Albania. The authors are interested in how the money is spent, specifying that Turkey, for example, is well known to have successfully managed to use the remittances received mostly from Germany.

For the case of Albania, remittances were used in the tertiary sector and in construction, while Bulgaria used most of the remittances to purchase durables goods. Remittances received by Romania have been channelled to the commercial sector, especially the transport, construction and financial services.

León-Ledesma and Piracha (2004) analysed the effect of remittances on employment performance for Central and Eastern European countries (they used a set of 11 transition countries for the period 1990-1999). It is known that one of the main reasons behind migration from Central and Eastern European countries to the EU is the significant difference between wages in the two regions of Europe. Thus, labour migration offers benefits both at micro and macro level. At the micro level, migrants earn higher wages, accumulate experience and/or develop new skills and increase the opportunities to get employed when returning to the home country, or to start a business on their own. At the macro level, unemployment is falling and therefore the social insurance system is recovering; the returning migrants help develop the economy through their investments. The authors estimated an equation for labour productivity and investment and consumption functions, the results showing a positive impact on productivity and employment. Moreover, remittances contribute to the increase of investment in the recipient country.

Posso (2012) analyses the impact of remittances on labour recipient countries, using a sample of 66 countries in the process of economic development (Middle East, Africa, Asia, Pacific, Latin America and the Caribbean) for the period 1985-2005.

The author estimated an equation of the form:

$$LF_{i,t} = \beta_1 \times R_{i,t} + \beta_2 \times X_{i,t} + \alpha_i + \lambda_t + \varepsilon_{i,t} \,,$$

where LF is total labour force, male and female (the dependent variable), R is the log of remittances and X is a vector that contains country-specific features, α_i is the country fixed effect, λ_t is the time fixed effect, and $\varepsilon_{i,\,t}$ is the error model. His results suggest a positive impact of remittances on total employment, with a greater effect on men.

Blouchoutzi and Nikas (2010) present a set of economic implications of remittances, both positive and negative:

- Positive: they facilitate transactions with other countries and finance account deficits; provide the exchange of foreign currency for import of equipment and raw materials for industry; represent a potential for savings and investments; facilitate investment in education and human capital development; increase living standards and reduce poverty
- Negative: they increase the aggregate demand, and thereby inflation and wages; savings and remittances reduce work effort, leading in

long-term to growth reduction; increase the level of dependency and inequality, accompanied by money launderers.

Neoclassical and Keynesian theories are based on very different implications for how changes in real wages produce changes in the level of employment. On the one hand, the neoclassical model assumes that all markets, including the labour market, work in a perfect manner, unless the activity is disrupted by various institutional impediments. Given these aspects, employment will increase if the wage decreases. In contrast to this model, Keynesian models argue that changes in real wages will not produce changes in the level of employment.

In recent years, a number of econometric studies have examined the relationship between real wages and employment. Arestis and Mariscal (1994), Carruth and Schnabel (1993), Smith and Hagan (1993) and Suedekum and Blien (2004) found evidence in favour of neoclassical theory, showing a negative relationship between wages and employment for Britain, West Germany and Australia. Apergis and Theodosiou (2008) have shown that there is a long-term relationship between the two variables, categorically excluding a short-term relationship, suggesting that the reduction in real wages is not large enough to induce an increase in production and employment.

3. Methodology

The econometric analysis is based on panel data estimation, using the Stata software.

A panel data regression has the form:

$$y_{it} = \alpha_i + x_{it}' \times \beta + \varepsilon_{it} \qquad i=1...N, \ t=1... \ T \tag{1}$$

where the i subscript denotes the cross-section dimension and t denotes the time-series dimension.

The individual effects may be either assumed to be correlated with the right hand side variables (fixed effects model: FEM) or be incorporated into the error term (random effects model: REM) and assumed uncorrelated with the explanatory variables (Baum, 2001).

When working with panel data models the first step is to test whether the data series can be estimated through a panel data model or through a pooled OLS. Therefore, Baltagi (2008) considers that the question is "To pool or not to pool the data?" A simple prolability test has the null hypothesis the OLS model and the alternative hypothesis the FE model.

The next step would be to decide whether a FE model or a RE model is more appropriate for the data series. The decision between the two models can be made based on different tests, economic reasons and/or information criteria. Baltagi suggests all of these methods; hence one can estimate both models and choose between them according to the information criteria and/or based on economic arguments.

For the fixed effects model the most used estimator is called the "within estimator". It performs OLS on the mean-differenced data. Because all the observations of the mean-difference of a time-invariant variable are zero, using a time-invariant variable is not recommended. Because the fixed effects have been eliminated (through mean-differencing), OLS leads to consistent estimates of the coefficients.

A great advantage of panel data is the fact that consistent estimation is possible even with endogenous regressors, provided that x_{it} is correlated only with the time-invariant component of the error, α_i, and not with the time-varying component of the error, ε_{it}.

For the random-effects model, the α_i from (1) is incorporated into the error term and assumed uncorrelated with the explanatory variables. Considering this assumption we have the model (2) as a random effect model specification:

$$y_{it} = x_{it}' \times \beta + u_{it} \qquad\qquad i = 1...N, t = 1...T \qquad\qquad (2)$$

Because the α_i is incorporated in u_i in each time period, we might say that we have to deal with autocorrelation of the error. Therefore the general least square method is used for the estimation of a RE model. An advantage of the RE model is that it allows to use explanatory variables that are constant over time; a great disadvantage is that if the FE model would be more appropriate those estimates would be inconsistent.

After controlling for the effects, the default standard errors assume that the error ε_{it} is independent and identically distributed (Cameron, Trivedi, 2009). Also, the model is estimated assuming the homoskedasticity of the residuals. When heteroskedasticity is present the standard errors of the estimates will be biased and one should compute robust standard errors correcting for the possible presence of heteroskedasticity. The most commonly deviation from homoskedastic errors in the context of panel data is likely to be error variances specific to the cross-sectional unit. When the error process is homoskedastic within cross-sectional units, but its variance differs across units we have the so called groupwise heteroskedasticity. Another problem is the serial correlation of the idiosyncratic error term, but Wooldridge proposed a very simple test for checking the autocorrelation of the residuals.

In order to overcome these problems, we should estimate the regression model using robust standard errors. Some authors have provided a number of tests in order to identify the problems encountered (Drukker, 2003, Baum, 2001, Green, 2000). Also, for the Stata program, there are some procedures that correct the error structure, assuming for example that the errors are heteroskedastic, autocorrelated up to some lag and possibly correlated between the groups, regardless of the estimated model.

4. Data analysis

We used annual data for the 27 European countries, for the period 2000-2010. The variables employed in this paper are: the employment rate, the average gross wage, the gross domestic product, the unemployment rate, the trade openness and the remittances.

The employment rate is expressed in percentage and refers to the 15-64 age group. The average earning is expressed in PPS (Purchasing power standard). The trade openness is expressed as the sum of exports and imports as a percentage of GDP and the remittances are considered as a percentage of GDP. The data was collected from Eurostat statistics database and from UNCTAD statistics (United Nations Conference on Trade and Development).

Employment rate evolution for EU-27; sex and age analysis
If we consider the employment rate in the EU, it appears that at the aggregate level the employment rate for the population aged 15 to 64 had an upward trend until 2008, when the economic crisis began to feel. In the period 2009-2011, the employment rate decreased; in 2011 this rate was 64.3%, at the level recorded in 2006. The analysis of the employment rate by gender (Figure 1) shows that the employment rate is higher for men than for women, following the same trend.
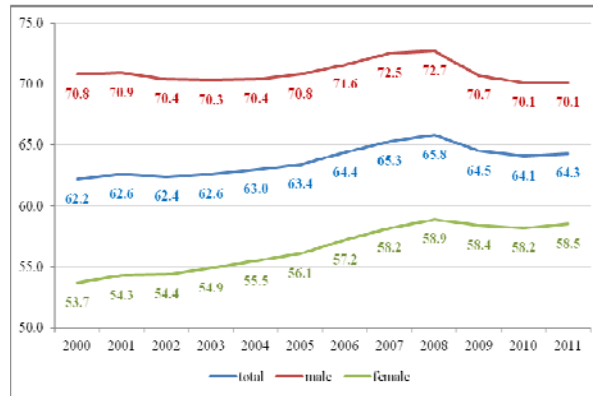
Figure 1. *Employment rate for the 15-64 age group and by gender, EU-27*
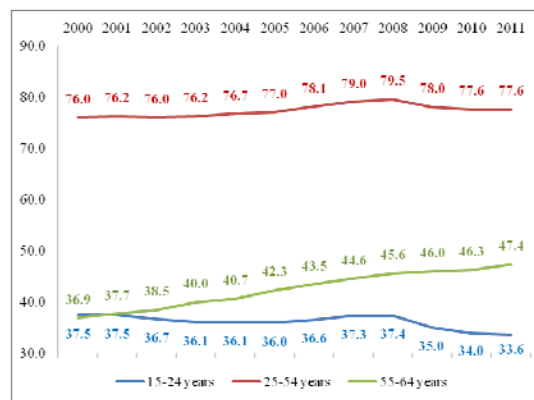

Figure 2. *Employment rate by age group, EU-27*

Analysing the employment rate by age group (Figure 2), one can easily see that the employment rate is lower for young people (age group 15-24), the young being hit harder by the economic crisis. In 2009 the employment rate for this age group fell by 2.4 percentage points compared to 2008. The age group 55-64 years had a continuous growth, without being affected by the crisis. Adult age group (25-54 years) represent the bulk of employment. The employment rate for this group decreased after 2008 (in 2011, the employment rate was 77.6%, comparable to the period 2005-2006).

Statistical analysis of the main macroeconomic indicators, considered as determinants of the employment level in EU countries

Regarding the employment rate in the EU, the growth undergone in the analysed period, highlighting growth in the pre-crisis and post-crisis period, is presented in Table 1. Thus, the largest increases in the employment rate before the economic crisis (calculated as the increase registered in 2007 compared to 2000) were found for the cases of Bulgaria, Latvia, Spain and Estonia, with growth exceeding 15%. Although a favourable period, Portugal and Romania were experiencing decreases. Moreover, if in Portugal the decrease was only 0.59%, for Romania the employment rate fell by 8.41% from 2000 to 2007.

After 2008, the labour market was severely affected by the global crisis. In terms of employment rates, we can easily find that most European Union countries have suffered losses. However, some countries continue to experience growth, albeit significantly lower than before the crisis: Austria (0.42%), Luxembourg (1.56%), Malta (2.75%), Germany (3.04 %), and Poland (4.04%). Belgium and Romania had in 2010 the same employment rate as in 2007.

Most severely affected countries from the employment rate point of view were: Ireland (13.15%), Latvia (13.18%), Estonia (12.10%), Lithuania (10.94%), and Spain (10.67%). Moreover, Estonia, Latvia and Spain are the countries that had the largest increases until 2007.

Regarding the unemployment, the most pronounced increases are recorded for Portugal (97.78% – an increase in unemployment from 4.5% to 8.9 % in 2007), Luxembourg (90.91%, from 2.2% to 4.2%), Austria (22.22%). In the period 2000-2007, the unemployment rate fell mostly in the countries with significant increases in employment rates: Bulgaria (57.93%), Estonia (65.44%), Latvia (56.2%), but also in the Czech Republic (39.08%), Italy (39%), Lithuania (73.78%), Poland (40.37%), Slovakia (40.96%).

Table 1

Growth rates for selected macroeconomic indicators for UE countries

Country	Employment rate		Wage		Unemployment rate		Remittances		Trade openness	
	07/00	*10/07*	*07/00*	*10/07*	*07/00*	*10/07*	*07/00*	*10/07*	*07/00*	*10/07*
Austria	5.15	0.42	20.98	1.81	22.22	0.00	-14.52	-0.07	5.15	-2.52
Belgium	1.81	0.00	15.94	3.37	8.70	10.67	32.97	12.17	30.48	-15.82
Bulgaria	19.81	-3.24	61.96	35.05	-57.93	47.83	791.04	-27.67	7.87	-0.93
Cyprus	8.56	-1.83	52.88	na	-18.75	58.97	13.01	-19.81	17.44	-6.62
Czech Republic	1.85	-1.66	50.64	9.05	-39.08	37.74	123.46	-7.31	31.40	0.98
Denmark	0.79	-4.81	16.68	4.61	-11.63	97.37	-36.83	45.26	-17.03	5.99
Estonia	15.09	-12.10	77.47	4.73	-65.44	259.57	2519.44	-9.07	-16.47	20.85
Finland	3.23	-3.13	32.90	9.40	-29.59	21.74	-19.83	14.03	-4.25	-14.29
France	4.21	-0.78	18.75	3.87	-6.67	16.67	-13.86	9.18	-1.15	-7.26
Germany	5.67	3.04	22.73	2.67	8.75	-18.39	54.10	21.93	-2.42	-3.54
Greece	8.48	-2.93	62.52	16.22	-25.89	51.81	-52.81	-38.87	10.21	-4.83
Hungary	2.50	-3.32	51.64	8.30	15.63	51.35	180.66	1.85	-7.78	-11.85

Country	Employment rate		Wage		Unemployment rate		Remittances		Trade openness	
Ireland	7.29	-13.15	0.30	8.73	9.52	197.83	-12.20	28.17	15.57	3.68
Italy	9.93	-3.07	15.81	8.24	-39.00	37.70	-15.29	121.84	26.90	13.91
Latvia	18.99	-13.18	81.92	17.97	-56.20	211.67	107.28	32.56	14.54	-6.50
Lithuania	8.89	-10.94	75.17	1.19	-73.78	313.95	739.06	25.92	5.93	3.01
Luxembourg	2.39	1.56	11.52	4.28	90.91	9.52	-0.85	5.09	1.13	-0.26
Malta	0.18	2.75	11.03	10.58	-2.99	6.15	31.44	-12.16	4.13	6.03
Netherlands	4.25	-1.71	31.55	3.48	16.13	25.00	21.62	34.61	23.60	-7.53
Poland	3.45	4.04	39.05	4.54	-40.37	0.00	182.66	-34.64	39.09	1.55
Portugal	-0.59	-3.24	42.66	5.53	97.78	34.83	-43.05	-7.53	5.10	-4.38
Romania	-8.41	0.00	83.87	25.81	-5.88	14.06	1845.51	-51.16	2.15	5.09
Slovakia	7.82	-3.13	40.24	16.09	-40.96	29.73	2156.95	-7.80	27.03	-7.49
Slovenia	8.13	-2.36	51.85	8.60	-26.87	48.98	-33.63	-3.50	21.85	-6.30
Spain	16.93	-10.67	16.23	8.23	-29.06	142.17	-10.99	0.54	10.88	-8.26
Sweden	4.36	-2.02	28.73	2.32	8.93	37.70	-9.87	-6.05	11.06	-3.22
United Kingdom	0.70	-2.80	25.02	-6.38	-1.85	47.17	14.56	17.15	-1.49	11.56

Regarding the period 2008-2010, the countries that previously experienced decreases in unemployment were the most affected by the crisis. The worst affected were the Baltic countries Lithuania, Estonia, Latvia, countries where the unemployment rate reached in 2010 alarming proportions (over 16% unemployment rate). Ireland and Spain were also significantly affected, Spain being the country that had the highest unemployment rate in the European Union in 2010 (20.1%). Moreover, in Spain, Ireland and Greece, youth unemployment has reached values even above 40%. In Sweden, UK and Portugal the unemployment rate for young people also increased (Global Employment Trends, 2012).

For Austria and Poland the unemployment rate remained at the level of 2007, while for Germany, the unemployment rate fell from 8.7% in 2007 to 7.1% in 2010.

In terms of earnings, in the period 2000-2007, the largest increases were recorded in Romania, Latvia, Estonia, Lithuania, Greece, Bulgaria, Slovenia, Cyprus, Hungary (increases above 50%). At the opposite pole, one can mention Ireland, where wages remained almost the same (0.3% increase). Analyzing the period 2008-2010, it appears that although period of crisis, the wages have risen in Bulgaria (35.05%) and Romania (25.81%). The only country where wages dropped 2010 compared to 2007 is Great Britain, the decline being of 6.38%.

Remittances have registered significant increases by 2007 for countries like Bulgaria, Estonia, Lithuania, Romania and Slovakia. After 2007, the remittances were drastically reduced in the aforementioned countries; the FDI increased much less or even decreased. Italy received in 2010 with over 100% more than in 2007.

Trade openness grew by over 20% in 2000-2007, especially in developing countries such as Czech Republic, Slovakia, Slovenia, Poland, but also for countries like Belgium, Italy and Netherlands. After 2007, trade openness increased in Estonia, Italy and the UK by over 10%, while in the Czech Republic, Denmark, Ireland, Lithuania, Malta, Poland, Romania the growth was lower. In all other European Union countries, the sum of exports and imports as a percentage of GDP declined due to lower production at European level.

5. Econometric results

We decided to estimate a panel data model because they control for the individual heterogeneity (Hsiao, 2003). In addition, the panel data models offer more information, increased variability, and there is a small probability to have collinearity between the variables. Also, results on panel data analysis are more efficient, since it provides the opportunity to identify and measure effects that would not be detectable by cross-sectional analysis or time series analysis.

As mentioned in the Methodology, the individual country-specific effects (α_i) can be a fixed parameter that can be estimated, if the model is with fixed effects, or may be a random disturbance affecting a particular country, in which case the model is with random effects. For models with fixed effects, the constant can be different for each country, but it is constant over time; however the regression slope is the same for all countries. Random effects models, on the other hand, allow estimating variables that do not vary over time.

Following Greenaway, Hine and Wright (1999), Milner and Wright (1998) and Craigwell (2006) we considered as starting point a Cobb-Douglas production function:

$$Q_{it} = A^{\gamma} \times K_{it}^{\alpha} \times N_{it}^{\beta}$$

where Q – real output, K – capital stock, N – labour, α and β are proportion coefficients of factor use and γ allows factors to change the degree of efficiency in the production process. It is assumed that the goal is to use labour and capital in varying proportions to maximize the profit (the marginal productivity of labour is equal to the wage (w) and the marginal productivity of capital is equal to its cost (c)). Based on these hypothesis one should solve the system formed in order to exclude the capital stock in the production function. After taking logs and rearranging the terms, one should obtain the following relation:

$$\ln N_{it} = \phi_o + \phi_1 \times \ln \frac{w_i}{c} + \phi_2 \times \ln Q_{it}$$

Having this relation as starting point, we estimated the following regression:

$$empl_{it} = \phi_0 + \phi_1 \times \ln cs_{it} + \phi_2 \times gdp_{it} + \phi_3 \times trade + \phi_4 \times rem$$

where:

empl = employment rate;
cs = annual gross wage;
gdp = annual growth rate of GDP;
umepl = unemployment rate;
trade = trade openness;
rem = remittances.

As Baltagi (2008) suggested, the first question is whether to pool or not to pool the data. The results initially obtained in Stata suggests the rejection of the null hypothesis that all α_i are zero (the OLS estimator is biased and inconsistent and we must accept the presence of the individual effects and therefore a panel data estimation is better than a pooled OLS). The next step was to run a Hausman test in order to decide whether we have a random-effects model or a fixed-effects one. The probability provided by the test implemented in Stata is 0.83, so we should accept the null hypothesis that individual effect are random and that RE provides consistent estimates.

Concluding that we have a RE model, we then checked for the presence of heteroskedasticity and autocorrelation of the errors. The serial correlation test, as well as the test for groupwise heteroskedasticity indicates that a robust estimation is needed. For this, we had to estimate the random effects model with option for a robust estimation. After re-estimating the model with the option *vce(cluster id)*, the variable trade openness was removed from the model.

The final estimation results are presented in the following expression.

$$empl = -7.125 + 7.826 \times \ln cs + 0.127 \times gdp_{it} - 0.501 \times rem$$
$$\quad\quad (12.856) \quad\quad (1.379)^* \quad\quad\quad (0.03)^* \quad\quad\quad (0.192)^*$$

where between brackets are the robust standard errors and the * stands for 1% significance.

All the coefficients are statistically significant at 1% level (except the constant).

The annual gross wage has a positive effect on employment rate, but although statistically significant, the value of the coefficient is small. If wages will increase with 1%, the employment rate will increase with only 0.078%. Thus, the dominance of labour supply (supported by the wage growth) on the dynamics of the employment rate is confirmed empirically. This is normal in

terms of proactive policies on employment promoted by the EU through the Lisbon Agenda by 2010 and continued through the Europe 2020 Agenda. The influence of GDP growth is perfectly normal, both in sign and in value (through the associated coefficient of 0.127).

The remittances have a negative impact on employment. As Blouchoutzi and Nikas (2010) pointed out, remittances could lead to a reduction of work effort, and therefore a reduction in employment from the perspective of household income contribution of migrants (who send money to their families in the origin countries, especially emerging economies). This is exactly the case here, where an increase of 1% in remittances will decrease the employment rate with 0.501%.

6. Conclusions

This paper examines the evolution of some important macroeconomic indicators for the EU analysing the changes caused by the crisis in the last years and tries to find which one of them is affecting the employment rate. We used a panel data approach, considering the 27 countries in the European Union.

A report of ILO (2012) mentions that in early 2012 one in three working population is either unemployed or is poor. Most severely affected countries, from the employment rate point of view, were: Ireland (employment rate dropped by 13.15% in 2010, compared to 2007), Latvia (13.18%), Estonia (12.10%), Lithuania (10.94%), and Spain (10.67%).

The worst affected in terms of unemployment were the Baltic countries Lithuania, Estonia, Latvia, countries where the unemployment rate reached in 2010 alarming proportions (over 16% unemployment rate). Ireland and Spain were also significantly affected, Spain being the country that had the highest unemployment rate in the European Union in 2010 (20.1%). Moreover, in Spain, Ireland and Greece, youth unemployment has reached values even above 40%.

The econometric model was tested including all the variables considered in the first place: the employment rate, the average gross wage, the gross domestic product, the unemployment rate, the trade openness and the remittances. After concluding that we have a RE model, we obtained robust estimates, but from this final estimation equation, the trade openness variable was excluded from the model (the coefficient was not statistically significant different from 0).

The annual gross wage and the gross domestic product have a positive effect on the employment rate, while the remittances have a negative impact. As Blouchoutzi and Nikas (2010) pointed out, remittances could lead to a reduction of work effort, and therefore a reduction in employment.

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