

DIFFERENCES IN EARNINGS AND LABOUR MARKET PERFORMANCES BETWEEN THE EUROPEAN UNION MEMBER STATES

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The objective of this paper consists in identifying the main differences on the labour markets of the European Union countries based on indicators of labour productivity, unemployment rate and annual net earnings. The main ante- and post-crisis differences in labour market indicators, government deficit and economic growth between the 28 EU countries are first highlighted for the period 2000 – 2013, then the robust dependencies between these main indicators corresponding to labour market, government policies and economic growth upon the annual net earnings for the 28 EU countries are modelled based on panel data estimation.

Keywords: *earnings, labour market, European Union, panel data model*

JEL Classification: C23, J30

1. INTRODUCTION

In this paper we focus on identifying the main differences on the labour markets of the European Union countries based on indicators of economic growth, public deficit, labour productivity, unemployment rate and annual net earnings. The main ante- and post-crisis differences on the labour market between the 28 EU countries are first highlighted for the period 2000–2013, then the robust dependencies between these main macroeconomic indicators corresponding to labour market, government policies and economic growth upon the annual net earnings for the 28 EU countries are modelled based on panel data estimation.

The problematic of wage differentials and social benefits is a very challenging issue (Matei et al., 2014; Militaru et al., 2011). Regarding the dependencies between labour productivity and earnings, both the economic theory and the international empirical studies suggest the need for a natural positive correlation. For instance, the empirical findings of Atesoglu and Smithin (2006), who investigated real wage and productivity dynamics in the G7 countries using annual data for 1960-2002, suggested that the level of labour productivity is positively related to GDP growth in all countries and real wages are positively related to growth in some of them. Moreover, the international literature confirms the presence of a positive relationship between GDP and real wage growth rates (Loukanova and Tzanov, 2011; Cristescu et al., 2014). Overall, the impact of economic growth on the dynamics of wages is assessed as moderate, suggesting relatively poor wage adaptability to the economic results.

According to Levy (2012), raising taxes would damage economic performance and widen rather than narrow budget imbalances. Fiscal austerity must therefore come mostly from spending cuts. Research suggests that spending cuts would not be as damaging to economic performance as tax increases. Nevertheless, the effect of budget balance on economic growth

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and therefore, on earnings, cannot be neglected, especially under the current context of unsustainable fiscal aggregates that characterize some of the European Union member states.

2. DATA AND METHODOLOGY

The following variables were considered in the analysis based on the Eurostat database: economic growth (expressed in %), public deficit (% of GDP), labour productivity (calculated as a ratio between real GDP and the employed population) and the annual net earnings (expressed in euros and deflated using the Harmonised Indices of Consumer Prices (HICP)). Annual data were used in the analysis for the period 2000 – 2013.

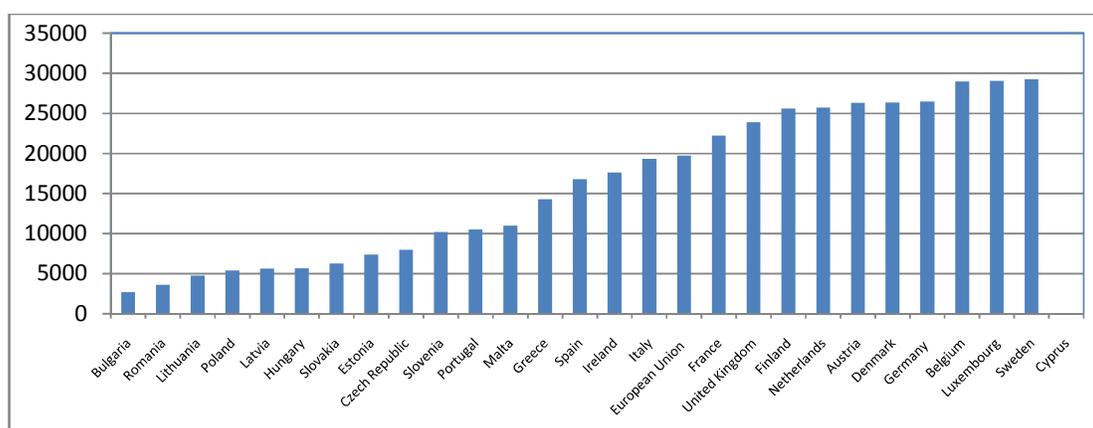
The econometric analysis is based on panel data estimation, using the STATA software. In a panel data model the individual effects may be either correlated with the explanatory variables (fixed effects model: FE) or incorporated into the error term (random effects model: RE) and assumed uncorrelated with the explanatory variables (Baum, 2001).

For the FE model, the estimation was made assuming that the default standard errors is independent and identically distributed (Cameron and Trivedi, 2009) and homoskedastic. When heteroskedasticity is present the standard errors of the estimates will be biased and one need to compute robust standard errors. Another problem is the serial correlation of the idiosyncratic error term, but Wooldridge (2002) 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 (Hoechle, 2007). In order to do that some authors have provided a number of tests that allows identifying the problems encountered (Drukker, 2003, Baum, 2001). Some procedures were also implemented in Stata software, in order to correct the error structure, assuming for example that the errors are heteroskedastic, auto-correlated up to some lag and possibly correlated between the groups.

3. DYNAMICS OF LABOUR MARKET INDICATORS FOR THE EU COUNTRIES

As the European Union is a space that provides its citizens the freedom of movement, European people often decide to relocate in countries that meet their needs in a better way. This decision resides in many cases on the level of earnings, which in the European Union can vary greatly between member states.

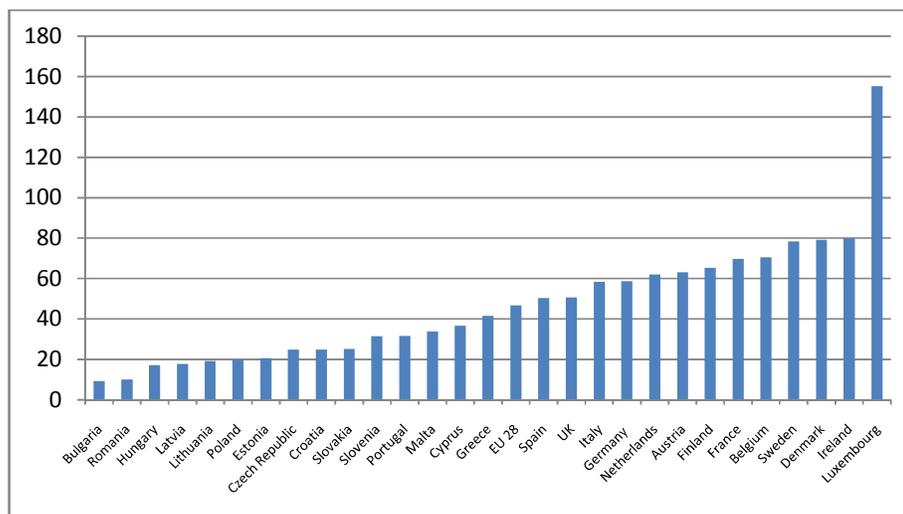


Source: EUROSTAT, own calculation

Figure1. The dynamics of earnings in the European Union (euro, 2012)

In France, United Kingdom, Finland, Netherlands, Austria, Denmark, Belgium, Luxemburg and Sweden, the level of annual earnings is above 20,000 euro, exceeding the EU average. In the other 15 member states, employed persons earn less money compared to the

EU average. The lowest earnings are by far registered in Bulgaria, Romania and Lithuania, where earnings are less than 5,000 euro. Therefore, the disparities in earnings between the European Union member states are very large, explaining to a large extent some of the characteristics of the European labour market. The level of earnings must be considered in comparison with the labour productivity of each country. For example, in Bulgaria and Romania the labour productivity registers the lowest level of all the European Union, just as the level of earnings.



Source: EUROSTAT, own calculation

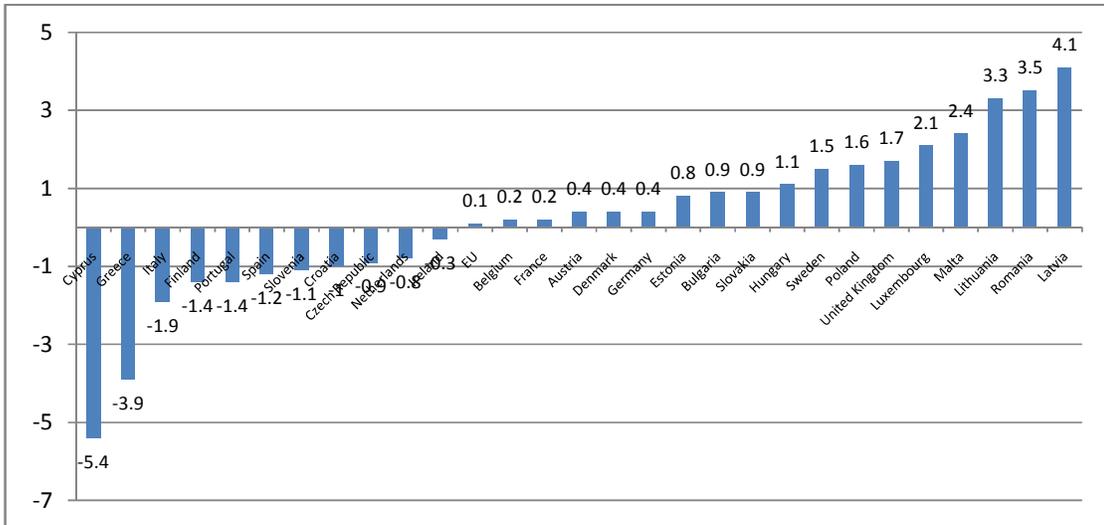
Figure 2. The dynamics of labour productivity in the European Union (2013)

13 out of the 28 European Union member states are above EU average in terms of labour productivity. The average (46.7%) is highly influenced by Luxembourg, in which the ratio of real GDP on the employed population exceeds 150%. However, Luxembourg does not register also the highest earnings in the EU, Sweden being the country in which employed persons earn the most annual amount of money. Regarding labour productivity, Sweden is not even the second most productive country in terms of labour, being surpassed by Denmark and Sweden.

Out of the 15 European countries that are below EU average, Bulgaria, Romania, Hungary, Latvia and Lithuania registered the lowest labour productivity levels, the ratio between real GDP and employed populations being of less than 20%. Close to the EU average, in terms of labour productivity, are Greece, Cyprus, Malta, Portugal and Slovenia. Therefore, the European Union is a space of large disparities, considering both the level of earnings and labour productivity, which are not in all cases perfectly connected.

Having in view all these differences in labour market between European Union member states, the real GDP growth is expected to vary between countries. In 2013, in average, GDP at market prices changed with 0.1 percent compared to the previous period (Figure 3). Above the EU average are 17 out of the 28 EU countries. However, the pace of economic growth is still slow, as the percentage change of GDP at market prices is less than 1 in 8 EU member states.

The highest economic growth was registered in Latvia, Romania and Lithuania, among which the last two countries register the lowest level of earnings and labour productivity. Cyprus, Greece and Italy are the EU countries that have the highest negative percentage change in GDP, expressed in market prices. Negative GDP changes were also registered by Finland, Portugal, Spain, Slovenia, Croatia, Czech Republic, the Netherlands and Ireland.

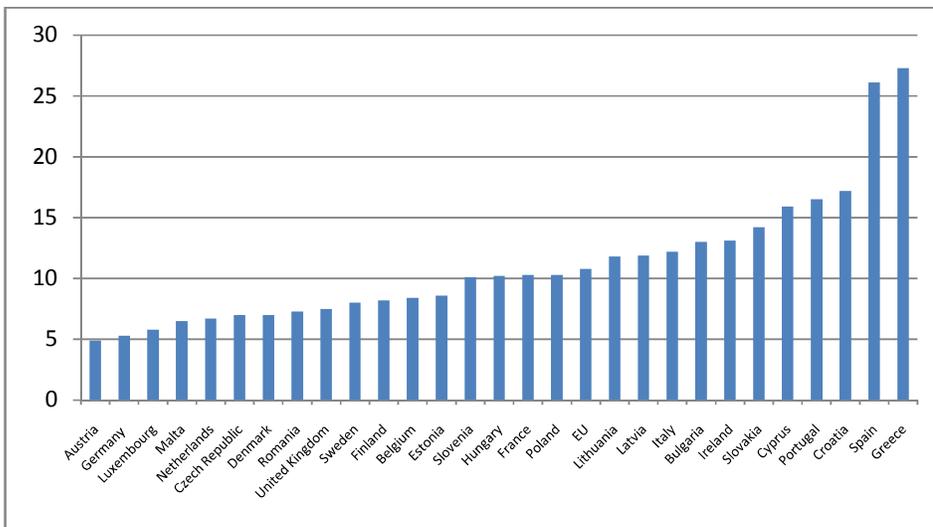


Source: EUROSTAT, own calculation

Figure3. The dynamics of economic growth in the European Union (2013)

The negative results of the 11 European economies that are below EU average and also the modest growth of the other 17 EU member states, draw attention of the persistent effects of the economic crises and highlight the need for further stimulus for recovery and economic growth.

All the above mentioned factors, added to the challenging macroeconomic context, led to high unemployment rates in the European Union Member states.



Source: EUROSTAT, own calculation

Figure4. The dynamics of unemployment rate in the European Union (2013)

Unemployment rate grew in the last years to alarming level. Greece, Spain, Croatia, Portugal and Cyprus register the highest unemployment rates in the EU. Lithuania, Latvia, Italy, Bulgaria, Ireland and Slovakia are also above EU average, but managed to keep unemployment below 15%. Northern countries registered the lowest unemployment rates in the EU, being well below EU average. Part of this group of countries is Romania, in which unemployment rate reached 7.3%, being in the 8th place in terms of unemployment rate.

4. ECONOMETRIC RESULTS

We estimated a fixed effects panel data model using the STATA software, in order to explain the annual net earnings variations. After applying the t-Student test, all the coefficients were statistically significant (p-value <0.05) and the results were consistent with the economic theory.

When running the Hausman test in order to decide whether a RE model is more appropriate than a FE model, the probability was less than 5%. Concluding that we are dealing with fixed-effects, we estimated the model using the within estimator.

When performing both the modified Wald test for group wiseheteroskedasticity in the FE model, implemented in Stata by Baum (2001) and the serial correlation test proposed by Drukker (2003), it resulted that the errors were both autocorrelated and heteroskedastic. That is why, in order to ensure the validity of the statistical results, we had to estimate a robust fixed-effects (within) regression with Driscoll and Kraay standard errors.

The output of the robust fixed-effects regression model that describes the annual net earnings variation is presented in Figure 5.

Fixed-effects (within) regression	Number of obs	=	340
Group variable: cod	Number of groups	=	27
R-sq: within = 0.7049	Obs per group: min	=	7
between = 0.4382	avg	=	12.6
overall = 0.4545	max	=	13
	F(3,310)	=	246.78
corr(u_i, Xb) = -0.6858	Prob > F	=	0.0000

lnearn	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
w	.0038081	.0012402	3.07	0.002	.0013679 .0062484
ldb	-.0034942	.0010989	-3.18	0.002	-.0056565 -.001332
llnGDP	.6638446	.0325981	20.36	0.000	.5997031 .7279862
_cons	1.160695	.3549264	3.27	0.001	.4623252 1.859064
sigma_u	.88624927				
sigma_e	.06277898				
rho	.99500721	(fraction of variance due to u_i)			

F test that all u_i=0:	F(26, 310) =	477.38	Prob > F = 0.0000
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Source: STATA, own calculation

Figure 5. Robust fixed-effects regression model

Therefore, the following final valid econometric model resulted:

$$\ln EARN_{it} = 1.161 + 0.004 * W_{it} - 0.0035 * DB_{it-1} + 0.664 * \ln GDP_{it-1}$$

where

$EARN_{it}$ - annual net earnings for each of the 28 EU countries from 2000 to 2013

GDP_{it} - the real GDP for each of the 28 EU countries from 2000 to 2013

W_{it} - labour productivity for each of the 28 EU countries from 2000 to 2013

DB_{it} -governmental balance for each of the 28 EU countries from 2000 to 2013

As expected, the dependence between labour productivity and earnings in the EU is positive, since an increase in productivity naturally stimulates production and normally leads to an increase in the labour force rewards (the coefficient indicates that a 1% increase in labour productivity stimulates an increase in earnings of 0.38%). A gain of labour

productivity normally induces a growth in the autonomous supply of goods and services at an either unchanged or even lower level of inputs, such as capital, time and human resources and should generate a rise in earnings.

Secondly, an increase in the Gross Domestic Product with 1% stimulates a rise of the real annual net earnings of about 0.66% with a one year delay, keeping all other variables constant.

Moreover, the influence of the government deficit turned out to be negative upon the earnings growth and with a one year delay, indicating that on a short run a reduction of the government expenditures which induces an improvement of the government deficit will contribute to a slight reduction on earnings. More exactly, an improvement of the government deficit with a 1% will lead to a decrease of real annual net earnings of about 0.34%, keeping all other variables constant.

5. CONCLUSIONS

In this paper we focused on identifying the main competitiveness gaps on the labour market between the European Union countries based on indicators of economic growth, public deficit, labour productivity and annual net earnings.

Our results show positive effects of GDP growth and labour productivity on the real annual net earnings, while the government deficit contribute to a slight reduction on earnings on short term.

Since government spending is mostly targeting retirement pensions, benefits and income support, while very little is allocated to investment-oriented activities, it leads to high unemployment and low investment spending that constrains productive capacity. While it is well known that fiscal austerity requires making retirement and pensions less generous, reallocating more national resources toward activities that would raise productive capacity is therefore necessary to improve economic performance, job creation and real wages over time.

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