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EVIDENCE ON EMPLOYMENT RATE AND ECONOMIC GROWTH

Literature review

Keywords
Economic growth
Labour force
Employment rate
Employment elasticity

JEL Classification
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Abstract

This paper explores a causal relationship between employment rate and economic growth for European Union countries, in general, and produces a structural assessment of employment on the background of labour market dynamics. Economic growth is the key in economic theory and the main source of well-being and quality of life. Since the 2008 financial crisis, most European countries have experienced job shortage and unemployment problem, but today's European economic outlook is strengthening on the bases of a GDP growing momentum. Empirical data shows, regardless the GDP's moderate positive trend, the employment rate did not increase enough. Given this, the present analysis address the question: to what extent the employment rate is affected by economic growth?

Introduction

European Labour market goes through major transformations due to a decreasing demographic trend and high unemployment rate among active cohort, but not evolved in any remunerated activity. The representative macroeconomic indicators in every economy able to create job opportunities for their people are: unemployment rate, employment to population ratio and labour force participation rates. Another important, but less used labour market indicator is employment intensity of growth or employment elasticity with respect to economic output.

Its significance corresponds to the measure of variation of two variables related to each other. In our case, employment elasticity represents how much employment changes with 1 percentage point economic growth. Although employment elasticity is one of the less used indicator from the set, it brings a deeper insight into labour market dynamics, structural changes of employment over a period of time, the evolution of employment together with economic growth and its variation for different cohorts.

Employment rate is an important indicator that must be addressed to every European country, otherwise, negative consequences can affect not only economies but also societies, for so long tested by a prolonged crisis.

Literature review

The present paper aims to do a synthesis of several studies with regard to employment elasticity or employment intensity of growth and try to follow the trace of the empirical trade-offs between employment rate and economic growth, represented by gross domestic product or value added, and whether this relationship is still valid.

European Union White Paper is a document issued by EU Commission containing proposal for community action in a specific area. The 1993 White Paper includes strategies on three areas: growth, competitiveness and employment, aiming to improve employment inside European Union countries. Its purpose was to promote the employment intensity of growth, but after five years, analyses have shown a partial success in reaching the stated targets.

Public opinion issued a debate on whether there is a link between employment and economic growth, but often the idea of a disturbance of this relation emerged. On the other hand, there was a concern in area of politics about the „jobless growth" phenomenon (Gerstenberger, 1999), in which growth happens but unemployment rate remains high. However, a linear relation between the percentage change of output and the absolute change in the unemployment rate is "atheoretical, if not indeed antitheoretical" (Blinder, 1997). According to White Paper calculations, the employment intensity is represents the difference between production increase and employment variation. This is an indication of an increment of labour productivity rate. Another conclusion that emerged from the paper refers to the growth rate of GDP necessary to keep employment constant at about 2 percentage points. However, this statement cannot be correctly quantified (Dopke, 2001).

Data presented in **table 1** show an increase of one third of occupied population as a result of a smaller rise of the output (real GDP). Here, the values were a consequence of 1992-1993 recession. The growth of real output was about 1 – 1.5 percentage points lower than the strategy had foreseen. The employment intensity of growth was basically lower than expected. However, the difference can't explain the slow increase of employment.

The Jorg Dopke's study "Employment intensity of growth in Europe" (2001) analyzes the growth – employment relationship for every European country and the differences between them. It estimates Okun coefficients for each investigated European country and tries to find their robustness or the undergone changes over time.

In 1962 Arthur Okun formulates the Okun's law in which an empirical link between unemployment and losses in a country's production is observed rather than a result derived from theory (Prachowny, 1993). It defines a coefficient which gives the rate of change of output a certain change in the unemployment rate. His 1970 paper focused on GDP estimation thus, unemployment was considered to be the exogenous variable and the real output as the endogenous one. The causality relation of these variables was presumed to be negatively correlated.

The Okun's "gap version" assert that for every 1 p.p. increase in the unemployment rate a country's GDP will be roughly an additional 2 p.p. lower than its potential GDP. His "difference version" describes the relationship between quarterly changes in unemployment and quarterly changes in real GDP. The stability and usefulness of the law has been long disputed (Knotek, 2007).

Lee (2000) calculated Okun coefficient for all OECD countries and he pointed out that the relationship is not constant over time, but the influence of growth on employment is confirmed and varies across the countries. Although, Okun offers no explanation for these differences the estimation of this coefficient continues to be considered an important macroeconomic tool for measuring the responsiveness of unemployment to growth in output.

The occurrence of jobless growth goes contrary to the Okun's law inference. Khemraj et al (2006) noticed the existing of such phenomenon in the US economy. Although the US economy grew stronger, the GDP growth could not be correlated

with an increase in employment and this fact oppose the idea of attaining a higher number of jobs due to the rise of the output.

Padalino and Vivarelle (1997) estimate the Okun coefficient for the G-7 countries. They found the Okun'slaw valid across all these countries. The GDP growth correlation to the changes in working hours in industry sector is closer than other tool used in measuring employment or unemployment and assessing the coefficient for the entire economy. The study conclude a robust link over time.

Baker and Schmitt (1999) estimate Okun coefficients for OECD countries. Their study found out a higher value for the employment intensity of growth than in the sixties. They emphasized the importance of foreign trade as a determinant factor for creating jobs.

Schalk and Untied (2000) provide an overview of the relationship between employment and growth for Germany. They estimated Okun's coefficient and found that Okun's law is a robust approximation. The unemployment threshold has decrease by 2 p.p. since early seventies. To prove a dynamic interaction between unemployment and growth the authors calculated a vector autoregressive model using the unemployment rate, real GDP, nominal wages and the inflation rate. The result revealed a strong influence of GDP or inflation on unemployment rate 15 quarters. They discuss about Okun's coefficient and report a higher value during recessions compared to expansion phases of a business cycle. They pointed out the utility of this unemployment – growth relationship on policy decisions. They put an emphasis on the aggregate demand that may produce structural changes in unemployment rate.

Solow (2000) argues that European unemployment is a consequence of lacking demand. Using the Okun relation and some simple calculations he quantifies the recent output gap for Germany in the neighbourhood of 6 p.p.

Prachowny (1993) considers the theoretical foundation of Okun's law. He derives the usual Okun relationship starting from a production function using several restrictive assumptions. His empirical evidence for the United States supports the view that the Okun equation is a useful proxy in macroeconomics.

Siebert (1997) stressed out a possible explanation for the variation of employment intensity of growth across countries stating that labour market institutions are different and have an impact on the Okun relationship.

Hubert (1997) used the overall study of the OECD jobs structure to evaluate the labour market institutions response of employment to fluctuations in real production. His empirical findings suggest a close link between the markets for goods and labour in countries with fewer regulations as compared to countries with many restrictions.

Figure 1 and figure 2 depicts the employment threshold, labour productivity and the measure of labour market flexibility for the European countries investigated.

An important idea emerged from Walterskirchen (1999) study which finds that an increasing of labour supply will lead to a rise of employment and a reduction of productivity. This underlines the classic theory that higher labour supply leads to a lower average wages and an augmentation of labour demand.

Beaudry and Collard (2002) study the relationship between labour force growth (labour supply) and productivity and finds a negative correlation. However, the study shows a diminished effect of this correlation as a country's economy integrates into the world's economy as a result of capital flow.

Methodological background

A basic definition of employment elasticity is the change in employees' number associated with the economic output change (GDP). One technique form of elasticity calculation is:

$\varepsilon = (\frac{\Delta E/E_0}{\Delta Y/Y_0})$, where: ΔE is the change in employees' number;

ΔY = the change in output.

Nazara and Islam (2000) have shown that elasticities calculated this way brings a great deal of instability, which makes this method inappropriate for comparative purposes.

In Okun's (1970) seminal paper, the correlation between unemployment rate change and real GDP takes form:

$\frac{(Y-\bar{Y})}{\bar{Y}} = \frac{Y}{\bar{Y}} - 1 = c(\bar{U} - U)$ (1),

where:

- Y is the output ($\bar{Y}$ – potential GDP/ real GDP rate),
- c the factor of changes occurred in unemployment when growth rate varies,
- U is the unemployment rate

This relation states that every one percent point decreasing of the unemployment (U) corresponds to a c p.p. rise of the potential GDP ($\bar{Y}$). $\bar{Y}$ and $\bar{U}$ are difficult to asses.

Expanding equation (1): $c * \bar{U} - c^*U = \frac{Y}{\bar{Y}} - \frac{\bar{Y}}{\bar{Y}}$ (2)

Differentiating equation (2), assuming GDP won't vary too much and $d\bar{Y}$ = constant the relation becomes: $c^*d\bar{U} - c^*dU = d\frac{Y}{\bar{Y}} - d\frac{\bar{Y}}{\bar{Y}}$ (3),

The trend of $d\bar{U} = 0$, then the equation (3) becomes:

$d\frac{Y}{\bar{Y}} = - c^*dU + d\frac{\bar{Y}}{\bar{Y}}$ (4)

As the trend of real GDP growth is closer to the real growth rate, equation (4) is:

$d\frac{Y}{Y} = - c^*dU + d\frac{\bar{Y}}{\bar{Y}}$ (5)

Using Ordinary Least Squares (OLS) in order to estimate c and $d\bar{Y}/\bar{Y}$, Okun has obtained the following results: c = 2 and $d\bar{Y}/\bar{Y}$ = 3. The data show the potential GDP growth rate of 3 p.p. and a rise 1 p.p. of unemployment corresponding to 2 p.p. decline of real GDP growth rate.

Kapsos (2005) pointed out the importance of assessing the dynamic relation between employment elasticities and labour productivity. He founds a fundamental link between these two concepts presented as follows:

$Y_i = E_i * P_i$ (6),

where Y_i = output (GDP or VA), E_i = employment and P_i = labour productivity (output per worker).

Relation 6 implies that small changes in output is corresponding to variation in employment and productivity, as follows:

$\Delta Y_i = \Delta E_i + \Delta P_i$ (7)

A small change in output growth will lead to a rise of employment rate which must be met by an equal and opposite decrease in labour productivity growth. Dividing relation 7 by output growth we obtain the following:

$$\varepsilon = 1 - \frac{\Delta P}{\Delta Y} = \frac{\Delta E}{\Delta Y} \quad (8)$$

Equation 8 clarifies the relationship between employment elasticity and actual employment growth and productivity growth. A summary of this relationship is provided in table 2.

Conclusion

This literature review points to a systematic and positive correlation between labour supply and the employment elasticity. This result suggests that growth in the labour supply tends to lead to low productivity growth.

Globalization and export orientation showed no strong relationship with employment intensity, except for the women for which employment intensity of growth has a higher level.

Okun's law relevance comes from the fact that it can be involved in the economic strategies. Thus, in case of high rate of GDP growth, policy maker may come to the decision of suspending the creation of the new jobs, so they will not generate inflation.

In Europe, the poor employment performance is partly a consequence of insufficient economic growth.

The fear for *jobless growth* holds no evidence "the idea of jobless growth in Europe is not only misplaced but also turns the facts upside down" (Paqué 1998)

A possible explanation for various values of employment elasticity across the countries stands the wage policy and labour market regulations.

One point in White Paper strategy is a closer look at the macroeconomic relations and country specific labour market institutions relationship.

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Appendix A –*Tables. Employment elasticity*

Table No. 1 - *The EU White Book, five years after*
Source. White Paper (1994), European Commission's Spring Forecast 2000 and JorgDopke calculations.

Employment elasticity	Positive GDP growth	Negative GDP growth
ε < 0	(-) employment growth (+) productivity growth	(+) employment growth (-) productivity growth
0≤ ε ≤1	(+) employment growth (+) productivity growth	(-) employment growth (-) productivity growth
ε > 1	(+) employment growth (-) productivity growth	(-) employment growth (+) productivity growth

Table No. 2 - *Interpreting employment elasticities*
Source. Kapsos, S. (2005), The employment intensity of growth: Trends and macroeconomic determinants

Increase in Employment (number of persons)	+15 mill.	+5 mill.
Growth of Employment in the European Union	1.5 to 2 %	0.7 %
Growth of Real GDP in the European Union in p.c.	3 to 3.5 %	2.3 %
Employment Intensity of Growth in percentage points	–2.5 to –3	–1.7

Appendix B–Figures. *—"Labor Market Flexibility", Unemployment Thresholds, and Trend Productivity Growth in the European Union in the Nineties*

Figure No.1 - Labour productivity Growth

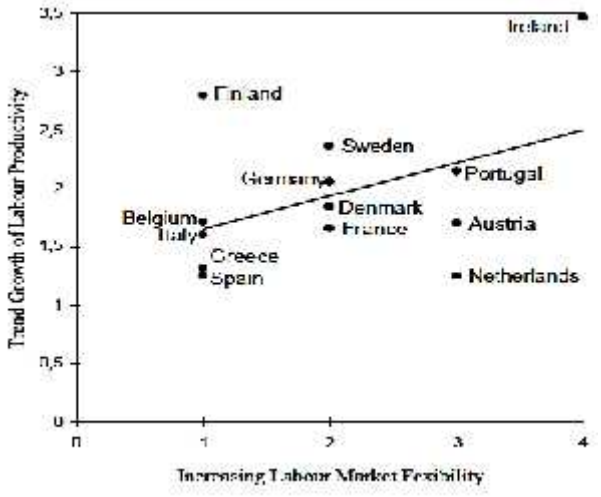
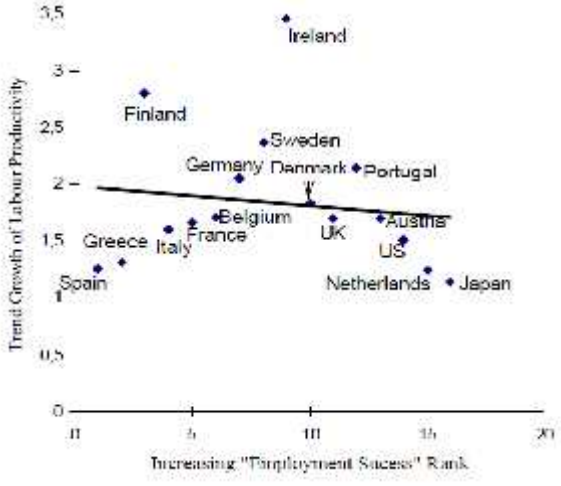


Figure No. 2 - Unemployment Threshold



Source figures 1 and 2 - Döpke, J. (2001). The employment intensity of growth in Europe.