

CONSIDERATIONS ON THE FACTORS OF ECONOMIC GROWTH AND LABOR PRODUCTIVITY IN THE EU

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Abstract:

Through this research we aim to identify and analyze the factors of increasing labor productivity in the conditions of internationalization of national economies. Labor productivity is determined by natural factors, technical factors, economic factors, social factors, management methods used. Taking into account all the determinants of labor productivity, the “Hard” Matrix Model was developed to determine the main indicators for its increase by calculating the Labor Productivity Index.

The main objective of the paper is to identify by the Hard matrix method the specific determinants of the factors of growth or stagnation of labor productivity in the EU.

Key words: labor productivity, European Union, economic development

JED Classification: O52, E24

Introduction

Labor productivity is a key factor in increasing economic growth in the internationalization of nations. It plays a key role in determining the standard of living and well-being of the human factor, which gives it significant importance in countries' economic development policies and strategies. The increase of labor productivity is determined by the quality and skills of human capital, the efficiency of resource allocation, technological changes, spending on research and development. It is important to note that not only the number and skills of the human factor involved have an impact on productivity, but the efficiency with which labor is combined with other factors of production. Therefore, the correct identification of the factors of the increase of the labor productivity is the foundation of the economic development of the states, and this aspect constitutes a good starting point in our research.

Identifying the determinants of labor productivity growth in the EU

Productivity is a fundamental factor in a nation's wealth. In the knowledge and information society, the concept of productivity acquires a more important value in the economy at the expense of competitiveness, as some scholars suggest abandoning the concept of competitive nation, being an obsolete subject, with an increasingly moderate impact on economic prosperity. Michael Porter claims that the main economic goal of a state is to provide a better life and a higher standard of living for its citizens. This is only possible by increasing national productivity. According to the Romanian economist, Mihail Manoilescu, productivity is an indicator more important than profitability, emphasizing that profitability is an individual criterion at the enterprise level, while productivity expresses efficiency at both micro and macroeconomic level. (Manoilescu M., 2014).

Productivity is an indicator of economic performance, a qualitative indicator whose evolution reflects in a very synthetic form the improvement of technology, technologies and production organization, qualification and improvement of people.

In a prosperous economy it is necessary to ensure social progress by increasing purchasing power and reducing working hours for employees. Satisfaction of these objectives is possible by improving labor productivity and by promoting the production process. At the same time, productivity growth leads to GDP / capita growth, therefore there is no economic growth without productivity growth.

The literature, expressed through the theories and models proposed by economists of all times, identifies a number of factors that contribute to increasing labor productivity. Empirical studies suggest that the growth rate of labor productivity is correlated with the resources available in the national economy, technological progress and institutions in the form of democracy and political stability. For example, neoclassical theory emphasizes the importance of physical and human capital, assuming that technological influences are exogenous. To remedy the ad hoc hypothesis of exogenous technological influences, growth theory has included technology in the system as an endogenous factor, suggesting that the accumulation of knowledge can generate increasing returns such as those generated by the accumulation of human capital. (Table no. 1)

Table no.1. Determinants of labor productivity in various economic theories

	<i>Economic theory</i>	<i>Determined factors</i>
Work productivity GDP / total labor force GDP / hours worked	Neoclassical theories	- Investment level - Human capital - Orientation towards technology
	Growth theory	- Endogenous technological progress - Externalities
	Factors based on knowledge	- Quantification of inputs (human capital, investments in R&D) - Quantification of outputs (patents, products)
	Cost theory	- Average of unit labor cost - The price of public inputs
	Economic geography / Trade theory	- Urbanization - Shipping costs - Sectorial specialization

Source: *European Competitiveness and Industry Report 2019*, https://ert.eu/wp-content/uploads/2019/12/ERT-Competitiveness-and-Industry-Benchmarking-Report-2019_II.pdf

Costs are another possible way to assess labor productivity. The economic theories that emphasize costs are: Ricardo's theory of comparative advantage or the Heckscher-Ohlin theory. The average unit cost is defined as the ratio between labor costs and the unit of production. Here, the numerator includes both the gross salary and the indirect costs per employee. Consequently, higher costs imply a decrease in productivity.

There are other factors that can affect labor productivity, but these cannot be easily approximated quantitatively. This category also includes many government policies, high-tech industrial agglomerations, innovations, investments or exports. (Das, Yildiz 2005)

French economist Simon Porcher said: "*I am not happy because I succeed, but I succeed and I am successful because I am happy.*" The interpretation of this idea lies in the fact that the increase of labor productivity, respectively of economic growth is directly proportional to the level of satisfaction and happiness of the labor force involved.

The determinants of the satisfied human factor in the economy of happiness are: health, security, social cohesion, autonomy, trust and equity. We can thus identify the portrait of the happy-productive employee, who is an intelligent, happy individual, generator of good ideas, skillful and responsible. At the same time, productive employees are extremely open and adapt without much difficulty to changes in their workplace. At the same time, they set clear goals and plan their activities effectively (Hesham Shafie, 2014).

The essential role of innovation and technology in the process of economic growth, respectively of increasing labor productivity is underlined in the context of endogenous growth models of the open economy (Grossman and Helpman, 1991, Rivera-Batiz, Romer, 1991, Coe and Helpman, 1995, Bloom 2002).

Innovation is currently supported by internet access, investment in research, development, intellectual capital and the process of globalization. It is a concern at the level of governments, companies, universities and civil society.

Methodology and results of the analysis of the determinants of labor productivity in the EU

Generalizing all the determinants of labor productivity, we can systematize them in the following categories:

- natural factors: climate, soil fertility, richness of the deposit, etc. ;
- innovation amplified by:
 - technical factors: research & development, application of modern technology and technologies, qualitative level of fixed capital used, etc
 - economic - social - psychological factors: raising the degree of training and qualification of the labor force, as well as the degree of motivation and material interest of the work factor, the level of professional conscience, moral stimulation;
- efficient management system: the scientific organization of production and work contributes to the reduction of manufacturing, supply and sales time, thus contributing to increased productivity.

Following the research carried out on identifying the factors of labor productivity growth, we developed a model for determining the main indicators for increasing it. Based on this model we will analyze the level of the Labor Productivity Index (I_{LP}) in EU. The central objective of calculating the Labor Productivity Index is to determine which factors influence and have a direct impact on it. In order to carry out this analysis, we used as a benchmark the “Hard” Matrix, developed within the *GOF Project Romania - Building Regional Assessment Capacity in Line with the Lisbon Agenda*, under the leadership of the Romanian economist Liviu Voinea (Voinea, L, 2010). The model starts from the structural indicators found in international statistics, in particular we used the categories of indicators proposed by the World Bank, grouped into the following categories: general economic environment, employment, innovation and research.

Taking into account these elements and the factors that influence labor productivity, we obtain three types of categories, as follows:

- Economic indicators (general economic environment);
- Social indicators (employment);
- Technological indicators (innovation and research).

Finally, the value of the Labor Productivity Index, IPM, is given by the weighted average of the three indicators, economic, social and technological, ie:

$$I_E = (30 \times E_1 + 10 \times E_2 + 30 \times E_3 + 30 \times E_4) / 100$$

$$I_S = (30 \times S_1 + 40 \times S_2 + 10 \times S_3 + 20 \times S_4) / 100$$

$$I_T = (20 \times T_1 + 30 \times T_2 + 20 \times T_3 + 30 \times T_4) / 100$$

Following the calculations, the contribution of each of the three sub-indicators to the labor productivity indicator will be reflected. In general, countries with high economic growth, a high degree of innovation and a high employment rate also tend to have higher labor productivity. At the same time, in the author's conception, this calculation method makes a much more objective assessment of the level of labor productivity, than the relation of GDP to labor force.

Table no. 2. Calculation of the Labor Productivity Index, according to the “Hard” Matrix Method

Economic indicator		The social indicator		Technological indicator	
GDP / capita (E1)	30	Literacy degree/ level (S1)	30	Expenditure with RDI as a share in GDP (T1)	20
GDP growth rate (E2)	10	Total labor force (S2)	40	Employed population with higher education(T2)	30
Net exports (E3)	30	Employment (S3)	10	Number of scientists (T3)	20
FDI input (E4)	30	Average life expectancy Index (S4)	20	Patent applications (residents) (T4)	30

Source: Voinea L. (2010) *Reindustrializarea României: Politici și strategii*. Studiu realizat de Grupul de Economie Aplicată - GEA. București: GEA, p.34-35

Following their weighting of three indicators, the calculation formula of the Labor Productivity Index (I_{LP}) is reached (the sum of the weights used has the value of 100). Each of these indicators is calculated as a weighted average of the variables selected from each group.

This leads to the following calculation model for the three indicators:

$$I_{LP} = (40 \times I_E + 30 \times I_S + 30 \times I_T) / 100$$

The economic indicator is the factor with the greatest impact on labor productivity, which means that the added value obtained from exports, FDI inflows are the determinants.

After half a century of European construction, the European Union (EU) as a whole is more imposing than each Member State taken separately: it exerts a much greater economic, social, technological, trade and political influence than if they should have acted individual. The fact that the EU takes joint action and speaks with one voice is an indisputable added value for Europe.

The crisis was already visible in the EU28 in 2008, amid a significant slowdown in GDP growth, followed by a decline in real GDP of 4.3% in 2009. EU-wide recovery - 28 meant an increase in the GDP index (based on chain volumes, look) of 2.1% in 2010, with a new increase of 1.7% in 2011.

Subsequently, GDP fell by 0.4% in 2012, before progressively higher positive rates of change in 2013 (0.3%), 2014 (1.8%) and 2015 (2.3). %. Since 2015, growth has been relatively stable, between 2.0% and 2.5% each year until 2018.

Table no.3. The evolution of macroeconomic indicators in the EU

Macroeconomic indicators	2000	2008	2010	2016	2018
GDP / capita	17.950	37.626	33.623	31.668	30.900
Annual rate of GDP growth, %	2,3	0,8	2,09	1,96	2,00
Productivity Labor GDP /worker	68.979	75.478	75.279	77.011	77.123
% of agriculture in GDP	2,4	1,8	1,62	1,59	1,89
% of industry in GDP	28.2.9	27.1	25.07	24.04	24.21
% of services in GDP	69,5	71,1	73.30	73.97	73.90

Source: Eurostat (2018) <https://ec.europa.eu/eurostat/statistics-explained/pdfscache/27161.pdf>

To eliminate the effects of inflation, labor productivity per employee can be calculated based on data adjusted for price variation. An analysis of labor productivity per employee in real terms (based on variations in chained volumes) in the period of 10 years between 2008 and 2018 shows increases in most activities in the EU-28, the highest gains in productivity being recorded in agriculture, forestry and fishing (increasing in general by 28.0%), in information and communication services (17.5%) and in industry (16.3%).

It should be noted that a precise comparison of labor productivity levels in real terms between activities can be analyzed only for the reference year 2010 due to the non-additive nature of the chained volumes.

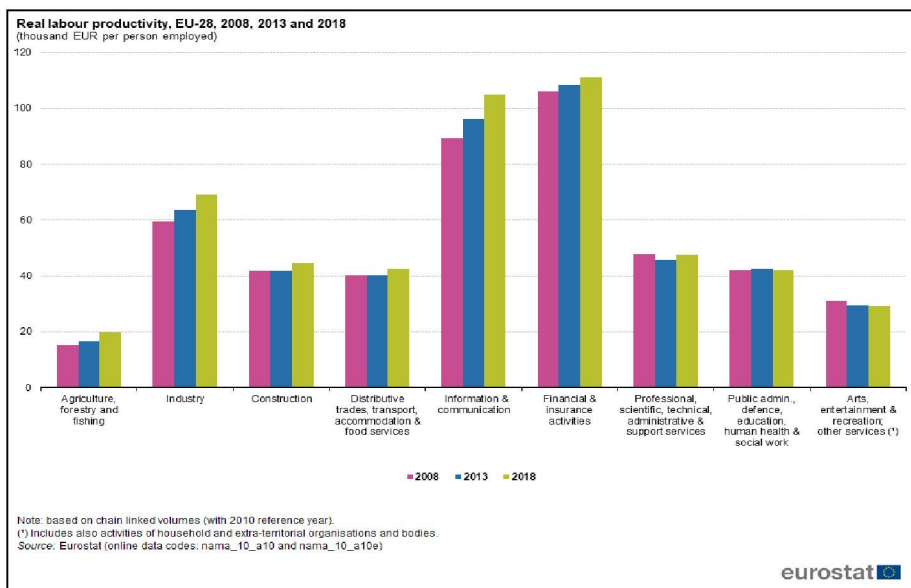


Figure no. 1: Real labor productivity, EU-28, 2008, 2013 and 2018 (thousands of EUR per employee)

Source: Eurostat (2018) <https://ec.europa.eu/eurostat/statistics-explained/pdfscache/27161.pdf>

Using the Hard Matrix method, the Labor Productivity Index at EU level 28 was determined to be 37,38. (table no.4)

Table no.4. Calculation of the Labor Productivity Index, according to the "Hard" Matrix Method

Economic indicator		The social indicator		Technological indicator	
GDP / capita (E ₁)	30.900x30% =9.270	Literacy degree/ level (S ₁)	95x30% =28,5	Expenditure with RDI as a share in GDP (T ₁)	2,12x20% = =0,43
GDP growth rate (E ₂)	2x10%=0,2	Total labor force (S ₂)	248.347x40% = 99.338,8	Employed population with higher education(T ₂)	149.008x30% =44.702,4
Net exports (E ₃)	7.115.901x30% =2.134.770,3	Employment (S ₃)	1.122.259x10 % =112.225,9	Number of scientists (T ₃)	2.801.321x20% = 560.264,2
FDI input (E ₄)	439.458x30% =131.837,4	Average life expectancy Index (S ₄)	81x20% =16,2	Patent applications (residents) (T ₄)	14.569x30% = 4.370,70
<i>I_E</i> calculated	2.275.877,9 (73,54%)	<i>I_S</i> calculated	211.609,4 (6,84%)	<i>I_T</i> calculated	607.337,73 (19,62%)
Labor Productivity Index for the EU (I_{LP}) = 36,37					

The economic indicator and the technological indicator are the main determinants of labor productivity, which means that the added value obtained from exports, FDI inflows are the main factors in its increase. It is observed that investments in research, development, the intelligent human factor, education, patents are factors that directly influence the increase of labor productivity in the European Union. The social index has a very small share, which confirms serious unemployment problems, the refugee crisis, the lack of jobs.

In the current uncertain conditions of the European Union, priority is given to the Europe 2020 Strategy which aims to contribute to European productivity and competitiveness by removing barriers in the European single market, encouraging investment in information technology and supporting innovation. The aim of this strategy is to transform the EU into a smart, sustainable and inclusive economy, characterized by high levels of employment, productivity and social cohesion. It is also worth noting that many EU countries still need to take steps to improve basic requirements, such as institutional stability and their levels of infrastructure. All this must improve their market efficiency, technological training, and the level of skills of the European human factor.

If insolvency proceedings are opened against an entity, labour productivity decreases. Most European countries give priority to the payment of salaries and protection to the employees of an insolvent company precisely so that this indicator is kept within the acceptable limits.. În România, based on the legal dispositions- Law 85/2014 and Law 200/2006 we may state that the protection of employees in insolvency by guaranteeing certain amounts of money is not an actual safety net, but rather a minimum assistance granted to the employees, an aspect that the legislator should improve¹.

Conclusions

The low productivity in the European Union is a consequence of the liberalization of the labor market, which was intended to be an efficient and creative one for economic growth, instead the tendency to improve it brought low wages and low-skilled workers to the workplace. In 2010, immediately after the onset of the 2008 financial crisis, the European Union drew up the Europe 2020 Strategy, which calls for greater emphasis to be placed on social inclusion, investment in research & development, education and support for young people by 2020. However, after five years of Europe 2020 reform, the EU does not seem to be able to enjoy substantial gains in labor productivity. Uncontrolled labor mobility, the refugee crisis, the economic crisis in Greece and other European countries, major domestic political, economic and social problems in Italy, Spain, France, the BREXIT crisis, the deplorable situation in terms of demography are serious current issues that directly affect the level labor productivity, hampering reforms initiated in the EU. Therefore, the need for Member States to work together is crucial to succeed in reducing socio-economic disparities and overcoming the negative phenomena that disrupt the EU's macroeconomic stability.

The main objective of the European Union is economic and social progress by increasing labor productivity, constantly improving the living and living conditions of its citizens. Decisive measures are needed to increase Europe's competitiveness in order to support a higher level of productivity, employment and prosperity. Openness, innovation, the development of labor skills, the free movement of capital, goods and services are the determinants of increasing labor productivity, competitiveness, growth and well-being in the EU.

¹ L.Iancu, (2019) ,Employee Entitlements II - *Chapter Romania*, Insol International, p.186

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