

TRENDS IN HUMAN RESOURCES STRUCTURE

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Abstract:

As a result of economic globalization, technological progress and population growth, changes occur in the structure of human resources, in all worlds' economies. This paper presents the trends of human resources structure in the European Union and Euro zone. Using the International Monetary Fund (IMF) predictions on GDP, the paper tries to predict the future trends of human resources structure in the European Union. Following research I found there is an increase in services sector employment at the expense of industry and agriculture employment.

Keywords: human resources structure, employment by sectors, employment trends, E.U.

Introduction

In recent years, the EU economy, like other developed economies (U.S., Japan, etc.), experienced a substantial structural change due to the transition from highly industrialized economy to a service economy. Structure of the human resources employed in production process followed the same trend. Today, nearly three-quarters of the labor force employed in the European Union can be found in the service sector.

Kemekliene et al (2007) believes that the main reasons which led to a slide of industrial and agricultural human resources to the service sector human resources are following:

- increasing role of services in intermediate and final demand in economy;
- demographic changes (increasing needs of education, health, public order and safety, etc.);
- technological developments (which led to creation of new jobs in services, and even the creation of new business areas - mobile phone services and internet);

- intense internationalization of trade not only in goods but also services, following the development of multinationals (over half of private sector services are provided in multinationals).

Lockard and Wolf (2012)

enumerate factors that may affect the utilization of occupations:

- “automation, productivity-enhancing technology,
- domestic or offshore outsourcing, changes in product mix,
- organizational or work restructuring”.

Wilson and Homenidou (2012) consider “that changing patterns of employment by sector are largely dominated by longer-term trends in the demand for goods and services. Increasing demand for a sector's output can be expected to result in increasing employment levels”.

An increase of productivity, however, in the same proportion, or even greater will result in reducing the employment.

If there is sufficient margin in the industry to increase productivity, due to technological progress, productivity in

services sector is relatively inelastic (especially for public services). Therefore, an increase in the production of goods and services would lead to an increase in employment particular in services sector.

In this work I will investigate this hypothesis based on previous developments and on research of factors that influenced changing employment patterns.

Structural developments of human resources in E.U.

In just 11 years, employment in services grew by over five per cent, while the industry has seen a reduction in employment by about four percent, due to automation process. Employment in agriculture declined by only 1.6 percent, mechanization process in this area taking place since the mid-20th century (Figure 1).

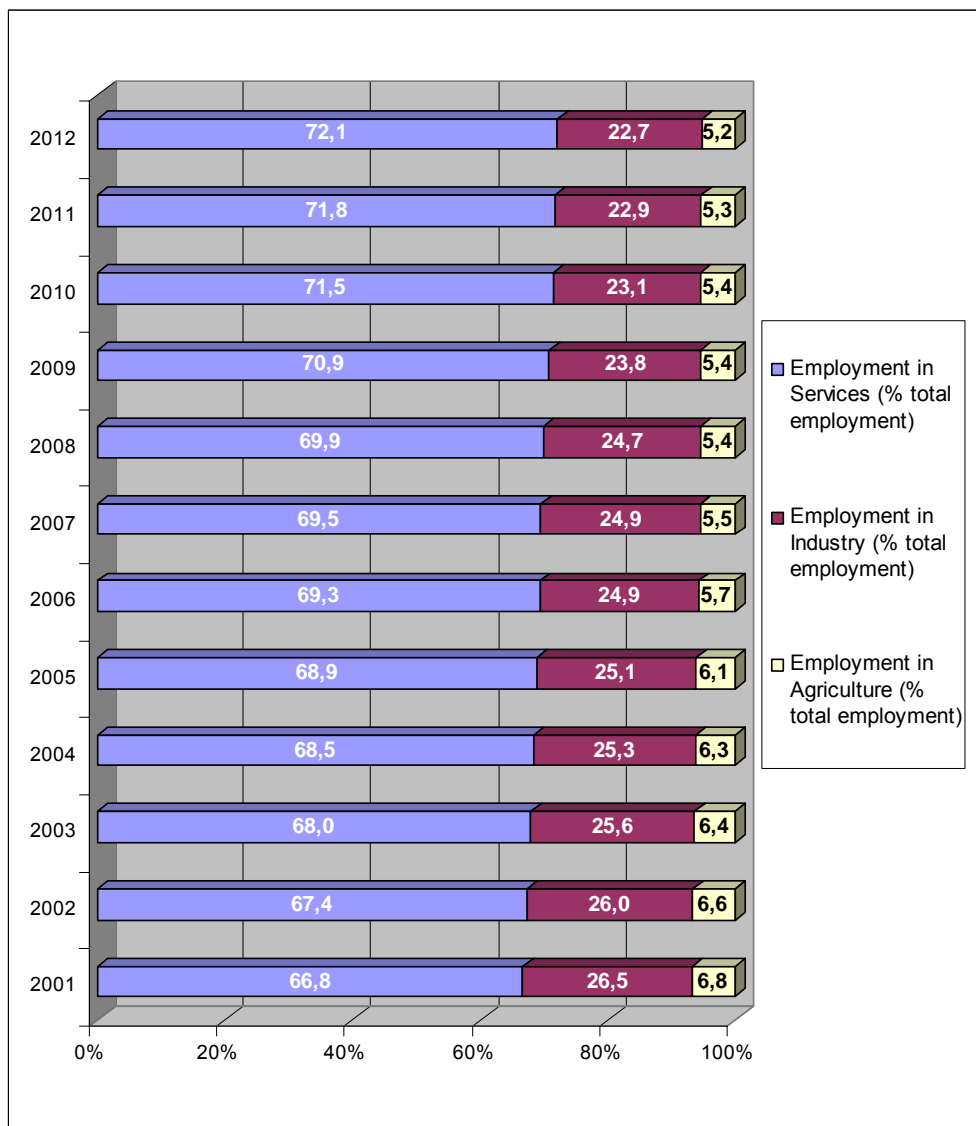


Figure 1. Human resources structure in E.U. (27 countries)

Source: data from European Commission, 2012

European Union economies are very heterogeneous. Human resources structure differs between developed and developing countries. In developed countries, employment in the service sector is higher than the European

average of employment. Also, employment in agriculture is very low due to the high degree of mechanization and automation. France is a good example in this respect (Figure 2).

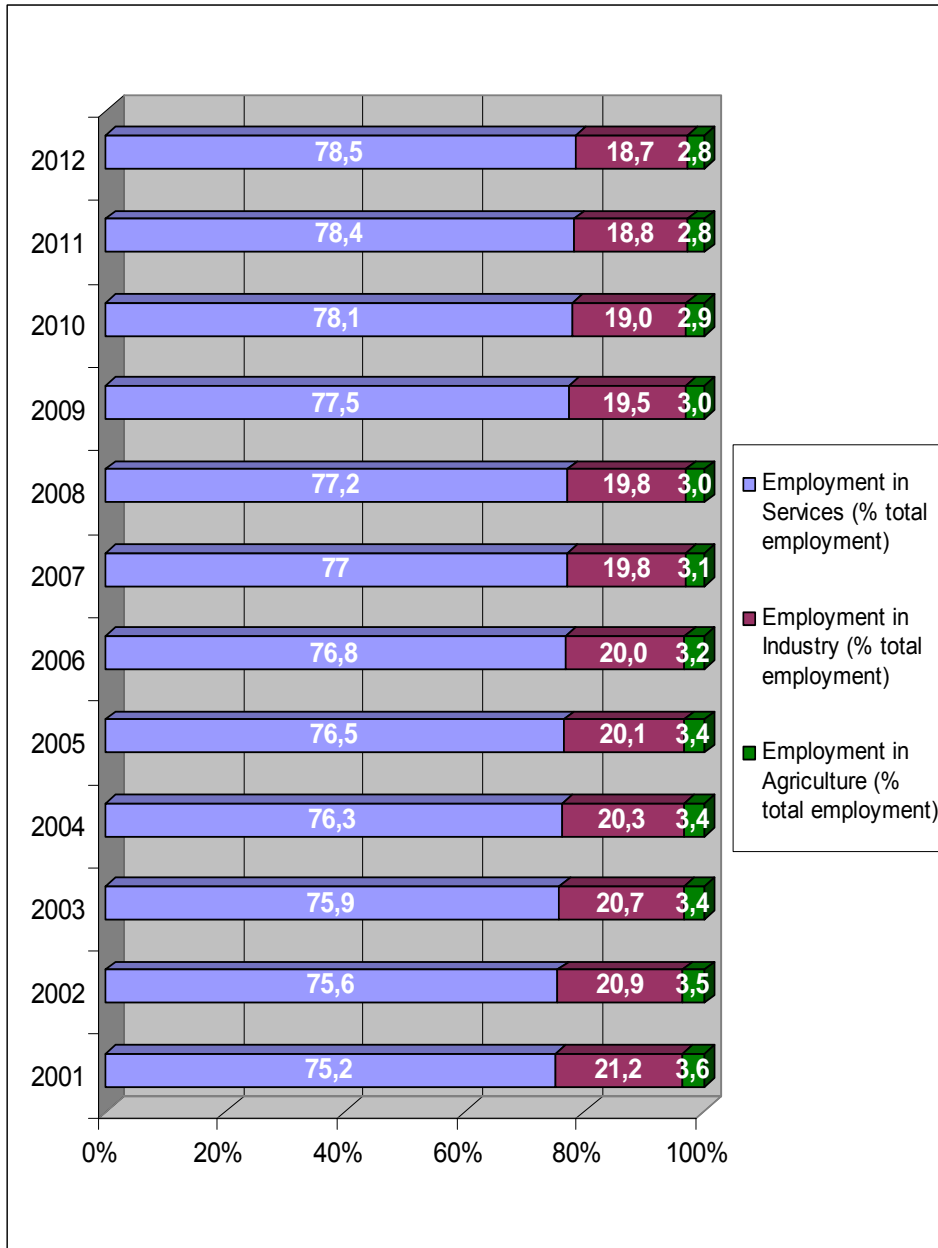


Figure 2. Human resources structure in France
 Source: data from European Commission, 2012

In contrast, in the former communist countries human resources structure is strongly influenced by the past processes of industrialization and low level of mechanization and automation in agriculture. In these countries still it is practice subsistence

agriculture (own consumption of rural households for) with low productivity and extensive labor consume. Trends in the employment structure, however, are the same as in developing countries. Bulgaria is a good example in this respect (Figure 3).

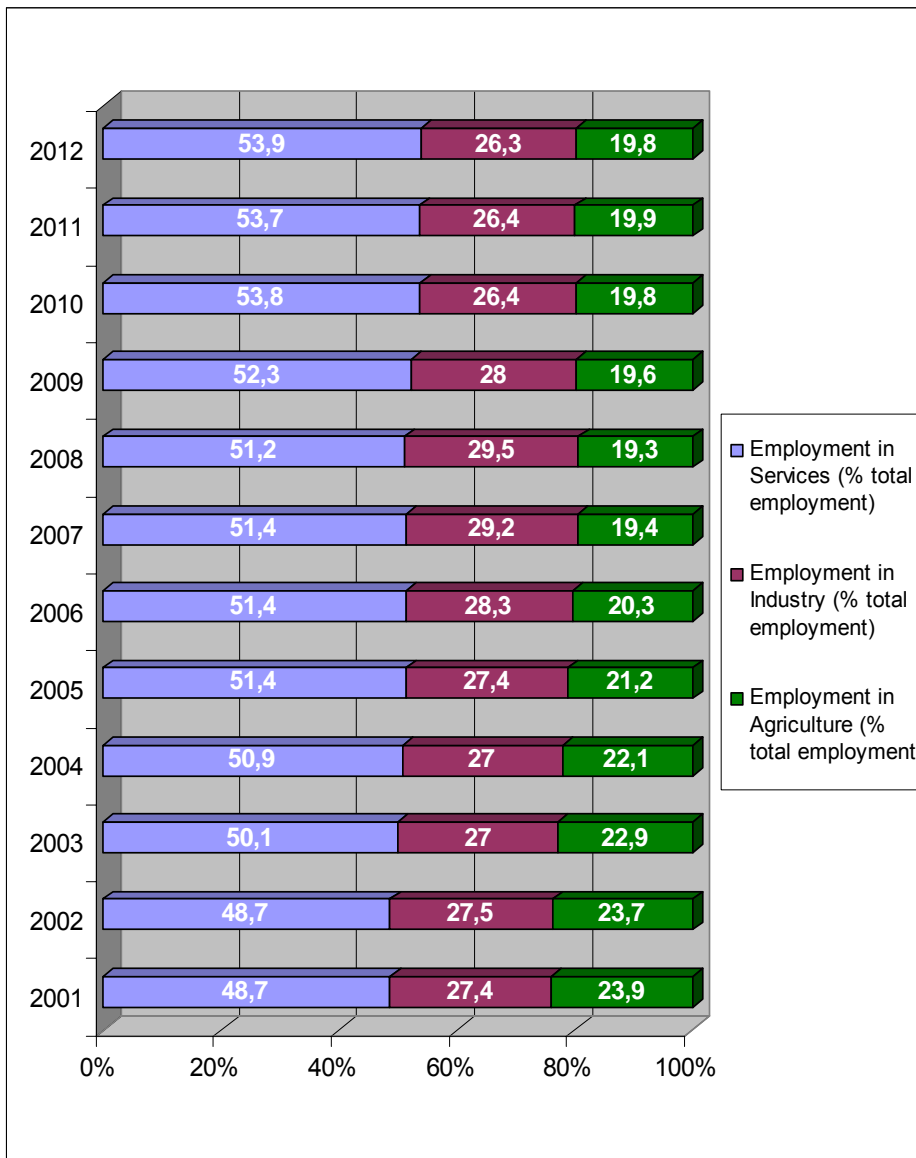


Figure 3. Human resources structure in Bulgaria

Source: data from European Commission, 2012

The women’s entry into the labor market was also an important factor to

boost the service sector, both by the occurrence of new services (child care,

catering etc) and due to women prefer the services sector for employment (with facile jobs than industry or agriculture).

Figure 4 illustrates the propensity of women for the service sector.

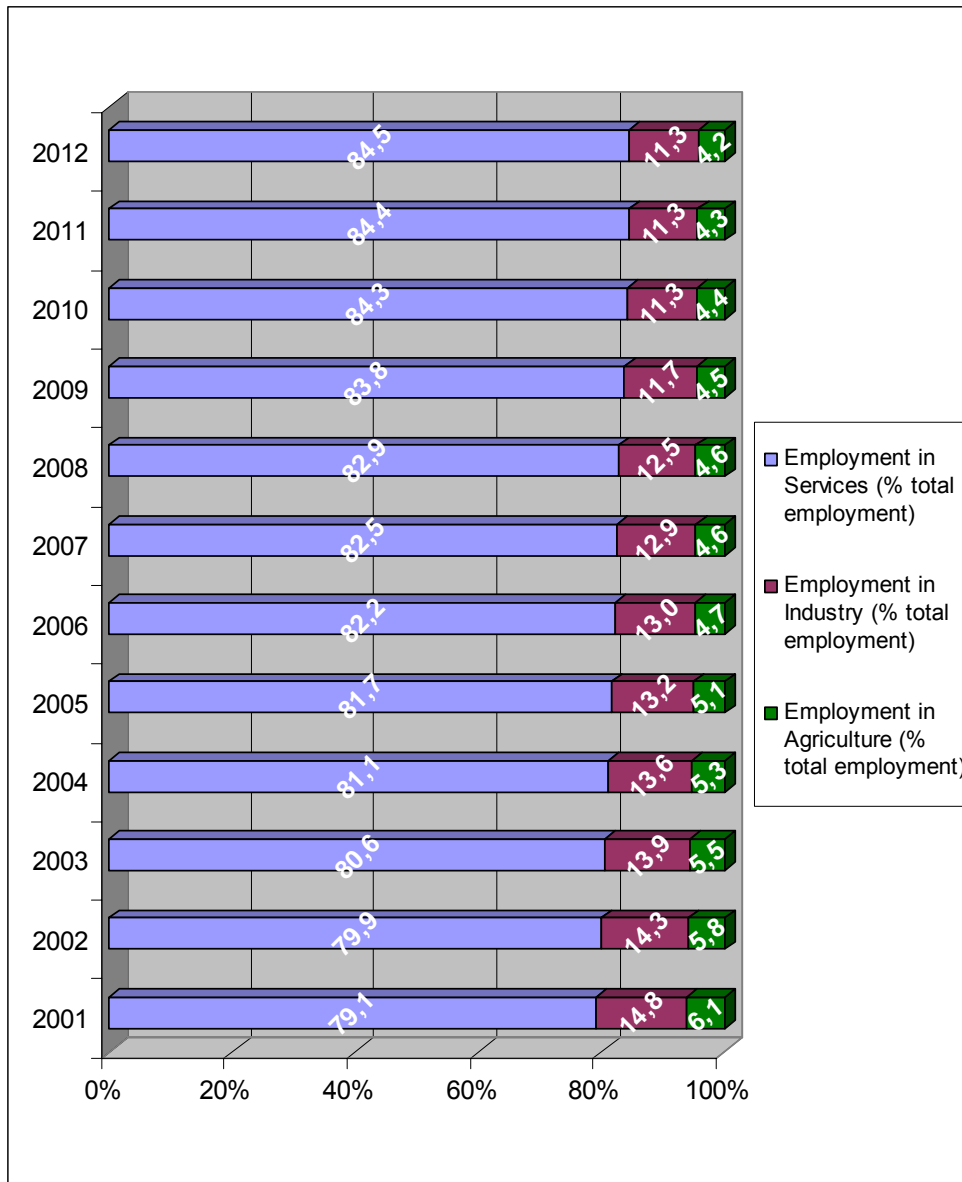


Figure 4. Human resources (female) structure in E.U. (27 countries)

Source: data from European Commission, 2012

Forecasting employment by sector trend in Europe

Hypothesis Development

One of the objectives of this study is to identify whether there is a clear link between human resources structure in

EU and GDP evolution. It is obvious that GDP growth lead to changes in economic patterns. If the hypothesis is validated I will make a prediction on employment by sectors in the European Union.

Sample and variables

To validate working hypothesis we used a series of data (period 2001-2012) of the variables involved in the study: employment in services, employment in industry and employment in agriculture, GDP evolution at EU level. Historical data for employment by sector were taken from an European commission study (Employment and Social Developments in Europe 2012). For predictions on GDP we used IMF "World Economic Outlook Database". GDP levels in the EU (independent variable) will be used to forecast employment by sectors in EU (the dependent variables).

Methodology

The data collected will be used to establish correlations between the independent variable (GDP development in EU) and the dependent variables (employment by sectors in EU). Based on the results found by studying the correlations I develop a model for predicting employment by sectors in the EU for the period 2013-2018.

Research results and interpretation

In order to ensure the links between the variables studied (Table 1) we considered necessary to establish the correlation between them.

Table 1

**Historical trends of GDP and human resources
by sector in E.U. (27 countries)**

	Employment in services (%)	Employment in industry (%)	Employment in agriculture (%)	GDP (\$ bln)
2001	66,8	26,5	6,8	11019,06
2002	67,4	26	6,6	11355,46
2003	68	25,6	6,4	11780,41
2004	68,5	25,3	6,3	12423,4
2005	68,9	25,1	6,1	13089,92
2006	69,3	24,9	5,7	13995,46
2007	69,5	24,9	5,5	14893,76
2008	69,9	24,7	5,4	15302,31
2009	70,9	23,8	5,4	14781,12
2010	71,5	23,1	5,4	15280,17
2011	71,8	22,9	5,3	15851,44
2012	72,1	22,7	5,2	16092,53

Source : European Commission, 2012 and IMF, 2013

As can be seen from Table 2, there is a significant direct correlation between two variables: employment in services and GDP growth. Pearson correlation coefficient calculated for the

two variables has the value 0.991. The other two variables (employment in industry and employment in agriculture) are in inverse correlation with the evolution of GDP (-0,902 and -0,992).

Table 2
Correlation between GDP and employment by sector in E.U. (27 countries)

	Employment in services (%)	Employment in industry (%)	Employment in agriculture (%)	GDP (\$ bln)
Employment in services (%)	1	-0,991	-0,940	0,948
Employment in industry (%)	-0,991	1	0,891	-0,903
Employment in agriculture (%)	-0,940	0,891	1	-0,992
GDP (\$ bln)	0,948	-0,903	-0,992	1

To estimate the evolution of employment by sectors in 2013-2018 I used a forecasting model ARIMA (SPSS program) with stationary R-squared as measure (0,816). Using parameters forecast by IMF (Gross

domestic product based on purchasing-power-parity – billions dollar) I forecasted the evolution of EU human resources structures. The forecasted period is 2013-2018 and is based on data from 2001-2012 (Table 3).

Table 3
Forecast on human resources structure in E.U. (27 countries)

	Empl. in services (%)	Empl. in industry (%)	Empl. in agriculture (%)	GDP (\$ bln)	Empl. in industry predictions (%)	Empl. in industry predictions (%)	Empl. in agriculture predictions (%)
2001	66,8	26,5	6,8	11019,06	67	26,35	6,71
2002	67,4	26	6,6	11355,46	67,3	26,14	6,6
2003	68	25,6	6,4	11780,41	67,69	25,88	6,47
2004	68,5	25,3	6,3	12423,4	68,28	25,49	6,27
2005	68,9	25,1	6,1	13089,92	68,88	25,08	6,07
2006	69,3	24,9	5,7	13995,46	69,71	24,52	5,79
2007	69,5	24,9	5,5	14893,76	70,53	23,96	5,51
2008	69,9	24,7	5,4	15302,31	70,9	23,71	5,39
2009	70,9	23,8	5,4	14781,12	70,42	24,03	5,55
2010	71,5	23,1	5,4	15280,17	70,88	23,73	5,39
2011	71,8	22,9	5,3	15851,44	71,4	23,37	5,22
2012	72,1	22,7	5,2	16092,53	71,62	23,23	5,14
2013	-	-	-	16331,6	71,83	23,08	5,07
2014	-	-	-	16869,25	72,32	22,75	4,9
2015	-	-	-	17496,1	72,89	22,36	4,71
2016	-	-	-	18188,94	73,53	21,93	4,49
2017	-	-	-	18932,86	74,2	21,48	4,27
2018	-	-	-	19713,27	74,91	20,99	4,02

Source : European Commission, 2012 and IMF, 2013

It can be observed a growing trend of employment in services sector while there is a constant decrease of employment in industry and agriculture.

This trend is confirmed by the structure of human resources in the most economically advanced countries in the EU (Euro Zone countries-see figure 5).

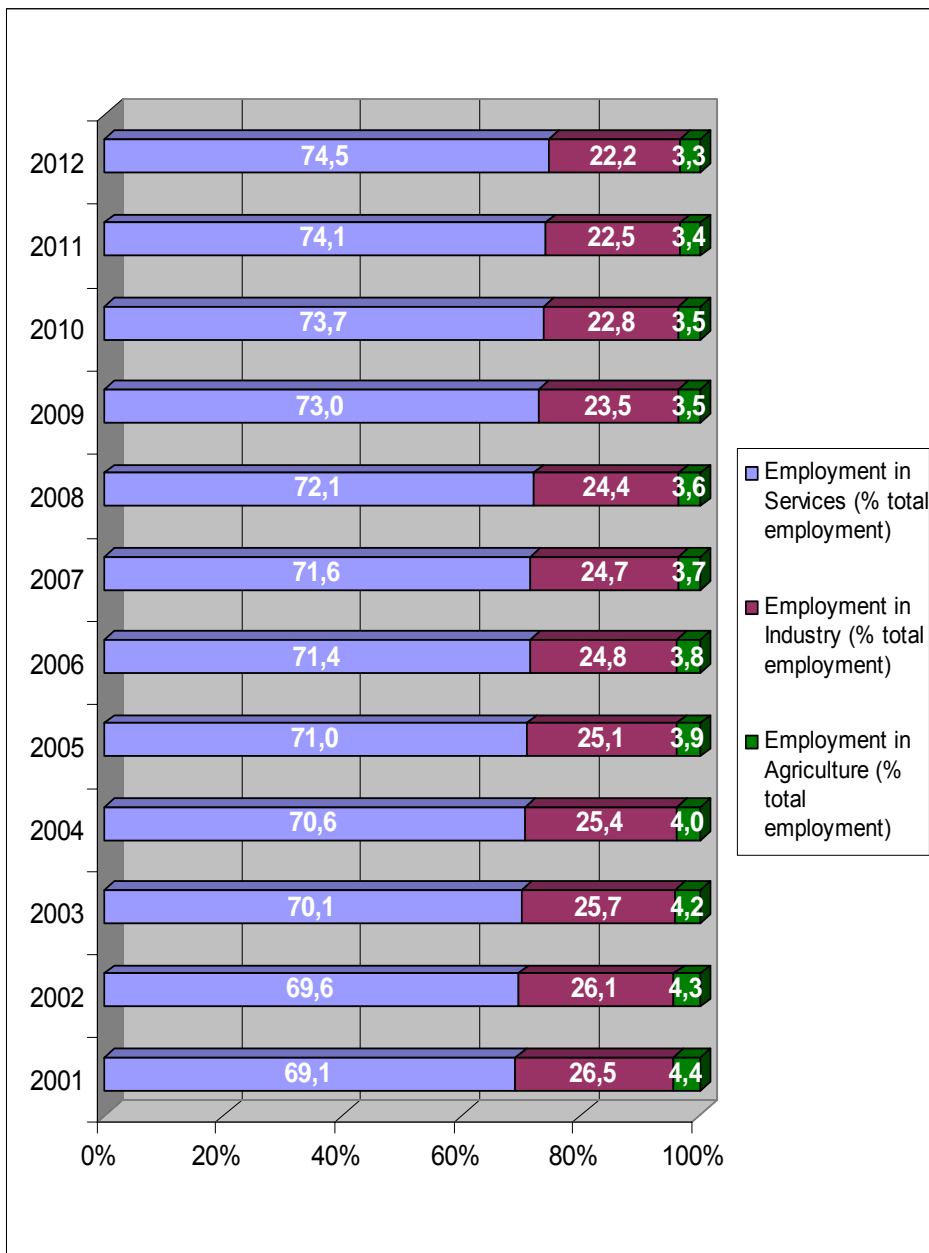


Figure 5. Human resources structure in Euro Zone (17 countries)

Source: data from European Commission, 2012

Conclusion

The rapid growth of the service sector in recent years was one of the most important social, political and especially economic developments, in most countries, with the growing intensity in developed countries.

In my opinion, based on research results, I believe that the main factors that determined an increase in service sector employment in European Union are:

- increasing demand for services at the expense of demand for material goods;
- increasing women's participation in the labor market;

- relatively inelastic productivity in services (especially for public services);
- Industrial production outsourcing to Asian countries, particularly;
- technological progress particularly in ICT.

In conclusion we can say that the net creation of new jobs is almost exclusively the preserve of the services sector. Expansion of existing services and development of new services as a result of social evolutions (demographic, technological, etc.), globalization and economic integration will increase both in scope and intensity.

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