The use of labor in Romania: present and perspective

Balan, Ana Maria

Doctoral School of Economics, Alexandru Ioan Cuza University of Iasi

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Ana Maria BALAN
Alexandru Ioan Cuza University, Doctoral School of Economics
Iasi, Romania
balan_ana84@yahoo.com

Abstract

For the efficient running of activities in the labor market it is required a rational use of working age people. This article analyzes theoretically and then in terms of its evolution, the use of labor in terms of employment, taking out the values which people actually occupied, so used, have recorded during 2002 - 2010 , on the ownership of the job: public, private, mixed or cooperative. Also, I made a forecast of the occupancy rate for 2020, based on the values of this index during the same period-from 2002 to 2010.
We note therefore that the purpose of this paper is to inform the reader how the use of labor evolved in Romania and also its evolutionary possible perspectives.

Keywords
Employment, use of labor, quantitative analysis, ownership of job, forecast.

JEL Classification: J21, J11, G32

1. THE CONCEPTUALIZATION OF LABOR' USE

Labor is the main force of production and one of the essential prerequisites for the economic growth [3]. The notion of "use of labor" can be defined broadly, intermediate and limited in accordance with its macro / microeconomic purpose:

- *The broadly sense*: it is a long and dynamic process, which includes a logical progression of all actions performed on the workforce, from macroeconomic level (initial and continuing vocational training in order to facilitate the integration on labor market) to microeconomic level (recruitment, selection, professional development), based on the stimulation of learning for a successful career. We note the fundamental role had by the continuing education, as source of labor productivity and quality growth of labor resources: "the fact that workforce preparing is a criterion and a factor of social wealth, reveals the importance of training for its use in efficient manner" [7, p. 52];
- *The intermediate sense*: the use of labor is equated with the employed population, the employment being a concrete expression of the actual labor used. Employment is "a means, the workforce represents a fundamental factor for any development" [6, p.157] and involves the fair allocation and distribution / redistribution of the working age population in industries and in the national economy' occupations;

- *The limited sense*: is strictly related to the use of labor at the microeconomic level and involves a optimal allocation of duties so that the employee to be effective among the working hours and to ensure economic efficiency for the company.

2. THE RATIONAL USE OF LABOR

The rational use of labor should be seen as a priority by all stakeholders involved in labor market organization and functioning and is an imperative necessity in the context in which the man, through the labor process, ensure the labor market functionality and provides the increasing of the national welfare. Also it requires an effective combination of the issues that must be considered for full use at maximum efficiency of available labor, as the foundation of stimulating a fairly employment, allocation and distribution / redistribution of active labor in those areas who requires it for the national economic development of Romania and to create and maintain an economic stability.

We should not forget that the appropriateness of scholar training programs on the labor market requirements, like also the continuous training related to the local, regional and national development strategies are prerequisites for the individual integration on labor market. Also, a rational use of workforce should take into account these issues when labor is exploited.

At microeconomic level, the rational use of staff is related to a set of principles, which, on the one hand, are the essence of the regulations contained in labor legislation for employers and employees, aiming to establish a certain order in the employment relationship between the two parts, and on the other hand, are dependent on the personnel policy existing in companies. In other words, this term should be one of the companies' objectives. The rational use of labor can be related to the way in which the human resources are exploited and aims:
- Planning and efficient use of labor and working time;
- Stimulating the performance, continuous development and improvement of human resources;
- Matching the training with the technical progress of the enterprise;
- The use of labor, for the duration of working time, according to the skill levels;
- Establishment of good working conditions, without the risk of injury or occupational disease;
- Setting an optimal number of employees for the carried out activity;
- The motivation of human resources;
- Balancing the work with the need for worker' rest and social life.

3. MACROECONOMIC CHARACTERIZATION OF LABOUR USING IN ROMANIA: QUANTITATIVE ANALYSIS UPON THE EMPLOYMENT'S EVOLUTION

In the most specialized sources, the use of labor is assimilated to the concept of employment is analyzed in terms of the structure and number of labor' indicators,

respectively the active population and the employed. The employment means the "use of human capacities to get the necessary existence and its development" [2, p 10] or a "source of a productive input, the main source of income, that cover the individual of its family needs" [2, p 72] and can be analyzed in terms of quality, quantity and labor efficiency.

From a quantitative perspective, the employment of labor resources is estimated in the absolute number of people attracted in the economic activity, given the working time of each. The relative form indicates the occupancy, as ratio between the employed population and population able to work.

The qualitative aspect of employment is expressed through labor efficiency, through the results obtained. This requires adherence to an optimal necessary labor, linked to the needs of the enterprise, industry and national economy. Also, the available working time should be the same with the time actually worked.

The work efficiency can be measured by the annual gross value added by a worker from the branches of national economy, the share of employment in the sectors of education in GDP, share of manufacturing contribution to GDP etc. [1].

3.1 Evolution of employment by the ownership of job

The analysis takes as a starting point data for employment by ownership in 2002, 2004, 2006, 2008 and 2010 offered by The National Institute of Statistics. Table no. 1 illustrates the evolution of this index for the period considered.

Table no.1 Employment by ownership during 2002 - 2010

Ownership	2002	2004	2006	2008	2010
Public	2287880	2123090	1925483	1723400	1647444
Mixed	496160	271118	223989	153197	125971
Private	6376809	6703145	7051000	7429115	7421706
Cooperative	55487	43483	88872	38749	28901
Other	17842	16782	23923	24660	15369

Source: National Institute of Statistics

Employment in the five forms of property in Romania (public, mixed, private, and cooperative or other forms) in the years to which we refer to Table no. 1 shows a majority population employed in the private and public areas. Although is noticed a trend inversely proportional to the number of employees in the two main sectors, however their number has been maintained in higher value throughout the period analyzed, compared with other forms of property.

The Romanian public sector registered the higher value of employed population in 2002 and the lowest in 2010, when it held approximately 1,647,444 employees, representing about 18% of total national employment in the respectively year. Most employees have held positions in the private sector, value which evolved upward until 2008 (with a slight decrease in 2010), comprising approximately 80% of the total number of employed persons.

In the other sectors (mixed, cooperative or other sector) are found very low percentages (between 0% - 1%) reported to the total employment. In other words, the number of employees in the mixed sector fell sharply from 2002 to 2010, which can be explained either by targeting the increasing number of individuals to work in private form, or by leaving the labor market through retirement or through other forms (increased migration may be one of the causes) of the persons employed in the joint. The cooperative work includes the maximum human resources in 2006, after which the volume of employment has declined while the number of employees decreased in all other forms of property.

A relevant explanation for the fact that in each sector the lowest value is the one related to the year 2010 can be associated to the economic crisis that has negatively affected employment and increased the unemployment rate and thus the number of unemployed. Next we test whether the differences found between the size of employment in the public, private, mixed, cooperative or another for 2010 are significant, using the ANOVA analysis. We test the equality of the five replicate between them (an average number of persons who hold a job in each of the five sectors).

The tested hypotheses are:

$H_0 : \mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5$ (there are no significant differences between the five forms of property in terms of employment' volume).

H_1: (there is at least one pair of forms of ownership between that are significant differences in terms of the employed number).

The decision rule supposes that, if we have a value for $Sig < \alpha$, than the H_0 hypothesis is rejected. If $Sig < \alpha$, than the H_0 hypothesis is accepted.

Table no.2 ANOVA analysis

ANOVA

Employed (Number of persons)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1E+019	4	3.373E+018	2E+007	.000
Within Groups	2E+018	9239384	2.133E+011		
Total	2E+019	9239388			

In this case, can be seen from the Table no.2 a Sig's value equal to 0.000 corresponding to the averages equality's testing that are obtained for employment in each sector. Therefore, the null hypothesis is accepted. Thus, with a 95% confidence we can say that at least a pair of ownership forms between that are significant differences concerning the number of employed persons. To analyze the pairs of ownership forms which have the largest differences it is used the Bonferroni test (Table no. 3).

Table no.3 The Bonferroni test

Multiple Comparisons

Dependent Variable: Employed (Number of persons)
Bonferroni

(I) Ownership	(J) Ownership	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Public	Mixed	758859.11*	1349.966	.000	755069.7554	762648.4720
	Private	-2956992.0*	397.72644	.000	-2958108.45	-2955875.61
	Cooperative	812220.02*	2740.222	.000	804528.2084	819911.8239
	Others	817552.14*	3742.536	.000	807046.8305	828057.4406
Mixed	Public	-758859.11*	1349.966	.000	-762648.4720	-755069.7554
	Private	-3715851.1*	1312.133	.000	-3719534.31	-3712167.98
	Cooperative	53360.902*	3012.029	.000	44906.1296	61815.6752
	Others	58693.022*	3945.894	.000	47616.8893	69769.1544
Private	Public	2956992.0*	397.72644	.000	2955875.612	2958108.450
	Mixted	3715851.1*	1312.133	.000	3712167.985	3719534.305
	Cooperative	3769212.0*	2721.782	.000	3761571.999	3776852.096
	Others	3774544.2*	3729.056	.000	3764076.700	3785011.634
Cooperative	Public	-812220.02*	2740.222	.000	-819911.8239	-804528.2084
	Mixed	-53360.902*	3012.029	.000	-61815.6752	-44906.1296
	Private	-3769212.0*	2721.782	.000	-3776852.10	-3761572.00
	Others	5332.11944	4610.476	1.000	-7609.4949	18273.7338
Others	Public	-817552.14*	3742.536	.000	-828057.4406	-807046.8305
	Mixted	-58693.022*	3945.894	.000	-69769.1544	-47616.8893
	Private	-3774544.2*	3729.056	.000	-3785011.63	-3764076.70
	Cooperative	-5332.1194	4610.476	1.000	-18273.7338	7609.4949

*. The mean difference is significant at the .05 level.

Values of Sig lower to a risk of 5% indicate significant differences. The only pair of sectors between that there are no differences in terms of employment is cooperative - other sector. Between any other pair there are major differences. The largest differences are found between employment in the public and those who are working in cooperatives or in other sectors or in a mixed form of ownership.

Next, is analyzed explicitly the evolution of employment by ownership in 2010, where we consider the male population and women who worked in these sectors of interest. Then it will be tested whether are or not differences between types of property in terms of the total volume of employed. The employment status of the five groups is presented in Table no. 4.

Table no. 4 Employment by ownership

Ownership * Gender Crosstabulation

			Gender		
			male	female	Total
Ownership	Public	Count	774287	873157	1647444
		% within Ownership	47.0%	53.0%	100.0%
		% within Gender	15.1%	21.2%	17.8%
		% of Total	8.4%	9.5%	17.8%
	Mixed	Count	80453	45518	125971
		% within Ownership	63.9%	36.1%	100.0%
		% within Gender	1.6%	1.1%	1.4%
		% of Total	.9%	.5%	1.4%
	Private	Count	4230712	3190994	7421706
		% within Ownership	57.0%	43.0%	100.0%
		% within Gender	82.8%	77.3%	80.3%
		% of Total	45.8%	34.5%	80.3%
	Cooperative	Count	14971	13929	28900
		% within Ownership	51.8%	48.2%	100.0%
		% within Gender	.3%	.3%	.3%
		% of Total	.2%	.2%	.3%
	Others	Count	11025	4343	15368
		% within Ownership	71.7%	28.3%	100.0%
		% within Gender	.2%	.1%	.2%
		% of Total	.1%	.0%	.2%
Total		Count	5111448	4127941	9239389
		% within Ownership	55.3%	44.7%	100.0%
		% within Gender	100.0%	100.0%	100.0%
		% of Total	55.3%	44.7%	100.0%

The highest percentage of total employment is for the private sector, so for those of males (45.8%) and for the females (34.5%). Also we find a significant number of female persons operating in public (53%) compared with men's volume in the same field (47%). In other sectors, the situation changes, the share of male population being higher compared to the share of female (57% versus 43% in the private sector, 63.9% to 36.1% in mixed, 51.8% from 48.2% in the cooperative). Comparing the distribution of employment by the two types, one can see that most people have opted for a job with private ownership (83% of men and 77% of women).

3.2 The employment rate of working age population's forecast for 2020

The approach proposes an estimation of the employment rate for the population aged between 20 and 64, for 2020, this being compared with the expected value for Romania, according to Europe 2020 Strategy. Employment rate is calculated as the

ratio between employment in the category 20-64 years, forecasted for 2020 and the total population of the same age group, estimated for the same horizon. After modeling the data on employment classified in the category 20-64 years in the period 2002-2010, the coefficients were validated as statistically significant for the compound model. They are presented in Table no. 4.

Table no. 4 Testing the coefficients of the validated regression model for modeling the number of employed population aged between 20-64 years

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Case Sequence	1.005	.001	2.477	1120.796	.000
(Constant)	8377216	42060.468		199.171	.000

The dependent variable is ln(Populatia ocupata 20-64de ani).

The mathematical form of the model is as follows:

$$y_{employed\ 20\_64} = 8377216 * 1,005^t + \varepsilon$$

Basing on this is made the forecast for interest year (2020). The Number of employed estimated for 2020 is 9227793.015 people. In terms of the population aged between 20-64 years in Romania, estimated in 2020, will be used a cubic model, whose coefficients are shown in Table no. 5. The data which were the basis for modeling are represented by the values recorded in 2002-2010.

Table no.5 Testing the coefficients of the validated regression model for modeling the number of total population aged between 20-64 years

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Case Sequence	-114225.656	16642.214	-1.662	-6.864	.001
Case Sequence ** 2	30941.354	3767.415	4.617	8.213	.000
Case Sequence ** 3	-1494.324	248.617	-2.030	-6.011	.002
(Constant)	13398847.6	20295.594		660.185	.000

The model has the following form:

$$y_{total\ 20\_64} = -1494{,}324t^3 + 30941{,}354t^2 - 114225{,}656t + 13398847{,}6 + \varepsilon$$

The level that the total population aged between 20-64 years in 2020 will reach is approximated to 12,148,819.90 people. The employment rate for 2020 calculated from the projections is equal to:

$$R_{Prev} = \frac{9227793,015}{12148819,90} * 100 = 75,95$$

It is noted that the employment rate obtained shows a higher value according to the one forecasted for 2020 for Romania in the Europe 2020 Strategy with about 6%.

4. CONCLUSIONS

A laborious analysis of employment by sector (mixed, public, private, cooperative) allows us to justify that the public sector is predominantly occupied by female in 2010, unlike the rest of sectors (private, mixed and cooperative), in which the majority of employed are male. Also, most people were employed in the public sector, which led to significant differences between employment in the public and those who are working in cooperatives or in other sectors or in a mixed form of ownership.

If we refer to the development prospects of employment, the quantitative analyzes realized through the methodological approach used led to obtaining optimal evolution' choice, in the case that we are observing an upward trend.

As a whole, the analysis of perspectives indicates optimal development scenarios concerning the forecast indicator for 2020, whose explanation can be derived from the following beliefs

- the likelihood of approach to the employment goal established for Romania in the Europe 2020 Strategy, due to the increased of investment in job creation from the individual's own initiative or from the actions planned and implemented through the regional development programs established for a period (usually two years);

- the increased of employment after stimulating the labor resources learning/training, which enhances the attractiveness of individual for employer;

- the decreases of migration intensity, by increasing the salaries and therefore, by stimulating the immigrant population to fill a job in Romania.

Acknowledgements

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