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SUMMARY OF THE PHD THESIS

The Study of Employment in Context of Romania's Integration into the European Union. Case Study: Central Region

(Studiul ocupării forței de muncă
în condițiile integrării României în Uniunea Europeană.
Studiu de caz: Regiunea Centru)

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Keywords

Employment
Labour market
Determinant factors of employment
Restructuring of labour force
Regional unemployment
Employment Policies
Romania's European Union accession
European Employment Strategy
Central Region
SWOT Analysis
Supply and demand of labour force

Introduction

In the context of Romania's EU integration, becomes important the employment at regional level. Central Region, one of the eight regions of Romania, is a NUTS2 region as Nomenclature of Territorial Units for Statistics, which consists of the next counties: Alba, Braşov, Covasna, Harghita, Mureş and Sibiu. The subject of the PhD thesis is the study of employment in Central Region

The research purpose is to provide an overview on employment situation at regional level, in the case study Central Region, useful for the economists and for the experts in the field of regional development in Romania.

The main object of the research is the study of employment situation in Central Region, in context of Romania's integration into the European Union.

To achieve this object, I put the next questions:

- which is the current situation of the national and international scientific research on employment in regional level;
- which are the objectives and policy measures of the European Union, of the national strategies and action plans from Romania, of the regional development plan and regional employment action plan from Central Region and of the development plan of the counties from Central Region;
- which are the community programs in European Union and their contribution to labour force employment in Central Region;
- how it contributed the Romania's integration to the EU on the employment;
- which is the situation of the labour force employment in Central Region, compared with the other regions of European Union;
- which is the situation of the labour force employment in Central Region, compared with the other regions of Romania;
- which is the relation between employment, and economic growth in the regions of Romania;
- which is the level of participation and labour productivity in the Central Region;
- which are the demographic trends of the active population to work in Central Region;
- which are the trends of population mobility in Central Region;
- how has the structure of employment changed before and after Romania's EU integration
- which are the county level differences in terms of activity level of population, employment, unemployment and wage income ;
- which are the local causes, which lead to county level differences of employment;
- there is or not an equilibrium state in labour market of Braşov and Harghita counties of Central Region,
- which are the trends in employment, activity rates and unemployment of the anticipated future population;
- which are the strengths, weaknesses, opportunities and threats of the regional employment, which is the result of the SWOT analysis for the Central Region case study.

To achieve the main object of thesis study and to answer the above questions, I submitted the next sequential objects which provide the general framework of research:

- Ob.1. synthesis of national and international scientific literature on the regional aspect of the employment;*
- Ob.2. basic elements of the community employment policy at European, national, regional level and how they are reflected in the Central Region*
- Ob.3. which is the position of Central Region, related to the structure of employment in the European Union;*
- Ob.4. the demographic sustainability analysis of Romania's regions and Central Region's counties*
- Ob.5. the analysis of participation, performance and labour productivity in the Central Region, compared with other regions of Romania;*
- Ob.6. the impact analysis on the economic competitiveness of employment in Romania's regions;*
- Ob.7. the analysis of structural change in regional level employment, after joining the European Union;*
- Ob.8. the analysis of differences on employment in the counties form the Central Region;*
- Ob.9. the local labour market analysis in Harghita and Braşov counties of the Central Region;*
- Ob.10. the SWOT analysis of employment in Central Region.*

Research methodology

The review of the national and international literature made possible to define the conceptual and theoretical framework of research, and the present state of research on regional employment.

Analytical methods are those, which appear in national and international literature:

- Principal Components analysis method;
- Cluster analysis method;
- Simple linear regression cross-sectional;
- Autoregressive integrated moving average model (ARIMA).

The calculations were performed using the next programs: SPSS Statistics, STATA and EVIEWS. For the presentation of regional, county and local differences a set of statistical maps was created using the ArcviewGIS program.

Through principal component analysis method can be explained the variation for a set of observable variables, also the correlations between them and the intensity of linkages between factors and observed variables. The method was used on a set of indicators of labour structure in the regions of the European Union with 27 Member States.

Cluster analysis is a method by which elements are grouped, subsets, starting from one or more features of these elements. (Rotariu, 2006) The method was used to identify the position of employment structure in the Central Region, among the NUTS2 regions of the European Union with 27 Member States.

The simple linear cross-sectional regression, is the method of approach the variable effect and alleged independent variables, in conditions under which, this relations is presumed (piori settled), and its existence does not show clearly, for each case, but it appears increasingly evident as the number of cases increases. (Isaic-Maniu 2003) This method was developed for the analysis of relationship between monthly series: number of unemployeers, (dependent variable) and number of vacancies job (independent variable) in the counties of Braşov and Harghita.

The time series, which are characterized by a certain degree of dependence, depending on their previous values, have a form of self-determination, features which make it possible to study them using econometric methods, like autoregressive model (AR), moving average model (MA) and autoregressive integrated moving average model (ARIMA) (Pecican 2004) These stochastic models based on time series data (AR, MA, ARMA, ARIMA) are useful to develop short-term forecasts (for 1-3 future periods) or medium forecasts (up to 5-6 future periods). (Isaic-Maniu 2003) ARIMA models are used to develop medium-term forecasts for the number of unemployed and vacant jobs in the counties of Braşov and Harghita.

Synthesis of the main chapters of the thesis

Chapter 1. Elements from theoretical analysis of employment in regional economic theory and employment in context of Romania's accession to the European Union

Chapter 2. Theoretical elements from labour economics and analysis methods of employment

Chapter 3. The study of employment at regional level in European Union

Chapter 4. Employment plans and labour force strategies developed in Romania and in Central Region

Chapter 5. Employment in the regions of Romania

Chapter 6. The study of employment Central Region

Chapter 7. Analysis of labour supply and demand in the counties of Braşov and Harghita, in the period 2005 – 2010

Chapter 1. Elements from theoretical analysis of employment in regional economic theory and employment in context of Romania's accession to the European Union

Study of employment at regional level is one of the main components of the regional economy. Conceptual and theoretical framework of the regional economy was made in this chapter, where the main concepts used in the thesis are defined on the basis of literature.

The first chapter defines the regional term and there are presented the main elements of the new EU regional policy.

In the European Union for studying regions using statistical methods, there are the reference base named NUTS (Nomenclature des Unités Territoriales Statistiques). Through this are formed the territorial units to develop a regional statistical system used for statistical analysis and implementation of development policy.

The eight NUTS2 level development regions of Romania were formed by voluntary association of counties, based on Law 151 from 1998. (Table 1)

Table 1. Development Regions in Romania

NUTS1 Macroregions	Macroregion 1		Macroregion 2		Macroregion 3		Macroregion 4	
NUTS2 regions	North- West	Center	North- East	South- East	South	Bucureș ti - Ilfov	South - West	West
NUTS3 Counties	Bihor Bistrița- Năsăud Cluj Maramure ș Satu Mare Sălaj	Alba Brașov Covasna Harghita Mureș Sibiu	Bacău Botoșan i Iași Neamț Suceava Vaslui	Brăila Buzău Constanț a Galați Tulcea Vrancea	Argeș Călărași Dâmbovița Giurgiu Ialomița Prahova Teleorman	Bucureș ti Ilfov	Dolj Gorj Mehedinți Olt Vâlcea	Arad Caraș- Severin Hunedoara Timiș

(Source: The Homepage of the Ministry of Regional Development and Housing (MDRL), <http://www.mdrl.ro>)

The subchapter 1.1.2 contains the synthesis of the literature of regional economy. The demographic component, with effect on volume of the active population and on the population's participation to work in EU regions are studied by classification methods.

The subchapter 1.1.2.2 contains some studies on employment in urban and rural areas.

Subchapter 1.1.2.3 contains the method of studying the relationship between employment and regional competitiveness. Analysis of the region's economic competitiveness is the core issue of regional economy. The analysis of the impact of employment on economic growth starts from the structure, performance and regional labour productivity.

Subchapter 1.1.2.4 contains a discussion of regional employment and economic restructuring, followed by the subchapter 1.1.2.5 that presents the SWOT analysis, which is an instrument for regional development.

In the context of Romania's EU accession, chapter 1.2. contains the synthesis of the strategic documents in relation to employment. The first part presents the main elements of Romania's integration process. Achieving a coherent national employment policy with the EU

community's is considered an integral part of the accession process. In subchapter 1.2.2 there are presented the main arguments in relation to the free movement of labour force within the European Union.

The subchapter 1.3 focuses on the presentation of development of the European Employment Strategy and highlights the main objectives of them, followed by the presentation of the new cohesion policy, after 2007. All these forms of coordination through open method of coordination represent the framework for national and regional employment plans achieving in Romania.

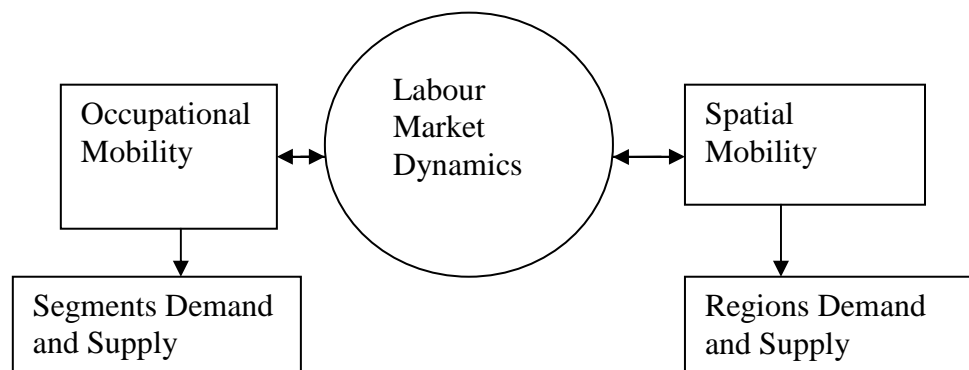
Chapter 2. Theoretical elements from labour economy, and analysis methods of employment

Subchapter 2.1. contains the definition of the labour market, followed by the presentation of the main functions and characteristics.

Labour Economics has a subject study of labour market performance analysis, the behavior of employers, workers, the wages and income levels, if external changes are existing. The main participants are: workers, employers, governmental institutions. (Ehrenberg 2000:20)

Subchapter 2.2. presents the labour demand and supply, followed by subchapter 2.3, which presents the main features of the regional labour market. (Figure 1)

Figure 1. Mobility Pattern of a Labour Market



(Source: Manfred M. Fischer, Peter Nijkamp: *Structure of regional labour markets*, Researchmemorandum, VRIJE Universiteit, Amsterdam, 1986:7)

State steady in the labour market is an important phenomenon in the functioning of this market, presented in subchapter 2.4, followed by the subchapter 2.5, with the presentation of positive examples of functioning labour market, related by flexicurity concept.

Subchapter 2.6 presents the synthesis of national and international literature on employment related to the transition and economic restructuring period in Romania. Main effects of process on the national level have been observed in regional level.

The process of labour force migration is a current topic of national and international research literature. Synthesis on the subject is presented in Subchapter 2.7, followed by presentation of some studies on the wage income formation, main topic of the labour economy, presented in Subchapter 2.8.

The unemployment level, distribution and structure represents a basic subject in regional economy studies. (Patridge 1997) Types of unemployment are presented in Subchapter 2.9.

In the thesis the employment is studied by statistical and econometric methods. Subchapter 2.10 contains the presentation of these analysis tools starting from the set of statistical indicators of labour force. (Table 2)

Table 2. The statistical indicators of labour force

The system of labour force statistical indicators	
1	Volume indicators
2	Structural indicators
3	Indicators of use / non use of labour resources
4	Indicators of efficiency of labour resources
5	Indicators of job quality
6	Indicators of Working Conditions
7	Indicators of wage income

(Source: based on *Statistica resurselor de muncă*, written by Simona Ghiță, Meteor Press, 2005, București)

Chapter 3. The study of employment at regional level in European Union

The third chapter contains the study of employment at regional, NUTS2 level in the 27 Member States of the European Union.

After presentation of the convergence and the employment improving in the EU-15, in Subchapter 3.1, follows to identify the differences in employment and unemployment in Romania compared to other new Member States and with EU-15 and EU- 27 in Subchapter 3.2.

Through the principal components method, the main factors of employment and unemployment in the NUTS2 regions of the European Union with 27 Member States are identified. The results showed four main components, which adequately describe the main features of the labour structure in the regions. (Table 3)

Table 3. Principal Component Characteristics

Nr.	Principal components	Share of variance explained (%)	Principal Component Characteristics
1	First	39.80	Participation at work and employment of women
2	Second	23.77	Participation in employment of people with low education
3	Third	11.82	Employment of higher educated population
4	Fourth	5.46	Restructuring the workforce in the economy sectors

(Source: Own calculations using SPSS STATISTICS, EUROSTAT)

Subchapter 3.4 contains the identification of the position of Central Region compared with NUTS2 regions in EU of 27 Member States using cluster method. Grouping by K-means cluster method, the calculations showed that the Central Region is part of the 22 regions which are composed by two regions from Bulgaria, seven from the Czech Republic, seven from Italy, two from Slovakia one from Hungary, and the Northwest Region, the Central Region and the Western Region from Romania.

This means that the employment structure in the Central Region is similar, especially with the regions of EU-27 new Member States’.

This group was characterized by low activity rate and low employment rate, while the unemployment rate was high. In the employment structure, the share of industry is higher, and the services is lower.

Chapter 4. Employment plans and labour force strategies developed in Romania and in Central Region

In Chapter 4 is presented the synthesis of strategic documents in Romania (Table 4) based on national employment plans in Subchapter 4.1, followed by the presentation of financial instruments employment programs of the Structural Funds in Romania.

Table 4. The strategic documents related to employment in Romania after 2000

Nr.	Strategic documents
1.	<i>National Action Plan for Employment, 2002</i>
2.	<i>National Employment Action Plan 2004</i>
3.	<i>National Action Plan for Employment</i>
4.	<i>National Strategy for Employment, 2004</i>
5.	<i>Short and medium term strategy for continuing training, 2005</i>
6.	<i>National Development Plan 2004</i>
7.	<i>National Development Plan 2007</i>
8.	<i>National Reform Programme 2007</i>
9.	<i>Romania's Post-Accession Strategy 2007-2020</i>
10.	<i>National Sustainable Development Strategy from Romania in Horizon of 2013</i>

(Source: www.mie.ro)

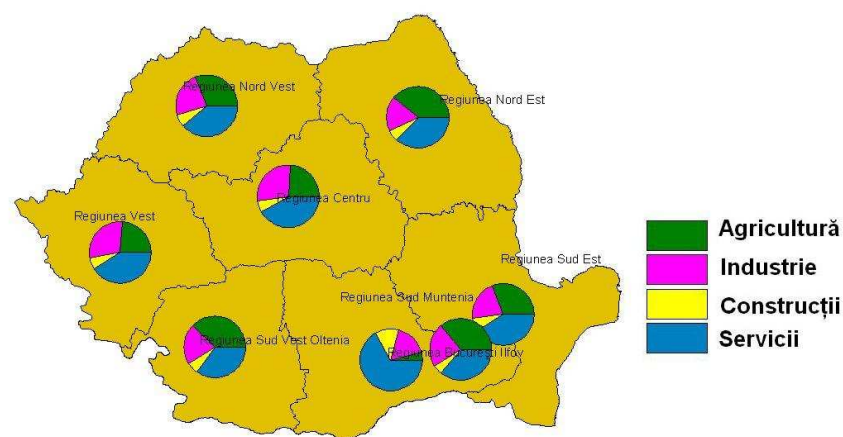
Further in subchapter 4.3. the priorities and measures from regional action plan for employment and social inclusion of the Central Region, and in subchapter 4.4 the development plans of the Central Region counties are presented.

The subchapter 4.5 contains the synthesis of the development plans of Central Region's counties. There are identified the common points of the SWOT analysis, and was made a comparative analysis of the ten guidelines of the European Employment Strategy.

Chapter 5. Employment in the regions of Romania

The chapter contains the study of employment in NUTS2 regions of Romania and aims to identify the position of Central Region in national level. Subchapter 5.1 shows the regional differences in employment, unemployment and wage income. of Romania's regions, during 1997-2007, followed by the analysis of employment structure by main branches of the economy. (Figure 2)

Figure 2. employment structure by main branches of the economy in Romania's regions, 2007



(Source: Drawned using the ArcviewGIS program, INSSE Tempo-online, 2009)

Subchapter 5.2 contains a comparative analysis of Romania's regions on natural reproduction and population migration, which is important for understanding the demographic causes of regional differences in employment. The subchapter 5.3 focuses on performance analysis and labour force participation in the regions of Romania. For this analysis was used a classification method used in the study of employment in regions of the EU. (SERA report)

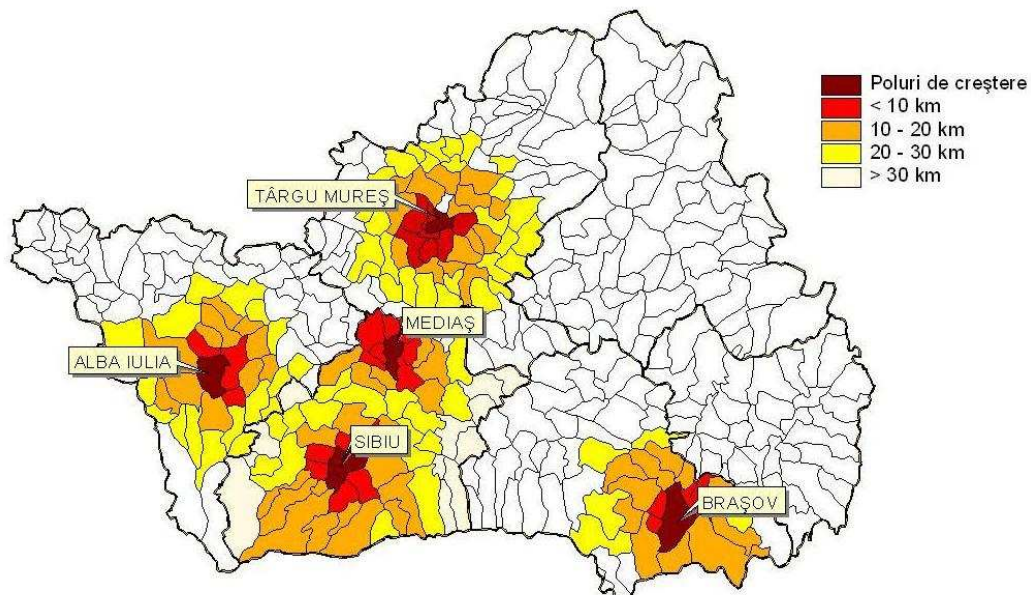
Subchapter 5.4 describes the study related to the employment impact on regional competitiveness in the regions of Romania verified by the panel regression.

Chapter 6. The study of employment Central Region

Chapter 6 contains the study of employment in the Central Region. The subchapter 6.1 is based on the key main processes that have existed in the labour market in Romania during 1997-2007, with effect on employment in the Central Region.

The subchapter 6.2 are focused on the main characteristics of employment in the Central Region, in which, in subchapter 6.2.1 the territorial administrative and demographic structure of the Central Region is presented. The study shows that most towns lie in a relatively large distance compared to the growth poles, the cities with population over 150 000 people. (Figure 4)

Figure 3. The towns's distance compared to the poles of growth in Central Region



(Source: Own calculations, ArcviewGIS, INSSE, TEMPO-Online)

In the next phase, in subchapter 6.2.2 was studied the demographic trends of the Central Region using the classification method related to demographic sustainability in the counties, and in Subchapter 6.2.3 was studied the natural and migratory movements of population in the Central Region's towns.

The study of employment in subchapter 6.3 was focused on the Central Region's counties, followed by a comparative analysis of employment structure in the Central Region before and after the accession to the European Union in subchapter 6.4.

Chapter 7. Analysis of labour supply and demand in the counties of Braşov and Harghita, in the period 2005 - 2010

Chapter seven contains analysis of labour force supply and demand in Harghita and Braşov, two counties in special situations. Analyses from previous chapters have highlighted the fact that the counties of Harghita and Braşov, from the Central Region have very different characteristics.

Braşov is the county with the highest share of population in urban areas (73.75%) and with the highest population density (111.20 inhabitants per km²). Harghita, with a relatively low employment rate (64.20% in 2007) is a predominantly rural county, 55.97% of the population are living in rural areas, with a population density of 49 inhabitants per km in the period 1997-2007, there was the highest share of population employed in agriculture. Analysis of supply and demand in the labour market, are focused on these two counties.

The subchapter 7.1 presents the main conceptual basis related to classification of the occupations in Romania.

Subchapter 7.2 contains the study of the job vacancies' number as monthly series and the classification of them in the counties of Harghita and Braşov during 2005-2009.

The evolution of unemployment and of the number of unemployed in the 2005-2009 period in the counties of Harghita and Braşov are presented in subchapter 7.3, as the difference between current supply and demand in the labour market in these counties.

The calculations shows that the ratio of jobs related to 1000 unemployed persons have different values in the two counties. (Table 5)

Table 5. The number of jobs compared to 1,000 unemployed persons in the counties of Harghita and Braşov, in December 2005-2009

Year	Month	Braşov	Harghita
2005	Dec.	5.47	9.84
2006	Dec.	6.16	29.70
2007	Dec.	27.22	31.41
2008	Dec.	5.63	23.38
2009	Dec.	11.23	9.65

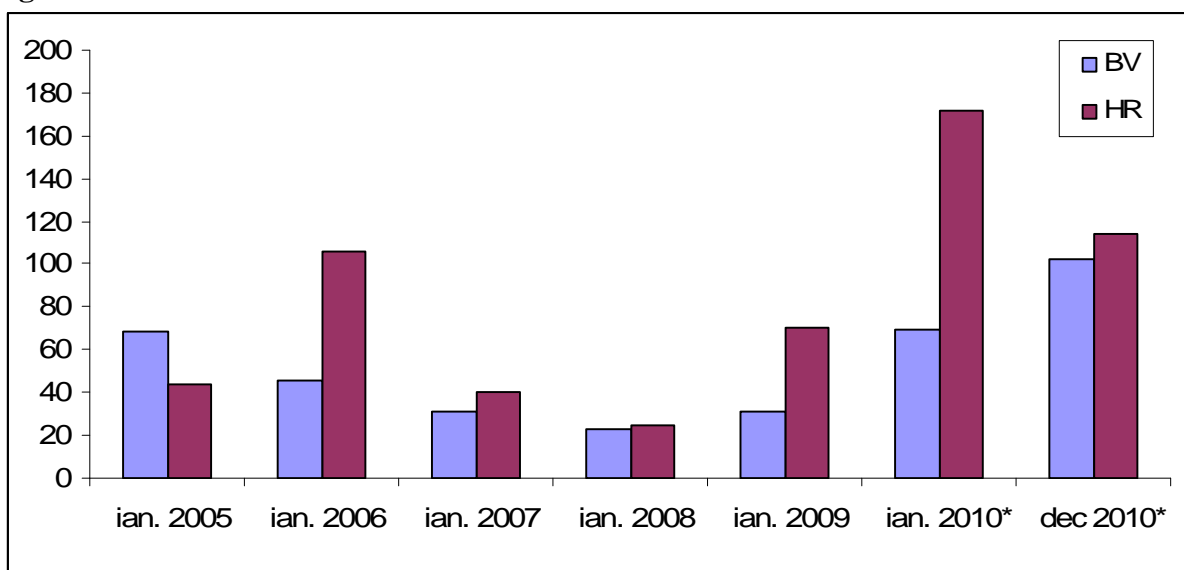
(Source: Own calculations based on statistical data of AJOFM Braşov and AJOFM Harghita)

Analysis of labour supply and demand in the counties of Braşov and Harghita using regression methods is the subject of subchapter 7.4 where in the first phase was identified the seasonality, then the time series stationarity to the registered number of unemployed and the number of job vacancies in the counties of Harghita and Braşov.

In subchapter 7.4.2 are developed the two cross sectional regression models which analyze the relationship between the series unemployed number (dependent variable) and number of job vacancies (independent variable) in the counties of Braşov and Harghita.

In subchapter 7.4.3 the autoregressive integrated moving average model is used to study labour market imbalance in the counties of Harghita and Braşov, based on the monthly series: the number of registered unemployed and the number of job vacancies in the counties of Braşov and Harghita. After the models were identified, based on them there were developed the medium-term forecasts, which show that the imbalance observed there will exists in the medium term. (Figure 4)

Figure 4. Number of unemployed reported to a job vacancy in the counties of Braşov and Harghita



* estimated values based on ARIMA models.

(Source: Own calculations based on statistical data of AJOFM Braşov and AJOFM Harghita)

Conclusions and the research contributions

After Romania's integration into the European Union the importance of identifying and solving employment problems in regional level increased. The support for this is provided by community policy through active measures to improve employment and reduce unemployment.

The first part of the thesis contains an overview of the research's subject, based on national and international literature. Research hypotheses were defined on the basis of economic theory. In terms of regional economy, the literature focuses on the regional employment's level, on several issues, such as: economic competitiveness, labour force migration, economics structural change, demographic sustainability and disparities in unemployment and the regional labour market performance.

Chapter 1 and Chapter 2 contains the literature synthesis (which is the first sequence objective of the research) and the results of studies in the following chapters are reviewed according to the literature. Thesis research concerns to the study of employment in the Central Region. This is one of the eight NUTS2 regions of Romania and contains the following counties: Alba, Braşov, Covasna, Harghita, Mureş and Sibiu.

Central Region has an area of 341000 km², of which 47.00% are mountainous area and 56.07% are agricultural area. In 2008 the region had 2.526 million people and the population density it was 74 inhabitants per km², of which 40.52% lived in rural areas. (Chapter 6.2.1).

The urban-rural typology of Central Region's counties are presented in Chapter 6.5.3, three of these counties are predominantly rurals (Alba, Covasna și Harghita) and the other three intermediate rurals (Braşov, Mureş și Sibiu).

Objective.2. The basic elements of the community employment policy at European, national, regional level and how they are reflected in the Central Region.

The evolution of the community employment policy, the principal moments, the procedure of open method coordination in European Commission, were the topics covered in Chapter 1.3. As an important part of the process of integration into the European Union, have been developed several national employment plans, namely the National Employment Strategy, forming the framework for regional employment measures. (Chapter 4)

By Romania's accession it was opened the labour market to Member States of the European Union and the free movement was one of the causes of migration. (Chapter 1.2)

The European Union's community policy on employment and the employment policy measures in Romania, are achieved through the regional employment plan in the Central Region.

The study of employment in the European Union refers also to the results of community policy.

Development of the European Employment Strategy from 2000-2006 planning period coinciding with the period in which real economic growth was registered in the EU-15.

In the 2000-2006 planning period, the employment levels has improved and the unemployment decreased in the Member States of the EU-15 countries, following to economic growth and the implementation of the European Employment Strategy programs. Community policy on employment has been made to support flexibility through active measures of job creations which result are the increased employment rates in all Member States of the EU-15.

The analysis in Chapter 3.1, showed the existence of convergence trends in the employment and unemployment rate, and in the Chapter 3.2, had shown the major differences

in activity's level, employment and unemployment in Romania, compared to the other new Member States and the EU -15.

The analysis shows that the countries that joined the European Union earlier with significant differences on employment, such as Greece and Spain, the regional employment programs have produced significant results in the period 2000-2006.

The study of employment in the NUTS2 regions of the European Union formed by 27 Member States, using principal components method in Chapter 3.3. shows that four main factors capture the main features of regional employment: participation to employment of women; employment of people with low education level; employment of higher educated population and restructuring the labour force.

These are the key points of regional level employment that needs to answer the Community's policy.

The study shows that the guidelines of the European Employment Strategy, described in Chapter 1.3. coincide with them:

1. Active and preventive measures for the unemployed and inactive
2. Job creation and entrepreneurship
3. Address to change and promote adaptability and mobility in the labour market
4. Promote development of human capital and lifelong learning
5. Increase labour supply and promote active ageing
6. Gender equality
7. Promote the integration of and combat discrimination against people at a disadvantage in the labour market
8. Make work pay through incentives to enhance work attractiveness
9. Transform undeclared work into regular employment
10. Address regional employment disparities (E.C. 2003/578)

The study shows that the National Employment Strategy in Romania, and the National Employment Plans developed since 2002, meet the real needs of the labour market in transition period and represented a basic tool in the process of accession of Romania to the European Union. At national level in rural areas the share of those who are seeking for a job is high, as the study of the National Institute for Public Opinion Studies and Marketing (INSOMAR 2009) developed in the spring of 2009 shows. This means that employment and training programs are useful.

"Regional Action Plan for Employment and Social Inclusion" and "Implementation Plan for the Regional Action Plan 2006-2008" in the Central Region focus on the promotion of the labour market flexibility and adaptability and of the pro-active measures to reduce and prevention of unemployment that are consistent with the objectives of national and European strategies. (Chapter 4.4.)

County development plans and strategies of the Central Region counties (Alba, Braşov, Covasna, Harghita, Mureş and Sibiu) were adopted by the County Councils. Objectives and strategic measures to improve the employment described of these refers to the unemployment's prevention (Alba and Sibiu), job creation through entrepreneurship's support (Alba, Braşov, Covasna and Mureş) promote the adaptability and mobility on the labour market (Alba, Covasna, Mureş and Sibiu), human capital training and development (Alba, Mureş and Sibiu). More county's strategies stresses the importance of partnership with state institutions, particularly with the County Employment Agencies. (Chapter 4.5)

Objective 3. Which are the main main features on the structure of employment in European regions, and which is the position of Central Region, based on this, in the European Union.

Employment study in Chapter 3.2 in the new member states of the European Union, including Romania and Bulgaria, which joined on 1 January 2007, shows that the difference is significant in the structure of employment. According to EUROSTAT, in 2007, in Romania, the share of agricultural population was 29.53% compared to 3.47% and 9.97% in the EU-15 and in the NMS10 (new EU member states which joined in 2004), and 39.07% in services, compared to 69.73% in the EU-15, and 56.84% in in the NMS10.

To analyze the structure of employment in the NUTS2 regions of the European Union with 27 Member States, based on data from EUROSTAT, I used the principal components method. The calculations presented in Chapter 3.3, showed the existence of four main components, which describe both the main features of the labour structure, but points out the problems of employment in the regions.

The first principal component, participation and employment of women, shows some employment problems faced by this social group in the European regions. In Chapter 3.2. I showed that in the European Union, have been increased between 2000-2007, but still remained below the average of the EU-27, the activity rate and employment rate of women. In Chapter 6 I showed that both in Romania and in the Central Region, the activity rate and employment rate of women has remained below the average.

A major problem is the labour participation of people with low education, described by the second main component in the analysis of employment structure in European regions.

In subchapter 3.2 I showed that between 2000 and 2007 have been decreased the share of active population with primary education (levels 0-2 according to ISCED 1997), but still remains at high values in EU-27 average (25.43% in 2007), in new Member States (10.62% in 2007) and in Romania (25.04% in 2007), according to Eurostat.

For treatment of this problem special measures have been developed in European Employment Strategy related to training, as described in Section 1.8, measures of which can be identified both in Romania National Employment Plans and in Employment Action Plan in Central Region (Chapter 4).

The transition to knowledge-based society and the importance of developing the research and development segment in the EU regions are highlighted by component of the higher education employment. In Chapter 3.2 I showed that the share of active population with university education (levels 5-6 of ISCED 1997) is much lower in new Member States (20.84% in 2007) and in Romania (13.30% in 2007) as the average in EU-27 (25.11% in 2007), according to Eurostat.

Similar to the third component, the restructuring of employment in sectors of the economy, as we named the fourth component, describes the process that is much more intensified in regions of new Member States compared to EU-15 regions. The subject of restructuring was discussed also in Chapter 2.5.2 on the basis of literature and studied in Section 6.4 for the Central Region.

To identify the position of the Central Region among the NUTS2 regions of the European Union's 27 member states, I have started from a database established according to the results of employment analysis using the principal components method. Then I used the K-Means clustering method, as the calculations are described in Chapter 3.4.

The results show that the structure of employment in the Central Region show similarities with two regions of Bulgaria, seven of Italy, two from Hungary, one from Slovakia, and the North-West and Western Region from Romania, of whole the European Union with 27 Member States regions.

This NUTS2 region group is characterized by:

- A relatively low activity rate and employment rate, especially in the case of young and elderly population;
- A higher unemployment rate than the EU-27 average;

- In addition to the high percentage of population employed in agriculture at the national level, as described in Section 3.2, in this group the results show that employment is higher in industry and is lower in services sectors than the average EU-27;

- It is higher the percentage of the population with secondary level of education and low the percentage of those with primary and tertiary level of education than the EU-27's average;

- The share of employees is lower than in EU-27

- Unemployment rate is higher, as the share of long-term unemployed.

The similarities in the structure of regional employment in the countries of Central and Eastern Europe is the consequence of the similar restructuring process during the transition period, described in the literature. (Köllő 2001, Oprescu 2001, Dinu 2005, Osoian 2005)

Objective 4. the demographic sustainability analysis of Romania's regions and Regional Center's counties.

After the analysis of employment in EU regions, I focused on the employment in the regions of Romania. The classification method used in the EU regions, was used to identify the regional differences and the trend during 1997-2007 period, and the demographic sustainability of the regions.

In 1997, the Central Region's population it was in the decreasing situation due to natural decline, although to migration was in the region, like the Bucharest-Ilfov Region and Western Region.

In 2007 the Central Region's population was in double-negative down, due to natural decrease and the migration out of the region, like the South-East, South-West, South-Muntenia, and Oltenia Regions. (Chapter 5.2)

Demographic decline in the Central Region, with effect on the working age population was studied in the subchapter 6.2.2. and the natural and migratory movements of population in the region is included in Chapter 6.2.3.

In 2008 the demographic decline was more intensive in Alba and Covasna and changes with resident departures showed high values in Alba and Mureş.

In the structure of the migratory movement of population by municipalities, I observed the following trends: in 2007 the massive departures were from rural towns with relatively large distance by the urban centers, and the establishments where observed in urban centers and their neighbors. (Chapter 6.2.3.)

Objective 5. The analysis of participation, performance and labour productivity in the Central Region, compared with other regions of Romania.

A comparative analysis in Chapter 5.1 shows that in 2007, in the Central Region, the activity rate was 67.20%, the employment rate was 64.00% and the unemployment rate was 4.80%, values above the national average while the average net income reached the penultimate place, being much below by the national average.

In 2006 based on the values of the gross domestic product per capita, Central Region was in the third position, after Bucharest – Ilfov, and West regions, with a relatively high labour productivity.

In 2007 based on the classification of the participation to work, the Central Region was in the group with the intermediate performance and participation. (Chapter 5.3)

The double classification of the Romania's regions in 2007 puts the Central Region next to South-East Region, South-Muntenia Region, and South-West Oltenia Region, with intermediate performance and participation, and a double demographic decline (negative value of natural reproduction and migration outside on the regions). (Chapter 5.3)

To emphasize the internal causes that led to this classification of the Central Region, compared with other regions of Romania the characteristic indicators were studied in the region's counties. (Sequence objective number 8)

Objective 6. The impact analysis on the economic competitiveness of employment in Romania's regions.

The impact of employment on economic competitiveness of Romania's regions has been studied in subchapter 5.6. According to calculations, the component of the employment rate is as an important factor as the labour force productivity. In 2007, the Central Region's gross domestic products per capita was below the EU's average, as in most of Romania's regions, and the labour productivity was below the national average.

Differences in the level of employment are caused among other things, by the differences of regions' economic competitiveness and the labour force productivity. The hypothesis was verified in Chapter 5, in study of employment differences in the regions of Romania.

In literature the economic competitiveness is expressed through labour productivity, employment rate and the share of active population in total population. (Porter (1990), Lengyel (2002) and Vincze (2003)).

The logarithmical version of the equation, which was developed by Nemes-Nagy (2006) was verified in NUTS2 regions of Romania during 1993-2006, using the panel regression model.

The results prove the employment relationship with economic growth known from the literature and identified as one of the regions achievement of economic cohesion in the European Union. (White Paper - Growth, competitiveness, employment COM 93/700, Growing regions, Growing Europe - Fourth Report on Economic and Social Cohesion)

Obiectiv 7. Analysis of structural change in regional level employment, after joining the European Union.

In subchapter 6.4 the structural changes of employment in the Central Region during 2002 – 2008 are presented, based on Household Labour Force Survey. The changes in the structure of employment in the region, after Romania's accession to the European Union, have the following characteristics:

- have been decreased the share of employment of young people with age between 15 - 24 years and to 34 years, and have been increased the number of people with age over 35 years;
- have been increased the share of employed population with higher education (especially in the case of the age group between 25-34 years) and those with medium education, and have been decreased the share of those with low education;
- have been decreased the share of employment in agriculture by over 10% (ie over 14% in female population), while in the industry sector have been increased by over 3% and by 7% in services;
- have been increased the share of employees from the employed population with 10%, in parallel with the decrease of employment in the other categories, particularly in case of the unpaid family workers. (Subchapter 6.4.)

Objective 8. Analysis of the differences on employment in the counties that form the Central Region.

The analysis of employment in the counties of Central Region begin with studying the urban - rural differences, the population density, which are related to the geographical structure of cities with population over 150 000 people.

The analysis of the employment's structure based on the key sectors of the economy in Central Region's counties, highlighted that in Harghita county there was the highest employment in agriculture, where population density was lowest. In Braşov county, there was the highest share of employment in services sector, and there was the highest population density parallel by the lowest proportion of the population who are living in rural areas.

The analysis of the migratory movement of population in 2007 shows departures from the more remote towns to the urban centers and to their neighbours.

On the basis of demographic sustainability, in 2008 the Central Region counties are grouped into two categories: the counties of Braşov and Sibiu are in the double positive growth situation, through natural growth and migration in these counties; Covasna and Harghita counties are in the demographic decline, with positive natural reproducing, but a migration outside the counties; and Alba and Mureş are in the double negative declining with the natural decrease of population and migration outside the county.

The decreased activity rate in the Central Region has led in particularly low values in the counties of Braşov (60.80%) and Covasna (65.40%), and the highest in Alba (76.30%).

In 2007 the lowest rate of unemployment was in Sibiu county (3.10%) and in Mureş county (4.30%) and highest in Covasna (7%).

The study of labour force performance and participation in the Central Region was carried out based on the methodology used in the case of EU regions. The classification results showed that four of the Central Region counties were in the intermediate group while the performance of labour force was low in Covasna county, where the average net nominal monthly earnings was the lowest (792 lei), while in Sibiu county, the average net nominal monthly earnings was the highest (987 lei). (Chapter 6.3.)

Table 73. Labour force performance and participation in the Central Region's counties

County	Performance	Participation
Alba	Intermediate	
Braşov	Intermediate	
Covasna	Low	Medium
Harghita	Intermediate	
Mureş	Intermediate	
Sibiu	High	Low

(Source: own calculations, SERA report)

The employment rate in 2007 recorded the highest value in Alba county (71.90%), being the county where between 1997-2007 the number of employees increased by over 900 person. The lowest employment rate was in Braşov (57.70%). During 1997-2007 the only county in which was observed a significant increase in the number of employed was Sibiu.

Except of Alba county, in the rest of the counties, the decrease was more than 12 000 people, in Braşov county reaching over 28,000 people. The structural change of the employed population was present in all counties, except that it differed case to case. The employed population decline occurred in the Central Region was particular in agriculture and industrial sectors. In 2007 the highest share of employed population in agriculture was in Harghita county (31.86%), where the share of employed population in services was the lowest (37.72%).

In 2007 the highest share of employment in industry existed in Sibiu county (39.23%), to the detriment of employment in agriculture in this county (15.69%), and the highest share of employment was in the services sector in Braşov county (50.34%), where the share of employment in agriculture was the lowest (13.11%).

Objective 9. Local labour market analysis in Braşov and Harghita counties in Central Region.

Steady-state in the regional labour market is an important part of the employment study in the Central Region. The differences between demand and supply had been verified by ARIMA models in the counties of Braşov and Harghita, resulting an imbalance state that is permanent and there will be in the short term.

Because of existing surpluses in the labour market caused by the economic restructuring, we assumed that there does not exist a steady-state of full employment in regional labour market in the transition period and after the Romania's European Union accession. The hypothesis was verified by a more detailed analysis at the county level, focusing attention on two counties of the Central Region, which were in special situation: Braşov and Harghita.

In Braşov the proportion of population who are living in urban areas was the highest, the county was characterized by traditions in the industry, the Braşov Municipality is one urban and university center, with high share of employment in industry and services. In Harghita, there is none of the six cities with over 150,000 people in the Central Region, considered as growth poles, the county was characterized as predominantly rural. In this county the employment rate and the average net income was relatively low, with a high share of employment in agriculture.

The analysis of the labour force supply and demand was carried out between January 2005 - December 2009, based on the monthly data of the number of job vacancies and the number of unemployed in the counties of Braşov and Harghita.

The analysis was performed based on the statistical database provided by the County Employment Agencies from Braşov and Harghita. The difference between the two counties are emerging both on the demand and supply side in local labour market.

The job vacancies which was registered by the COR classification for the period of 2005-2009 differ between the Braşov and Harghita counties and are related to the economic structure of the local business sector: in Braşov county workforce was primarily in the industrial and construction sectors, while in Harghita county in the wood industry and in construction. (Subchapter 7.2.)

Unemployment rate had been increased in 2007-2009 in the Central Region at 4.80% (2007), to 7.84% in July 2009 and to 9.86% in December 2009.

Rising unemployment rate was observed in the both counties, reaching higher values in Harghita: 6.60% in 2008 and 10.60% in December 2009 compared to Braşov where 4.30% was in 2008 and 8.70% in December 2009. (Subchapter 7.3.)

The state of imbalance in the labour market of the counties of Braşov and Harghita was studied in Subchapter 7.3.

The difference between the number of unemployed and the number of job vacancies offered by the labour market was over 10,000 on average in the county of Braşov, and over 4000 in Harghita, ie during the period studied there on the labour market was none of moment with a perfect balance. Since the second half of the 2008 year, in both counties we observed two parallel processes: the decrease in number of job vacancies and increase of unemployed.

As a result, by the end of the studied period (December 2009), the difference between labour supply and demand was growing.

The state of imbalance was confirmed by the values of the ratio of the unemployed number and vacant jobs.

In the Employment Agencies of Braşov and Harghita, in December 2007, there was registered 36.74 and 31.84 unemployed reported in one vacant job, and in December 2009

these values reached 89.08 and 103.60 unemployed reported in one vacant job. (Subchapter 7.3.)

In another formula, the demand covers only a small part of the offer, the rate of vacancy jobs from unemployed number was below 12% in Braşov, Harghita 10% respectively in 2005-2008. Since 2009, this percentage was in declining and it was below 3.5% in Braşov, and below 2% in Harghita. (Subchapter 7.4.2.)

Cross-sectional regression models were developed in Subchapter 7.4.2 to describe changes in the next series: the unemployed as dependent variable and the number of job vacancies as independent variable, in the counties of Braşov and Harghita. The calculations were made using the Eviews5 program and the results are relevant based on the literature. The models describe the number of unemployed at a certain t period, using the number of unemployed at period t-1, respectively the number of jobs at a period t-2.

Therefore, the high number of unemployed are formed during a t-1 period from unemployed who have not found a job and the lack of local jobs at the t-2 period.

To study the labour force supply and demand registered at the Employment Agencies of Braşov and Harghita counties by the number of job vacancies and the number of unemployed, were used econometric methods in order to study the cross-sectional regression relationship between the series, respectively for developing short-term forecasting models. Autoregressive integrated moving average models for the time series of the number of job vacancies and of the number of unemployed in the counties of Braşov and Harghita where developed in subchapter 7.4.3 and 7.4.4, which estimates a decrease in the number of job vacancies and increase in the number of unemployed. As a result, in June 2010 was estimated a number of 138.48 and 118.26 unemployed to a vacant job in the counties of Braşov and Harghita. The analysis confirm the state of imbalance in the labour market during 2005-2009, and the forecast showed that this will be permanent in the short term (subchapters 7.4.3. And 7.4.4.)

Objective 10. The SWOT analysis for employment in Central Region.

To answer the question what are the strengths, weaknesses, opportunities and threats existed on the regional labour market, I have formulated as one object to achieve the SWOT analysis of the research case study the employment in the Central Region. I have chosen this method because it reflects the synthesis of both internal and external conditions.

I also chose this method because it reflects the summary of internal and external conditions, with positive and negative influence. (Table 74)

Table 74. The SWOT analysis for employment in Central Region

Strengths
1) Cheap labour force; 2) Industrial traditions especially in the counties of Braşov, Mureş and Alba; 3) The existence of universities in the major cities of the region; 4) Development plans or development strategy medium-term for the Central Region counties.
Weaknesses
1) The relatively low labour training; 2) Imbalance in the labour market; 3) High share of employment in agriculture and the existence of a large number of agrarian subsistence family farms; 4) Lack of job vacancies; 5) Regional unemployment.

<p>Opportunities</p> <ol style="list-style-type: none"> 1) Integration into the European Union; 2) Participation of a higher number of the females in labour force; 3) The labour market integration of the socially vulnerable groups; 4) Active employment measures in the European, national and the Center Region's plans.
<p>Threats</p> <ol style="list-style-type: none"> 1) The lack of demand on the regional labour market which materialized in the medium-term lack of job vacancies; 2) Aging of the population in working age; 3) The decrease level of schooling for young people; 4) In medium term the national and regional forecasts show the decrease of active population and employed population.

(Source: Study of the author.)

Weaknesses are the internal conditions of the region in relation to employment, internal resources and strengths. All points are motivated by the results of the chapters.

Weaknesses

The employment population's relatively low level of education and of training is a main problem.

In Subchapter 3.2, I mentioned the difference in the active population's structure by the educational level in Romania, compared with EU-15. The comparative analysis of employment structure between 2002 and 2008 in the Central Region, showed that it have been decreased the share at the low educated population and it has increased the share at the high educated population. (Subchapter 6.3)

Among the high share of employed population in the agriculture another problem consisted the existence of the subsistence farms, as we showed in some studies at micro regional level in the Central Region. (Vincze 2002, Madaras 2006)

Based on the theory of the labour economy, it was verified using one regression model in Chapter 7, the lack of job vacancies as one of the main causes of regional unemployment, and both issues was included among the weaknesses of SWOT analysis. (Chapter 7)

Strengths

The analysis of the structure of the Central Region's counties in the subchapter 6.2.1 showed that there are Braşov, Mureş, Alba and Sibiu counties with industrial tradition and Braşov, Mureş and Sibiu counties with university centers.

The detailed analysis of the Braşov and Harghita counties showed the high ratio of unemployed related to one vacant job, which indicates the existence of free labour force in the region. (Chapter 7) The comparative analysis of wage incomes shows the existence of cheap labour force in the Central Region. (Subchapter 6.3)

The comparative analysis of the medium term development plans and strategies in the Central Region's counties showed that in the county level are formulated many specific measures to improve employment in the region. (Subchapter 4.5.)

Threats

In medium term the most important risk consists in the the lack of jobs in the region, causing the observed imbalance in the labour market. (Chapter 7)

The classification analysis in Chapter 5 and also the comparison study in the Chapter 6, showed the existence in the Central Region the population aging process, phenomenon known from the literature.

A comparative analysis of the employment's structure in the Central Region, before and after Romania's accession to the European Union, showed as a serious problem the lower schooling level for youth population. (Chapter 6)

The synthesis of the national forecasts, in medium- and long-term, showed that there exist the real threat of decreasing of the active and the employed population in the Central Region as well as in Romania. (Chapter 8)

Opportunities

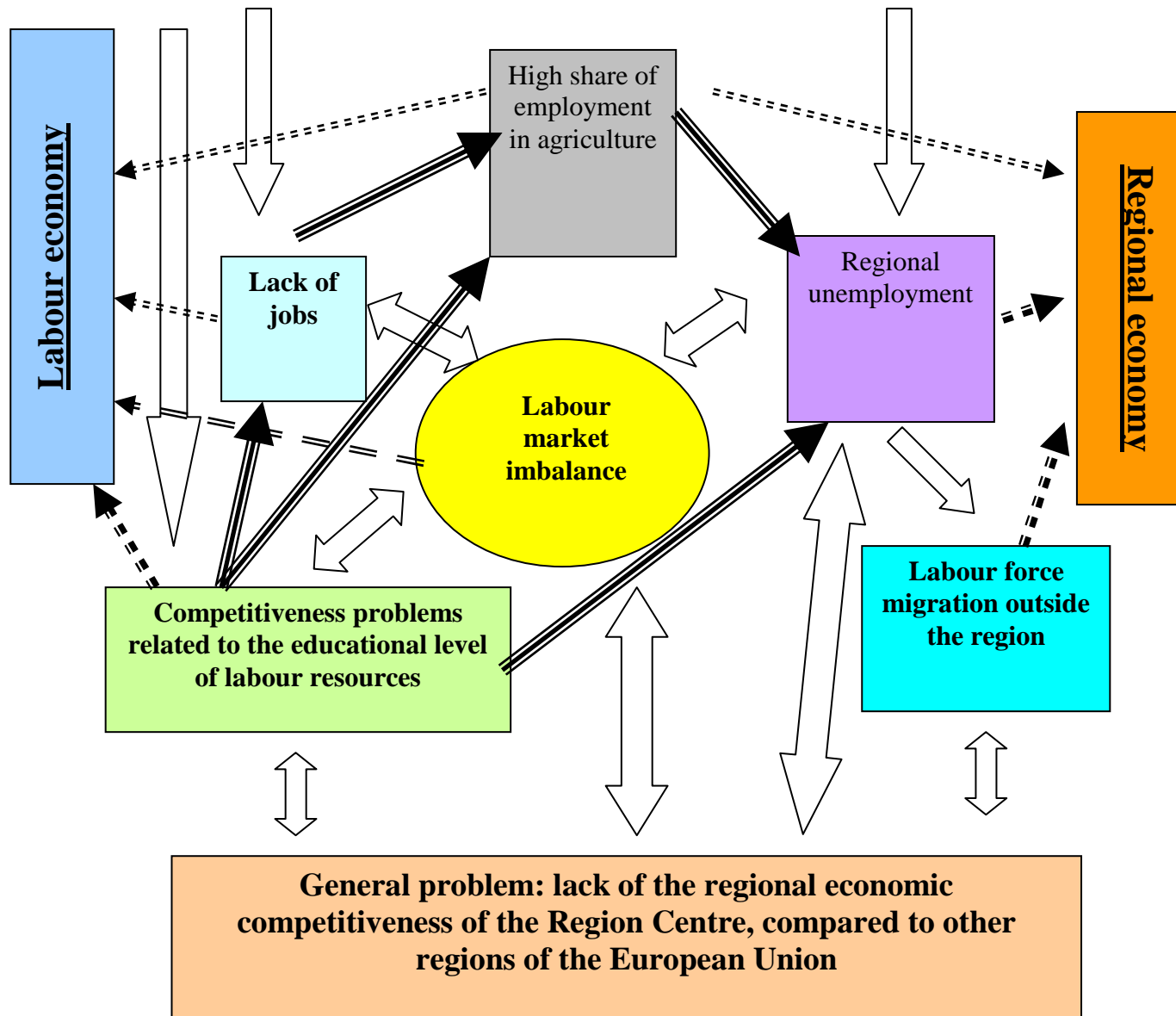
The importance of the employment policies at european, national and regional level is undeniable, like the opportunities to handling employment problems in the regions of Romania, as the in the Central Region after EU accession. (Chapter 1)

The active employment measures and programs, like the unemployment combating programs in the European Union gave a community policy instruments addressing the regional employment problems in Romania. Based on these some vulnerable groups such as women or roma minorities can be integrated into the labour market. (Chapter 1 and Chapter 4)

The scheme of the employment problems in case of the Central Region describes the relationships with the root causes like, economic competitiveness, are reaching a potential treatment possibilities on active employment programs on employment and on unemployment reduction programmes, according to the EU's guidelines. (Figure 5)

Figure 5. The scheme of the employment problems in case of the Central Region, based on the SWOT analysis

The development possibility: active measures for employment and unemployment based on the community policy of the European Union



(Source: Study of the author.) (own edition)

The statistical analysis based on the theory of the regional economy in Central Region case study showed that the structure of employment, unemployment and labour migration are linked by the regional competitiveness.

Analysis in Braşov and Harghita counties showed on the basis of the theory of the labour economy, that the non-correlation between supply and demand, ie the imbalance in the labour market explains some problems of employment, such as the low level of income, the regional unemployment and the migration of labour force outside of the region.

The scientific contribution of the author of this thesis consists mainly in following:

- provides a description of the conception process of employment policy at EU level;
- provides an overview of conception of the national and regional employment strategies in Romania, in terms of the European Union's accession;
- presents in details the employment strategic documents of the Central Region and of counties with objectives and active employment measures of these strategies;
- presents the results of the multicriteria analysis related to the structure of labour force in the 260 NUTS2 regions from EU-27, using the principal components method, emphasizing four common factors;
- highlights and examines the group of European regions in which was included Central Region using cluster method, as well as other regions with similar employment structures;
- examine the causes of structural changes that have affected the employment in the regions of Romania, using the identification of the direct influence factors on the regional competitiveness (measured by gross domestic product per capita) the labour productivity, the employment rate and the share of active population in total population;
- studying the characteristics of employment in the Central Region during pre-accession and analyze the employment-related socio-economic causes;
- examines the changes in the labour force structure in Central Region after EU's accession
- realize the cross-sectional analysis of labour supply and demand in the counties of Braşov and Harghita;
- develop some autoregressive integrated moving average models for time series for the number of the job vacancies and the number of unemployed in Braşov and Harghita counties, which are used for short-term forecasts;
- provides a rich literature reference, which may be used by those who are interested in to the field of employment;
- highlights a complex research methodology suitable for detailed analysis of the explored issues.

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