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**DIPLOMA THESIS**

**Labour Market Trends in Selected European Countries**

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## **DECLARATION**

I hereby declare that I have worked on my Diploma Thesis titled “Labour Market Trends in Selected European Countries” solely and I have used the literature and sources listed in bibliography.

In Prague, 7<sup>th</sup> March 2011

.....  
Bc. Klára Nesvadbová

## **ACKNOWLEDGEMENT**

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The great thank belongs to my parents for supporting me in all possible ways and for giving me the opportunity of university education.

# **Labour Market Trends in Selected European Countries**

## **SUMMARY**

The diploma thesis themed “Labour Market Trends in Selected European Countries” focuses on labour market analysis in the Czech Republic, in the Netherlands and in Spain.

The theoretical part of the study is an introduction to the labour market and unemployment topic; it explains the main concept and summarizes the related literature that has been examined. The practical part of the study analyzes the labour market trends in selected countries. Next to the Czech Republic have been chosen countries regarding the unemployment rate in recent years - the countries are characterized by diverse values of main labour market indicators. The analysis is focus on these differences and through detailed study of unemployment and related issues examines the main labour market trends. The main part focuses on unemployment indicators and in order to gain complex data, the related issues such as work-time, employment structure or labour force are included. The obtained results are summarized in the end of the study, and the main identified problems are dissected. Possible recommendations to the key issues are outlined in the conclusion.

## **KEY WORDS**

The Czech Republic, The Netherlands, Spain, Labour Market, Unemployment, Employment

# **Trendy na trzích práce ve vybraných zemích Evropy**

## **SOUHRN**

Diplomová práce na téma “Trendy na trzích práce ve vybraných zemích Evropy” je zaměřena na analýzu pracovních trhů v České republice, Nizozemí a ve Španělsku.

Teoretická část práce slouží jako úvod do problematiky trhu práce a nezaměstnanosti, vysvětluje základní koncept trhu práce a sumarizuje literaturu, která byla analyzována. Praktická část studie je zaměřena na současné trendy na trzích práce ve vybraných zemích. Kromě České republiky byly vybrány země vzhledem k výši míry nezaměstnanosti v posledních letech – vybrané země jsou charakteristické rozdílnými hodnotami základních ukazatelů dané problematiky, analýza se na tyto rozdíly soustředí a pomocí detailní studie nezaměstnanosti a dalších ukazatelů identifikuje hlavní trendy, které jsou pro současný pracovní trh v dané zemi typické. Praktická část se vedle problematiky nezaměstnanosti věnuje také pracovní době, struktuře zaměstnanosti a pracovní síle tak, aby byl pohled na danou problematiku komplexní. Získané výsledky jsou pak shrnuty na konci celé studie a jsou rozebrány hlavní zjištěné problémy. Možná doporučení týkající se klíčových oblastí jsou nastíněna v závěru.

## **KLÍČOVÁ SLOVA**

Česká republika, Nizozemí, Španělsko, trh práce, nezaměstnanost, zaměstnanost

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# 1 INTRODUCTION

In 2008, the whole world was affected by financial crisis and the impact on national economies was more intense and visible than the leaders of high-developed countries expected. It has been caused by dysfunctional financial system, which remains and influences enterprise investments and further delaying of a job recovery.

Unemployment is one of the key macroeconomic indicators of every country and in the time of crisis has become one of the major problems of most the countries. The economic recovery from the crisis is weak and uneven across the world. The results are constantly high unemployment and increasing share of long-term unemployment on total unemployment, which represent serious not only economical but also social problem.

Europe and the European Union (the EU) are facing to the consequences of the crises as well. The common policy of the EU pays high attention to the problems on labour markets and increase in employment (or decrease in unemployment) is one of the main priorities. The aim of the EU is to compensate high differences among member states and approximate the level of employment to certain average rate. The aspirations of the European Council for the year 2010 were discussed on conferences in Lisbon in 2000 and in Stockholm in 2001, where the specific goals of common policy were also stated.

The dispersion of unemployment rates in 2010 among member states was almost 17%. The lowest rate was in the Netherlands (4.4%) and the highest one was in Spain (20.7%). The Czech Republic ranked at the sixth position with its unemployment rate (6.9%). The financial crises had different impact on these countries. Since 2007, the unemployment rate in the Czech Republic increased by 2%, in the Netherlands by 0.6% and in Spain by striking 11.2%.

The mutual comparison of countries with different labour market characteristics will provide deeper insight and will reveal weaknesses, strengths and main merits of labour markets in the context of unemployment, of the main macroeconomic indicator.

The study will lead to summarizing conclusions and recommendations, which is beneficial, because the problem of unemployment remains at the forefront of interest of all national and even multinational economies.

## **2 OBJECTIVES OF THESIS AND METHODOLOGY**

### **Objectives of thesis**

The main objective of the diploma thesis is the analysis of labour market trends in the Czech Republic, Spain and the Netherlands. The labour markets in these countries show different position in European context. The mutual comparison will disclose evidential differences.

The analysis focuses mainly on the problem of unemployment as one of the main characteristics of the labour market. The annual and quarterly unemployment rates will be examined in time in order to evaluate the development in all selected countries. The aim is to analyze not only the development of the overall unemployment but also of particular components (structural and cyclical).

The unemployment rate then will be studied in wider connections and the aim will be to test the dependency of unemployment rate on socio-demographic characteristics, such as age, gender, education and nationality (natives versus foreigners).

The next trends will be inquiry by study of long-term unemployment, unemployment across regions (on the level NUTS 2), employment rate, employment structure and in addition, the work-time structure of employment (full-time versus part-time).

Summarizing of identified trends, conclusions about studied topic and eventually relevant suggestions and recommendations are the final aim of the entire analysis.

### **Methodology**

Data from Statistical Office of the European Communities (EUROSTAT) and from statistical database of Organization for Economic Co-operation and Development (OECD) will be used in the whole study. The used time series of main indicators start in 1998, due to the availability of data for all selected countries. The year 2010 will be compared to previous years. In the cases, where the data for 2010 are not available and no significant composition changes are expected, the data for 2009 will be analyzed. The data will be analysed in econometric software Gretl and Data analysis tool in Microsoft Office Excel.

The analysis is based on comparative method. Indicators and tools which allow to compare analyzed facts will be used – such as data published by EUROSTAT, that are adapted to be compared.

For analysis and comparative study will be used modern tools such as indicators, classifications and time series. Descriptive and fundamental statistical characteristics will be calculated (standard deviation, variation coefficient, 1<sup>st</sup> and 2<sup>nd</sup> differences, coefficients of growth, basic indexes and similar) to analyze the time series.

For the decomposition of unemployment to its structural and cyclical components, it will be used seasonally adjusted quarterly time series of unemployment rate. The trend element will be stated by applying Hodrick-Prescott filter - the filter will reveal the cyclical element. The structural element will be the residual value of seasonally adjusted unemployment rate after deduction of cyclical component. Those two elements are going to be examined as well by using matching functions (the Beveridge curves) between job vacancies and unemployment rate.

The dependencies between unemployment rate and other variables (such as age, education, nationality) will be tested in association and contingency tables. The Chi-square test values will be calculated and compared to critical table values for every examined dependency. The detected statistical relations are going to be specified by calculation of proper coefficients (Association or Yule coefficient for association tables, Pearson or Urbach-Čuprov coefficient for contingency tables).

The calculated and proven facts for all three countries will be subsequently compared and will be summarized and dissect at the end of the study. [11, 22]

### 3 LITERATURE OVERVIEW - THE LABOUR MARKET AND UNEMPLOYMENT

#### 3.1 Definition of Labour Market

Labour market is an informal market, where households supply hours of work to the market and firms demand them. The households work to consume (to earn money) but they want also spend some of their time not working but enjoying leisure time. The supply of labour is therefore a trade-off between consumption and leisure. Firms demand labour if it has some value to them in production. Following chapters will analyze the labour market and its particular elements in detail. [2]

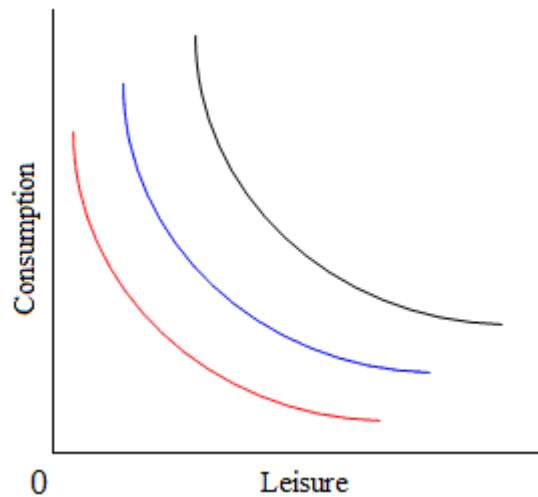
##### 3.1.1 Supply in Labour Market

The supply in labour market is represented by available suitable human resources in that particular market; accurately expressed it is a number of total hours that workers are willing to work at a given real wage rate. The available human resources, who are able to work, constitute one of the primary production factors – labour.

People need income to consume goods and services therefore they are willing to work; they offer their available working hours to firms for a wage or a salary. They do not just benefit from that, it has also a cost side – every hour of work means an hour less of free time. Households value consumption as well as leisure time, that is why they balance them the best they can. This trade-off is known as the consumption-leisure trade off.

Preferences of households between consumption and leisure represent *indifferent curves*, which show different combinations of both factors (consumption and leisure) with the same utility. The term utility expresses a measure of consumer's relative satisfaction (=consumer's state of satisfaction). The graph 1 shows the indifference curves of household preferences. [2]

Graph 1: Indifference curves of household preferences



Source: Macroeconomics, A European Text; Burda and Wyplosz

An indifference curve (IC) expresses how a household is willing to substitute consumption for leisure (holding its level of satisfaction or utility constant). The further is the IC from the origin, the higher is the level of utility. The slope of IC is negative; it means that one additional unit of leisure requires one unit of consumption less.

Household is willing give up consumption for leisure at a certain level – the level is called *the marginal rate of substitution* of consumption for leisure.

The price of an additional hour of leisure is its *opportunity cost* and the price of labour is the real wage. An opportunity cost is a cost of the next best alternative that is at disposal to a person, who is choosing among several mutually exclusive options. The real wage represents income of that person. [2]

Possible combinations of leisure and consumption, that can a household afford are given by household's budget that is presented by following equation:

$$\bar{L}w = lw + C$$

$w$  ... hourly real wage (average nominal wage to the consumer price index)

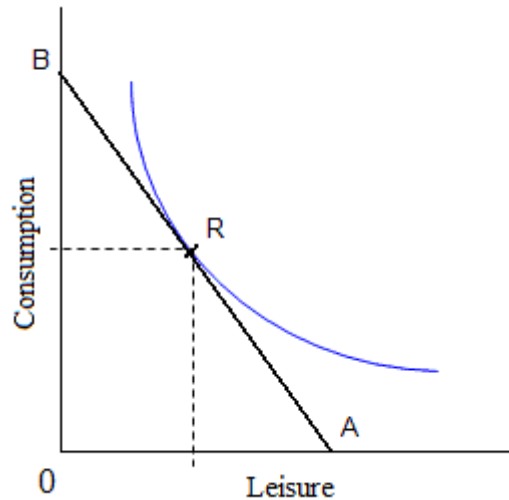
$\bar{L}$  ... total available time for work

$l$  ... hours of leisure

$C$  ... units of consumption

The relation between the household budget line and indifference curve of household preferences draws the graph 2.

Graph 2: The household budget line and optimal choice



Source: Macroeconomics, A European Text; Burda and Wyplosz

The household which is analyzed in the graph 2 has certain amount of disposal hours (expressed by the distance 0-A). The slope of the budget line AB is determined by the real wage  $w$  (the slope equals to  $-w$ ). In the point R is achieved the highest possible utility. [2]

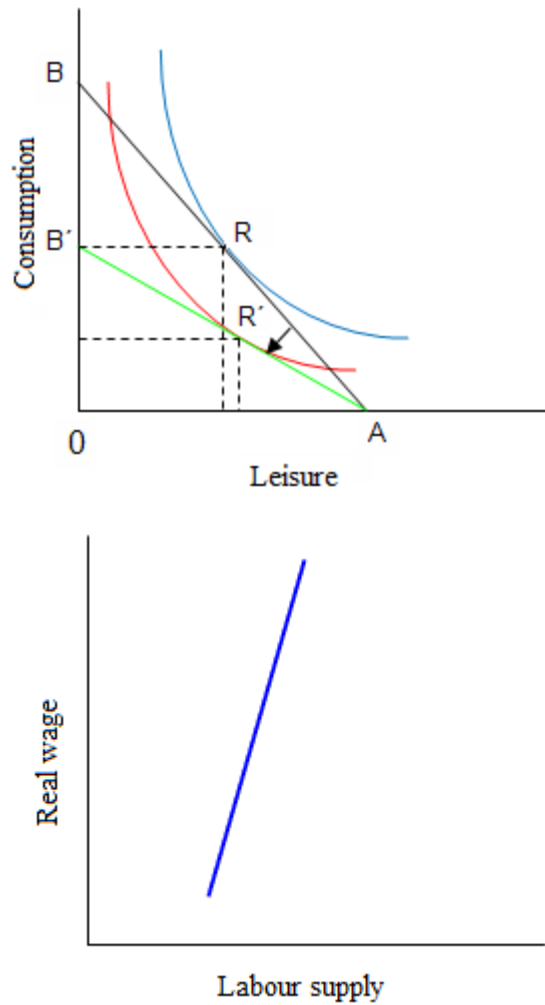
### **Optimal choice and the individual labour supply schedule**

Maximization of the utility is realized when the highest possible IC is chosen, and when there is no moving to the right or above the budget line. It is achieved in the point where the IC is a tangent to the budget line. It is in the point R in the graph 2. At that point is the marginal rate of substitution of consumption for leisure equal to the real wage. The household cannot make any better off than in this point.

Very important is the influence of the real wage on households' behaviour. Two different effects can occur. The first one is called *substitution effect* – it means that the relative attractiveness of leisure declines because its relative price has risen. The second one is *income effect* – it means that the incentive to work is less in response to a wage

increase. Both effects will screen in household labour supply curve. In order to understand which effect dominates it is necessary to know the preferences and then create the concrete curve. [2]

Graph 3: Reaction of the household to a wage decrease - Labour supply



Source: Macroeconomics, A European Text; Burda and Wyplosz

The possible reaction of household to a wage decrease graphically illustrates graph 3. It illustrates as well the inference of individual labour supply.

In practice is used moreover *the aggregate supply*, which is the sum of the supplies of individual households across the economy (it means sum of many individual decisions).



While individual labour supply is measured in hours during some period, aggregate labour supply is measured in person-hours (the total amount of hours supplied by all workers during the same period). The decision of any individual then influences the aggregate supply curve. [2, 8]

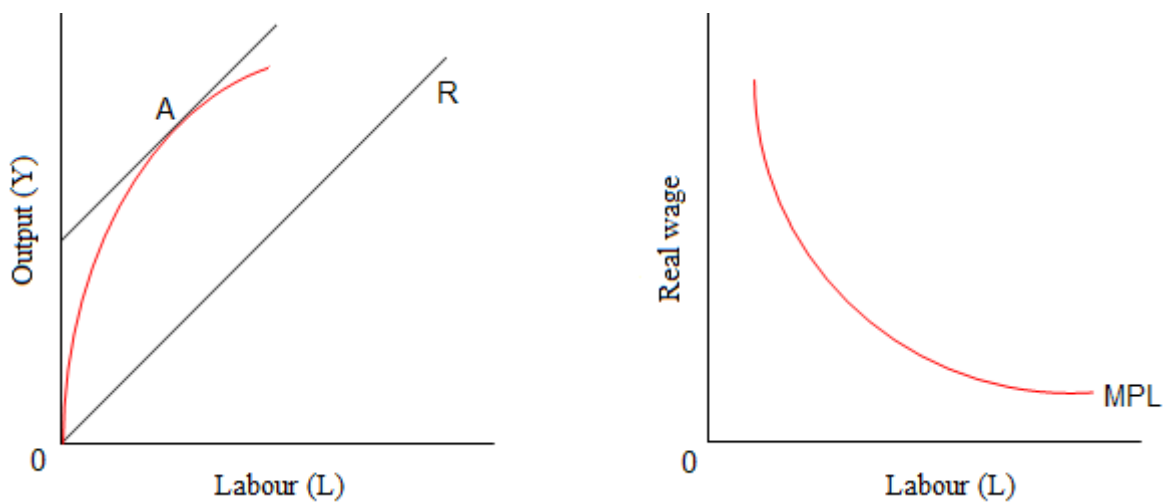
### 3.1.2 Demand in Labour Market

Demand in labour market stands for the demand of firms for the input labour. It is derived from the demand for the goods and services that workers have to produce.

The relation between output and employment express *the production function* (PF). The slope of production function measures the marginal productivity of labour (MPL) - the quantity of additional output, which results from one more unit of labour input.

The labour demand curve is derived from the PF and is characterized by the declining marginal product of labour (MPL) – see graph 4. The increase in labour input causes the increase in output, but at a declining rate. [2]

Graph 4: The production function and the labour demand curve



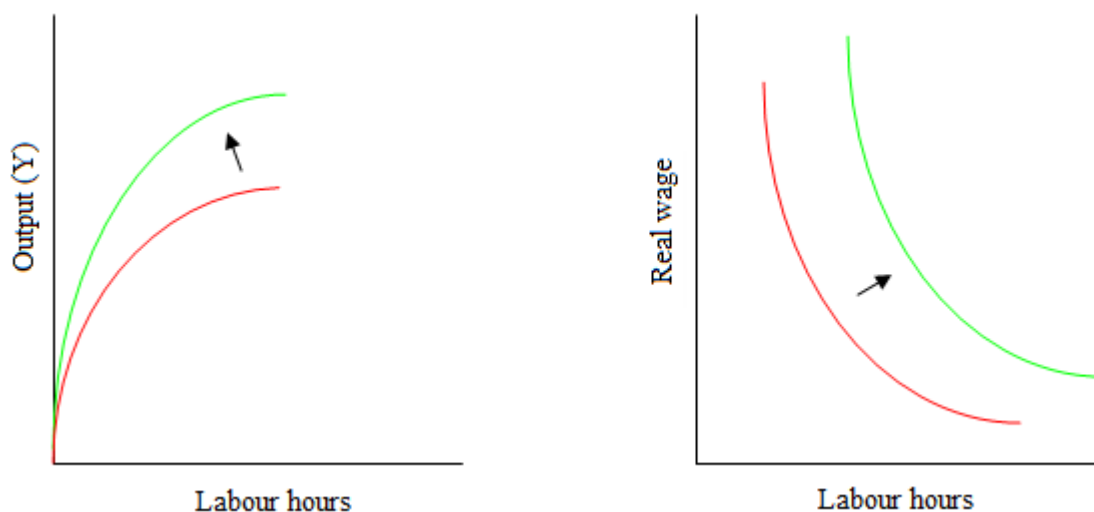
Source: Macroeconomics, A European Text; Burda and Wyplosz

The firms want to maximize their profit. They do so at the point where the production function is parallel to the ray, which represents the labour cost of production when the hourly real wage is  $w$ . The profit is then represented by the vertical distance between the PF and the cost line. If the MPL exceeds the real wage, hiring one more unit of labour raises revenues by the amount MPL, while raising costs by only real wage. It implies an increase in profit. A firm would hire the extra hour in order to maximize the profit, and it would continue to do so as long as the MPL exceeds the real wage.

The slope of the labour demand curve depends on the rate at which the MPL falls – it is flat if MPL is insensitive to labour and steep if it is sensitive. It is possible to distinguish between elastic and inelastic demand for labour. It is elastic if small changes in the wage will lead to large responses in the demand for labour and vice versa.

The labour demand curve can shift – change its position to the left or to the right. The increase in the capital stock and technological improvement will shift the curve to the right and the declining in the capital stock and labour-saving technical changes will shift it to the left. [2, 8]

Graph 5: An increase in labour productivity



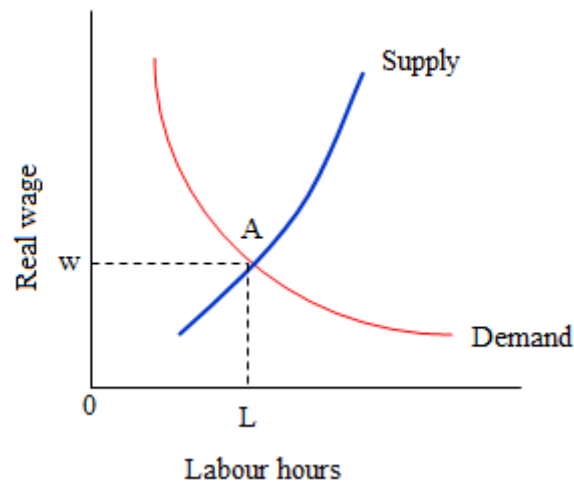
Source: Macroeconomics, A European Text; Burda and Wyplosz

The graph 5 demonstrates the increase in labour productivity. It is mainly due to increase in capital input or technological progress. The first part of the figure shows that in any level of labour input, more output is produced and so PF is everywhere steeper. It causes increase of MPL and the demand for labour schedule shifts up in panel (second part of the graph). [2]

### 3.1.3 Labour Market Equilibrium

From previous chapters it is obvious that a supply labour curve is a derivation from households' behaviour, and a demand curve is derivation from firms' behaviour. The interaction of supply and demand meets in a point of labour market equilibrium, where the equilibrium wage rate and number of workers are determined. The graph 6 interprets the equilibrium rate. The real wage rate and employment are endogenously determined in the labour market.

Graph 6: Equilibrium in the labour market



Source: Macroeconomics, A European Text; Burda and Wyplosz

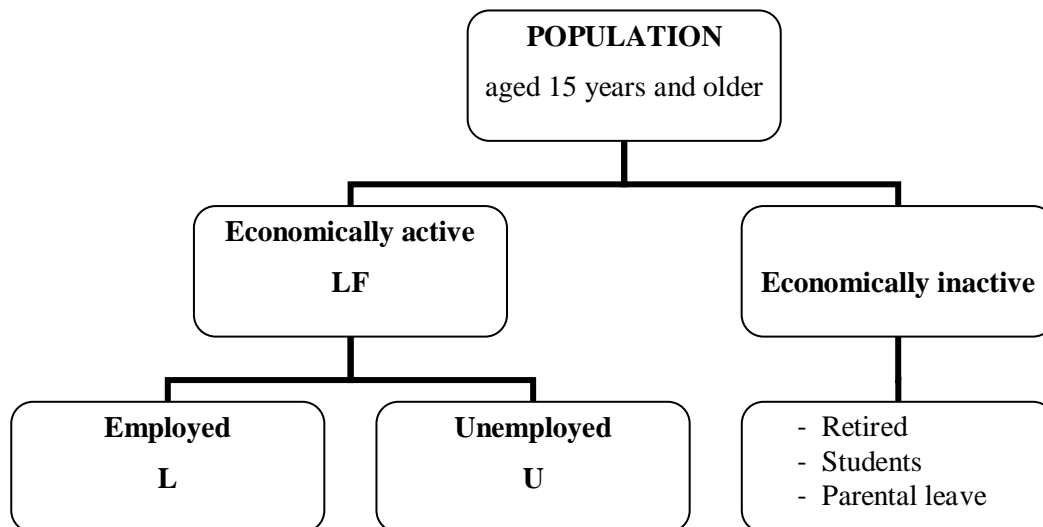
When one of these curves changes (examples of shifts of the demand and supply labour curve are briefly presented in the appropriate chapters), the point of equilibrium changes as well. [2, 4]

### 3.2 Unemployment

Unemployment defined by International Labour Office (ILO) is equal to the difference between the total potential labour supply and the real labour supply. The unemployment occurs simply when the real wage in equilibrium is too low to persuade all workers to give up their leisure.

The labour force (LF) involves all working people over 15 years (L) and unemployed workers (U). An unemployed worker is a person who is not working, is not self-employed, is actively seeking for a job and is able to start a new job in a certain period. Those, who are not employed persons, and are not seeking for a job, are not a part of LF. They form a group of economically inactive people whose are mainly young people in school, the retired, and those who are not willing to work. For graphical illustration see chart one. [9]

Chart 1: Structure of population over 15 years



Source: PAVELKA T.: Makroekonomie. Základní kurz.

## Measurement of unemployment

The unemployment is measured by unemployment rate expressed in percentage (UR) or sometimes also by labour force participation rate (LFPR). The unemployment rate represents the number of unemployed people as a percentage of the labour force. The labour force participation rate is the fraction of the population that is over 15 years of age ( $\leq 15$ ) that is in the labour force. [2, 10]

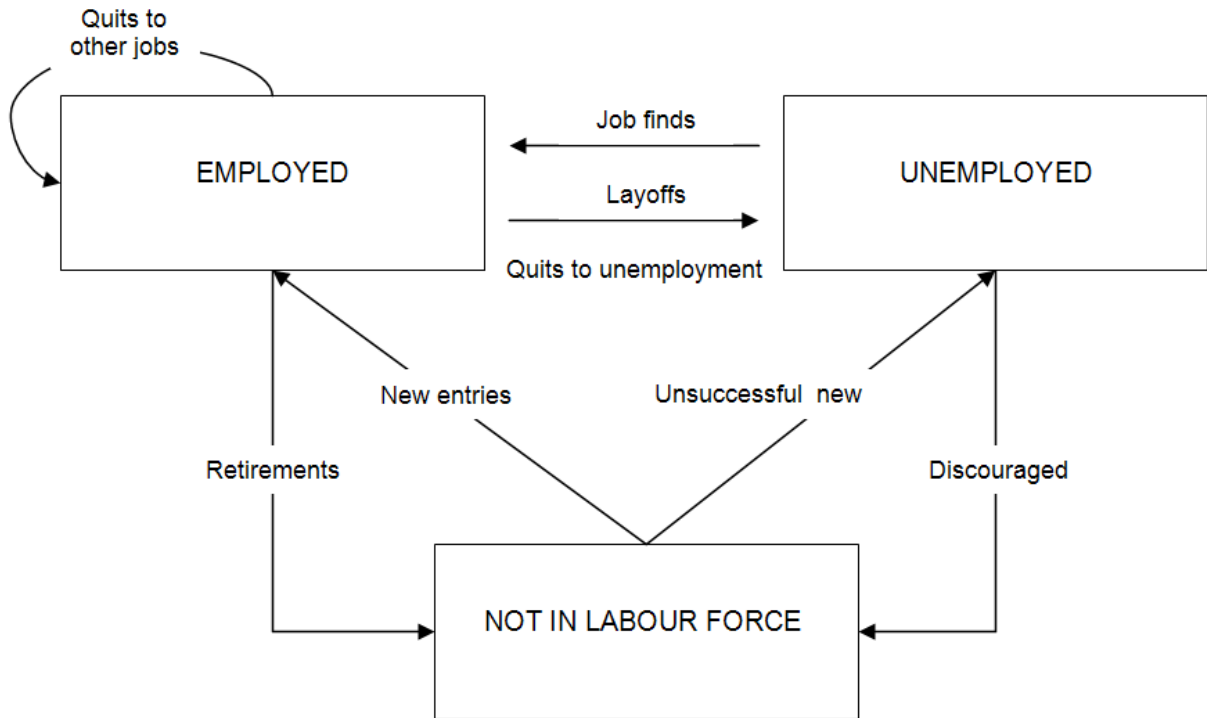
$$UR [\%] = \frac{U}{LF} \qquad LFPR = \frac{LF}{\leq 15}$$

Different sources indicate different unemployment rates. The Ministry of Labour and Social Affairs in the Czech Republic publishes the registered unemployment rate, which considers as unemployed people those who are enrolled in the Labour office. However, not all unemployed people are seeking for a job through the Labour office; people can seek for jobs also for example by assistance of the Labour agencies. The Czech Statistical Office is therefore performing Labour force survey, which examines the quantity of unemployed people in households. The data from Czech Statistical Office uses then Statistical Office of the European Communities (EUROSTAT). The EUROSTAT publishes internationally comparable unemployment rate for all countries of the European Union.

Unemployment is not a static phenomenon, since the labour markets are remarkably dynamic – see chart 2. Dynamic flows on labour market initiate different reason that people are unemployed:

- graduates and young people who are new entrants to the market cannot find a job
- people loose job because of lack of work
- workers are separated from job - involuntarily separation [2]

Chart 2: A map of dynamism on labour markets



Source: Macroeconomics, A European text; Burda and Wyplosz

The result of the dynamic movements on the labour market is frictional unemployment which is explained in the chapter Types of unemployment. The unemployment in this case means the stock, which results when flows into and out of unemployment are equal. [2, 7, 9]

### 3.2.1 Types of Unemployment

Every type of unemployment has different causes and implicates different economic and social costs. According to the duration of unemployment, it is possible to distinguish short-term (less than 12 months), long-term (12 – 24 months) or very long-term (more than 24 months) unemployment.

According to the origin are by economists distinguished three main types of unemployment: frictional, structural and cyclical unemployment.

**Frictional unemployment** is a short-term unemployment, which occurs due to the dynamism of labour market and heterogeneity of workers and jobs.

The technical progress, globalization and changes in preferences call for production of new products, formation of new companies and branches. Workers have different skills and jobs preferences; jobs are differed by their location and by various requirements on workers. That is why frictional unemployment occurs. It takes usually some time until a job position is taken and a worker finds a job. The time period when the worker is searching for a new job or is changing the current position, is expressed by this type of unemployment. It is voluntary type of unemployment – it means that the worker is not willing to work for a given wage and given conditions and is seeking for better position. It is sometimes also called search unemployment.

Some authors indicate as a part of frictional unemployment also the seasonal unemployment, which is typical for example for agriculture or building industry, and which is caused by seasonal fluctuation of labour demand.

The second type is **structural unemployment**. It is long-term and chronicle unemployment and rises from the imbalance between labour demand and supply on the labour market. The reasons can be unqualified workers, economical changes (some branches are in progress and some are in decline – in the progressing branch the labour demand is growing and vice versa) or possibly as well labour unions (they can influence the mobility of workers) and minimum-wage laws, which hold wages over the equilibrium wage rate.

The typical example can be metallurgy and electronic sector in the last century. This type of unemployment has much higher costs than frictional one because it is long-term unemployment. It causes high economic costs to workers but also to society as whole.

The last type is **cyclical unemployment**. It occurs when there are not enough job positions on the labour market – the number of needed and demanded workers is lower than the number of supplied workers. It is the result of low demand on products and services and therefore on labour. It emerges generally in the period of growth recession. However, even if the economy is growing, cyclical unemployment can emerge, because of population

growth and immigration. To avoid the cyclical unemployment, the economy has to grow at least as quickly as labour force is growing. [1, 4, 9, 10]

### 3.2.2 Main Causes of Unemployment

There are many causes of unemployment as it is visible from above listed types of unemployment. Economists usually indicate four main causes:

- *Minimum wage* – if the government gives the price floor above the equilibrium wage, the minimum wage laws cause unemployment.
- *Labour unions* – if the labour unions raise the wage of particular job above the equilibrium rate, then the supply of people raises as well. Nevertheless, people looking for this kind of work cannot find it.
- *Efficiency wages* – workers are paid more than is the equilibrium rate – incentive for better performance. It causes unemployment because of increase in supply.
- *Public policy* – if there are in the economy any public benefits for unemployed people, it can cause their unwillingness to find a job. [2]

According to the incentive of unemployment, it is possible to distinguish between voluntary and involuntary unemployment. The involuntary unemployment involves people who would be willing to work for the given wage but cannot get any offer. The cause of involuntary unemployment explains real wage rigidity. It means that the wages are not adjusted; workers are not supplying the labour at lower wage than is required or firms are not willing to take up their offers. The solution of the problem of involuntary unemployment would be the fall of real wages. It would increase labour demand, labour supply would decrease and the unemployment would be eliminated. It is the failure of the wage to decrease that keeps unemployment. [2, 7]



### **3.2.3 Natural Rate of Unemployment**

The natural rate of unemployment  $u^*$  in monetarist approach is equal to full employment in Keynesian approach. The full employment does not mean any unemployed people, but it means that the economy is using all available labour resources in the most economically efficient way. The economy operates on the level of potential output.

**A. M. Okun studied the relation in 1962:** “The full-employment goal must be understood as striving for maximum production without inflationary pressure; or, more precisely, as aiming for a point of balance between more output and greater price stability, with appropriate regard for the social valuation of these two objectives.” [8]

From the unemployment point of view, the potential output is reached when on the market is just natural rate of unemployment. From this definition, we can see that even when we have full employment, we have certain rate of unemployment.

The natural rate of unemployment consists of the frictional and structural unemployment. The cyclical unemployment is not a part because it rises from cyclical fluctuation of economy around the level of potential output. The natural rate of unemployment is sometimes also called equilibrium rate of unemployment.

For every economy and country is this rate different, it is even not possible to say that it is desirable rate. It is also changing in time and to determine its value, is very difficult. It is influenced by many factors such as demographic changes, government policy, and structural changes of economy. [2, 6, 9]

### **3.2.4 Macroeconomic Framework of Unemployment**

Unemployment is one of a key macroeconomic indicator, besides gross domestic product, inflation and trade balance. Economic authors distinguish relations among those indicators. For the unemployment indicator has the key importance an output of economy and inflation.

The concept, which explains relation between unemployment and output of economy, is called Okun's law. The second important concept examines relation between unemployment and inflation, and is expressed by Phillips curve. [12]

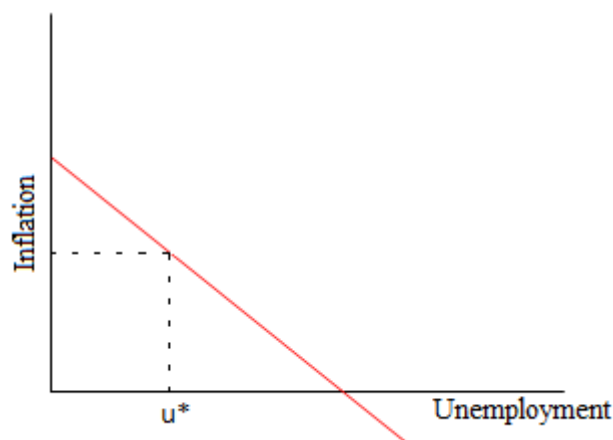
### **Phillips curve**

Phillips curve is very controversial topic in macroeconomics. The first idea came up from A. W. Phillips in 1950<sup>th</sup>. Many authors, such as Samuelson and Sollow, Phelps and Friedman, thenceforth examined his findings.

The Phillips curve expresses the trade off between unemployment and inflation. It gives two possible options to government – either to keep unemployment down at the cost of some inflation or to limit inflation, but by accepting higher unemployment. Friedman and Phelps accounted in the theory delayed inflation rate as an explanatory variable for actual inflation rate and introduced the term natural rate of unemployment. [2, 6]

The theory distinguishes between the curve in short-run and long run. The graph 7 demonstrates the Phillips curve in short run. In short run, the inflation on the axis y is the price inflation. If the inertial price inflation will increase, the Phillips curve will shift towards right.

Graph 7: Phillips curve in short run



Source: Macroeconomics, A European text; Burda and Wyplosz

The graph 8 demonstrates the Phillips curve in long run. The inflation on axis y is expressed by inflation rate. The long-run Phillips curve is a curve of natural unemployment rate. Friedman (1958) states that in long run is unemployment rate independent on inflation rate (therefore it is parallel with axes y). In long run, economy has tendency to get near to the natural unemployment rate. [2, 6]

Graph 8: Phillips curve in long run



Source: Macroeconomics, A European text; Burda and Wyplosz

### Okun´s law

A. M. Okun examined the estimation of potential output. He exploited the dependable relation between the rate of growth of output and the unemployment rate because he wanted to estimate potential output given actual unemployment. Theoretically, it is relation between the aggregate supply curve and the Phillips curve.

**Okun says, in his paper “The Battle against Unemployment” (1965):** “It is not surprising that we find the unemployment rate declining in periods when output is rising rapidly. And we find the unemployment rate rising when real GNP declines. These qualitative relationships can be turned into numerical estimates by standard statistical techniques.”

The basic form of Okun's law shows the graph 9 and it can be expressed by following equation:

$$unr_t = unr_t^* + \beta \times ygap_t + \varepsilon_t$$

$unr_t$  ... real unemployment rate

$unr_t^*$  ... natural rate of unemployment

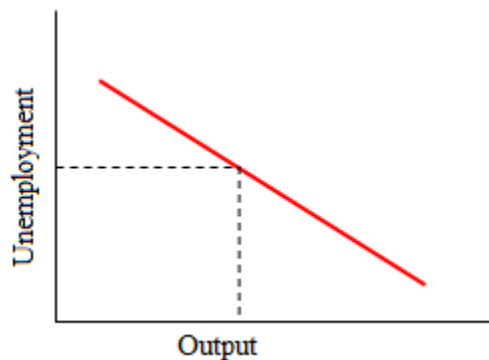
$ygap_t$  ... deviation of real GDP from its trend growth path

$\varepsilon_t$  ... residue (from normal distribution)

$\beta$  ... Okun's coefficient

This equation is a static form of Okun's law. It may be inadequate because of omission of significant time lags, especially in the reaction of labour demand. Later the dynamic model was defined. It is called Autoregressive Distributed Lag model (Hendry, 1984).

Graph 9: Graphical illustration of Okun's law



Source: Macroeconomics, A European text; Burda and Wyplosz

According to the original formulation, every further percentage of unemployment causes loss of 3% of real output. New researches indicate the loss of 2% (mainly due to a change of labour force – more female and young workers and as well due to change of output – increase of production services). [2, 12]

### **3.2.5 Effects of Unemployment**

The main effects of unemployment can be divided into economic and social effects.

#### **Economic effects**

If the labour force is not fully employed, the available labour capacity is not used; it results in lower output on the market and related problem of unemployment. As the workforce increases, the problem of maintaining employment for whole work force becomes more intensive. The relation between production possibility frontier and unemployment defined and quantified Arthur Okun. See above the Okun's law.

The Okun's law expresses just the economic costs of whole society but also the individual economic costs of unemployed people have to be considered. [2, 6, 7]

#### **Social effects**

Unemployment is very often connected with mental problems of unemployed people, criminality, alcoholism, and suicides and similar. The long-term unemployment represents the biggest social problem (long-term unemployment is though over 12 months), those people have complicated situation to find a new job because they lose their working habits. [6, 9]

### **3.3 Government Policy**

Government plays crucial role in unemployment solving. The government can react by passive or active policy tools.

The passive government policy represents a reaction on the problem of unemployment and tries to decrease its consequences. It is done mainly by unemployment benefits. Every country has its own government policy.

The active government policy is focused on decreasing of unemployment. It is done by job creation, increase of labour force flexibility or prevention tolls of unemployment. Active governmental policy tools usually focus on increase of matching between job vacancies and unemployed people seeking for job.

The relation between unemployment rate and vacancy rate maps the *Beveridge curve*. Vacancy rate does not include the artificially created job vacancies – the Beveridge curve shows the efficiency of matching on labour market (not the efficiency of active governmental policy tools). The efficiency of matching indicates the unemployment rate.

The graph 10 demonstrates the general form of the Beveridge curve. The higher matching between job vacancies and seekers for job, the more towards left the Beveridge curve will shift – the same rate of job vacancies is connected to lower rate of unemployment (see graph 10). Beveridge also estimated criterion for full employment – job vacancies should be equal to the number of unemployed people. [2, 3, 8]

Graph 10: The Beveridge curve

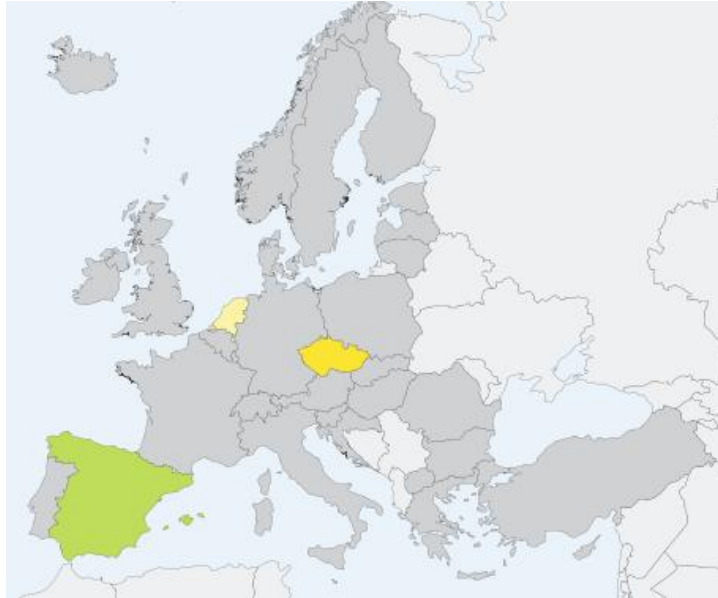


Source: Macroeconomics, A European text; Burda and Wyplosz

If there is strong or long-term cyclical unemployment in the economy, besides two above-mentioned government types of policy it is also possible to use expansive fiscal and monetary policy that will cause job creation.

Generally, the flexibility of the labour market should be increased by the state. It means increase of awareness of available job positions; improve of transport services, reasonable social policy and similar. [6, 9]

#### **4 COMPARISON STUDY OF UNEMPLOYMENT - THE CZECH REPUBLIC, SPAIN AND THE NETHERLANDS**



Source: EUROSTAT

The comparison study analyzes and examines the labour markets, primarily unemployment, in the Czech Republic, Spain and the Netherlands. All three countries are members of the European Union and are part of the common EU policy. During the financial crises in overall European context, the selected countries were characterized by medium change of economic output (3 - 7% change in GDP) but the change of unemployment rate differs; the Netherlands face to low increase (less than 1.5%), the Czech Republic to medium increase (1.5 – 3.5%) and Spain to high increase (more than 3.5%). The following study will examine main current trends and patterns on labour markets in selected countries through the detailed study of unemployment and related issues. [12, 14]

## 4.1 Presentation of Selected Countries

Before the analysis of unemployment will be performed, brief presentation of selected countries will be introduced in order to obtain comprehensive insight on selected countries.

### 4.1.1 The Czech Republic

The Czech Republic is the eleventh biggest state in the EU with the area of 77.3 thousands of km<sup>2</sup>. According to the number of inhabitants, it ranks at the twelfth place in the EU with 10,506,813 inhabitants. From the total population are less than 4% foreigners (407,541 foreigners). They are mainly from Slovakia, Germany or Poland.

The Czech Republic is a parliamentary republic. The country is divided into 14 districts and according to the division of the EU, it is divided into 8 NUTS 2 regions.

Table 1: The analysis of GDP indicators in time in the Czech Republic, 1998 -2010

	1998	1999	2000	2001	2002	2003	2004
Real GDP (in millions of EURO)	50,023.1	56,124.8	58,472.6	63,005.8	70,354	82,885	84,553
Real GDP per capita (% change)	-0.7	1.5	3.8	2.9	2.1	3.6	4.4
	2005	2006	2007	2008	2009	2010	
Real GDP (in millions of EURO)	93,837	107,011	120,667	130,467	141,744	136,919	
Real GDP per capita (% change)	6.0	6.5	5.6	1.4	-4.9	2.1	

Source: Own elaboration based on the OECD data

The table 1 states for the analysis of GDP in the Czech Republic in time. The knowledge of GDP change in last years will be helpful when analyzing the unemployment structure. Between years 2008 and 2009 is in evidence decrease of economic output – the percentage change from 2008 to 2009 was -4.9%. In 2010, the output is slowly increasing (by 2.1% in comparison to 2009). [14, 15, 23]



#### 4.1.2 The Netherlands

The official name of the Netherlands is The Kingdom of Netherlands. It spreads on 41,527 km<sup>2</sup> and it takes the ninth place in the EU with the volume of inhabitants 16,574,989. The national constitution of society in the Netherlands is similar to the Czech Republic regarding to the share of minorities on total population. Around 3.8% (637,136 people) of total population are foreigners. The most numerous minorities are from Germany, Turkey or Morocco.

The country is divided into 12 provinces and the provinces are identical to the European regional level NUTS 2.

Table 2: The analysis of GDP indicators in time in the Netherlands, 1998 – 2010

	1998	1999	2000	2001	2002	2003	2004
Real GDP (in millions of EURO)	354,523.5	376,715.6	401,413	426009	448,073	466,775	487,612
Real GDP per capita (% change)	3.3	4.0	3.2	1.2	-0.6	-0.1	1.9
	2005	2006	2007	2008	2009	2010	
Real GDP (in millions of EURO)	501,236	530,833	561,396	582,531	572,883	582,626	
Real GDP per capita (% change)	1.8	3.2	3.7	1.5	-4.4	1.2	

Source: Own elaboration based on OECD data

Table 2 represents the analysis of GDP indicator in the Netherlands in time. From the table is evident the same development as in the case of the Czech Republic. The output has been slightly decreasing between years 2008 and 2009. In 2009, the real GDP per capita was by 4.4% lower than in 2008. In 2010, the GDP is growing by 1.2% (0.9% less than in the Czech Republic). [14, 15, 23]

### 4.1.3 Spain

The official name of Spain is The Kingdom of Spain. It spreads on 504,782 m<sup>2</sup> and it ranks at the sixth position among EU member states with the number of inhabitants 45,989,016. The national constitution of society is very heterogeneous in Spain. More than 12% (5,650,968 people) are foreigners. The most numerous minorities are from Rumania, Morocco, Ecuador, the United Kingdom, Columbia or Bolivia.

Spain is a parliament constitutional monarchy. The political system is highly decentralized into autonomous regions (in the country is next to the national parliament 19 regional autonomous parliaments) - Spain is formed by 17 autonomous regions and 2 autonomous cities, which are divided into 52 provinces. The level NUTS 2 of European nomenclature is identical with autonomous regions and cities (Spain is divided into 19 regions NUTS 2).

Table 3: The analysis of GDP indicators in time in Spain, 1998 – 2010

	1998	1999	2000	2001	2002	2003	2004
Real GDP (in millions of EURO)	528,021.6	562,398.9	609,228	653,255	699,085	751,785	808,506
Real GDP per capita (% change)	4.1	4.2	4.2	2.5	1.2	1.4	1.6
	2005	2006	2007	2008	2009	2010	
Real GDP (in millions of EURO)	871,44	945,313	1,019,465	1,062,596	1,047,618	1,045,137	
Real GDP per capita (% change)	1.9	2.4	1.7	-0.7	-4.4	-0.6	

Source: Own elaboration based on OECD data

Table 3 demonstrates the development of GDP indicators in Spain since 1998. Decrease of economic output is noticeable already between years 2007 and 2008. The decrease was continuing between years 2008 and 2009. In 2009, the real GDP per capita was by 4.4% lower than in 2008. The decrease of GDP is evident as well in 2010, by similar rate as in 2008 - by 0.6% in comparison to previous period. In Spain, in contrast to the development in the other two countries, the declining in GDP continues also in 2010. [14, 15, 23]

## 4.2 Labour Force in Selected Countries

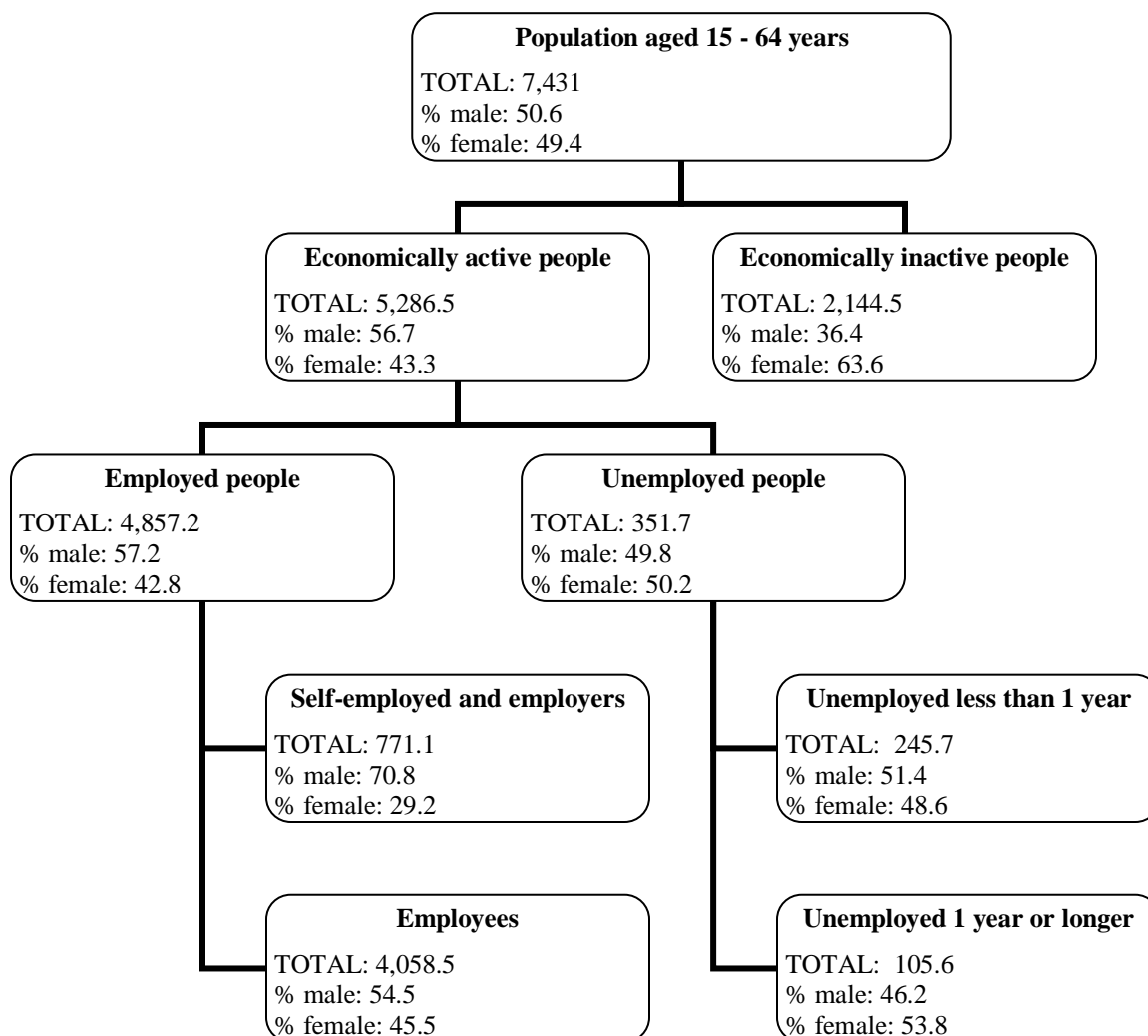
The labour force (LF) consists of employed and unemployed people. Those two groups form economically active population of every country. The constitution depends not just on a demographic development but also on economic growth and lengthening of education period of young people.

The composition of LF in selected countries is illustrated in charts 3, 4 and 5. Different sources define LF for various age intervals. In this analysis, the LF is considered in interval from 15 to 64 years (due to data availability for all three countries).

The chart three analyses the Czech LF. Almost 71% of population aged 15 to 64 years are economically active people from which almost 57% are men. On the other side, we have economically inactive people who form 29% of the population. The distribution of gender in economically inactive population is not even – 63.6% of economically inactive people are females. If analyzing the gender among employed people, it is obvious that males are represented by 14.4% more. The unemployed people are distributed almost equally and together present 6.7% of the LF.

The employed people can be divided into 2 basic groups – self-employed people (and employers) and employees. Just 16% are self-employed people and employers (whereas 71% of them are men). From the chart three is as well apparent that 7.6% more of long-term unemployed people are women. The structure of unemployed people will be in detail examined in the following chapters.

Chart 3: Work status of persons aged 15 - 64 years in the Czech Republic (thousands of people)<sup>1</sup>, 2010



Source: Own elaboration based on EUROSTAT data

The chart four shows the structure of persons aged 15 – 64 years in the Netherlands in 2010. In 2010, more than 81% of population in the age interval 15 to 64 years were economically active people (8% more of them were males). Almost 95% of the LF are employed people and around 12% of them are self-employed persons and employers -

<sup>1</sup> Due to non-response, certain sub-totals may not exactly sum up to the corresponding aggregate.

it is 4% less than in the Czech Republic. In the Netherlands, the share of women on self-employment is higher than in the Czech Republic (34.5% of self-employed people in the Netherlands are women). The structure of unemployed people will be in detail examined in the following chapters.

Chart 4: Work status of persons aged 15 – 64 years in the Netherlands (thousands of people)<sup>2</sup>, 2010



Source: Own elaboration based on EUROSTAT data

<sup>2</sup> Due to non-response, certain sub-totals may not exactly sum up to the corresponding aggregate.

Spanish LF is analyzed in chart five. Around 27% of the population in examined age interval are economically inactive people. Four fifths of active population are employed people (12.6% more of them are men). In Spain, the composition of employed people is more similar to the composition of the Czech Republic (than of the Netherlands). The share of self-employed people on total employment is 16% - whereas 68.5% are men.

Chart 5: Work status of persons aged 15 - 64 years in Spain (thousands of people)<sup>3</sup>, 2010



Source: Own elaboration based on EUROSTAT data

<sup>3</sup> Due to non-response, certain sub-totals may not exactly sum up to the corresponding aggregate.

From the statistical database of total population are evident some generally known demographic trends. In the case of the Czech republic is evident ageing of population; in years 2000 and 2001 decreased the volume of active population and the increase in next years is as well slight. The birth rate in the Czech Republic is low and the share of people who are older than 65 years is growing. In 2010, the index of senility (the share of people aged over 65 on population aged less than 14 years) is equal to 1.78 (in 2000, the index was equal to 0.855). The problem of ageing population is topical in all selected countries. In Spain, the senility index is even higher, it equals to 2.03. In the Netherlands, it is the lowest from analyzed countries but it is still high - it equals to 1.49. The share of old population on total population is expected to grow in the future and it will cause both economical and social problems.

The Spanish active population had different development than the Czech and Dutch active population. In Spain, it has increased almost by 35% since 2000 (in the Czech Republic only by 3% and in the Netherlands by 14%).

The rapid increase of active population in Spain is caused by fast growth of Spanish population (mainly due to increase of immigrants - since 2000 the volume of immigrants has grown seven times), the growing entrance of women to labour market and because of changes in the retirement system. In Spain, the average exit age from LF is 62.3 (the retirement age is 65 and it should grow to 67). In 2001, the average exit age was 2 years lower (0.4 year for men and 3.4 years for women). In Spain, the average exit age among women is 2.2 years higher and equals to 63.4 years.

In the Netherlands, there is the retirement limit similar but the average exit age from the LF is higher - 63.5 years (increase by 2.6 years since 2001, 2.8 for men and 2.3 for women). The Czech Republic has different patterns for retirement leave. The retirement age for men is 62 years and 2 months and for women it depends on number of children (vary from 57 to 61). However, steps towards the European pattern are taken and the retirement age should gradually increase by 2 months for men and 4 months for women every year until it reaches 65 years for men and 62 - 64 for women. The average exit age from the LF in the Czech Republic is equal to 60.5 years, which means increase by 1.6 year since 2001 (increase by 0.8 for men and by 2.3 years for women). [12, 23]

Table 4: Activity rate in selected countries (%), 1998 - 2010

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Czech Republic	71.7	71.8	71.3	70.8	70.6	70.2	70.0	70.4	70.3	69.9	69.7	70.1	70.2
Spain	62.7	62.7	65.4	64.7	66.2	67.6	68.7	69.7	70.8	71.6	72.6	73.0	73.4
Netherlands	72.6	72.6	75.2	75.8	76.5	76.5	76.6	76.9	77.4	78.5	79.3	79.7	79.1

Source: Own elaboration based on EUROSTAT data

Activity rate (LF participation rate) represents the work force supply of the labour market; it is the percentage of active population on total population. The table four records the activity rates in selected countries in time.

The development of activity rates corresponds to the development of total population. Nevertheless, the composition of active population changes in time. In the Czech Republic, the share of people aged 15 to 24 on active population has been decreased by 37% since 2000 (due to low birth rate and due to lengthening of studies), in Spain by 11% and in the Netherlands, the share has increased by 8%.

The gender composition of active population in individual countries shows also different trend in development. In Spain and in the Netherlands grew the share of women significantly (in Spain by 42%, in the Netherlands by 16%) while in the Czech Republic the share of women on active population has decreased (by 1%) since 2000.

### 4.3 Unemployment Rate in Selected Countries

The EUROSTAT has been providing the unemployment rate data for all selected countries since 1998. Table five and graph 11 record annual unemployment rates for the Czech Republic, the Netherlands and Spain in time.



Table 5: The unemployment annual rates for the Czech Republic, Spain and the Netherlands (%), 1998 – 2010

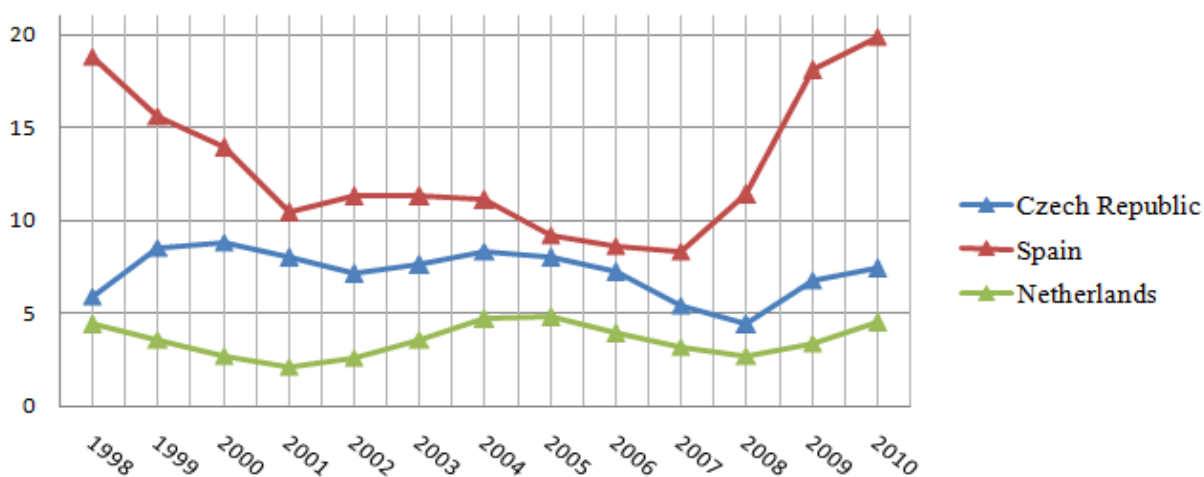
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Czech Republic	5.9	8.5	8.8	8.0	7.1	7.6	8.3	8.0	7.2	5.4	4.4	6.8	7.4
Spain	18.8	15.6	13.9	10.4	11.3	11.3	11.1	9.2	8.6	8.3	11.4	18.1	19.9
Netherlands	4.4	3.6	2.7	2.1	2.6	3.6	4.7	4.8	3.9	3.2	2.7	3.4	4.5

Source: Own elaboration based on EUROSTAT data

The unemployment rate of the Czech Republic and the Netherlands has been growing since 2008, while in Spain it has been growing already since 2007. The growth goes along with global economical crises and its consequences. The overall increase in unemployment was the most significant in Spain. In period from 2007 to 2010, the unemployment rate has been growing by 11.6%. In the Czech Republic has been growing by 3% and in the Netherlands by 1.8%.

The unemployment rate at the end of the analyzed time series is moderate in the case of Czech Republic and the Netherlands and in previous years reaches even higher levels. In the case of Spain, the year 2010 represents the year with the highest rate and the change is very significant in comparison to other periods.

Graph 11: The annual unemployment rates in the Czech Republic, Spain and the Netherlands (%), 1998 – 2010



Source: Own elaboration based on EUROSTAT data

Fundamental statistical characteristics have been calculated for the annual time series, see tables 9, 10 and 11. The first columns of the tables represent the total number of unemployed people in thousands. In the column named  $d_{1i}$  are first differences, in the next one are second differences. The column  $k_i$  represents the coefficient of growth (chain indexes), the column  $r_i$  shows relative additions and the last column presents basic indexes (as initial year is understood year 1998).

In the Czech Republic was the most significant increase in absolute value of unemployed people between years 1998 and 1999 (increase by 135 thousands). The most significant relative increase is obvious in 2009, by 53%. In 2010, the unemployment increased as well - by 9% of unemployed people. In 2010, the number of unemployed people is higher by 28% in comparison to 1998.

The calculated average absolute addition is equal to almost seven thousands of people each year (6,944). The calculated average coefficient of growth for whole period is equal to 1.02.

Table 6: Fundamental statistical characteristics of the unemployment rate time series in the Czech Republic, 1998 - 2010

Year	Unemployment (in thousands)	$d_{1i}$	$d_{2i}$	$k_i$	$r_i$	$y_i/y_0$
1998	298.90	-	-	-	-	-
1999	433.90	135.00	-	1.45	0.45	1.45
2000	447.50	13.60	-121.40	1.03	0.03	1.50
2001	404.40	-43.10	-56.70	0.90	-0.10	1.35
2002	355.10	-49.30	-6.20	0.88	-0.12	1.19
2003	381.40	26.30	75.60	1.07	0.07	1.28
2004	417.50	36.10	9.80	1.09	0.09	1.40
2005	408.50	-9.00	-45.10	0.98	-0.02	1.37
2006	370.20	-38.30	-29.30	0.91	-0.09	1.24
2007	275.80	-94.40	-56.10	0.75	-0.25	0.92
2008	229.30	-46.50	47.90	0.83	-0.17	0.77
2009	351.70	122.40	168.90	1.53	0.53	1.18
2010	382.23	30.53	-91.87	1.09	0.09	1.28
Total	4,756.4	83.3	x	x	x	x

Source: Own calculation based on EUROSTAT data

Table 6 shows analogous characteristics for Spain. The most significant increase in absolute value is visible in 2009 – the unemployment grew almost by 1,560 thousands

of people. It means growth by 60% to previous year. Nevertheless, already the year 2008 shows the increase of unemployed people by 41%. In 2010, the number of unemployed people is 2.5 times higher than in 2007.

The calculated average absolute addition is equal to almost 121.5 thousands of people every year. The calculated average coefficient of growth for whole period is equal to 1.03.

Table 7: Fundamental statistical characteristics of the unemployment rate time series in Spain, 1998 - 2010

Year	Unemployment (in thousands)	$d_{1i}$	$d_{2i}$	$k_i$	$r_i$	$y_i/y_0$
1998	3,170.50	-	-	-	-	-
1999	2,676.80	-493.70	-	0.84	-0.16	0.84
2000	2,466.90	-209.90	283.80	0.92	-0.08	0.78
2001	1,853.90	-613.00	-403.10	0.75	-0.25	0.58
2002	2,091.00	237.10	850.10	1.13	0.13	0.66
2003	2,188.90	97.90	-139.20	1.05	0.05	0.69
2004	2,225.50	36.60	-61.30	1.02	0.02	0.70
2005	1,909.10	-316.40	-353.00	0.86	-0.14	0.60
2006	1,834.70	-74.40	242.00	0.96	-0.04	0.58
2007	1,831.80	-2.90	71.50	1.00	0.00	0.58
2008	2,586.60	754.80	757.70	1.41	0.41	0.82
2009	4,145.10	1,558.50	803.70	1.60	0.60	1.31
2010	4,628.58	483.47	-1,075.03	1.12	0.12	1.46
Total	33,609.4	1,458.1	x	x	x	x

Source: Own calculation based on EUROSTAT data

The table 7 records the calculated fundamental statistical characteristics for the time series of the Netherlands. In 2002, the unemployment in the Netherlands grew by 41% compared to previous year and it is the most significant increase in the analyzed time series. In 2009 and 2010, the increase of unemployed people was equal to 26%.

The average absolute addition in Dutch time series of unemployment is equal to 3.14 thousands of unemployed persons. The average coefficient of growth for whole period is the lowest from analyzed countries and it is equal to 1.01.

Table 8: Fundamental statistical characteristics of the unemployment rate time series in the Netherlands, 1998 - 2010

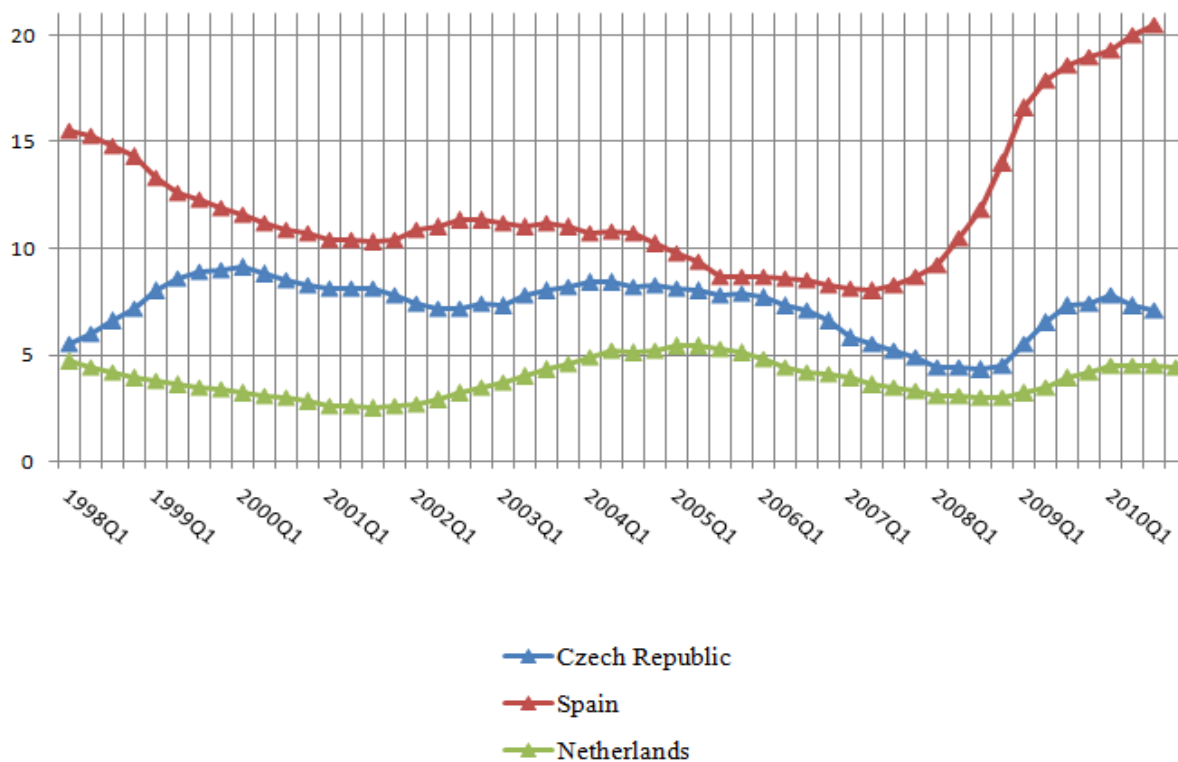
Year	Unemployment (in thousands)	$d_{1i}$	$d_{2i}$	$k_i$	$r_i$	$y_i/y_0$
1998	340.20	-	-	-	-	-
1999	285.80	-54.40	-	0.84	-0.16	0.84
2000	220.20	-65.60	-11.20	0.77	-0.23	0.65
2001	174.60	-45.60	20.00	0.79	-0.21	0.51
2002	213.70	39.10	84.70	1.22	0.22	0.63
2003	300.70	87.00	47.90	1.41	0.41	0.88
2004	391.10	90.40	3.40	1.30	0.30	1.15
2005	400.50	9.40	-81.00	1.02	0.02	1.18
2006	332.30	-68.20	-77.60	0.83	-0.17	0.98
2007	276.70	-55.60	12.60	0.83	-0.17	0.81
2008	236.60	-40.10	15.50	0.86	-0.14	0.70
2009	298.80	62.20	102.30	1.26	0.26	0.88
2010	377.90	79.10	16.90	1.26	0.26	1.11
Total	3,849.1	37.7	x	x	x	x

Source: Own calculation based on EUROSTAT data

Graph 12 charts quarterly data of unemployment rates in selected countries (for total population). The data are seasonally adjusted in order to perform purposeful international comparison of analyzed time series. Refer to appendix 1 for source database.

From the graph 12, it is observable growth of unemployment rate in Spain since second quarter 2007 and in the other countries since last quarter of 2008. The graph 12 also shows flattening of observed Czech and Dutch series. The unemployment in the Czech Republic decreased in third quarter 2010 by 0.2% and in the Netherlands in fourth quarter by 0.1%. In the case of Spain, continual increase is obvious – in last quarter 2010 by 0.5% to previous quarter.

Graph 12: The quarterly unemployment rates for the Czech Republic, Spain and the Netherlands (%), 1998 – 2010



Source: Own elaboration based on EUROSTAT data

In table 9 are recorded descriptive statistics for analyzed quarterly time series. The descriptive statistics were calculated by using econometric software Gretl.

Table 9: Descriptive statistical characteristics of the unemployment rate time series in selected countries, 1998 – 2010

Statistical characteristic	Czech Republic	Spain	Netherlands
Average	7.27	11.86	3.85
Median	7.55	10.95	3.80
Modus	8.10	8.70	3.50
Standard deviation	1.29	3.33	0.84
Variation coefficient	0.22	0.33	0.22
Kurtosis	0.11	0.81	-0.99
Skewness	-0.98	1.28	0.25
Minimum	4.30	8.00	2.50
Maximum	9.10	20.50	5.40

Source: Own calculation based on EUROSTAT data

The quarterly values of unemployment rate state that the time series of Spain is the most asymmetric one since the average, median and modus are the most different. The most consistent series is the one of the Netherlands.

The other calculated indicator is standard deviation, which shows the conformity of the series. The series of the Netherlands is the series with the least differences between individual observations (periods). Spain is the one with the highest differences between periods. The variation coefficient shows that the variation is the same for the Czech Republic and the Netherlands. For Spain, it is higher.

The indicators kurtosis and skewness characterize the probability distribution. The series for the Netherlands is 'flatter' than normal distribution. The Czech Republic and Spain have 'sharper' distribution, whereas Spain's distribution is the most 'sharpest' one. The skewness indicator shows the direction of distribution's skew. The distribution of the Czech Republic is skewed towards left and the distribution of the Netherlands and Spain is skewed towards right. [11]

#### **4.4 Decomposition of Unemployment into its Components**

The fundamental types of unemployment are the structural and cyclical unemployment as described in the chapter 'Types of unemployment' in the theoretical part. The decomposition of overall unemployment to its component can be done by using various methods. The following chapter will decompose the time series using Hodrick-Prescott filter and the chapter devoted to Beveridge curve will help on the analysis.

##### **4.4.1 Decomposition of Unemployment using the Hodrick-Prescott Filter**

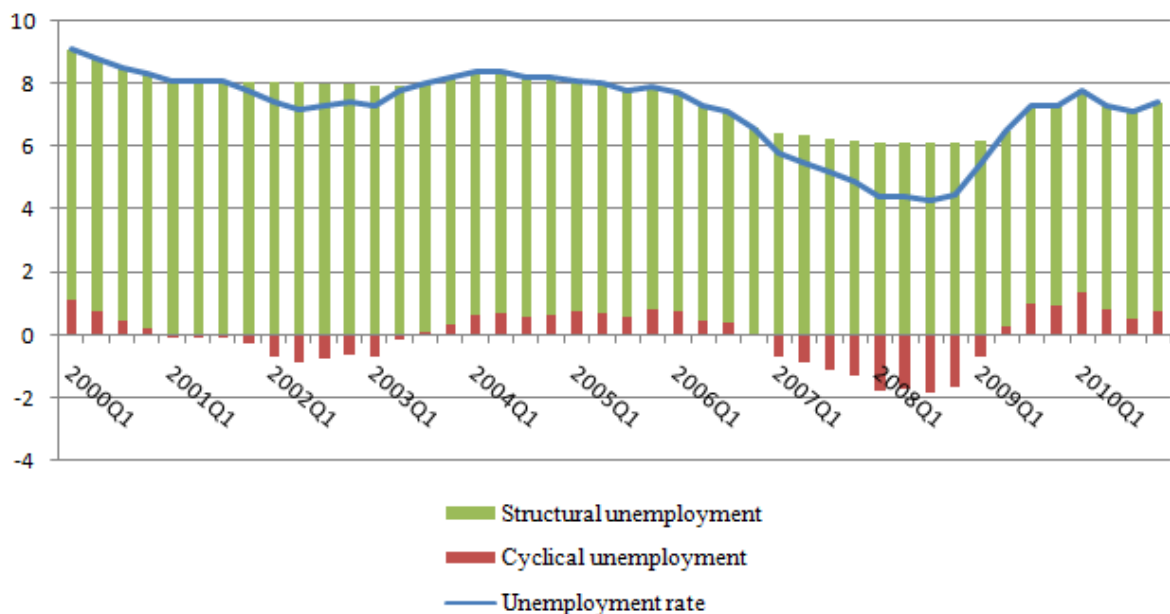
The data for decomposition have to be seasonally adjusted because possible seasonality would be misleading. EUROSTAT publishes the seasonally adjusted data for all selected countries; therefore, they are going to be used in order to avoid mistakes caused by using less sophisticated methods. The time series from 1998 to 2011 (included the prediction for 2011)

are used (the marginal years are later excluded because of possible distortion resulting from the method used).

The trend component is identified by application of Hodrick-Prescott filter in software Gretl. The difference between identified trend and seasonally adjusted unemployment rate series gives the cyclical component of unemployment. The structural unemployment is then the residual part of unemployment after subtraction of seasonal and cyclical component. If the actual unemployment rate is higher than natural rate of unemployment, then the cyclical unemployment is positive and so creates the positive cyclical unemployment gap. It is typical for the period of recession; in the time of expansion is the cyclical unemployment rate negative and it means that labour is used more intensively than normally. [20, 21, 24]

Graphs 13, 14 and 15 present the decomposition of all three time series for selected countries. The source data for all three graphs see in appendix 2.

Graph 13: The decomposition of unemployment in the Czech Republic (%), 2000 - 2010



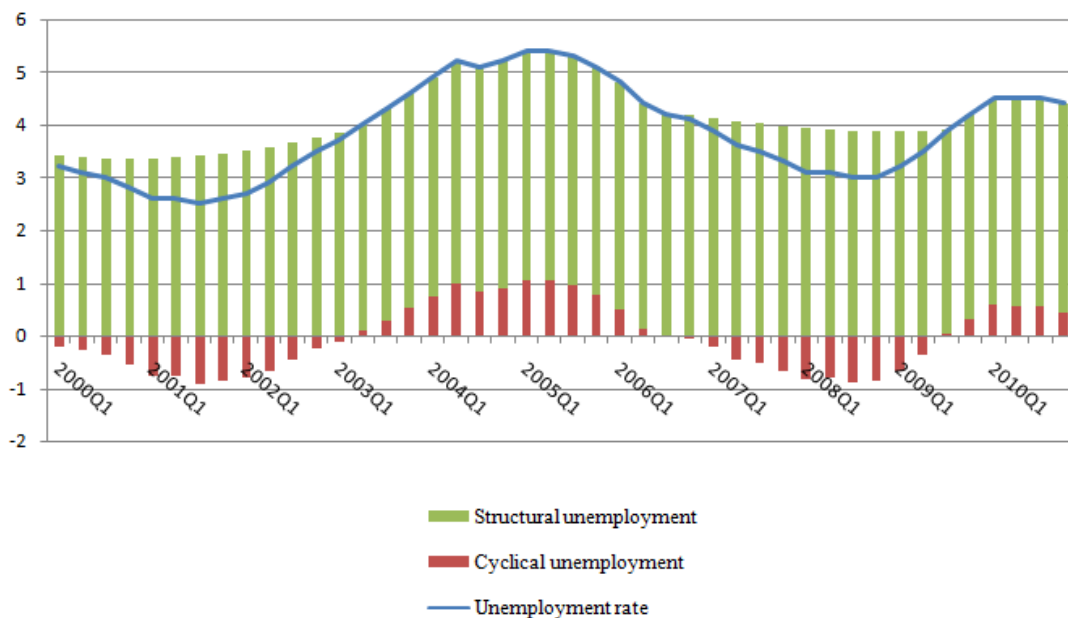
Source: Own estimation and elaboration based on EUROSTAT data

The negative cyclical component is obvious in particular in years 2002, 2007 and 2008, whereas in 2008 the cyclical component is growing and in 2010Q1 reaches the maximum.

The change between 2007 and 2010Q1 is equal to 3.1%. In the rest of the year is the component decreasing – by 0.5% until the end of the year.

The structural component is declining until the third quarter 2008 and since the time is growing – it grows by 0.5% until the end of the analyzed time series. The beginning of the time series is defined by higher structural rate.

Graph 14: The decomposition of unemployment in the Netherlands (%), 2000 - 2010

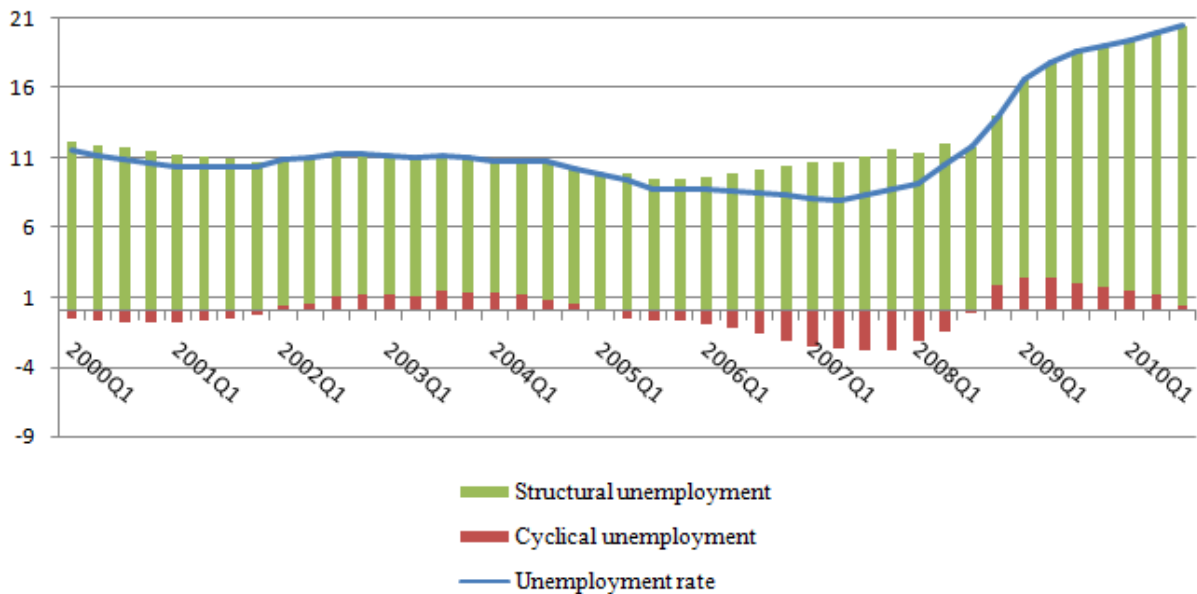


Source: Own estimation and elaboration based on EUROSTAT data

The graph 14 demonstrates the decomposition of unemployment in the Netherlands. The beginning of the period features by negative cyclical unemployment and low structural unemployment. The cyclical component grows from 2003 on and in the beginning of 2005 reaches the maximum in analyzed time series – reaches the level of 1%. Until the half of 2008, the increase is observable and in the end of 2010 reaches 0.6% (change by 1.5% since 2008). The structural unemployment dispersion range from 3.4% to 4.4%, whereas the maximum reaches in 2005 and in 2010 equals to 4.0%.



Graph 15: The decomposition of unemployment in Spain (%), 2000 - 2010



Source: Own estimation and elaboration based on EUROSTAT data

The decomposition of Spanish unemployment demonstrates graph 15. The beginning of analyzed series is characterized by slightly negative cyclical unemployment, around 0.7%. Since the end of 2001, it has been growing by 2% until the end of 2003. The next years are characterized by continual decrease (by 4.2% until 2008). The financial crises and its consequences push the cyclical unemployment to its maximum (2.4%) in 2009 – it means change by 4.6% since the beginning of 2008. Year 2010 is characterized by declining; the cyclical component reaches 0.4% at the end of this year. The significant problem of Spain is the structural unemployment, which has been growing by enormous 11% since 2005 and recently it reaches the level of 20%.

The estimated results can be compared with results of the OECD. The technique used by OECD is based on estimation of non-accelerated wage rate of unemployment, which is more comprehensive. See the OECD estimation in appendix 3. The courses of the graphs are similar - they differ mainly at the end of the time series. The distortion might be due to some disadvantages of technique applied; the Hodrick-Prescott filter can cause the end-range error of bias. Nevertheless, it is possible to conclude that the provided analysis reached the same course of the decomposed curves. [20, 22]

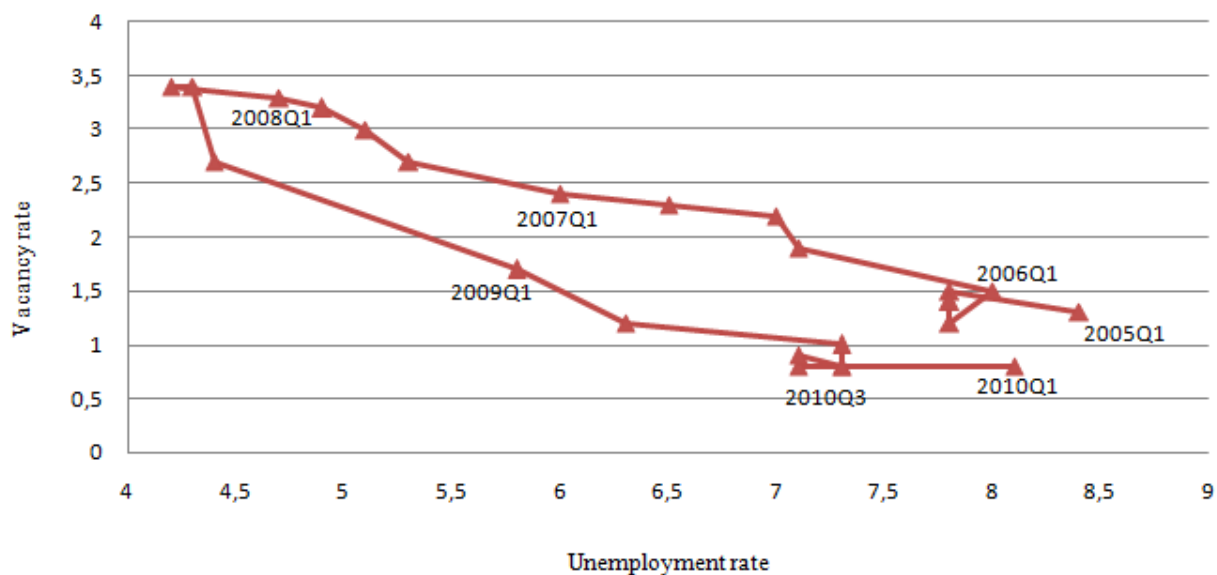
#### 4.4.2 The Beveridge Curve

The relation between job vacancies and unemployment is explained by the concept of Beveridge curve. The curve is an empirical relationship between job vacancies and unemployment and explains how are labour markets efficient when matching unemployed people to job vacancies. [9, 23]

For construction of Beveridge curves were used available data from EUROSTAT (seasonally adjusted quarterly vacancy rates and unemployment rates for years 2001 - 2010, in case of the Czech Republic 2005 - 2010).

Graph 16 shows the continuance of Beveridge curve in the Czech Republic. The correlation coefficient between vacancy and unemployment rate is equal to  $-0.88$ ; it means high negative relationship between those two analyzed variables. From the graph is evident that higher unemployment is accompanied by lower vacancy rate. In 2009 (2010) was the structural unemployment slightly higher than in 2008. However, it is still lower than in the beginning of the analyzed time series, since the course of the curve is shifted towards left. The cyclical unemployment decreases from 2005 to 2008 and from that year on increases – it supports the fact that the period was a period of economical recession.

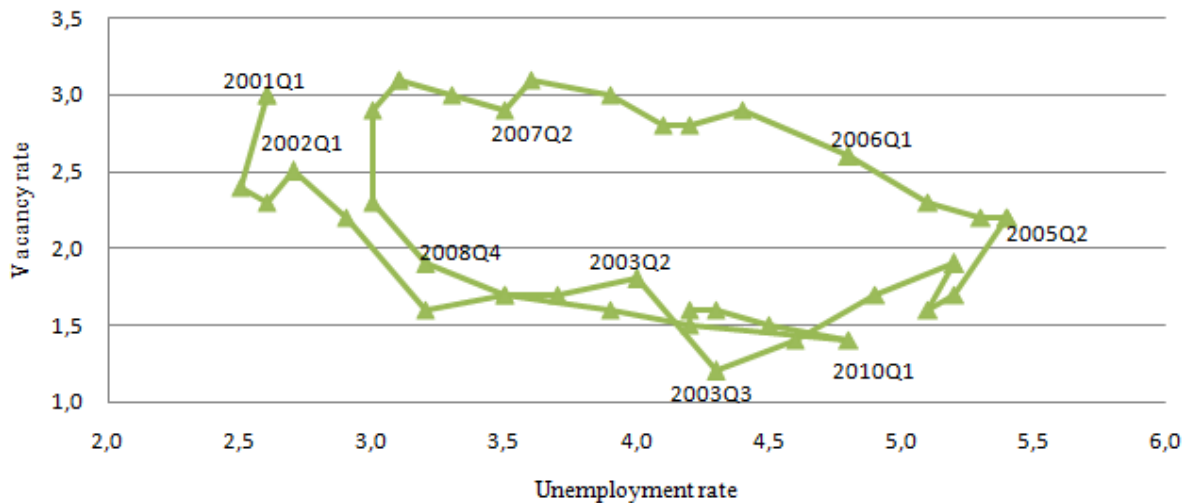
Graph 16: The Beveridge curve in the Czech Republic (%), 2005 – 2010



Source: Own elaboration based on EUROSTAT data

The data for 2010 are available just for first quarter. The influence of decrease of economic activity due to financial crises on structural unemployment will be obvious in longer time distance. Increase of structural unemployment in the period of economical recession supports the long-term unemployment. The long-term unemployment grew from 30.3% to 41.2% in this period.

Graph 17: The Beveridge curve in the Netherlands (%), 2001 – 2010



Source: Own elaboration based on EUROSTAT data

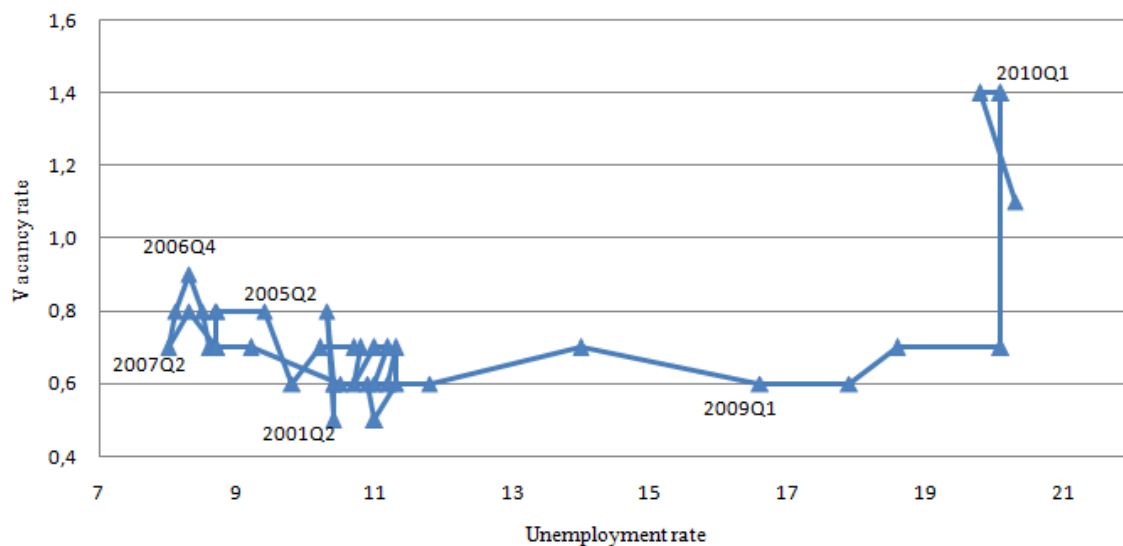
The graph 17 represents the Beveridge curve in the Netherlands in 2001 – 2010. The correlation coefficient between vacancy and unemployment rate is equal to -0.38; it means moderate negative relationship - the lowest from analyzed countries. In long run, the overall job vacancy rate is the highest from analyzed countries (equals to 2.4%) and the same holds for the year 2010 (equals to 1.5%). Therefore, it is possible to conclude that the Netherlands has with the lowest unemployment rate the highest vacancy rate.

The Netherlands faces to qualitative structural unemployment – the vacancies are not well matched qualitatively regarding occupations, level of qualification and geographical distribution. The demand does exist but it is of a different type from the labour supply. [25]

Between years 2008 and 2010, there is evident increase in cyclical component of unemployment (similar in period from 2001 to 2003), whereas from 2003 to 2005 is high increase in structural unemployment and since 2005 the structural component is declining.

Graph 18 shows the Beveridge curve in Spain in 2001 – 2010. The vacancy rate in Spain is in comparison with the Czech Republic lower – in last five years, the average vacancy rate in the Czech Republic was equal to two and in Spain, it was equal to 0.8. However, if the year 2010 is compared separately, the Czech vacancy rate is lower (0.83) than the Spanish one (1.3).

Graph 18: The Beveridge curve in Spain (%), 2001 – 2010

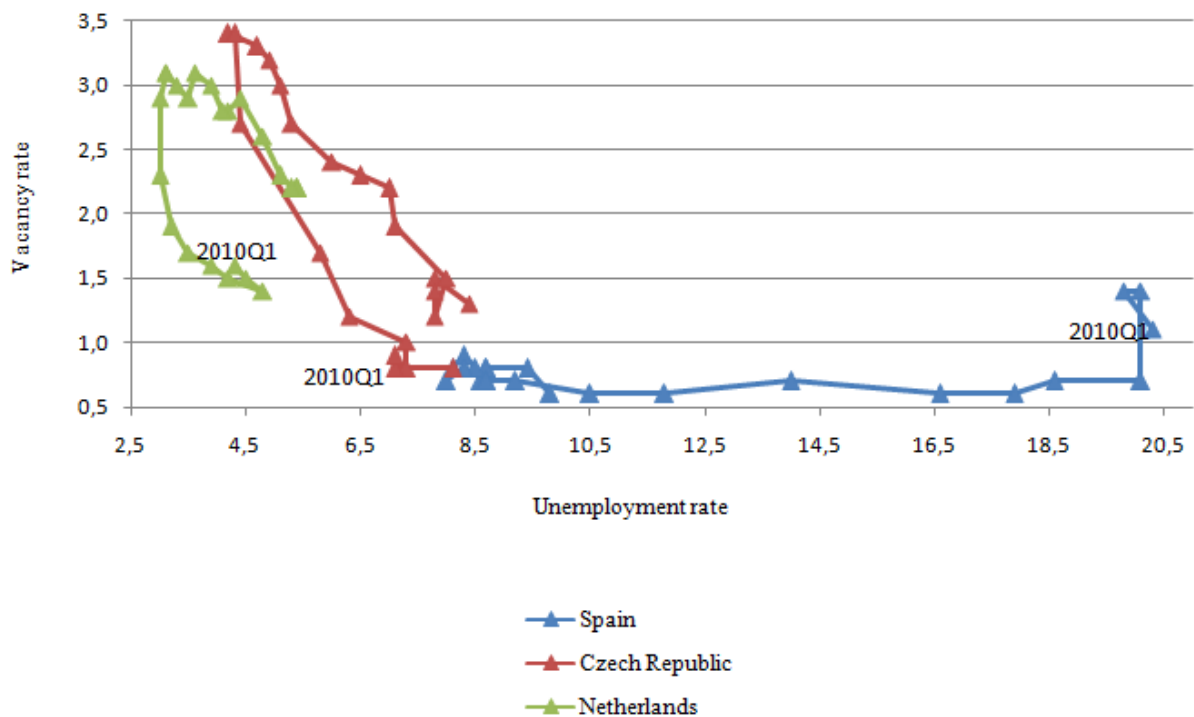


Source: Own elaboration based on EUROSTAT data

The correlation coefficient between vacancy and unemployment rate is equal to -0.55; it means high negative relationship but lower than in case of the Czech Republic. From the graph is evident that higher unemployment was accompanied by lower vacancy rate more or less from 2001 to 2008 and in 2009 (2010), the Beveridge curve follows different trend. In 2009 is the same job vacancy rate as in 2005 followed by much higher unemployment rate (in some cases even double).

In 2009, significant increase of cyclical unemployment is evident and very significant increase of structural unemployment as well. In the last quarter 2009 and first quarter 2010 is the unemployment rate the same but the vacancy is different – increase of structural unemployment. Very high mismatch is evident in the huge outward shift in the Spanish Beveridge curve during the great recession; there are now many more unemployed workers for each job vacancy.

Graph 19: The Beveridge curves for all selected countries (%), 2005 – 2010



Source: Own elaboration based on EUROSTAT data

Graph19 shows all above discussed Beverdige curves in one graph (2005 – 2010Q3). It is transparent and objective for mutual comparison among analyzed countries. The Beveridge curves for the Czech Republic and the Netherlands seem to have more similar position and course. Cyclical unemployment in the Czech Republic and the Netherlands grew since 2008 – in the Czech Republic was the increase more sharp and significant. The Spanish

curve differs in both attributes – position and course. The Czech Beveridge curve in 2010 meets the Spanish Beveridge curve in 2007. Then in Spain, the unemployment rate is rapidly growing unaffected vacancy rate. The vacancy rate is growing in 2010 and reaches the same level as in the beginning of 2010 in the Netherlands but the unemployment rate is that time in Spain almost five times higher.

## 4.5 Unemployment Analysis regarding Socio-demographic Characteristics

The following chapter will provide deeper insight on unemployment problem regarding socio-demographic characteristics, such as gender, age, education and nationality. The regularities will be tested by Chi-square test and the strength of dependency will be expressed by particular coefficients.

### 4.5.1 Labour Status versus Gender

In the Czech Republic is the unemployment rate of women higher by 2% than of men, in Spain by 0.7% and in the Netherlands, it is lower by 0.1%. Table 11 records the unemployment rates regarding gender in selected countries in 2010.

Table 11: Unemployment rates in selected countries regarding gender (%), 2010

Country	Males	Females
Czech Republic	6.5	8.5
Spain	19.9	20.6
Netherlands	4.4	4.3

Source: Own elaboration based on EUROSTAT data

For the association tables for testing the dependency between labour status and gender refer to appendix 5. The Chi-square test was performed in order to verify the statistical relations.

#### Results of the Chi-square test

The table value:  $\chi^2_{0.05(1)} = 3.841$

Czech Republic:  $\chi^2 = 7.385$ ; Spain:  $\chi^2 = 1.758$ ; Netherlands:  $\chi^2 = 0.061$

The null hypothesis that between sex and labour status is no statistical relation was confirmed in the case of Spain and the Netherlands. The hypothesis was rejected in the case of the Czech Republic. The degree of dependency is calculated by Association and Yule coefficients. The calculated coefficient shows just very low statistical dependency between gender and labour status in the Czech Republic – the Association coefficient equals to 0.04 and the Yule coefficient equals to 0.15.

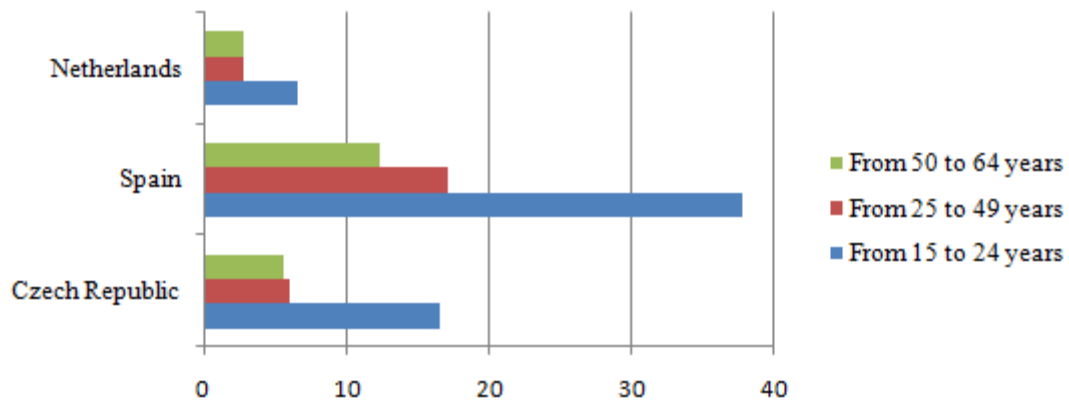
In the Czech Republic, the unemployment rate of men has increased by 1.4% since 1998 (since 2009 by 0.8%) and of women by 0.4% (since 2009 by 0.8%). In the Netherlands, the male unemployment rate has increased by 0.9% (by 0.7% since 2009) and female rate decreased by 1% since 1998 (increased by 0.7% since 2009). In Spain, the unemployment rate of women has been decreasing by 6.1% since 1998 (increasing by 2.1% since 2009), and rate of men increasing by 5.8% since 1998 (increase by 2.1% since 2009).

#### **4.5.2 Labour Status versus Age**

The unemployment rate varies regarding age in all analyzed countries. The graph 20 demonstrates the situation in selected countries in 2010. The age group 15 to 24 years is the one with the highest unemployment rate. The unemployment rate in second age interval (25 to 49 years) is roughly one third of the unemployment rate in first age interval; it is similar for all three countries. The last age interval (50 to 64 years) varies among analyzed countries.

From the data published on EUROSTAT, it is possible to table contingency charts, which are necessary to test the dependency between labour status and age interval. See the contingency tables in appendix 6.

Graph 20: Unemployment rates in selected countries by age (%), 2010



Source: Own elaboration based on EUROSTAT data

The null hypothesis, that between labour status and age is no dependency, was tested by using the Chi-square test.

#### Results of the Chi-square test

The table value:  $\chi^2_{0.05(6)} = 12.59$

Czech Republic:  $\chi^2 = 71.97$ ; Spain:  $\chi^2 = 701.67$ ; Netherlands:  $\chi^2 = 54.07$

The calculated values for all countries are higher than the Chi-square table value for chosen level of significance (0.05). Therefore, the null hypothesis is rejected for all analyzed countries and it is possible to conclude that between analyzed variables is significant statistical dependency. The Pearson, Urbach-Cuprov and Co-integrate coefficients were calculated to determine the strength of dependency. The calculated values show low dependency in all three cases whereas the dependency in the case of Spain is the highest. Refer to table 12.

Table 12: The calculated coefficients for testing the dependency of labour status on age

Country	Pearson's coefficient	Urbach-Cuprov's coefficient	Co-integrate coefficient
Czech Republic	0.13	0.10	0.12
Spain	0.18	0.15	0.17
Netherlands	0.10	0.07	0.08

Source: Own calculation based on data from EUROSTAT



If the theoretical values for every cell of the contingency tables are compared with the real values, it is obvious that the age category 15 to 24 years has higher ratio of unemployed people than the other age categories and therefore causes the dependency. It is also necessary to take into account that the active population in this age interval is small; most of the people belonging to this interval are still studying and so the absolute volume of unemployed people in this interval is not so significant – does not cause high dependency.

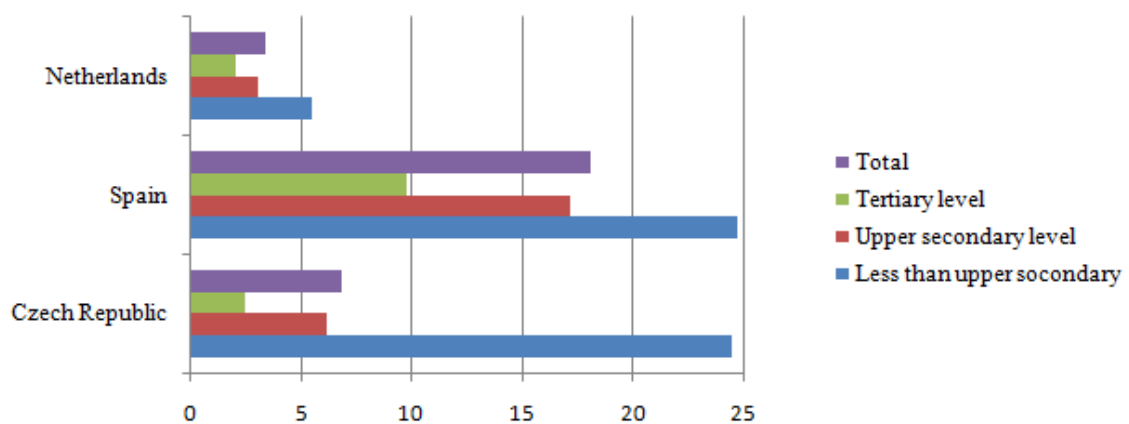
The age interval 15 to 24 varies the most in time. The variations and average annual increase (in time series 1998 - 2010) are the highest in this age interval - in the Czech Republic equals to 2.6%, in the Netherlands to 1.13% and in Spain to 3.7%.

#### 4.5.3 Labour Status versus Education

The unemployment rate differentiates concerning the achieved education. The EUROSTAT Labour Force Survey provides the data for three education groups – pre-primary, primary and lower secondary education; upper secondary and post-secondary non-tertiary education and tertiary education.

Graph 21 shows the unemployment rates in context with education in selected countries in 2009, the data for 2010 are not available and significant differences in division of unemployment with regard to education are not expected.

Graph 21: Unemployment rates in selected countries by education (%), 2009



Source: Own elaboration based on data from EUROSTAT

In all analyzed countries, the highest unemployment rate is among people with the lowest education level. In the Czech Republic, the rate in that group equals to 24.4% (almost 4 times more than the unemployment rate in total), in the Netherlands equals to 5.5% (approximately 1.5 times more than total unemployment rate) and in Spain equals to 24.7% (6.5% more than in total). The unemployment rate of people in middle education group is lower than the rate in total - it holds for all countries.

Among countries are differences in development in comparison to previous year. In the Czech Republic, the unemployment rate in the lowest educational level has grown by 5%, in the second level by 2.5% and in the last group by 0.8%. In Spain, there is the development similar but with different strength – growth by 9.3% in the first group, by 6.5% in the second group and by 3.4% in the last group. In the Netherlands, the development is similar in all education categories – increase by 0.5 – 0.9%.

#### 4.5.4 Labour Status versus Nationality

In the Czech Republic live 4% of foreigners (understood as a share on total population), in the Netherlands 3.8% and in Spain 12%. The unemployment of natives and foreigners is not the same. The absolute volumes of employed and unemployed people see in appendix 7. The share of unemployed people on total active population in particular categories is recorded in table 13. In the Czech Republic, there are slightly more unemployed people among natives. In Spain and in the Netherlands is the trend different. The unemployment among foreigners is by 12.4% higher in Spain and by 3.8% in the Netherlands.

Table 13: Share of unemployed people on total active population of foreigners and natives in selected countries (%), 2010

Country	Foreigners	Natives
Czech Republic	5.9	6.7
Spain	28.4	16.0
Netherlands	7.0	3.2

Source: Own elaboration based on EUROSTAT data

Because of evidence, which is shown in table 13, the Chi-square test of dependency between labour status and citizen type (native versus foreigner) was performed in order to express the relation in numbers. The results of Chi-square test demonstrate the statistical dependency between analyzed variables in Spain and in the Netherlands.

#### Results of the Chi-square test

The table value:  $\chi^2_{0.05(1)} = 3.841$

Czech Republic:  $\chi^2 = 0.08$ ; Spain:  $\chi^2 = 319.75$ ; Netherlands:  $\chi^2 = 13.79$

The calculated Association and Yule coefficients show medium dependency– in Spain the co-integrate coefficient (of calculated Association and Yule coefficients) equals to 0.35 and in the Netherlands equals to 0.38. The dependencies have the same tendency. In the case of the Czech Republic, any dependency was rejected.

## 4.6 Unemployment across Regions

The unemployment rates vary across regions. The highest dispersion (measured at level NUTS 2) was observed across Spain (15.3%). In contrast, there was relatively little divergence in unemployment rates across the regions in the Netherlands (2.7%). The dispersion in the Czech Republic equals to 7.2%. The regions with highest and lowest unemployment rates are recorded in table 14. The data used are for 2009, the data for 2010 were not available at the time of writing this paper but no significant proportion differences are expected. For detailed listing of all regions, refer to appendix 8.

Table 14: Regions NUTS 2 with highest unemployment rates in selected countries (%), 2009

Country	Region NUTS 2	Unemployment rate
Czech Republic	Praha	3.1
	Severozápad	10.3
Netherlands	Zeeland	2.1
	Groningen	4.8
Spain	Comunidad Foral de Navarra	10.9
	Ciudad Autónoma de Melilla	26.2

Source: Own elaboration based on EUROSTAT data

The relative dispersion coefficients (variation coefficients) were calculated for years 2000 and 2009 in order to see the degree of convergence of regional unemployment rates in time. Table 15 records those coefficients. From the calculated values, it is obvious that the unemployment rates vary significantly across the regions in all three countries (it supports the dispersion of unemployment rate listed in appendix 8). If the year 2009 is compared to 2000, it is obvious that the dispersion among regions in the Czech Republic remains the same, the dispersion in Spain slightly decreased. In the case of the Netherlands, the decrease is more significant – by 0.25.

Table 15: The relative regional dispersion coefficients for selected countries, 2000 and 2009

Country	2000	2009
Czech Republic	0.87	0.87
Spain	0.81	0.77
Netherlands	0.67	0.42

Source: Own calculation based on EUROSTAT data

The OECD database includes information about the unemployment regarding the degree of urbanisation of residence in particular regions. Three type of regions are distinguished: densely-populated area (at least 500 inhabitants/km<sup>2</sup>), intermediate urbanised area (100 – 499 inhabitants/km<sup>2</sup>) and sparsely populated area (less than 100 inhabitants/km<sup>2</sup>). In the Czech Republic, the unemployment rate differs by 1.4% across these regions (in intermediate urbanised area and sparsely populated area equals to 7.8%, resp. 7.7%). In Spain is the dispersion 5%; the highest unemployment rate (25.2%) is also in intermediate urbanised area as in the Czech Republic. The Netherlands has the highest unemployment rate in densely populated area (3.9%) and the dispersion equals to 1.1%.

The Chi-square test of dependency between degree of urbanisation of residence and labour status was performed. The results show very low dependency – the calculated coefficients were lower than 0.1. In case of the Czech Republic was even accepted the null hypothesis, which assumes no dependency at all.

## 4.7 Long-term Unemployment

The biggest problem, when talking about unemployment, represents the long-term unemployment, which is understood as more than 12 months. The table 16 shows the long-term unemployment as a share on total unemployment for a given sex and age group in selected countries in 2010 and in 2009. The difference between 2009 and 2010 is very significant.

People between 25 and 49 years are the most burdened with long-term unemployment in the Czech Republic - 44% of all unemployed people in this age interval are unemployed in long-term. In Spain and in the Netherlands, it is the age group from 50 to 64. Generally evaluated, it is possible to conclude that in the Czech Republic is the long-term unemployment the biggest problem (41.2% of long-term unemployed people in total). In Spain long-term unemployed persons present 36.6% and in the Netherlands 27.5%.

The long-term unemployment of women is higher than of men in the Czech Republic and in Spain, but it differs according to age. The youngest men face to higher risk of long-term unemployment.

Table 16: Long-term unemployment as a share on total unemployment for a given sex and age group in selected countries (%), 2009 and 2010

Country	Age interval	2009			2010		
		Total	Males	Females	Total	Males	Females
Czech Republic	15 - 24	19.8	18.8	21.3	31.8	33.6	29.3
	25 - 49	31.3	30.0	32.4	44.0	44.1	44.1
	50 - 64	36.2	32.3	40.7	42.2	39.7	45.1
	15 - 64	30.1	27.8	32.3	41.2	40.6	42.0
Spain	15 - 24	18.1	18.4	17.8	29.3	31.7	26.3
	25 - 49	22.3	19.2	26.0	35.5	34.3	36.8
	50 - 64	38.4	32.3	46.2	50.1	47.1	54.2
	15 - 64	23.7	20.9	27.2	36.6	35.9	37.4
Netherlands	15 - 24	10.7	11.3	-	12.5	14.1	10.8
	25 - 49	23.3	19.4	27.3	27.8	26.1	29.6
	50 - 64	46.5	47.1	45.8	46.8	47.3	46.0
	15 - 64	24.2	23.1	25.4	27.5	27.8	27.0

Source: Own elaboration based on quarter EUROSTAT data

Table 17 records the detailed analysis of development of long-term unemployment. The table shows that the increase from 2009 to 2010 was abnormal and enormous. The comparison of 2007 and 2008 shows slight decrease in almost all age and both gender categories. The years 2008 and 2009 show different development among analyzed countries. In Spain, the long-term unemployment in all categories grew up in 2009 but in the Czech Republic and in the Netherlands, it decreased. The increase in those two countries occurred in the next year. In 2010, the long-term unemployment increased in all analyzed countries, whereas in the Czech Republic and in Spain the strength of growth was similar. In the Netherlands, the growth of long-term unemployment was not so significant, in total by 3.3%.

The significant changes of long-term unemployment in analyzed countries support the fact that the countries has faced in last years to economic recession. From the time series, it is obvious that Spanish economy was affected already in 2007 but the changes in the Czech Republic and the Netherlands are not evident until 2008. This investigation corresponds to the changes in time series of unemployment rate and GDP analyzed in some of previous chapters.

Table 17: Change of long-term unemployment rate in comparison to previous year (%), 2008 - 2010

Country	Age interval	2008			2009			2010		
		Total	Males	Females	Total	Males	Females	Total	Males	Females
Czech Republic	15 - 24	-1.0	0.4	-3.3	-11.4	-15.6	-5.2	12.0	14.8	8.0
	25 - 49	-4.7	-0.2	-7.5	-19.8	-23.8	-17.0	12.7	14.1	11.7
	50 - 64	1.0	-2.5	4.2	-22.5	-23.2	-20.9	6.0	7.4	4.4
	15 - 64	-3.0	-1.1	-4.5	-19.2	-21.8	-16.8	11.1	12.8	9.7
Spain	15 - 24	0.2	1.3	-0.6	7.7	8.4	7.0	11.2	13.3	8.5
	25 - 49	-2.9	-3.9	-0.9	5.5	7.3	4.3	13.2	15.1	10.8
	50 - 64	-5.4	-7.5	-2.6	3.2	3.3	4.2	11.7	14.8	8.0
	15 - 64	-2.6	-3.5	-1.0	5.9	7.1	5.3	12.9	15.0	10.2
Netherlands	15 - 24	-1.6	0.3	-	-0.3	-1.2	-	1.8	2.8	-
	25 - 49	-6.0	-7.6	-4.7	-11.4	-15.6	-7.3	4.5	6.7	2.3
	50 - 64	-6.1	-3.8	-9.1	-16.7	-20.0	-12.0	0.3	0.2	0.2
	15 - 64	-4.9	-4.8	-5.1	-10.2	-13.9	-6.5	3.3	4.7	1.6

Source: Own calculation based on EUROSTAT data

The Chi-square tests were performed in order to quantify the relationship between duration of unemployment and gender and age. For appropriate contingency tables see appendix 9 and 10. In the Czech Republic, there was rejected any dependency between examined variables. In the Netherlands, the test has proved very low dependency – the calculated Pearson coefficient for dependency on age equals to 0.07 and for dependency on gender to 0.15. In Spain, there has been proved dependency on age, the calculated Pearson coefficient equals to 0.3, which proves the medium dependency.

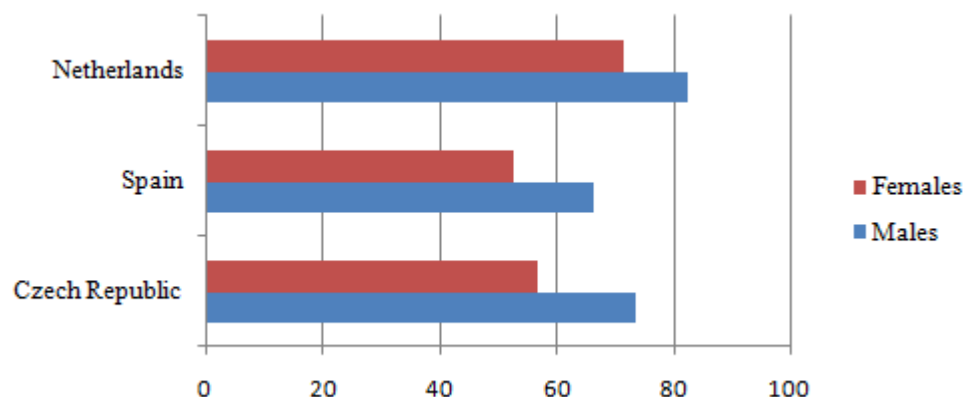
## **4.8 Employment in Selected Countries**

Along with increase of unemployment goes decrease of employment. The following chapter is going to briefly analyze the employment rate, the structure of employment regarding sectors of national economy and work time in selected countries. The analysis of these issues will help on the analysis of unemployment and current labour market trends and will reveal the background of unemployment problem.

### **4.8.1 Employment Rate**

The employment rate among Czech active population was 64.8% in 2010 whereas the employment rate of women was equal to 56.6% and employment rate of men was 73.4%. In the Netherlands, in the same year, the employment rate reached 75.7%, whereof female rate was 70.7% and male rate 80.6%. The employment rate in Spain was the lowest from analyzed countries – 58.6%, the male rate was equal to 64.8% and female rate was equal to 52.3%. It means that just in the Netherlands was reached the target of 70% that was stated by Lisbon European Council (in 2000) for year 2010. From the graph 22 is apparant that the biggest difference between male and female employment rate was recorded in the Czech Republic (difference of 16.8%). The target employment rate for women was set to 60% by the Lisbon European Council. It means that from analyzed countries just the Netherlands achieved this goal. [16]

Graph 22: Employment rate in selected countries by gender (%), 2010



Source: Own elaboration based on EUROSTAT data

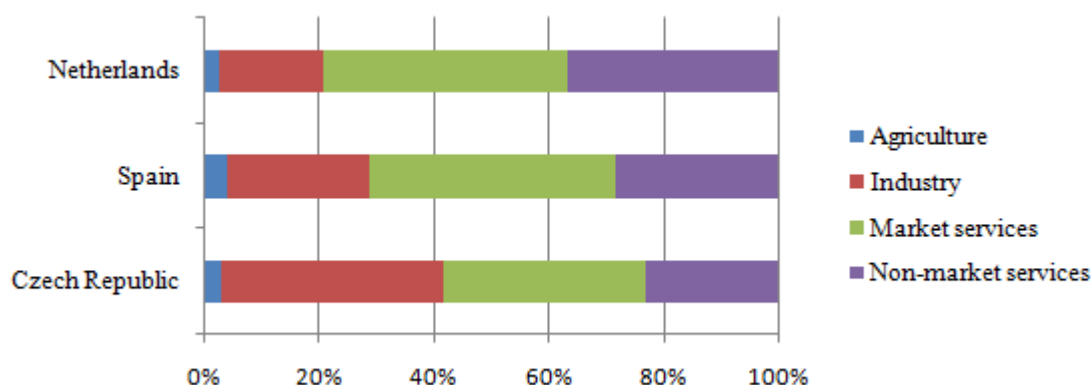
In the gender composition of unemployed people in particular countries were evident some imbalances, however the differences are much higher in the case of employment. It is mainly due to the unbalanced composition of economically active population. The share of women on inactive population is generally higher because of motherhood and child care.

#### 4.8.2 Employment by Sectors

The share of the employment in agriculture is very low in all analyzed countries. In Spain is the employment in agriculture the highest, equals to 4.2%. In the Czech Republic, there is equal to 3.1% and in the Netherlands to 2.8%. The share of employment in industry is the highest in the Czech Republic, represents 38.6% of total employment, which is 13.9% more than in Spain and even 20.6% more than in the Netherlands. Market services are the most represented in Spain and the least in the Czech Republic; the same holds for non-market services. 79% of employed people in the Netherlands work in service sector. For graphical illustration refer to graph 23.



Graph 23: Employment by sectors in selected countries (%), 2010



Source: Own elaboration based on OECD data

According to NACE classification (classification of economic activities), the most significant differences among countries show the category of manufacturing; construction; human health and social work activities and accommodation and food service activities. The employment structure has contributed to the increase of unemployment during the crises in the Czech Republic and in Spain – both countries have relatively high share of employment in the sector of construction and manufacturing and those two sectors belong to the most influenced by the financial crises. Regarding employment structure, the Czech Republic and Spain seem to be in worse position during the recent global crises.

Since 2000 in the Czech Republic, the most significant change has been recorded in the sector of agriculture (decrease by 2%) and the most significant increase in the sector of industry and services (2%). In the Netherlands, the most significant change records the sector of industry (decrease by 4%), manufacturing (decrease by 2.5%) and the most significant increase the sector of services (8%) and education (3.5%). In Spain, the most significant decrease is in the sector of agriculture (by 2.3%) and the most significant increase in the sector of services (8%) and Real estate, renting and business activities (3%). Refer to appendix 4, the table shows the employment divided according to NACE classification in 2009. The table stands for the most significant sectors (does not include all categories). The database for 2010 was not available at the time of the study. [12, 17]

### 4.8.3 Work time in Selected Countries

This chapter will focus on work time in selected countries. The work time is understood as full time or part time. The chapter will also include composition of employment regarding to type of employee's contract (temporary versus permanent).

The part-time employment analysis in selected countries is recorded in table 18. The table demonstrates the part-time employment as a percentage of the total employment for a given sex and age group in 2009 (the data for 2010 were not available at the time of the study). From the table is transparent that the part-time employment is most popular in the age interval 15 – 24, whereas significant differences exist between countries. The Czech Republic is a country with the least popularity of part-time employment – share on total employment just 4.8%. In Spain, it is 12.6% and in the Netherlands, it is significant 47.7%. Very fundamental is also the share of females on part-time employment; in the Netherlands it is 75.7 % (in Spain 22.9% and in the Czech Republic only 8.5%). Part-time employment has important share in all age categories in the Netherlands - the overall proportion of people working part-time is the highest in EU-27. [12]

Table 18: Part-time employment as a share on total employment for a given sex and age group (%), 2009

Country	Gender	Age category			
		15-64	15-24	25-49	50-64
Czech Republic	Total	4.8	8.2	3.9	6.1
	Males	2.0	5.5	1.1	3.3
	Females	8.5	12.4	7.5	9.8
Spain	Total	12.6	25.4	12.0	10.3
	Males	4.7	17.8	3.9	3.1
	Females	22.9	34.3	22.2	21.3
Netherlands	Total	47.7	73.3	40.9	47.3
	Males	23.6	64.9	13.4	22.4
	Females	75.7	81.8	71.9	80.8

Source: Own elaboration based on EUROSTAT data

The association tables were drafted in order to test the statistical significance between work time and gender. The relevant association tables see in appendix 11. The Chi-square test

was performed and the calculated values were compared to critical value. The null hypothesis that between analyzed variables is no dependency is rejected in all three tested cases.

Results of the Chi-square test

The table value:  $\chi^2_{0.05 (1)} = 3.841$

Czech Republic:  $\chi^2 = 108.61$ ; Spain:  $\chi^2 = 1,390.2$ ; Netherlands:  $\chi^2 = 2,281.94$

The coefficients were calculated in order to quantify the dependency. The computed values are recorded in table 19. The values of Yule and Association coefficients were co-integrated and the co-integrate coefficient states the dependency as medium in the Czech Republic and in Spain. In the Netherlands, the dependency is the highest, the coefficient equals to 0.7.

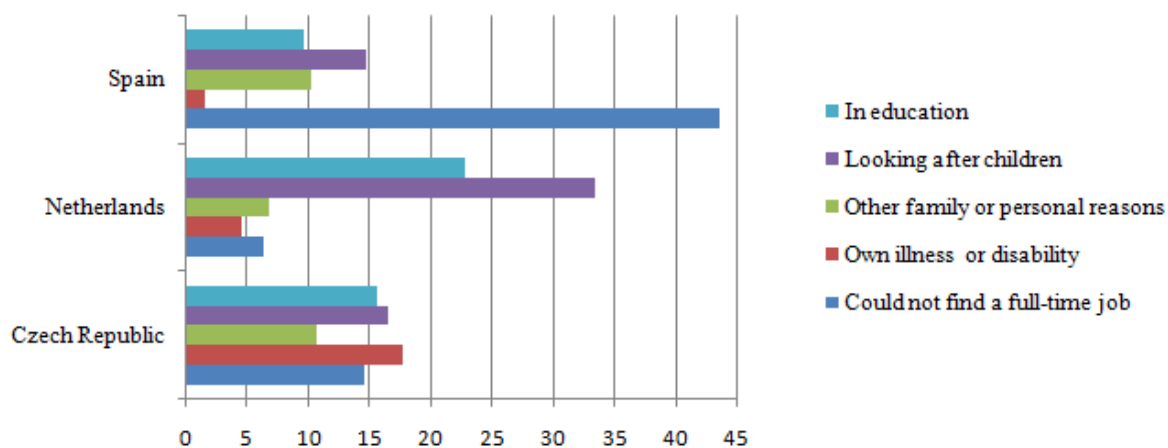
Table 19: Calculated coefficients for testing the dependency between work time and gender

Country	Association coefficient	Yule's coefficient	Co-integrate coefficient
Czech Republic	0.15	0.64	0.4
Spain	0.27	0.72	0.5
Netherlands	0.52	0.82	0.7

Source: Own calculation based on EUROSTAT data

The part-time employment is a tool of flexible working conditions, which can stimulate employment and activity rates by encouraging more people into the labour force. The main reasons why people choose part-time employment are expressed in graph 24. In the Netherlands, the main reason why people work on part-time positions is 'Looking after children and incapacitated adults'. This reason is not the main one in the other two countries. In Spain, people work on part-time positions mainly because they could not find a full-time job (reason of more than 40% of Spanish people working on part-time positions). The reasons among Czech workers are more evenly distributed.

Graph 24: The main reasons for part-time employment in selected countries (%), 2009



Source: Own elaboration based on EUROSTAT data

The workers, who are employed on a part-time basis, do so either because they want to or because they do not have any other opportunity. Table 20 shows the share of involuntary part-timers on total employment, on labour force and on total part-time employment. It is obvious, that in the Netherlands, where this type of employment is very popular, there are just 4.35% involuntary part-time workers. On the other side, in Spain, almost half of the part-time employment is involuntary.

Table 20: Share of involuntary part-time employees on total employment, labour force and total part-time employment (%), 2009

Indicator	Czech Republic	Netherlands	Spain
Share of involuntary part-timers in total employment	0.53	1.60	5.55
Share of involuntary part-timers in labour force	0.49	1.54	4.36
Share of involuntary part-timers as % of part-time employment	13.62	4.35	46.79

Source: Own elaboration based on OECD data

Since 1998, the part-time employment share on total employment has been increasing by 9.2% in the Czech Republic, by 4.8% in Spain and by 9.2% in the Netherlands.

Table 21: The composition of work contracts among employed people (thousands of people), 2009

Country	Absolute frequency (thousands of people)		Relative frequency (%)	
	Permanent employment	Temporary employment	Permanent employment	Temporary employment
Czech Republic	3,758.66	347.22	91.54	8.46
Netherlands	6,020.95	1,344.02	81.00	18.08
Spain	11,698.3	3,982.37	74.60	25.40

Source: Own elaboration based on OECD data

Table 25 shows the composition of work contracts among employed people in 2009. In the Czech Republic, there are just 8.5% of people working on temporary contract, in the Netherlands 18% and in Spain even 25.5%.

If analyzing different types of contracts, we have to consider the particular protection indicators and the costs of employee dismissal. Graph 25 shows the job security indicators in analyzed countries.

Graph 25: Employment protection in selected countries, 2009



Source: Own elaboration based on OECD data

The employment protection is the highest in Spain and in comparison to the other two countries (every indicator ranks in interval 0 to 6 and higher value means higher protection), it is evident that temporary forms of employment are protected more and even more than the permanent employment.

The costs of dismissal are also various among selected countries. In Spain, the costs of objective dismissal and fair consequences are 20 days of salary per each year worked , up to a maximum of 12 monthly payments and for unfair consequences, it is 45 days of salary per each year worked, up to a maximum of 42 monthly payments. In the Netherlands, there are no statutory criteria (depends on seniority, gross income and others – it can be awarded by District Court). In the Czech Republic, the severance pay to employee is 3 monthly salaries in case of fair consequences and 12 monthly salaries in case of unfair consequences. Generally concluded, the highest costs are in Spain and the lowest are in the Netherlands. In Spain, the costs are among the highest in the EU and also the Czech Republic ranks above the EU average. [24]

## **4.9 Summary of Main Identified Trends**

### **4.9.1 The Czech Republic**

- The active population has grown by 3% since 2000 - it is mainly due to increasing volume of immigrants (by 1.7 times since 2000). The activity of natives is declining which supports the trend of ageing of population (the index of senility has increased by 0.9 since 2000 and equals to 1.8). The active population in age interval 15 - 24 years has decreased by 37% since 2000. The activity rate has decreased by 1% since 2000 and so did the activity rate of women.
- The average exit age from the labour force equals to 60.5 years, which means increase by 1.6 year since 2001 (increase by 0.8 for men and by 2.3 years for women).
- The unemployment rate has grown by 1.5% since 1998 and it reaches 7.4% in 2010. The most significant increase is evident in 2009 – by 2.4% (increase of unemployed people by 53%). The average addition of unemployed people is equal to almost seven thousands per each year and the average coefficient of growth is equal to 1.02.
- The increase of unemployment due to the decrease in economic output is observable at the end of 2008. In 2010Q3, the unemployment rate shows declining tendency.
- The cyclical unemployment is the highest in 2010Q1 – it has grown by 3.1% since 2007. In 2010Q3, the cyclical component is decreasing by 0.5%.
- The structural unemployment is declining until 2008Q3 and since then it is growing – by 0.5% until the end of 2010. The beginning of analyzed time series is defined by higher structural rate.
- Job vacancy rate has been decreasing since 2008Q3 and in 2010, it is equal to 0.8% (it means decrease by 2.6%).
- The employment rate does not meet the criteria given by European Council for 2010.
- According to NACE classification, the main sectors of employment were manufacturing (25.4%), construction (10.1%), wholesale and retail trade (12.9%) and transportation and

storage (6.8%). Since 2000, the most significant change is observable in the sector of agriculture (decrease by 2%) and the most significant increase in the sector of industry and services (2%).

- The unemployment rate of men has increased by 1.4% since 1998 (by 0.8% since 2009) and the rate of women by 0.4% (by 0.8% since 2009). Statistical dependency between gender and labour status has been proved but the dependency is low.
- In time varies the most the age interval 15 to 24 years, the unemployment rate has increased by 6.7% since 2009 (by 8.8% since 1998). The statistical dependency between labour status and age was accepted and calculated as medium.
- The unemployment rate among people with less than upper secondary education equals to 24.4% and it varies the most in time – it has increased by 9.1% since 1998 (second education level by 1% and the highest level by 0.4%).
- The unemployment rate of natives equals to 6.7% and of foreigners to 5.9%. The unemployment rate of foreigners has been decreasing by 5.5% since 1998. The statistical dependency between labour status and nationality was rejected.
- The dispersion of unemployment among Czech regions NUTS 2 equals to 7.2% in 2009. The relative dispersion coefficient among different regions is the same in 2000 and in 2009 and equals to 0.87 – the regional disparities were not reduced.
- 41.2% of all unemployed people are long-term unemployed persons (increase by 11.1% since 2009). The most long-term unemployed people are in the age interval 25 - 49 years (44% in 2010). The long-term unemployment is higher among women. No statistical relation between duration of unemployment and gender (or age) has been proved.
- Just 4.8% of employed people work on part-time positions - 8.5% of all employed women and 2% of men. The share of part-time employment is slightly decreasing in time. The statistical dependency between gender and work-time is medium.



#### 4.9.2 The Netherlands

- The active population has grown by almost 14% since 2000. The active population in the age interval 15 – 24 years has increased by 8%. The activity rate has increased by 4% since 2000 - the rate of women has grown by 16% since 2000.
- The average exit age from labour force is equal to 63.5 years – it means increase by 2.6 years since 2001 (2.8 years for men and 2.3 years for women).
- The unemployment rate has changed by non-significant 0.1% since 1998. In 2010, it reaches 4.5% (in 2008, the rate was just 2.7%). In 2009 (and in 2010), the increase of unemployed people was equal to 26% (in comparison to previous year). The average absolute addition in analyzed time series is equal to 3.14 thousands of unemployed persons per year. The average coefficient of growth for whole period is equal to 1.01.
- The increase of unemployment due to decrease in economic output is observable at the end of 2008. In 2010Q3, the unemployment rate shows declining tendency. The Dutch series of unemployment is characterized by low dispersion.
- The beginning of the time series (1998 - 2010) features by negative cyclical and low structural unemployment. The cyclical component has grown since 2003 on and in 2005, it reaches the maximum (1%). Between years 2005 and 2008, the cyclical components has decreased and since the time has grown (by 1.4% until 2010).
- The structural unemployment disperses at interval from 3.4% to 4.4%, whereas the maximum of 4% reaches in 2005 and again in 2010.
- In 2010, the job vacancy rate equals to 1.5%. The country faces to qualitative structural unemployment – the vacancies are not well matched qualitatively regarding occupations, level of qualification and geographical distribution. The demand does exist but it is of a different type from the labour supply.
- The target employment rate given by the European Council for 2010 was reached both for women and for men. The employment rate has increased by 6.3% since 1998.

- Regarding NACE classification, the main sectors of employment are manufacturing (10%), construction (5.8%), wholesale and retail trade (13.4%) and human health and social work activities sector (16.1%). The most significant change (in comparison to 2000) records the sector of industry (decrease by 4%), manufacturing (decrease by 2.5%) and the sector of services (8%) and education (3.5%).
- The unemployment rate of men has increased since 1998 by 0.9% (by 0.7% since 2009) and rate of women has decreased by 1% (increased by 0.7% since 2009). Any statistical dependency between gender and labour status was rejected.
- Regarding age, the unemployment rate varies the most in the youngest age category (15 to 24 years) – it is 2% lower than in 1998 and 2.2% higher than in 2009. The statistical dependency between labour status and age was accepted and proved as low.
- Regarding education – the unemployment rate in time varies the most in the category of less than upper secondary education level.
- The unemployment of foreigners is twice higher than of natives, it has decreased by 3.7% since 1999. The statistical dependency between labour status and nationality was accepted and proved as medium.
- The dispersion among Dutch regions equals to 2.7% in 2009. The relative dispersion coefficient among different regions equals to 0.67 in 2000 and to 0.42 in 2009. It shows effective decreasing of regional unemployment disparities.
- The share of long-term unemployment on total is equal to 27.5%. The most long-term unemployed people are in the age interval 50 to 64 years. Statistical dependency between long-term unemployment and age (and gender) has been accepted and proved as low. Since 2009, the long-term unemployment rate has increased by 3.3%. In 2009, it was significantly decreasing (in age group 50 to 64 years by almost 17%).
- 47.7% of employed people work on part-time positions. The share of females on part-time employment is 75.7%. The statistical dependency between gender and work-time was accepted and proved as high. Since 1998, the part-time employment share on total employment has increased by 9.2%.

### 4.9.3 Spain

- The active population has been growing by 35% since 2000. It is mainly due to the increase of immigrants (the volume of immigrants is sevenfold since 2000) and due to more women in labour force. The active population in the age interval 15 to 24 years has been decreasing by 11% since 2000. The activity rate has been increasing by 8% since 2000 and the activity of women has been growing by 42%.
- The average exit age from labour force is 62.3 years. It means increase by 2 years since 2001 (0.4 for men and 3.4 for women). The average exit age of women is 2.2 years higher than of men (equals to 63.4 years).
- The unemployment rate series (time series 1998 - 2010) is very asymmetric and the dispersion coefficient is very high. The unemployment rate has grown by 11.6% since 2007. In 2010, the number of unemployed people is 2.5 times higher than in 2007. The average absolute addition of unemployed people equals to 122 thousands of people every year. The average coefficient of growth is equal to 1.03.
- The increase of unemployment due to decrease in economic output is observable in the middle of 2007 and in 2010, the growing tendency continues (by 0.5% in 2010Q4).
- The cyclical unemployment was growing by 2% between 2001 and 2003. The next years are characterized by continual decrease – by 4.2% until 2008. The cyclical element reaches the maximum in 2009 (2.4%) – it means change by 4.6% since the beginning of 2008. Year 2010 is characterized by declining of cyclical component.
- The significant problem of Spain is the structural unemployment, which has been growing since 2005 by 11% (in 2010 equals to 20%).
- In 2010, the job vacancy rate equals to 1.1% (increase by 0.5% since 2000). In 2009, the same job vacancy rate as in 2005 is followed by much higher unemployment rate (in some cases even double) – evidence of very high mismatch between job vacancies and unemployed people.
- The employment rate does not meet the criteria given by European Council for 2010.

- According to NACE classification, the major sectors of employment are manufacturing (13.4%), construction (10%), wholesale and retail trade (15.7%) and transportation and accommodation and food services (7.5%). The most significant change (since 2000) records the sector of agriculture (decrease by 2.3%), the sector of services (increase by 8%) and Real estate, renting and business activities (increase by 3%).
- The unemployment rate of women has been decreasing by 6.1% since 1998 (and increasing by 2.1% since 2009) and the rate of men has been increasing by 5.8 since 1998 (and increasing by 2.1% since 2009). Statistical dependency between gender and labour status was rejected.
- The unemployment in the youngest age interval is constantly high and it has been rapidly growing since 2006 – by 20% until the end of 2010. The statistical dependency between labour status and age was accepted and proved as low.
- Regarding to education, in time varies the most the education group of less than upper secondary level.
- The unemployment rate of natives equals to 16% and the rate of foreigners to 28.4%. The unemployment of foreigners has increased by 12.2% since 1998. The statistical dependency between labour status and nationality was accepted and proved as medium.
- In 2009, the dispersion rate among Spanish regions equals to 15.3% and the relative dispersion coefficient equals to 0.81 – it means decrease by 0.04 since 2000.
- 36.6% of all unemployed people are long-term unemployed persons. The most long-term unemployed people are in the age interval 50 to 64 years. The long-term unemployment is higher among women. The dependency of unemployment duration on age was proved as medium.
- The share of part-time positions on total employment is 12.6%. Among the part-time workers predominate females (22.7% of all employed women work on part-time positions). The statistical dependency between gender and work-time is accepted as medium. Since 1998, the part-time employment share on total employment has been increasing by 4.8%.

## **5 CONCLUSIONS**

### **5.1 The Main Identified Problems and Recommendations Drawn from the Results**

The applied analysis in selected countries did identify the most significant weaknesses and problematic areas on labour markets regarding to unemployment and related issues. This chapter will summarize the main identified problems in all countries and will briefly outline general thoughts and recommendations how to improve the situation.

The decomposition of unemployment into its components shows the increase of cyclical unemployment in the time of economic recession. In the case of Spain, the recession goes along with very significant increase of structural unemployment as well. In the case of the Netherlands, there was identified the qualitative structural unemployment. It means that the rate of structural unemployment is not significantly high but it is high in context with job vacancy rate. The vacancies are not highly qualitatively matched according to job positions, qualification or spatial location. It means that the labour demand exists but it is not in conformity with the labour supply. Also in the case of the Czech Republic, the structural unemployment is relatively high and it has been slightly increasing since beginning of 2008. The structural unemployment represents major problem because it influences in a negative way the long-term unemployment. The structural unemployment grows due to rapidly changing structure of labour demand – the labour supply has to be adapted.

The next problem of economies in all three countries will be in near future demographic trends. In all countries is evident ageing of population, the index of senility is rapidly growing in all analyzed countries (the highest is in Spain) and in the future it will cause relevant social and economic problems. The labour market policies have to react on those demographic trends and take steps to find proper solution. The Spanish government is just now finishing the reform of retirement system and the retirement age of both genders will rise from 65 to 67. But not only the lengthening of the leaving age from labour force is important, the systematic education of older people should be supported and an integrated concept should be created to avoid the exclusion of older population. The employers should be

motivated to educate their employees, for example by reduction of tax liabilities or providing of financial subsidies.

The parallel demographic trend is the low birth rate – steps, which will support the position of family and will offer more flexible work opportunities for women and facilities for children can positively influence the birth rate and mainly the growth of activity rate.

The unemployment is a significant problem also in the youngest age category and people with lowest education. Those two categories were also the most involved during the recent economic recession because companies prefer persons with practical knowledge and qualification. The educational system has to prepare new entrants to labour market for dynamic labour environment, where mainly new technologies are used. The globalization and new technologies together require the knowledge of languages and IT knowledge. The educational institutions should prepare students for future job by active labour participation through internships. In the Netherlands, there is an internship compulsory on all universities and on main high schools. The previous experience will prepare new entrants to working environment and possibly will give them the opportunity to find a future employer already during studies.

Big problem in Spain and in the Netherlands represent immigrants. The share of immigrants on total population has been rapidly increasing and it has ascending trend. The unemployment rate among foreigners is significantly higher than of natives. The adaptability to different environment and culture has to be intensified and supported.

The Czech Republic and Spain are burdened by high long-term unemployment and the recent global crises did intensify the problem. It represents serious problem in both countries and the active labour policy should answer by systematic improvement of active policy tools. Both countries also face to high regional disparities. Those two indicators advert to low labour market flexibility, which is in the dynamic labour market environment necessary. The heterogeneity of labour markets is growing - employers have different demands. Many companies are changing their labour system for example due to increase of project engagements, seasonality and the supply of labour has to adapt to that changing environment.

The labour market has to be stimulated toward creation of flexible workloads. The alternative forms of labour positions are not very popular in the Czech Republic and in Spain.

On the other hand, in the Netherlands, almost half of all employed people work on part-time positions and just 5% of them are not voluntary part-time workers. The part-time employment is a tool of flexible working conditions, which can stimulate employment and activity rates by encouraging more people into the labour force. Such a type of employment would increase the employment of young women, older people and it could be starting point for long-term unemployed people to return to labour force and so it would sustain their working habits and qualifications.

The next tool, how to increase the flexibility on labour market could be the temporary contracts. However, when analyzing this issue in selected countries, it is obvious that Spain has very high share of temporary contracts (even the highest in the EU) and the unemployment and employment results do not show a positive impact. It seems to be a controversial tool. For better understanding of this issue will help on the analysis of dismissal costs. The dismissal costs are very high as well as protection policy in Spain. The temporary positions are just rarely the starting positions to permanent jobs - for the employers, it is less risky to sign new temporary contract than to prolong it and transform into a permanent employment. In the time of recession, it leads to high increase of unemployment, as it is obvious in 2007 and later.

As it was said above, the costs of dismissal are very high in the Czech Republic and in Spain and companies are afraid of hiring employees due to uncertain economic situation. Flexible workloads such as part-time positions or sharing of one position by two people would stimulate the labour markets. The stimulation of labour market can be done as well by supporting of self-employment. Especially on the regional level, the support of small and medium enterprises, could lead to decrease of regional dispersion of unemployment, which remains in the Czech Republic and Spain very high and since 2000, it has not changed.

## 5.2 Conclusion

The main objective of the diploma thesis was the analysis of labour market trends in the Czech Republic, the Netherlands and in Spain. The analysis was based on previous study of theoretical basis and the knowledge was applied in practise. The performed analysis was focused mainly on the unemployment problem on labour markets but also on related issues in order to gain more complex view on assigned topic. The main identified trends are summarized and possible suggestions and thoughts are outlined at the end of the study.

The Dutch labour market is in long run characterized by very low rate of unemployment and in 2010, the unemployment rate was the lowest one among the EU member states. Regarding employment rates in 2010, the country is the only one from analyzed countries, which achieved the goal of the European Council for this period. Neither the Czech Republic, nor Spain did achieve the employment goal of the European Council.

The main demographic trends, which reflect in the labour force, are the ageing of population and low birth rate. The active population is growing in the Netherlands and in Spain, and it is mainly due to increasing volume of immigrants. This could be for both labour markets a threat because the unemployment among immigrants is significantly higher, the dependency between labour status and nationality was proved as medium. The ageing of population forces to raise the retirement age and so the average exit age from the labour force significantly increases in all three countries.

Recently, the countries were featured by increasing of cyclical unemployment and in the case of Spain, the significant increase shows structural unemployment, which has negative impact on long-term unemployment. In the Czech Republic, the structural unemployment remains relatively high as well and in last two years it is slightly increasing, which has the same impact on long-term unemployment.

In the Netherlands, the jeopardised groups of people are involved into the employment mainly by flexible job positions, such as part-time positions. The popularity of such a type of employment is not high in other two analyzed countries; the share on total employment is even decreasing. The reasons for part-time employment in the Netherlands are voluntary – mainly



the education and child care, but in Spain and in the Czech Republic, high share of part-timers are involuntary workers – 14% in the Czech Republic and 47% in Spain.

Increase of employment and decrease of unemployment in the Czech Republic and in Spain should be stimulated by steps, which would strengthen the labour market flexibility - on one hand by working time flexibility and on the other side by external tools, such as employment protection.

The studied issue is very topical and it will always remain at the forefront of interest of all national economies. The labour market policies have to answer to relevant matters. Regarding results of the analysis applied and problems identified, it is possible to conclude that changes on global, regional and local level call for more flexible labour force and job positions. The labour markets in the Czech Republic and in Spain has to react, as the Netherlands partially already did, and have to adapt the labour market policies, legislative form and also the educational system.

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**Appendix 1:** The quarterly unemployment rates in selected countries (%), 1998 – 2010

	1998Q1	1998Q2	1998Q3	1998Q4	1999Q1	1999Q2	1999Q3	1999Q4
Czech Republic	5.5	6	6.6	7.2	8	8.6	8.9	9
Spain	15.5	15.3	14.8	14.3	13.3	12.6	12.3	11.9
Netherlands	4.7	4.4	4.2	3.9	3.8	3.6	3.5	3.4
	2000Q1	2000Q2	2000Q3	2000Q4	2001Q1	2001Q2	2001Q3	2001Q4
Czech Republic	9.1	8.8	8.5	8.3	8.1	8.1	8.1	7.8
Spain	11.6	11.2	10.9	10.7	10.4	10.4	10.3	10.4
Netherlands	3.2	3.1	3	2.8	2.6	2.6	2.5	2.6
	2002Q1	2002Q2	2002Q3	2002Q4	2003Q1	2003Q2	2003Q3	2003Q4
Czech Republic	7.4	7.2	7.2	7.4	7.3	7.8	8	8.2
Spain	10.9	11	11.3	11.3	11.2	11	11.2	11
Netherlands	2.7	2.9	3.2	3.5	3.7	4	4.3	4.6
	2004Q1	2004Q2	2004Q3	2004Q4	2005Q1	2005Q2	2005Q3	2005Q4
Czech Republic	8.4	8.4	8.2	8.3	8.1	8	7.8	7.9
Spain	10.7	10.8	10.7	10.2	9.8	9.4	8.7	8.7
Netherlands	4.9	5.2	5.1	5.2	5.4	5.4	5.3	5.1
	2006Q1	2006Q2	2006Q3	2006Q4	2007Q1	2007Q2	2007Q3	2007Q4
Czech Republic	7.7	7.3	7.1	6.6	5.8	5.5	5.2	4.9
Spain	8.7	8.6	8.5	8.3	8.1	8	8.3	8.7
Netherlands	4.8	4.4	4.2	4.1	3.9	3.6	3.5	3.3
	2008Q1	2008Q2	2008Q3	2008Q4	2009Q1	2009Q2	2009Q3	2009Q4
Czech Republic	4.4	4.4	4.3	4.5	5.5	6.5	7.3	7.4
Spain	9.2	10.5	11.8	14	16.6	17.9	18.6	19
Netherlands	3.1	3.1	3	3	3.2	3.5	3.9	4.2
	2010Q1	2010Q2	2010Q3	2010Q4				
Czech Republic	7.8	7.3	7.1	-				
Spain	19.3	20	20.5	-				
Netherlands	4.5	4.5	4.5	4.4				

Source: Own elaboration based on EUROSTAT data

**Appendix 2: The decomposition of unemployment rate in selected countries (%), 2000 - 2010**

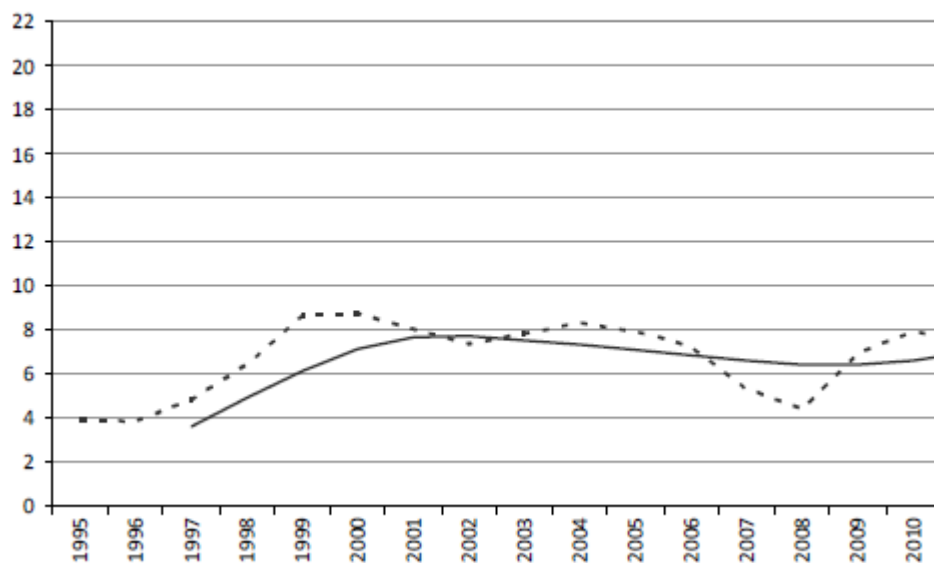
Year	Czech Republic			Spain			Netherlands		
	UR	CUR	SUR	UR	CUR	SUR	UR	CUR	SUR
2000Q1	9.10	1.14	7.96	11.60	-0.58	12.18	3.20	-0.21	3.41
2000Q2	8.80	0.79	8.01	11.20	-0.73	11.93	3.10	-0.28	3.38
2000Q3	8.50	0.45	8.05	10.90	-0.79	11.69	3.00	-0.36	3.36
2000Q4	8.30	0.22	8.08	10.60	-0.87	11.47	2.80	-0.55	3.35
2001Q1	8.10	0.01	8.09	10.40	-0.86	11.26	2.60	-0.76	3.36
2001Q2	8.10	0.00	8.10	10.40	-0.67	11.07	2.60	-0.77	3.37
2001Q3	8.10	0.00	8.10	10.30	-0.59	10.89	2.50	-0.91	3.41
2001Q4	7.80	-0.29	8.09	10.40	-0.32	10.72	2.60	-0.85	3.45
2002Q1	7.40	-0.67	8.07	10.90	0.34	10.56	2.70	-0.81	3.51
2002Q2	7.20	-0.85	8.05	11.00	0.59	10.41	2.90	-0.68	3.58
2002Q3	7.30	-0.72	8.02	11.30	1.03	10.27	3.20	-0.46	3.66
2002Q4	7.40	-0.60	8.00	11.30	1.16	10.14	3.50	-0.25	3.75
2003Q1	7.30	-0.66	7.96	11.20	1.19	10.01	3.70	-0.13	3.83
2003Q2	7.80	-0.12	7.92	11.00	1.12	9.88	4.00	0.08	3.92
2003Q3	8.00	0.12	7.88	11.20	1.44	9.76	4.30	0.29	4.01
2003Q4	8.20	0.37	7.83	11.00	1.35	9.65	4.60	0.51	4.09
2004Q1	8.40	0.63	7.77	10.80	1.26	9.54	4.90	0.73	4.17
2004Q2	8.40	0.71	7.69	10.80	1.25	9.55	5.20	0.97	4.23
2004Q3	8.20	0.59	7.61	10.70	0.83	9.87	5.10	0.82	4.28
2004Q4	8.20	0.68	7.52	10.20	0.48	9.72	5.20	0.88	4.32
2005Q1	8.10	0.78	7.32	9.80	0.11	9.69	5.40	1.05	4.35
2005Q2	8.00	0.68	7.32	9.40	-0.49	9.89	5.40	1.04	4.36
2005Q3	7.80	0.60	7.20	8.80	-0.63	9.43	5.30	0.95	4.35
2005Q4	7.90	0.82	7.08	8.70	-0.71	9.41	5.10	0.77	4.33
2006Q1	7.70	0.75	6.95	8.70	-0.94	9.64	4.80	0.50	4.30
2006Q2	7.30	0.48	6.82	8.60	-1.22	9.82	4.40	0.13	4.27
2006Q3	7.10	0.41	6.69	8.50	-1.66	10.16	4.20	-0.02	4.22
2006Q4	6.60	0.03	6.57	8.30	-2.16	10.46	4.10	-0.07	4.17
2007Q1	5.80	-0.66	6.46	8.10	-2.62	10.72	3.90	-0.22	4.12
2007Q2	5.50	-0.86	6.36	8.00	-2.74	10.74	3.60	-0.47	4.07
2007Q3	5.20	-1.07	6.27	8.30	-2.82	11.12	3.50	-0.52	4.02
2007Q4	4.90	-1.31	6.21	8.70	-2.86	11.56	3.30	-0.68	3.98
2008Q1	4.40	-1.76	6.16	9.20	-2.16	11.36	3.10	-0.84	3.94
2008Q2	4.40	-1.73	6.13	10.50	-1.50	12.00	3.10	-0.81	3.91
2008Q3	4.30	-1.83	6.13	11.80	0.01	11.79	3.00	-0.89	3.89
2008Q4	4.50	-1.64	6.14	14.00	1.90	12.10	3.00	-0.88	3.88
2009Q1	5.50	-0.67	6.17	16.60	2.36	14.24	3.20	-0.67	3.87
2009Q2	6.50	0.28	6.22	17.80	2.40	15.40	3.50	-0.37	3.87
2009Q3	7.30	1.02	6.28	18.60	2.04	16.56	3.90	0.02	3.88
2009Q4	7.30	0.96	6.34	19.00	1.67	17.33	4.20	0.30	3.90
2010Q1	7.80	1.39	6.41	19.40	1.49	17.91	4.50	0.58	3.92
2010Q2	7.30	0.82	6.48	20.00	1.21	18.79	4.50	0.57	3.93
2010Q3	7.10	0.54	6.56	20.50	0.44	20.06	4.50	0.55	3.95
2010Q4	7.40	0.77	6.63	-	-	-	4.40	0.42	3.98

Notes: UR – unemployment rate, CUR – cyclical unemployment rate, SUR – structural unemployment rate

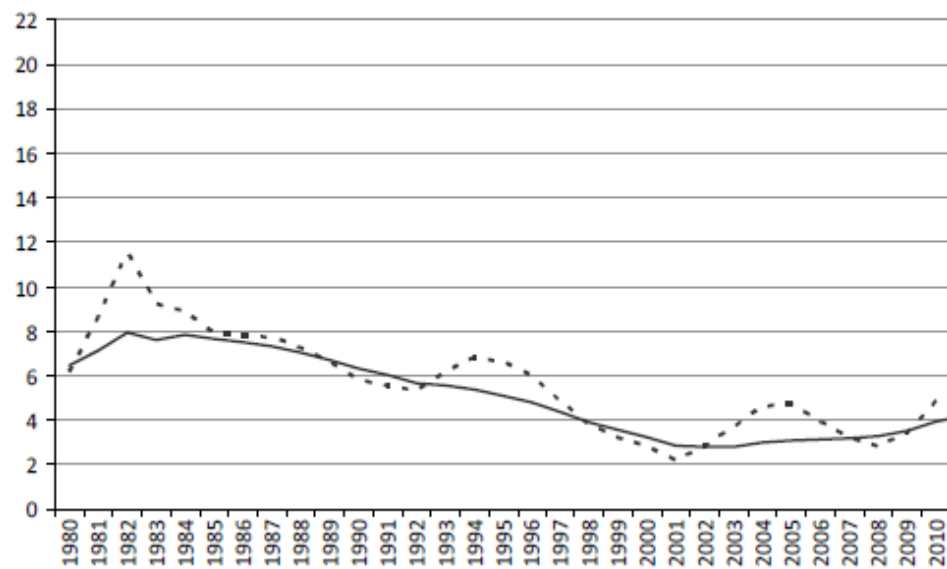
Source: Own elaboration based on EUROSTAT data

**Appendix 3:** The OECD estimation of structural unemployment rate in selected countries (%), 1995 - 2010

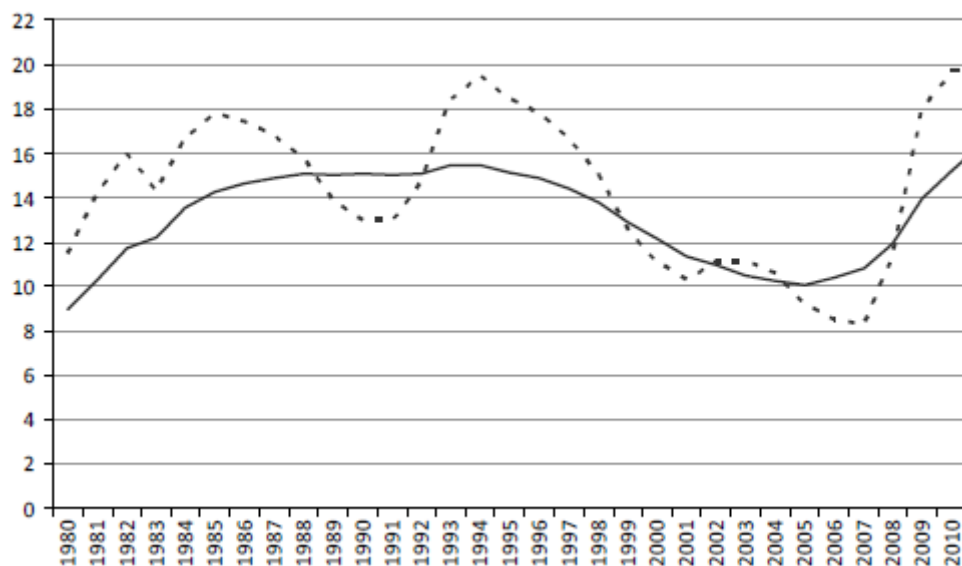
### Czech Republic



### Netherlands



## Spain



Notes: - - - - Actual unemployment, — Structural unemployment

Source: OECD

### Appendix 4: Employment rate by NACE classification (%), 2009

Region NACE 2	Czech Republic	Spain	Netherlands
Agriculture, forestry and fishing	3.1	4.1	2.4
Manufacturing	25.4	13.4	10.0
Construction	10.1	10.0	5.8
Wholesale and retail trade; repair of motor vehicles and motorcycles	12.9	15.7	13.4
Transportation and storage	6.8	4.8	4.8
Accommodation and food service activities	3.8	7.5	3.9
Information and communication	2.6	2.7	3.6
Financial and insurance activities	2.2	2.5	2.8
Professional, scientific and technical activities	4.0	4.5	6.0
Administrative and support service activities	2.3	4.8	3.7
Public administration and defence; compulsory social security	6.5	7.2	6.7
Education	5.9	6.1	6.9
Human health and social work activities	6.6	7.0	16.1
Arts, entertainment and recreation	1.6	1.6	1.9
Activities of households as employers	0.2	3.8	0.1

Source: Own elaboration based on OECD data

**Appendix 5:** Association tables for testing the dependency between labour status and gender in selected countries (in thousands of people), 2010

COUNTRY	GENDER	Labour status		Total
		Employment	Unemployment	
Czech Republic	Males	2,823.7	175.4	2,999.1
	Females	2,110.5	176.8	2,287.3
	Total	4,934.2	352.2	5,286.4
Spain	Males	10,646.4	2,292.1	12,938.5
	Females	8,241.6	1,857.4	10,099.0
	Total	18,888.0	4,149.5	23,037.5
Netherlands	Males	4,648.3	162.1	4,810.4
	Females	3,947.7	141.7	4,089.4
	Total	8,596.0	303.8	8,899.8

Source: Own elaboration based on EUROSTAT data

**Appendix 6:** Contingency tables for testing the dependency between labour status and age in selected countries (thousands of people), 2010

Country	Age	Labour status		Total
		Employment	Unemployment	
Czech Republic	15 - 24	353.5	70.6	424.1
	25 - 49	3,200.9	203.3	3,404.2
	50 - 64	1,302.8	77.8	1,380.6
	Total	4,857.2	351.7	5,208.9
Spain	15 - 24	1,381.7	841.5	2,223.2
	25 - 49	13,215.9	2,721.4	15,937.3
	50 - 64	4,138.4	582.3	4,720.7
	Total	18,736	4,145.2	22,881.2
Netherlands	15 - 24	1,351.5	95.9	1,447.4
	25 - 49	4,973.8	141.8	5,115.6
	50 - 64	2,118	61.1	2,179.1
	Total	8,443.3	298.8	8,742.1

Source: Own elaboration based on EUROSTAT data

**Appendix 7:** Association tables for testing the dependency between labour status and nationality (thousands of people), 2010

Country	Citizen	Employment	Unemployment	Total
Czech Republic	Foreigner	72.4	4.5	76.9
	Native	4,861.9	347.7	5,209.6
	Total	4,934.3	352.2	5,286.5
Spain	Foreigner	2,634.5	1,044.8	3,679.3
	Native	16,253.4	3,104.7	19,358.1
	Total	18,887.9	4,149.5	23,037.4
Netherlands	Foreigner	303.3	22.9	326.2
	Native	8,222.6	275.0	8,497.6
	Total	8,525.9	297.9	8,823.8

Source: Own elaboration based on EUROSTAT data

**Appendix 8:** Unemployment rates across regions in selected countries (%), 2009

Spain		Netherlands		Czech Republic	
NUTS 2	UR	NUTS 2	UR	NUTS 2	UR
Com. Foral de Navarra	10.9	Zeeland	2.1	Praha	3.1
País Vasco	11.0	Gelderland	2.8	Střední Čechy	4.4
Cantabria	12.0	Utrecht	2.9	Jihozápad	5.2
Galicia	12.6	Noord-Holland	3.2	Jihovýchod	6.5
La Rioja	12.8	Noord-Brabant	3.2	Severovýchod	7.3
Aragón	12.8	Friesland (NL)	3.5	Střední Morava	7.5
Principado de Asturias	13.4	Overijssel	3.6	Moravskoslezsko	9.7
Castilla y León	13.8	Flevoland	3.6	Severozápad	10.3
Comunidad de Madrid	14.0	Zuid-Holland	3.6		
Cataluña	16.2	Drenthe	4.2		
Illes Balears	18.0	Limburg (NL)	4.4		
Castilla-la Mancha	18.8	Groningen	4.8		
Ciudad Autónoma de Ceuta (ES)	18.9				
Extremadura	20.5				
Región de Murcia	20.7				
Comunidad Valenciana	21.2				
Ciudad Autónoma de Melilla (ES)	24.2				
Andalucía	25.4				
Canarias (ES)	26.2				

Source: Own elaboration based on EUROSTAT data

**Appendix 9:** Contingency tables for testing the dependency between duration of unemployment and gender (thousands of people), 2010

Country	Duration	Males	Females	Total
Czech Republic	Less than 1 month	16.4	13.5	29.9
	From 1 to 2 months	33.4	28.6	62
	From 3 to 5 months	37.9	35.3	73.2
	From 6 to 11 months	38.6	42	80.6
	From 12 to 17 months	14	20.2	34.2
	From 18 to 23 months	7.6	7.4	15
	From 24 to 47 months	12.4	15.2	27.6
	48 months or over	14.8	14.1	28.9
	Total	175.1	176.3	351.4
Spain	Less than 1 month	219.4	176.8	396.2
	From 1 to 2 months	503.9	397.5	901.4
	From 3 to 5 months	533.5	387.8	921.3
	From 6 to 11 months	554.1	389.6	943.7
	From 12 to 17 months	256	208.7	464.7
	From 18 to 23 months	94.7	94.7	189.4
	From 24 to 47 months	91.4	120.5	211.9
	48 months or over	36.3	80.2	116.5
	Total	2,289.3	1,855.8	4,145.1
Netherlands	Less than 1 month	12	10.5	22.5
	From 1 to 2 months	44.2	36.8	81
	From 3 to 5 months	36.2	29	65.2
	From 6 to 11 months	29.2	25.2	54.4
	From 12 to 17 months	13	12.5	25.5
	From 18 to 23 months	:	:	0
	From 24 to 47 months	10.4	9.6	20
	48 months or over	9.9	8	17.9
	Total	154.9	131.6	286.5

Source: Own elaboration based on EUROSTAT data

**Appendix 10:** Contingency tables for testing the dependency between duration of unemployment and age (thousands of people), 2010

Country	Duration	15 - 24 years	25 - 49 years	50 - 64 years	Total
Czech Republic	To 2 months	23.4	51.1	17.4	91.9
	From 3 to 5 months	17.3	40.9	14.9	73.1
	From 6 to 11 months	15.8	47.4	17.4	80.6
	From 12 and more	12.0	47.1	17.8	76.9
	Total	68.5	186.5	67.5	322.5
Spain	To 2 months	298.3	867.0	132.4	1,297.7
	From 3 to 5 months	196.4	624.1	100.7	921.2
	From 6 to 11 months	194.5	623.8	125.5	943.8
	From 12 and more	148.6	543.7	173.7	866.0
	Total	837.8	2,658.6	532.3	4,028.7
Netherlands	To 2 months	47.0	46.5	7.4	100.9
	From 3 to 5 months	21.0	33.0	11.3	65.3
	From 6 to 11 months	14.4	28.7	11.4	54.5
	From 12 and more	6.1	20.4	17.0	43.5
	Total	88.5	128.6	47.1	264.2

Source: Own elaboration based on EUROSTAT data

**Appendix 11:** Association tables for testing the dependency between work-time and gender (thousands of people), 2010

Country	Work-time	Gender		Total
		Males	Females	
Czech Republic	Part-time	56.1	176.2	232.3
	Full-time	2,720.5	1,904.2	4,624.7
	Total	2,776.6	2,080.4	4,857.0
Spain	Part-time	493.3	1,875.6	2,368.9
	Full-time	10,061.7	6,305.4	16,367.1
	Total	10,555.0	8,181.0	18,736.0
Netherlands	Part-time	1,070.7	2,953.1	4,023.8
	Full-time	3,469.6	950.0	4,419.6
	Total	4,540.3	3,903.1	8,443.4

Source: Own elaboration based on EUROSTAT data