

**CZECH UNIVERSITY OF LIFE  
SCIENCES IN PRAGUE**

**FACULTY OF ECONOMICS AND MANAGEMENT  
DEPARTMENT OF ECONOMICS**

*Foreign direct investments and their impact on employment in  
the Czech Republic*

**BACHELOR THESIS**

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**CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE**

Department of Economics  
Faculty of Economics and Management

# **BACHELOR THESIS ASSIGNMENT**

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Thesis title

**Foreign direct investments and their impact on employment in the Czech Republic**

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## **Objectives of thesis**

Analyze impact of Foreign Direct Investment on Unemployment in the Czech Republic

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### Recommended information sources

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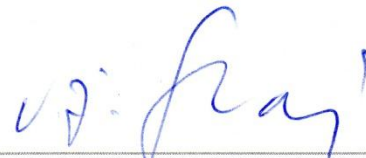
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## **Declaration**

I declare that I have worked on my bachelor thesis called “Foreign direct investments and their impact on employment in the Czech Republic” by myself and I have used only the resources mentioned at the end of the thesis.

Prague, the 13th March 2014

.....

Marika Schimonová

## **Acknowledgment**

I would like to thank Ing. Mansoor Maitah, doc. Ph.D. et Ph.D. for being my supervisor, for consultations concerning my bachelor thesis and useful advices.

I also want to thank my parents for their endless support during my study years and my colleagues from AIESEC CZU, who evoked motivation to work harder to reach all the goals.

# Foreign direct investments and their impact on the employment in the Czech Republic

*(Přímé zahraniční investice a jejich vliv na zaměstnanost v České republice)*

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## **Summary**

This Bachelor thesis provides overview of the situation on the Czech labour market from 1993 until 2012 and focuses on the impact of inflow of foreign direct investment on the employment in the Czech Republic. The definition of unemployment, methodology of Czech labour market sample survey, main issues of the labour market with focus on structural and regional differences, foreign investors' issues with recruiting and employing Czech employees and policy on employment are presented in the first theoretical part. The second part consists of general topics connected with FDI definition and valuation and classification with strong orientation to the Czech Republic.

The analytical part is focused on verification of hypothesis that increase in amount of FDI will decrease the unemployment rate in the Czech Republic. The analysis is done using comparative analytical approach. It consists of graphs and tables of FDI inflow and unemployment rate on the national and regional level as well as comparison of the situation in chosen sectors of economics with correlation analysis and regression analysis. For complexity, in the end is a case study that compares intensity of impact of Greenfield and Brownfield investment on employment and wages in the region.

## **Key words**

Foreign direct investment, unemployment rate, economic growth, Czech labour market, investment encouragement

## **Souhrn**

Tato bakalářská práce poskytuje přehled o situaci na Českém trhu práce po roce 1993 až do roku 2012 a zaměřuje se na vliv přílivu přímých zahraničních investic na zaměstnanost v České republice. V teoretické části je prezentována definice nezaměstnanosti, metodologie Výběrového šetření pracovních sil, hlavní problémy na Českém pracovním trhu se zaměřením na strukturální a regionální odlišnosti, hlavní problémy zahraničních firem při recruitu a zaměstnávání českých zaměstnanců, a politiku zaměstnanosti. Druhá část obsahuje hlavní témata spojená s PZI, definicí PZI, hodnocením a klasifikací s důrazem na Českou republiku.

V analytické části se práce zaměřuje na ověření hypotézy, že s vyšším přílivem PZI do České republiky nezaměstnanost klesne. Analytická část je vypracována metodou porovnávací analýzy a obsahuje grafy a tabulky, které porovnávají příliv PZI a nezaměstnanost na národní a krajské úrovni, v sektorech ekonomiky a dalších ohledech s použitím korelační analýzy a regrese. Pro úplnost je práce doplněna o případovou studii, která srovnává vliv investice na zelené louce a investice na hnědé louce na zaměstnanost v daném regionu.

## **Klíčová slova:**

Přímé zahraniční investice, míra nezaměstnanosti, hospodářský růst, Český trh práce, investiční pobídky

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## **Introduction**

The purpose of this study is to investigate the impact of foreign direct investment on employment in the Czech Republic and describe the nature of this relationship.

In the past two decades the Czech economy and labour market has been through great changes. The importance of traditional industries and agriculture were repressed with strengthening sector of services, education and research. These changes in our economy accelerated thanks to the impact of multinational enterprises the productivity, growth of GDP, organizational changes in firms, company cultures, Czech labour code etc. The FDI was initially oriented to acquisition and privatisation of the existing companies or investment in their privatisation and restructuring. The Greenfield investment practically did not exist until numerous investment incentives by the Czech government, Ministry of Trade and Commerce. Both types have generally different measure of impact on employment, which is also a part of my investigation. The FDI brought positive and negative spill over and spin off effects, from which just the issues connected to the employment in the Czech Republic were chosen to be further analysed in this work. The personal motives for selection of this topic is simple; the two timeless, but still current and rewarding topics of economists are combined together and result in complex work, which specifies the impact of inflow of foreign capital to the Czech Republic. The employment, or better unemployment, is a huge issue in the entire world, because it measures unproductive resources in an economy. The foreign direct investment is frequently cited theme connected to economic globalisation and the impact on home and host countries. High unemployment slows down the economy, because all the available human resources are not used and it generates social problems and conflicts connected with poverty and self-esteem of individuals.

## **Aims and Methods**

The aim is to find out how and in which size the employment in the Czech Republic is influenced by the inflow of foreign capital. In the theoretical part is described the evolution of economy after year 1993 (when the Czech Republic became independent state) and the changes of unemployment rate as well as qualitative changes in the labour market and work culture. The analytical part is focused on mathematical and statistical description of the relationship between the unemployment rate and FDI. Correlation analysis is used to find the

intensity of relationship between the inflows of FDI to selected sectors and the number of employees in it. The calculation takes in account that the employment rate changes after longer time and tries to approximate this interval. Next stands the estimation of linear regression function, which tries to explain the unemployment as a function of more variables, such as foreign direct investment, gross domestic product, population in the Czech Republic, gross wages and inflation (CPI based). The regression analysis was done using statistical economic software GRET, the rest of descriptive and comparative tables, graphs and calculation on MS Excel.

Not only was the relationship between the unemployment rate and FDI investigated in this thesis. The last chapter of analytical part compares the influence on unemployment and wages in the region, where the foreign capital flew in form of Greenfield and Brownfield investment. This example was chosen to show the different nature and effect those types of investment have on the employment in the region.

The concept of this bachelor thesis was verify and analyse the claims and theories found in specialized literature for this topic using basic descriptive, comparative and statistical methods and to come up with simple, but still complex document.

# **Employment**

## **Specification of the Czech labour market**

This chapter describes the Czech labour market, the evolution of unemployment after the Velvet revolution and is focused on determinants that influence the unemployment rate in the Czech Republic.

The very basic definition of labour market says: “A labour market in an economy functions with demand and supply of labour. In this market, labour demand is the firm's demand for labour and supply is the worker's supply of labour. The supply and demand of labour in the market is influenced by changes in the bargaining power.”<sup>1</sup>

To specify the main issues connected with labour market not only in the Czech Republic, let's have a look at EU agency Eurofound that resumes it: “Labour market issues include employment, unemployment, participation rates and wages. In particular, in recent times, demographic changes have resulted in an increasingly ageing workforce, part of which is willing to take up paid work after retirement.”<sup>2</sup>

## **Changes of the Czech economics and labour market since 1989**

After the Velvet Revolution until 1997 the market reforms and stabilisation policies that followed the foreign trade and price liberalisation were expected to produce high unemployment in transition countries. In the Czech Republic, however, there initially appeared to be more emphasis on keeping unemployment (artificially) low, instead of moderating the consequences of relatively high transitional unemployment. This situation was called the Czech unemployment miracle. In the 1990s also the society was transforming. The demographic behaviour, including reproductive activity and life expectancy changed. The number of marriages was declining and fewer children were being born. The consequence population ageing are various direct and indirect problems in society and mainly in social system.

The reason of low unemployment in the early 1990's were the generous credits given by the semi-state owned banks to the large multinational enterprises, who bought the semi-state

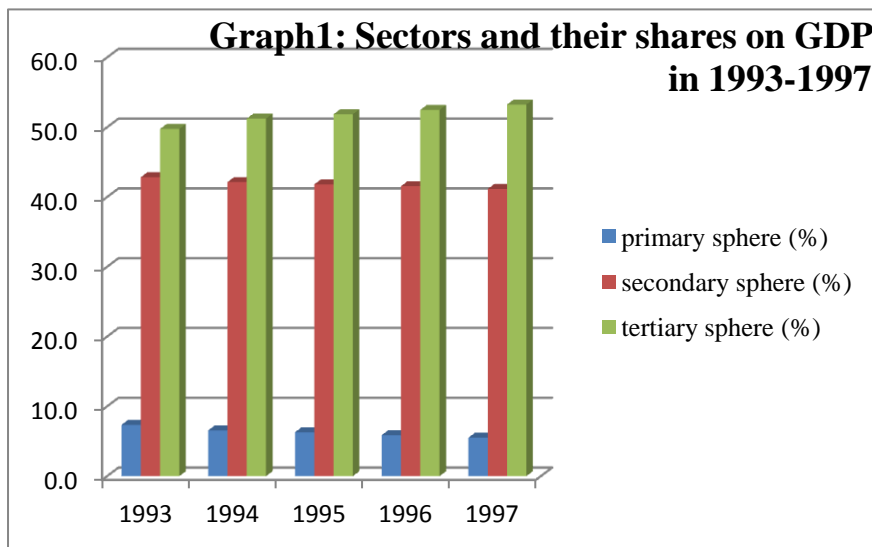
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<sup>1</sup> (Economic Times ), retrieved from [http://articles.economicstimes.indiatimes.com/2013-04-11/news/39027511\\_1\\_labour-demand-supply](http://articles.economicstimes.indiatimes.com/2013-04-11/news/39027511_1_labour-demand-supply) on 12/2/2014

<sup>2</sup> (European Foundation for the Improvement of Living and Working Conditions (Eurofound))

owned factories and enterprises. However, because of the above-mentioned specificity of financing of (formerly) state-owned enterprises, these pressures on the workers and managers were clearly much lower than they would otherwise have been. Most of those who eventually left their jobs moved directly to another job or retired. After the transition of economy, some workers were made redundant, because the aggregate labour productivity slightly increased (see Graph 3). On corporate level, there started to be motivation to work effectively, because of the loss of permanent job security. Majority of non-flexible workers benefited from situation and retired, because of high pension at that time. Some workers also established their own business, or became independent sole-traders.

The relatively high concentration of FDI caused the most important changes for Czech economy and society in the late 1990's, when the companies went through organizational changes in hierarchy, division of responsibility, principles of remuneration (e.g. variable part of salary depending on productivity of worker) and work conditions etc., which probably helped the Czech Republic to catch up the economies from the EU15 and have the best reputation for investors from the CEEC countries of ex-Soviet bloc.<sup>3</sup>



Graph 1\_Economic Sectors-shares on GDP in the Czech Republic 1993-1997

Source: [http://www.czso.cz/csu/redakce.nsf/i/cr\\_od\\_roku\\_1989#03](http://www.czso.cz/csu/redakce.nsf/i/cr_od_roku_1989#03), Table 04.01

<sup>3</sup> (FLEK, 2004)

As the consequence of these structural changes in companies, in Prague and other cities were new opportunities especially for modern-skilled workers, who knew languages, finance, management and law. Many workers started to switch to sector of trade and

services, which started to be more dominant in short time (see Graph 1).

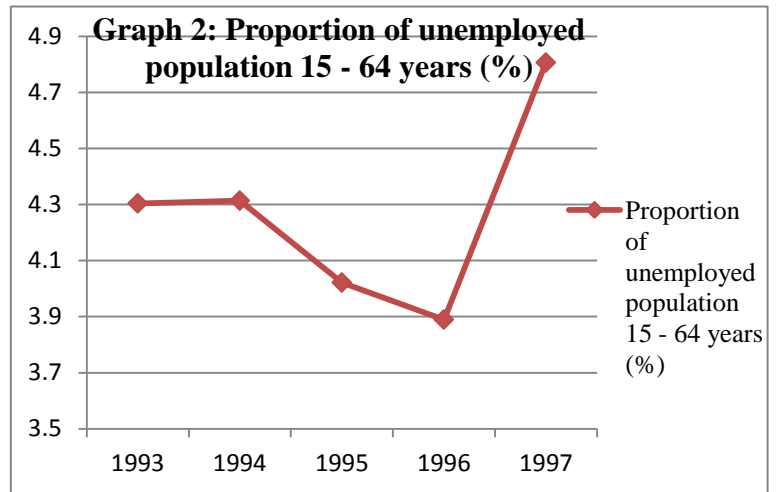
Only the construction industry remained stable across all the years. The Czech

society also changed the occupational hierarch; the manual workers (skilled or unskilled) lost their privileges. The society knew the occupational hierarchy. In the Graph 1, we can see the proportion of primary, secondary and tertiary sector in the Czech economy between 1993 and 1997. The tertiary sector was slightly getting more important, the secondary sector and agriculture were slightly losing their role.

The Czech miracle was finishing in 1997, when many hastily privatized companies entered bankruptcy and it caused a high increase in unemployment rate. Also banks limited their credits and the economic growth stagnated.

The graph 1 illustrates the structural changes the Czech economics in 1993-1997 proportion of unemployed population between 15 and 64 years old, we can see that in years 1993-1997, the unemployment rate never touched 5%, which is very good. Between 1996 and 1997, we can see however slight upward shift of the unemployment, which was probably caused by bankrupt of some companies privatised right after the revolution.

From 1998 to 2002, during the Social Democrat party period, the privatization accelerated. The shares in banks, Czech Telecom and state mines were sold. The role of Investment Privatization Fund declined and the inflow of FDI increased. It caused even greater enterprise restructuring and new managers increased pressure on the workers efficiency. On the graph below, we can see the productivity of workers in the 1990s. The work productivity was first measured in 1995, so for 1993 the value is just imaginary. However, in 1995 the productivity



Graph 2\_Proportion of unemployed population between 15 - 64 years, the CR

Source: [http://www.czso.cz/csu/redakce.nsf/i/cr\\_od\\_roku\\_1989#03](http://www.czso.cz/csu/redakce.nsf/i/cr_od_roku_1989#03), Table 05.01

for one working hour was 161,36 CZK (nominally) and in 2000 it was 245,64, which is a huge difference during 5 years even if the inflation is not included.

The unemployment during 1997 to 2000 almost doubled reaching 8.7% in 2000 according to OECD survey from 2006. It was also the period of financial services and intermediation boom in the Czech Republic.

"From 2000 until the outbreak of economic crisis at the end of 2008, the Czech Republic experienced steady economic growth. GDP growth in the early 2000s was moderate, but it reached its maximum in the modern history of the CR during 2005 to 2007. The slowdown of economic growth due to the economic crisis was steep although under the EU average. The key factors for the robust economic performance in the CR were growth in productivity and high inflows of FDIs. Economic growth related to FDI inflows has fostered an increase in the demand for labour since 2004 and a decrease in unemployment rates; before the economic crisis the economy was able to employ nearly all the labour force."<sup>4</sup>

The unemployment rate, which was in 2000 a serious concern (at 8.8%) decreased to 4.4% in 2008. The number of unemployed people per vacancy decreased between 2005 and 2008 from 8 to 2. In 2007 and 2008, the shortage of labour was particularly serious as companies could not find employees in some regions, especially blue collar workers, middle technical staff as well as highly qualified experts in manufacturing. This shortage was partly solved by the supply of foreign labour force which grew after 2000. Illegal immigration was however estimated to represent 50% to 100% of legal foreign employment in 2008; according to official data, foreign workers represented about 6.5% of the total labour force in 2009.

Unfortunately, the economic crisis interrupted promising developments observed during previous years. The economic downturn in manufacturing led to higher unemployment and the same process followed in the service sector. The unemployment rate in 2009 stood at 6.7% and at the end of 2010 it reached 7.3%, which was still lower than the EU average. The unemployed/vacancy ration increased steeply to 18.2 in December 2010.

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<sup>4</sup> (VOZÁB, 2011)



## **Contemporary issues on the Czech labour market**

As was already described in the previous chapter, the Czech Republic went in relatively short time through huge structural changes connected to transformation of economy. The contemporary issues are mainly unemployment and wages, gender difference between salaries, wages and work-legal relations, participation of disadvantaged workers, demographic changes, and decrease in economically active population, illegal immigration of workers, structural or regional unemployment.

According to National Action Plan on Employment from 2004, the Czech (and EU) labour market is characterised by low mobility and flexibility of the workforce. The active population also has grown small, and the extension of retirement age doesn't have any impact on the unemployment rate. The regional and long-term unemployment are especially in regions of Northern Bohemia and Moravia, former mining and manufacturing regions which after transition lost its competitiveness.

According to the National Action Plan and statistics, unemployment is most probable for persons with lower education, school-leavers without practical experience and persons over 50 years of age. Especially workers who don't possess modern skills, e.g. PC skills, languages can't find employment for long time. It is also caused by the switching from agriculture and industry sector to trade and services and specializing amongst fields to which huge proportion of our labour force is not prepared.

From small towns and villages, young and skilled workers immigrate to the cities, where they have better opportunities and higher salaries than in their place of origin. It is a huge problem, because these regions start to lack quality workforce, young people, the population there decreases and it will discourage investors to establish their businesses there. It could also be threat for infrastructure in these regions. Good news for rural areas are increasing opportunities of internet business and commerce, which doesn't need permanent residence of offices in city centre. The start-up companies find budget-wise to have offices or small depots outside the cities, which offer great connection with the customers of for example e-shops, but on the other hand the expenses for the rent are much higher. Another way how to stabilize situation on the regional labour markets are investment incentives that are nowadays focused on attraction high investments that create a lot of work opportunities. This topic is further elaborated in chapter about Investment Incentives and analytical part.

The regional labour market differences can be also illustrated by the rate of GDP per capita in regions. The major disparity in the CR according to GDP capita is between the capital city

Prague and the rest of the country. In 2007, the GDP capita of Prague was almost once more than the EU 27 average, while all other regions were far below the EU average.

Several groups of regions can be identified based on the GDP growth:

- Successful regions with robust growth which coped relatively well through the crisis.
- Regions that have experienced growth but were more severely hit by the crisis; their unemployment rate increased significantly, particularly in certain micro-regions. –
- Third, there are regions experiencing long-term economic downturn since half of 90s, when large part of the manufactures, coal mines and steel factories lost their eastern markets demanders.

Regional differences in unemployment are larger and more serious than the differences in economic performance measured by the GDP/capita, but they are more correlated with economic growth.<sup>5</sup>

Unemployment in the Czech Republic could be divided into the frictional unemployment, which lasts up to 3 months and is the least problem for economists and society. Frictional unemployment is consequence of switching between works. It occurs especially when a person finishes in one work, but doesn't have another one scheduled immediately.

Another usual type of unemployment is cyclical, which is connected with the economic situation, economic cycle of given state. The cyclical unemployment increases when the aggregate demand decreases and has influence on all the sectors of economy. In times of recession like in 2008, less people had job, but this also isn't the most difficult problem in the Czech Republic and EU nowadays.

One of the biggest issues for EU and OECD is now the structural unemployment. It is result of mismatch of workers' skills and the skills needed by the employers in given country.

Between the most usual causes belongs the insufficient mobility of workers and demand for certain education/knowledge/skills (e.g. new technologies, languages). The most difficult problems in the Czech Republic is nowadays lack of skilled blue-collar workers in manufacturing and excess of university-leavers especially in field of social and human sciences, who can't find decent employment.

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<sup>5</sup> (VOZÁB, 2011)

## Definition of unemployment and methodology of CZSO

In this chapter is described the definition of unemployment, which is the main topic of this thesis. This chapter is based on the sources of the Czech statistical office that publishes yearbooks on time series according to areas or employment according to CZ-NACE division of employments.

The unemployed are all persons aged 15+ who belong into 1 of these groups during the reference period:

- were without work - i.e., were in neither employment nor self-employment,
- were actively seeking work. The active form of seeking work includes registration with a labour office or private employment exchange, checking at work sites, farms, market or other assembly places, placing or answering newspaper advertisements, taking steps to establish own business, applying for permits and licenses, or looking for a job in a different manner, were currently available for work - i.e.,
- were available during the reference period for paid employment or self-employment immediately or within 14 days.

If someone doesn't meet the description above, they are either employed, or economically not active (e.g. children in pre-school age, persons attending various educational institutes, normally retired persons, long-term disabled or invalid persons and persons on parental leave). People not seeking work because they have scheduled job, whose commencement is fixed for later (3 months at the latest), are also classified as unemployed by Eurostat.

Labour force: all persons aged 15+ who satisfy the requirements for inclusion among the employed or the unemployed.

<b>Total population</b>	Population aged 0-14	Economically not active	
	Population aged 15 or more	<b>Economically active (labour force)</b>	Employed in national economy
			<b>Unemployed</b>

Table 1\_Economic status of population table, Source: Methodology of VŠPS at [www.czso.cz](http://www.czso.cz)

The unemployment could be either measured by the Labour Office (registered unemployment) or by Labour Force Sample Survey (ILO unemployment), which is obligatory survey in all the EU countries and also other states. Both types consequently use different definitions and it is necessary to distinguish between them. Beside the different methodological definition of indicators, this fact is a consequence of other factors.

Unemployment rates are calculated as the ratio of the unemployed to total labour force. General unemployment rate (ILO) is an indicator derived from LFSS results in compliance with international definitions and recommendations. Both the numerator and the denominator use surveyed persons according to their place of stay. Specific unemployment rates are indicators which describe unemployment in a certain social, age or other group of population.

### **Methodology of Labour Force Sample Survey indicators**

In this thesis is primarily used the ILO unemployment, so let's explain some backgrounds of the survey.

The LFSS is conducted among respondents living in dwellings chosen at random. All characteristics of every respondent are related to his/her position in the reference week. This allows tracking all the population groups and judge their position on the labour market in terms of age, gender, education, branch of industry, and status in employment, mobility of labour force, social status and the like.

Compared with current accounting and other register sources, LFSS allows making an expert guess of not only the level and character of employment and total unemployment from various aspects, but also the scope and character of economic inactivity of the population.

The basic and key criterion for placing a respondent in a particular group is always the respondent's (aged 15+) actual activity in the labour market in a reference week. As employed are considered all persons aged 15 or more who belonged to paid employed persons or were in own business during the reference week. It does not matter whether their working activity was of a permanent, temporary, seasonal or occasional character or if they held only first or second jobs, but the work has to take least one hour in the reference week. Also apprentices who receive wage, salary or remuneration like other persons are considered as employed. The same holds good for students, house persons and other respondents

engaged above all in other than economic activities and were employed in the reference period.

## **Current policy and acts on employment**

The main sources of the labour law are three acts: the Labour Code, the Collective Bargaining Act and the Employment Act. The Labour Code (Act No. 262/2006 Coll., as amended by Act No. 585/2006 Coll.) – is the Czech Republic’s fundamental regulation in the area of labour law. It regulates the way of origination, duration and termination of employment, working discipline, working conditions, the wage and reimbursement of wage, female and juvenile workers' working conditions, labour disputes, compensation for damage and many more.

The Collective Bargaining Act (Act No. 2/1991 Coll.) – regulates the collective negotiations between the respective trade unions organisations and employers, the participation of the state, and the purpose of which is the conclusion of a collective agreement. It regulates the requisites of the collective agreement, the procedure of collective agreements, collective disputes, strikes within a dispute related to the conclusion of a collective agreement, etc.

The Employment Act (Act No. 435/2004 Coll.) – regulates the provision of the state’s employment policy, the goal of which is to attain full employment rate and protection against unemployment, fair treatment and ban on discrimination in the course of persons asserting their right to employment, the activities performed by labour offices and their powers, the assessment of natural persons’ health condition and healthcare providers’ cooperation with the assessment of their health condition, the right to employment.<sup>6</sup>

The Czech Republic also follows the European integrated policy on employment (latest from year 2011), which focuses on:

Maintaining the highest possible rate of employment and endeavour to stay in one job for long time (to avoid frictional unemployment), increasing investments in human capital (education and improvement o skills), motivation of workers to be more flexible in terms of commuting or willingness to additional education, and improvement of work productivity. It is against discrimination women or socially disabled persons and differences between wages because of race or sex. It emphasises the importance of necessity to change attitude towards employing older people. Another trend should be to support life-work balance and provide

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<sup>6</sup> From (Ministry of Foreign Affairs)

the pre-school child-care, so that the people wouldn't spend too much time on parent leave. Parent leave means competitive disadvantage on labour market when the person wants to get back to work. The parent leave indicates the obsolescence of knowledge and skills to the employers and hiring managers. Also the problem of structural unemployment is taken in account and the EU recommends steps to struggle it.

**Concrete steps to ensure optimal situation on the Czech labour market according to the National Reform Program 2008-2010:**

- Implementation of new social, benefit, pension and tax systems, programmes of active employment policy and lifelong education.
- Extension of retirement age and motivating retirees to participate. Unlimited amounts of wage even when having a pension. Conditions for early retirement make more stringent.
- Flexibility of the labour market should be improved by temping (hiring temporary workers) in aid of profit-making labour agencies.
- Tighten the restrictions on the provision of unemployment benefits and urge for closer cooperation of the unemployed and the Labour Office. Active employment policy should be also supported by socially expedient jobs and socially benefiting jobs.
- To improve the disproportions in unemployment rate, the investors who create jobs in regions with unemployment higher than 14% should be given tangible support.
- The government also suggests supporting the education in technical fields and optimizing the education with the labour market demand.
- The life-cycle approach to work will be supported. The family life attitude of state will shift from parent-leave benefits to support of flexible jobs for parents on parent-leave. "The proposals are focused on an increase of incentives for the founders of nurseries to adapt their opening hours to the needs of working parents, on an increase of incentives for the employers to establish nurseries and children corners at workplaces, on subsidies for the education of employees on parental leave and on a more frequent use of flexible work forms."<sup>7</sup>

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<sup>7</sup> National Reform Programme of the Czech Republic 2008-2010

# **Foreign Direct Investments**

## **Definition of FDI valid for the Czech Republic**

“Foreign direct investment (FDI) is the process whereby residents of one country (the source country) acquire ownership of assets for the purpose of controlling the production, distribution and other activities of a firm in another country (the host country).”<sup>8</sup>

In this thesis focused primarily on the effect of FDI on the employment in the Czech Republic, should appear also the definition of the Czech National Bank, which publishes statistics about FDI in the Czech Republic. The definition is set by the OECD in accordance with EUROSTAT and the International Monetary Fund. It specifies that: “Foreign direct investment reflects the objective of obtaining a lasting interest by a resident entity in one economy (direct investor) in an entity resident in an economy other than that of the investor (direct investment enterprise). The lasting interest implies the existence of a long-term relationship between the direct investor and the enterprise and a significant degree of influence on the management of the enterprise. Direct investment involves both the initial transaction between the two entities and all subsequent capital transactions between them and among affiliated enterprises, both incorporated and unincorporated.” (§5 OECD Benchmark Definition).<sup>9</sup>

The Czech National Bank also reminds of relations between the investor and affiliate enterprise. If the investor has 10-50% of shares, we talk about foreign associates, if the investor has more than 50% of shares, we talk about subsidiaries and the wholly-owned foreign establishment is called a branch.

## **Types of FDI**

The classification of FDI reflects the mode of entry to the host market, share and to motives of foreign direct investor to enter the host market. The classification of FDI is closely connected to the theory of MNE, thus this chapter is a free continuation of the previous one.

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<sup>8</sup> (MOOSA, 2002)

<sup>9</sup> OECD Handbook on Economic Globalisation Indicators, 2005

### *Mode of entry*

FDI may take one of three forms: Greenfield investment, cross-border mergers and acquisitions (M&As), and joint ventures.

GREENFIELD INVESTMENT means establishment of completely new production, distribution or other facilities in the host country. This is normally welcomed by the host country because of the job-creating potential and value-added output. Sometimes, the term 'Brownfield investment' is used to describe a situation where investments that are formally an acquisition resemble Greenfield investment. This happens when the foreign investor acquires a firm but replaces almost completely the plant and equipment, labour and the product line. This concept has been used most to describe acquisitions in transition economies, thus is very common in the former Czechoslovakia and Czech Republic.

AN ACQUISITION OR A MERGER with an established firm in the host country is cheaper, if the acquired project is a loss-making operation that can be bought cheaply; and it allows the investor to gain a quick access to the market. Firms may be motivated to engage in cross-border acquisitions to bolster their competitive positions in the world market by acquiring special assets from other firms or by using their own assets on a larger scale. (Hopkins, 1999)

JOINT VENTURE could be realized either with a host country firm or a government institution, as well as with another company that is foreign to the host country. One side normally provides the technical expertise and its ability to raise finance, while the other side provides valuable input through its local knowledge of the bureaucracy as well as of local laws and regulations. Buckley and Casson (2000b) present a model that explains the formation of joint ventures in terms of nine distinct factors: (1) market size; (2) pace of technological change; (3) interest rates; (4) cultural distance; (5) protection of independence; (6) missing patent rights; (7) economies of scope; (8) technological uncertainty; and (9) economies of scale.<sup>10</sup>

### *Location factors*

- Market-seeking (amount of GDP per capita, networking, market structure etc.)

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<sup>10</sup> (MOOSA, 2002)



- Resource-seeking (lower costs of factors of production prices, option to use special local resources etc.)
- Efficiency-seeking (membership in integration treaties with positive influence to business, creation of regional corporate networks, expense decomposing)<sup>11</sup>

<b>Phases of FDI inflows in Central Europe (Radosevic, self edited)</b>			
<b>Item</b>	<b>Market-Seeking</b>	<b>Market/Efficiency Seeking</b>	<b>Efficiency-seeking</b>
<b>Motives for FDI</b>	<i>First-mover advantages</i>	<i>Factor cost advantages</i>	<i>Export-oriented FDI</i>
	<i>Cheap labour</i>	<i>Skill improvement</i>	<i>Local suppliers</i>
	<i>Domestic market acquisition</i>	<i>Local Market</i>	<i>International value chain integration</i>
<b>Dominant FDI types</b>	<i>Distributors</i>	<i>Distributors</i>	<i>Distributors</i>
	<i>Low value-added activities</i>	<i>Low value added activities</i>	<i>Low value added activities</i>
		<i>Offshore plants</i>	<i>Offshore plants</i>
			<i>Focused production activities</i>

Table 2\_Phases of FDI inflows in Central Europe, *Source: DUFAX, Stéphanie, Endeavour to maintain full employment, 2010, Central European University in Budapest, Dpt. of Public Policy*

### ***Mode of expansion***

HORIZONTAL FDI is undertaken for the purpose of horizontal expansion to produce the same or similar kinds of goods abroad (in the host country) as in the home country. This type is thus called also market-seeking. Hence, product differentiation is the critical element of market structure for horizontal FDI. More generally, horizontal FDI is undertaken to exploit more fully certain monopolistic or oligopolistic advantages, such as patents or differentiated products, particularly if expansion at home were to violate anti-trust laws.

VERTICAL FDI, on the other hand, is undertaken for the purpose of exploiting raw materials (backward vertical FDI) or to be nearer to the consumers through the acquisition of distribution outlets (forward vertical FDI). Vertical FDI can be also called asset-seeking or resource-seeking.

The third type of FDI, CONGLOMERATE FDI (also called platform), involves both horizontal and vertical FDI. In 1999 horizontal, vertical and conglomerate mergers and acquisitions accounted for 71.2 per cent, 1.8 per cent and 27 per cent, respectively, of the total value of mergers and acquisitions worldwide. This type has another name efficiency

<sup>11</sup> (ZAMRAZILOVÁ, 2006)

seeking, because they try to find the efficient balance between the horizontal and vertical FDI.<sup>12</sup>

### *International trade balance related*

**Import-substituting** FDI involves the production of goods previously imported by the host country, necessarily implying that imports by the host country and exports by the investing country will decline. This type of FDI is likely to be determined by the size of the host country's market, transportation costs and trade barriers.

**Export-increasing** FDI, on the other hand, is motivated by the desire to seek new sources of input, such as raw materials and intermediate goods. This kind of FDI is export-increasing in the sense that the host country will increase its exports of raw materials and intermediate products to the investing country and other countries (where the subsidiaries of the multinational corporation are located).

**Government-initiated** FDI may be triggered, for example, when a government offers incentives to foreign investors in an attempt to eliminate a balance of payments deficit.

A similar, trade-related classification of FDI is adopted by Kojima (1973, 1975, and 1985). According to Kojima's classification, FDI is either trade-orientated FDI (which generates an excess demand for imports and excess supply of exports at the original terms of trade) or anti-trade-orientated FDI, which has an adverse effect on trade.

**Expansionary** FDI seeks to exploit firm-specific advantages in the host country. This type of FDI has the additional benefit of contributing to sales growth of the investing firm at home and abroad.

**Defensive** FDI seeks cheap labour in the host country with the objective of reducing the cost of production.

### **Valuation of FDI by the CNB**

This chapter is about valuation of investments in statistics of the Czech National Bank. Generally, when recording the value of direct investment stocks *own funds at book value* are used. (This value consists of the items *equity plus reinvested earnings*.) It is not possible to report the FDI stocks in their market value, because if so, the foreign-owned shares in all individual companies would have to be revaluated on a regular basis, which is not feasible.

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<sup>12</sup> (MOOSA, 2002)

“In compliance with the methodology applied in the EU, the territorial breakdown of foreign direct investment is based on the country of the immediate investor. The ultimate owner of the investment may thus come from some other country (for example, if a parent company owns a foreign affiliate which invests in the Czech Republic, the investment is classified as originating in the home country of that affiliate).

The industrial breakdown is based on the branch classification of economic activities, which corresponds to the internationally used NACE Rev. 2 classification.

In order to comply with the confidentiality treatment requirements laid down by international regulations, the symbol C (maintenance of primary confidentiality so that direct identification of data provided by individual respondents is not possible) and D (maintenance of secondary confidentiality so that identification of data provided by individual respondents is not possible through grossing up) is used in the relevant statistical aggregates.”<sup>13</sup>

### **Theory of multinational enterprise and context in the Czech environment**

Theories of Multinational Corporation or Enterprise (MNC or MNE) try to explain the reasons for existence of MNEs in the world economy, concretely the motives for moving abroad, why MNEs undertake different forms of investment and what enables them to do so. John H. Dunning defines MNE as: "Enterprise which owns and controls income generating assets in more than one country."

He also developed eclectic paradigm or so-called OLI framework in the theory of internalisation, which says that the firm chooses to internalize the transactions if the transaction costs on the free market are higher than the internal costs. OLI framework itself evaluates ownership, localisation and internalisation advantages of different modes of market entries. For illustration see the table above.

<i>Dunning (1981)</i>		<b>Categories of advantages</b>		
		Ownership advantages	Internalization advantages	Location advantages
Form of market entry	<b>Licensing</b>	<b>Yes</b>	No	No
	<b>Export</b>	<b>Yes</b>	<b>Yes</b>	No
	<b>FDI</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>

<sup>13</sup> (Monetary and Statistics Dept., Balance of Payments Division, 2013)

Table 3\_Categories of FDI advantages by Dunning (1981), Source: [http://en.wikipedia.org/wiki/Eclectic\\_paradigm](http://en.wikipedia.org/wiki/Eclectic_paradigm)

In the table above, we can see another summary of the advantages giving rise to FDI from Ahmad A. Moosa's Foreign Direct Investment: Theory, Evidence and Practice, 2008.

<b>Advantages giving rise to FDI</b>	
<i>Advantage</i>	<i>Description</i>
Capital	Larger or cheaper cost of capital than local or smaller foreign competitors
Management	Superior management in the form of greater efficiency of operation or greater entrepreneurial ability to take risk or to identify profitable ventures
Technology	Superior technology in the form of ability to translate scientific knowledge into commercial use. This involves the functions of discovering new processes and products, product differentiation and various support activities
Marketing	The functions of market research, advertising and promotion, and distribution
Access to raw materials	Privileged access to raw materials arising from the control of final markets, transportation of the product, processing, or the production of the material itself
Economies of scale	The finance and expertise to set up and operate facilities that enjoy these economies
Bargaining and political power	The ability to extract concessions and favourable terms from the host government

Table 4\_Advantages giving rise to FDI, Source: (MOOSA, 2002)

- General motives – political framework (concretely about FDI, tax policy) and quality of institutional environment (bureaucracy, bribery, education etc.)
- Specific (economic) factors – according to aims of the investor (acquire a market share, acquire specific assets/resources, efficiency increasing
- Location factors – amount of GDP per capita, networking, market structure, lower costs of factors of production prices, option to use special local resources, membership in integration treaties with positive influence to business, creation of regional corporate networks, expense decomposing)<sup>14</sup>

### **Competitive advantages of the Czech Republic in investment attraction**

The reasons why the Czech Republic has the most of investments from abroad in CEEC region is quite simple. The Czech Republic joined and integrated the trade and commerce

<sup>14</sup> (ZAMRAZILOVÁ, 2006)

very soon with the international organizations as NATO, OECD, WTO, EU, IMF, ILO. It enabled the foreign investors' easier entry to the Czech market. Also quite stable economy, low taxes and investment incentives helped to attract huge firms.

The Czech bureaucracy also integrated to the EU system. The overall education and skills of the workers are rather above the EU average, which also made a good reputation. "The Czech Republic has a working population of about 5.2 million. The well educated and skilled workforce, together with favourable labour costs, makes it one of the main attractions of the Czech economy. Ninety-two percent of the population in the 25–64 age range has completed at least upper secondary education, ranking the Czech Republic among the highest of all of the OECD countries, compared to the OECD average of 74 percent and EU average of 75 percent. Of the same age range, 17 percent have attained tertiary education," states KPMG in their brochure for potential investors. They also confirm that the language skills of young people are above the EU average, because 79% of university students study one foreign language and 19% study two languages. 1,9% of the university students study three or even more foreign languages. Even though that according to surveys of Ministry of Labour, the labour market is not flexible enough, the foreign investors can in majority cases find relevant workforce to the open positions. Another important determinant of FDI is the GDP per capita is quite high.

The most of the investors traditionally invest in textile, chemical and automobile industry. The KPMG also states, that the Czech Republic has a highly developed industrial base in automotive, industrial machinery and equipment, electronics, metallurgy, mining and quarrying, glass manufacture and production of beverages (beer in particular), but the high-tech industries, research and development centres and Czech universities – mainly in the life sciences, nanotechnology and aerospace are also opportunity for more sophisticated investors. Also "several Czech companies, mainly in the IT sector, have become truly global players and now rank among the global top 10 in their respective markets, or are leaders within Central Europe. At the same time, foreign companies have found the Czech Republic to be an ideal location for business support centres – in particular shared services centres, IT centres and software development centres." This is particularly thanks to the investment incentives from the Czech Ministry of Trade.

The Czech Republic always had a good road and railway infrastructure and the location in the Central Europe, close the Wien, Berlin, Frankfurt, Munich, Bratislava etc. is very strategic for many firms expanding to or from the Eastern markets.

## **Effects of FDI on the Czech economics and labour market**

The economic globalisation and foreign direct investment are very close to each other, because the multinational enterprise influences directly or indirectly the domestic firms in their sector and environment. Also the firm can bring much news for the customers. Specialized economic literature generally differ spill-over and spin-off effects, which are direct and indirect effects of FDI to the host country's economy. While vast literature focused on indirect effects of FDI proves, that FDI doesn't have substitution for their function in globalized world, because they represent much more than just international trade enrichment of free movement of capital.<sup>15</sup>

The positive impact of FDI on the Czech economy as a whole may also have been felt through other channels than economic spill-overs as outside investment tends to exert broader pressure on the business, legal, institutional, and political environment which, although less tangible, can have a profound and reciprocal effect on an economy. Concretely the FDI enables: transfer of new technologies and know-how, formation of human resources, integration into global economy, increased competition in the host country, firms development and restructuring, difficulty of implementation economic policies. All of these except the last are rather positive effect especially when speaking about the developing and transition countries. Another con connected to FDI is crowding-out effect, which causes that the domestic firms go bankrupt, when the domestic investment is lower than FDI and domestic firms cannot compete with MNEs.

Since the 1990's the companies under foreign control increased their share on the GDP in national economy. The influence of FDI for the Czech Republic increased after year 2000, when the non-financial companies represented 16.2% of Czech GDP in 2006 it was 25.4% share. The domestic entities lost their leading positions in almost all the sectors and fields. The most noticeable was the decrease of Czech share on GDP in the sector of services and finance. The reason could be the privatisation of huge Czech banks, which were purchased by foreign subjects. The MNEs and foreign investors and managers brought especially new technology, marketing techniques and management skills. According to ECFIN Country Focus from 2.2. 2007, all the studies showed that the foreign counterparts of Czech firms totally outperformed them. This is also called "dual economics". This phenomenon was very apparent, especially in manufacturing, oil refinery, and chemical industry, in financial

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<sup>15</sup> (BREJCHA, 2006)

services, real-estates and business consulting. From all these sectors of national economy the domestic companies also fell behind in quantity as well as in quality from years 2000 to 2006.

Thus the MNEs in the Czech Republic thus had a considerable impact on productivity. The consistent rise in productivity in parallel with substantial FDI flows underlines the importance of FDI in the catching-up process in promoting greater efficiency and industry restructuring. The workers used to socialist regime and artificial employment weren't so motivated and productive. During and after transition the working conditions and remuneration changed also thanks to the MNEs. With FDI also came inflation and higher wages for workers. However, the introduction of large-scale outside investment is thought to raise the bar to market participation and thus crowd out domestic investment, which was confirmed by numerous studies on this topic.

The MNEs also increased the export performance of Czech economy and the export became the engine of economic growth. After all, a profitable FDI project with profits repatriated in foreign currency must necessarily result in greater balance of payments outflows than a similar project financed locally.

From all these facts could be concluded that the influence of FDI on the Czech economy and balance of payments depends on the life cycle of FDI. In the first phase the FDI increases the assets on financial account of balance of payments. In the beginning the FDI increases imports, because the equity is usually brought to the domestic country from the investor's country. If the host economy is focused on low-tech, the value-added is lower than when focus on high-tech. In addition the demand for import doesn't have to decrease.

In the first years of production the FDI is positive on the balance of payments and the reinvested earnings are relatively high, so the companies extend the production.

The future outlook suggests no immediate risks to the currently high levels of foreign investment, although countries like the Czech Republic will come under increasing pressure from eastern European neighbours as well as global competitors in labour intensive industries. It will therefore be essential both to attract foreign investment in higher value-added industries associated with the knowledge-based economy and to foster greater domestic investment in order to balance some of the volatility risk in an increasingly competitive environment. Such future high levels of foreign investment will be underpinned a range of factors highlighted in the Commission's assessment of the 2006 Czech national

reform programme including macroeconomic stability and continued investment in the human capital base.

## **Investment Incentives in the Czech Republic**

Investment incentives comprise of government schemes aimed at stimulating private sector interest in specified types of capital expenditure, or investment in areas of high unemployment or backwardness. These incentives may take the form of direct subsidies (investment grants) or corporate income tax credits (investment credit) that compensates the investors for their capital costs.<sup>16</sup>

“Investment incentives can take form of:

- Low corporate tax and individual income tax rates
- Tax holidays
- Other types of tax concessions
- Preferential tariffs
- Special economic zones
- EPZ – Export Processing Zones
- Bonded Warehouses
- Investment financial subsidies
- Soft loan or loan guarantees
- Free land or land subsidies
- Relocation & expatriation
- Infrastructure subsidies
- R&D support
- Derogation from regulations (usually for very large projects)”<sup>17</sup>

In the Czech Republic, the conditions for getting state support are published on the Ministry of Trade and Commerce and CzechInvest organisation.

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<sup>16</sup> Investment incentives definition from <http://www.businessdictionary.com/definition/investment-incentives.html>, visited on 28/12/2013

<sup>17</sup> According to [http://en.wikipedia.org/wiki/Foreign\\_direct\\_investment](http://en.wikipedia.org/wiki/Foreign_direct_investment), visited on 28/12/2013



Investment incentives are available not only to investors launching or expanding production, but also to technological centres and strategic service centres (shared service centres, software development centres, high-tech repair centres). This is so thanks to the amended Act No. 72/2000 on investment incentives which came into force on July 12, 2012. The concept of strategic investment project is an absolute novelty as well. Investors in the processing industry, strategic services and technological centres (existing investors and new entrants alike) can enjoy income tax abatement for ten years, instead of the previous five. The availability of financial support for creating new jobs and for training and re-training remains unchanged, and the same applies to the investment incentive in the form of transferring the ownership of land and the related infrastructure at an advantageous price. The concept of strategic investment project is an absolute novelty. For capital investments in projects in this category, the level of financial support may be up to 5% of the costs, in addition to the standard investment incentives. This support is available for projects in the processing industry and technological centres. Decisions concerning support to eligible projects will be made by the Government of the Czech Republic.

# **Analysis of influence of FDI on unemployment rate in the Czech Republic**

The analytical part was divided in following subchapters: First was dedicated to the evolution of unemployment (ILO) on the national (NUTS1) and regional (NUTS3) level. The unemployment rate data were taken from the Czech statistical office and collected in annual Labour Market Sample Survey, whose methodology was described in the chapter Definition of Unemployment of this thesis. In the second chapter was described the evolution of Foreign Direct Investment (inflow, outflow and net inflow) as well in which areas and sectors the investment went. The graphs of both were compared in order to prove/decline apparent relationship between each other and correlation analysis to check up the degree of dependency. The analytical part also contains the regression analysis, which investigated the relationship between the unemployment rate and other variables that could influence it. The variables chosen for regression analysis are: amount of FDI, amount of GDP, total population, average gross wages and inflation CPI based.

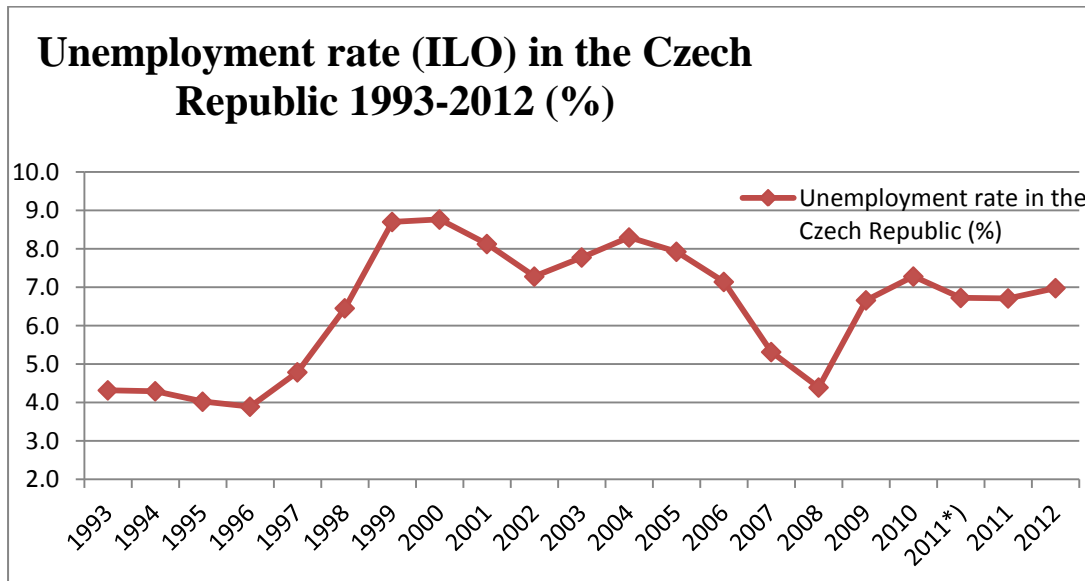
In the last chapter will be case study of impact of selected Greenfield and Brownfield investment on unemployment rate in the given region. The analytical part together with case studies should clarify the question whether the FDI inflow has positive impact on decrease of unemployment rate.

## **Analyses, calculations**

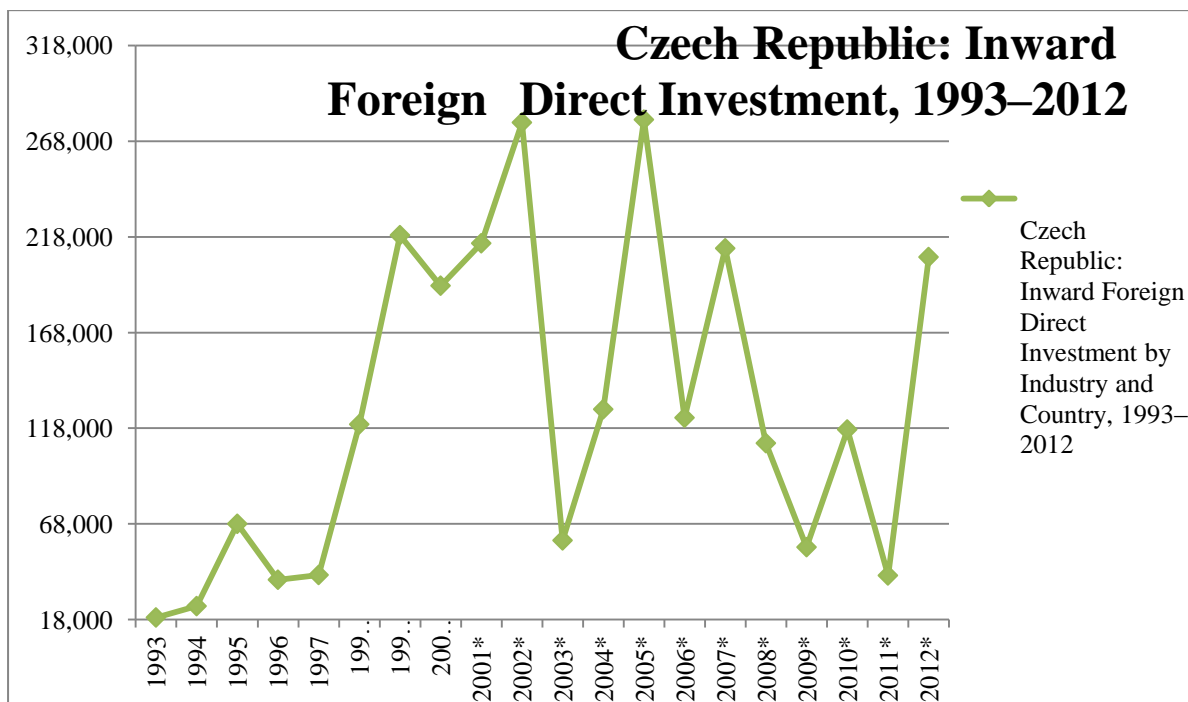
### **Development of FDI inflow and unemployment rate on NUTS1 and NUTS3 level in years 1993-2012**

The graph below shows that until the mid 1990's the unemployment rate was low and since 1996 the rate rapidly increased, which was probably caused by the finishing privatisation and changes in organization and structure of firms. The same fact confirms the graph of FDI, which shows the rapid growth in amount of FDI between 1997 and 1999. By 2000, many privatised firms went bankrupt, but since then the unemployment rate decreased. We can also see that there was slight decrease in amount of FDI in years 1999–2001. With approaching the EU entry, many investors decided to postpone their investment until 2004, when the legislature changed and made investment easier especially for investors from EU countries.

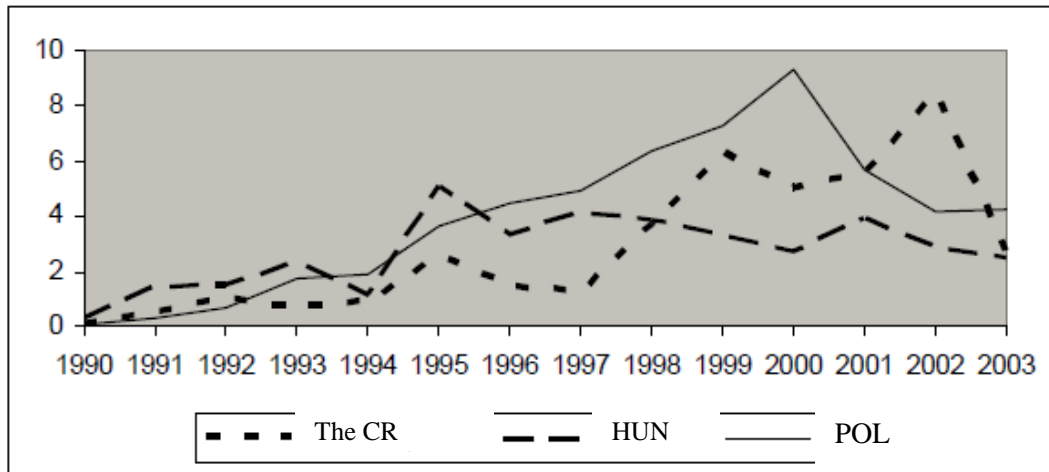
At that time around 2003 – 2008 the unemployment rate was at the minimum since 1996. With Czech entry to the EU many workers emigrated to work elsewhere in Euro zone. In 2009 however the crisis forced enterprises to cut down the costs, decrease the production and make some workers redundant. The unemployment thus jumped again and stabilised on the rate of around 7%. From 2007 to 2009 the amount of investment dropped from 212.000 mil. CZK to the amount of just 55.000 mil. CZK. We can see that the amount of FDI in the Czech Republic varies a lot each year and depends on investment life cycle (Graph 4).



Graph 3\_Unemployment in the CR 1993-2012, Source: [http://www.czso.cz/csu/2013edicniplan.nsf/engkapitola/3104-13-eng\\_r\\_2013-401](http://www.czso.cz/csu/2013edicniplan.nsf/engkapitola/3104-13-eng_r_2013-401), own graph; 2011\*) change in methodology



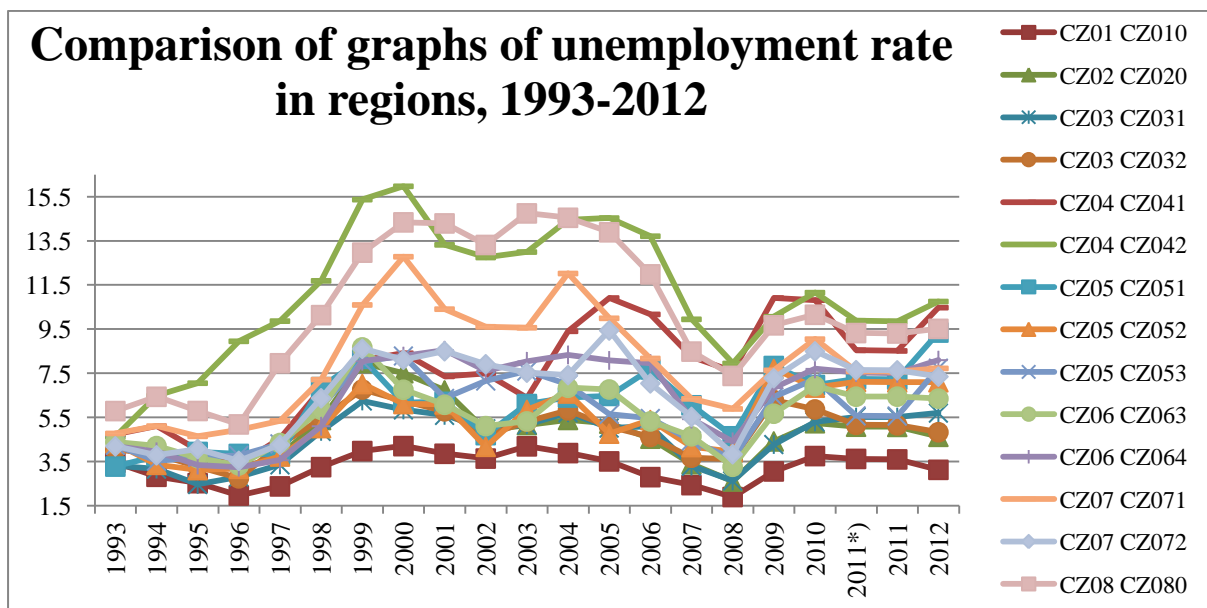
Graph 4\_Inflow of FDI to the CR, Source of data: ČNB, PZI books available at [http://www.cnb.cz/cs/statistika/platbejni\\_balance\\_stat/pzi/](http://www.cnb.cz/cs/statistika/platbejni_balance_stat/pzi/),



Graph 5\_ FDI inflow to the CR, Hungary and Poland, Source: (BREJCHA, 2006)

For comparison with graph 4, the graph 5 above shows that the FDI inflows in CEE countries have also very variable trend.

We can see that in all the regions the unemployment had comparable trend in the graph below.



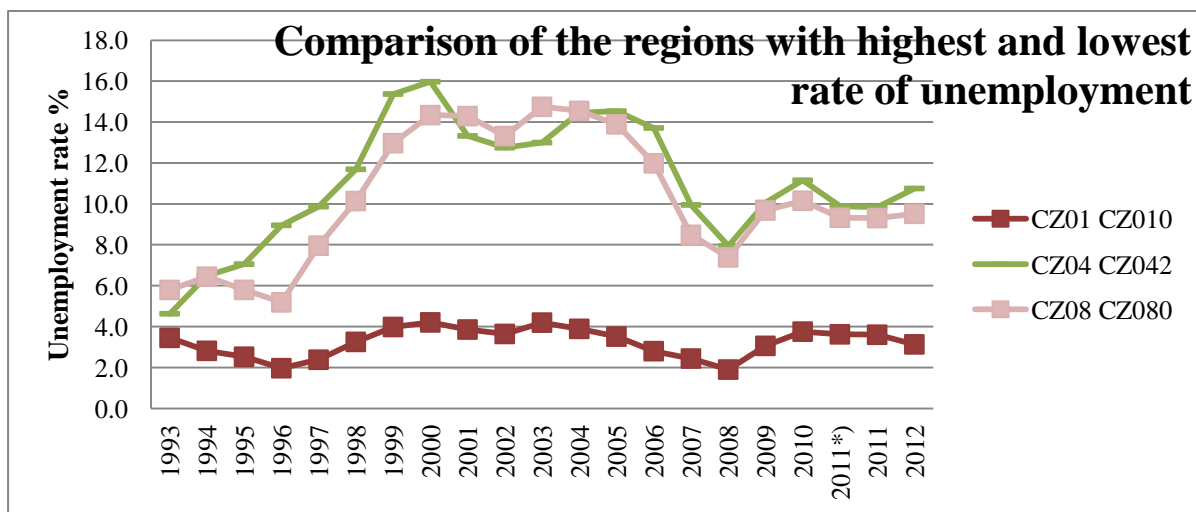
Graph 6\_ Comparison of shapes of unemployment rate in regions, 1993-2012, Source: [http://www.czso.cz/csu/2013edicniplan.nsf/engkapitola/3104-13-eng\\_r\\_2013-401](http://www.czso.cz/csu/2013edicniplan.nsf/engkapitola/3104-13-eng_r_2013-401)

The codes of regions are listed in the table above:

Region	NUTS3
Prague, capital city of Prague	CZ010
Central Bohemia, Central Bohemian region	CZ020
South Bohemian region	CZ031
Pilsen region	CZ032
Charlesbad region	CZ041
Usti nad Labem region	CZ042
Liberec region	CZ051
Hradec Králové region	CZ052
Pardubice region	CZ053
Region of Highlands	CZ063
South Moravia region	CZ064
Olomouc region	CZ071
Zlin region	CZ072

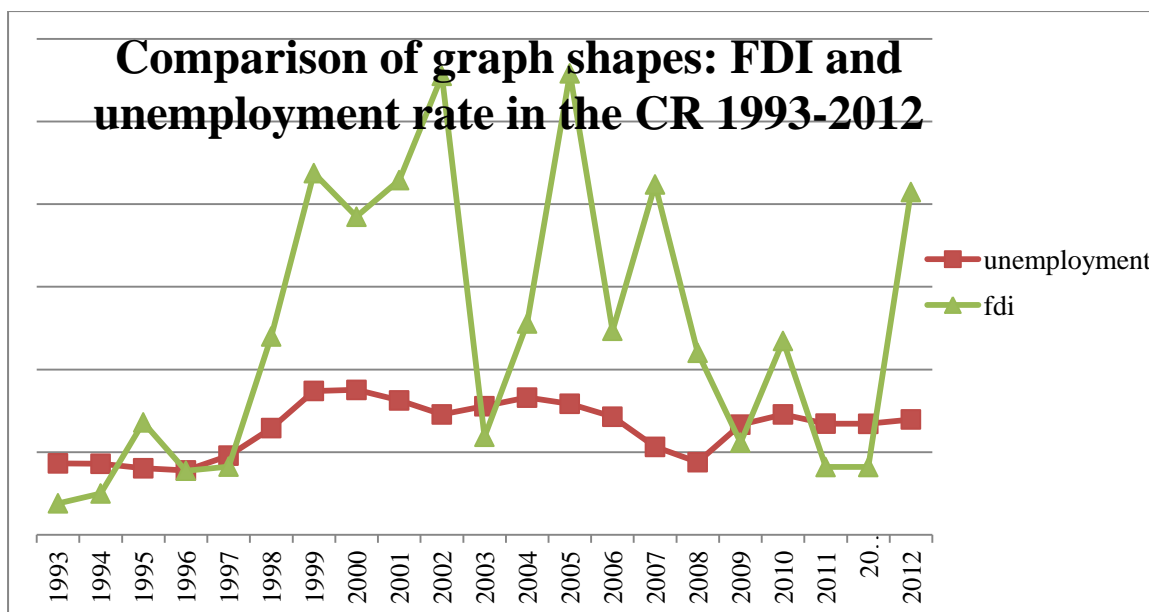
We may see that the unemployment in all the regions copies more or less similar shape and conclude that the unemployment is in all the regions mainly dependent on the same factors e.g. economic growth, increase/decrease of population, the minimal wage, investment incentives etc.

For complexity, the graph below compares just the regions with the highest and lowest rate of unemployment. The graph confirms that the shape is the same, even though the capital city of Prague is not so prone to the economic recession.



Graph 7\_ Comparison of the regions with highest and lowest rate of unemployment, *Source:* [http://www.czso.cz/csu/2013edicniplan.nsf/engkapitola/3104-13-eng\\_r\\_2013-401](http://www.czso.cz/csu/2013edicniplan.nsf/engkapitola/3104-13-eng_r_2013-401)

If we compare the shapes of graph with inflow of FDI and unemployment rate, we may see that they have also similar trend. The hypothesis that with higher inflow of foreign direct investment the unemployment rate decreases doesn't prove to be true for the same year. We have know, that the firms usually try to keep as many workers as long as possible, thus the correlation analysis has to count on it.



Graph 8\_ Comparison of the graph shapes: FDI and unemployment rate in the CR 1993-2012

### Development of FDI inflow and employment in selected sectors

Year	1.Manufacturing industry		2.Raw material extraction		3.Trade, repairing motor vehicles and products for private and domestic use; catering and hospitality		4.Financial intermediation	
	Workers (in thous.)	FDI inflow in mil. Kč	Workers (in thous.)	FDI inflow in mil. Kč	Workers (in thous.)	FDI inflow in mil. Kč	Workers (in thous.)	FDI inflow in mil. Kč
1993	1,220.4	10,632	109.8	408	211.9	1,165	62.6	4,107
1994	1,163.5	13,461	98.9	604	240.5	1,007	72.7	3,998
1995	1,031.6	22,744	88.5	610	161.8	3,901	80.3	1,831
1996	983.6	17,378	81.9	190	158.8	7,684	83.8	896
1997	1,163.7	12,947	77.8	0	313.4	3,935	82.0	9,456
1998	1,147.7	41,431	71.9	549	296.7	26,943	79.5	17,973
1999	1,097.9	69,481	62.9	8,619	274.9	50,826	75.8	52,078
2000	1,045.4	79,109	57.7	2,970	255.7	21,185	72.8	36,033
2001	1,067.9	62,880	56.5	1,387	276.3	26,773	69.1	60,234
2002	1,069.6	32,762	52.2	905	275.6	8,221	66.3	48,485
2003	1,033.3	73,823	48.9	874	289.4	18,449	65.4	25,153
2004	1,032.2	26,001	46.4	3,393	295.3	19,002	64.2	19,634
2005	1,051.0	22,142	45.0	-3,860	327.9	8,597	63.8	54,144
2006	1,063.7	38,306	43.0	-1,879	338.9	29,283	64.2	14,066
2007	1,098.5	78,437	40.3	-12,439	355.8	25,548	67.7	46,842
2008	1,111.3	13,862	39.5	-13,027	377.3	4,001	70.0	51,217
2009	968.9	-36,678	36.9	-1,930	381.0	9,846	69.7	58,057

Table 5\_Data for correlation analysis of impact of FDI on number of workers in selected sectors, Source: Employment: Time series from 1989, Table 05.03; FDI: ČNB statistics of FDI according to sectors, retrieved from [http://www.cnb.cz/cs/statistika/platebni\\_bilance\\_stat/pzi/](http://www.cnb.cz/cs/statistika/platebni_bilance_stat/pzi/)

### Correlation analysis

y=number of workers

x=amount of FDI

Summary of results	1.Manufacturing industry	2.Raw material extraction	3.Trade, repairing motor vehicles and products for private and domestic use; catering and hospitality	4.Financial intermediation
Correlation, simple	$y1=0.44823701*x1$	$y2=0.37515972*x2$	$y3=0.21253601*x3$	$y4=-0.3685*x4$
Correlation, unemployment lagged 1 year	$y1=-0.07541*x1$	$y2=0.380099*x2$	$y3=0.208299*x3$	$y4=-0.66223*x4$
Correlation, unemployment lagged 2 years	$y1=-0.33066*x1$	$y2=0.288579*x2$	$y3=0.354947*x3$	$y4=-0.75023*x4$
Correlation, unemployment lagged 3 years	$y1=0.27238*x1$	$y2=0.032547*x2$	$y3=-0.04367*x3$	$y4=-0.75464*x4$

Table 6\_Results summary of correlation analysis

In the first correlation analysis is proved positive relationship between amount of investment and number of workers for manufacturing and raw material extraction. For trade, repairing and hospitality and catering the dependency is not strong, but still exists. For financial services however the hypothesis didn't prove to be true. The explanation could be simple: the hypothesis generally is valid for agriculture, raw materials mining and industry. For services and trade the dependency is not definite, because the investment doesn't go always directly equipment, inventory, machines or activities that expand the production and employ more workers. The same proves financial intermediation and services sectors, where the amount of investment rather implies decreasing number of employees.

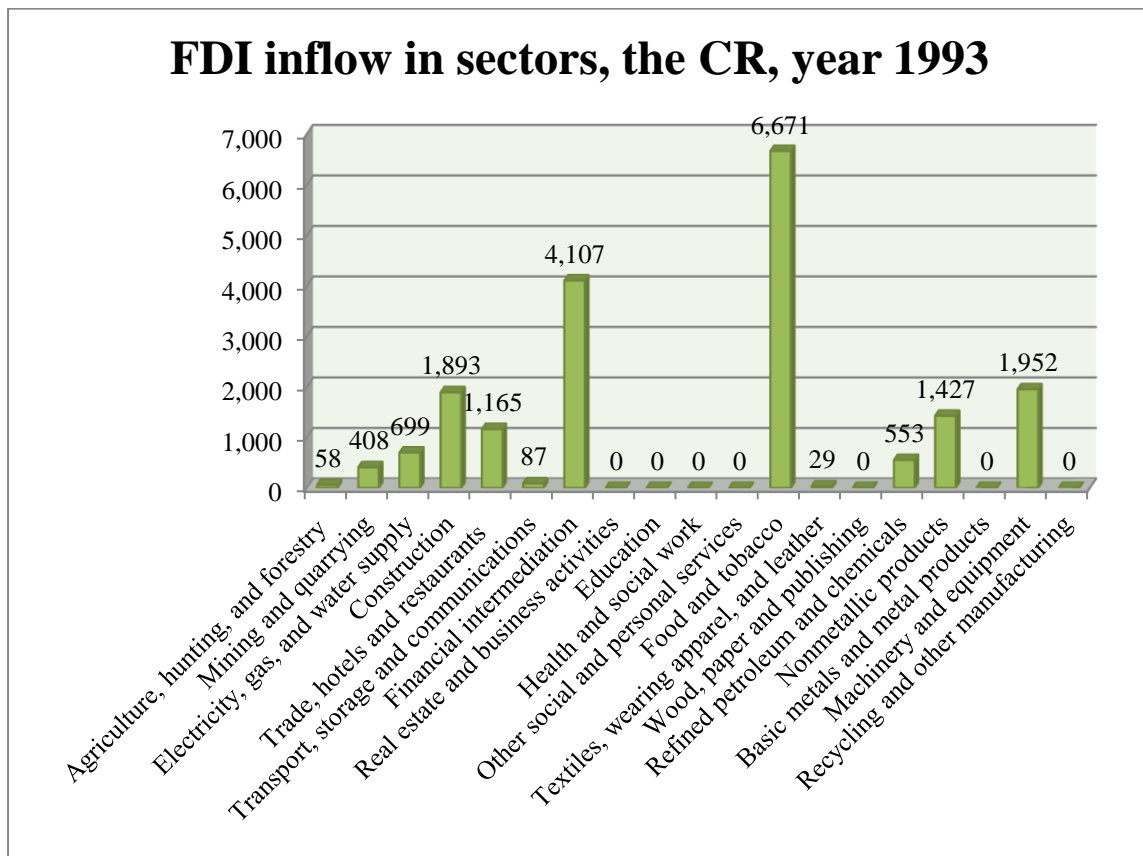
The correlation with FDI in sector lagged 3 years, the dependency is strong, but the relationship is negative – the more investment the less employees in this sector.

### Comparison of economic sectors in years 1993, 2000 and 2011

In the graphs below we can see overview of FDI inflow in selected years 1993, 2000 and 2011, which illustrates the spectrum of changes in the most attractive sectors for the foreign investors to the Czech Republic.

For example, in 1993 the most investment went to goods and tobacco industry, financial intermediation (due to privatisation of biggest banks and insurance companies) and also to construction, machinery and equipment.

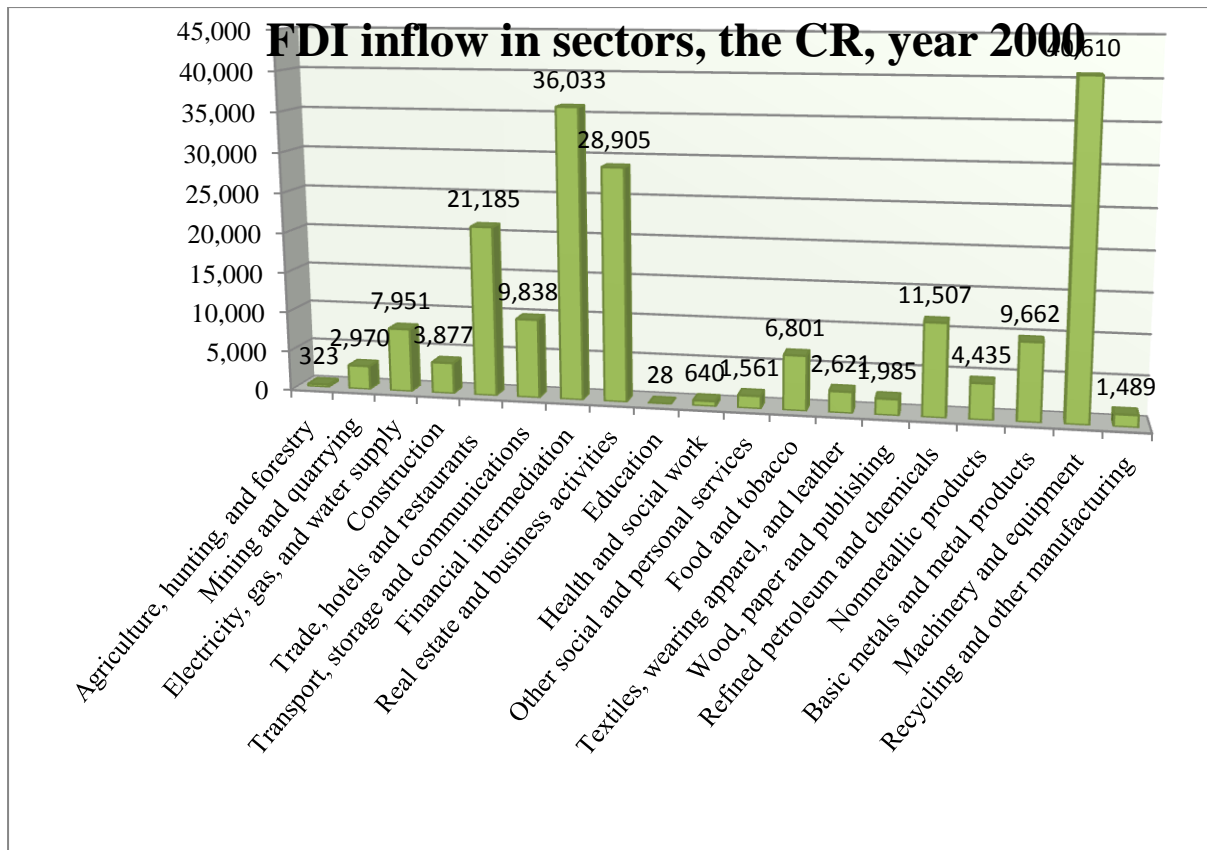
The education and health and social work were fully in hands of state, thus no investment of foreign investors was possible. In 2000 on the contrary, some foreign investors had opportunity to invest in these sectors. The food and tobacco weren't attractive anymore, probably because of health policy and increasing imports of food and tobacco from developing countries in Asia and Eastern Europe, which domestic firms couldn't surpass in the domestic market.



Graph 9\_FDI in sectors, the CR, year 1993, Source: ČNB, PZI books available at [http://www.cnb.cz/cs/statistika/platebni\\_balance\\_stat/pzi/](http://www.cnb.cz/cs/statistika/platebni_balance_stat/pzi/)

The financial services and intermediation had even bigger role in attracting investment in 2000, as well as the real estates and business activities.

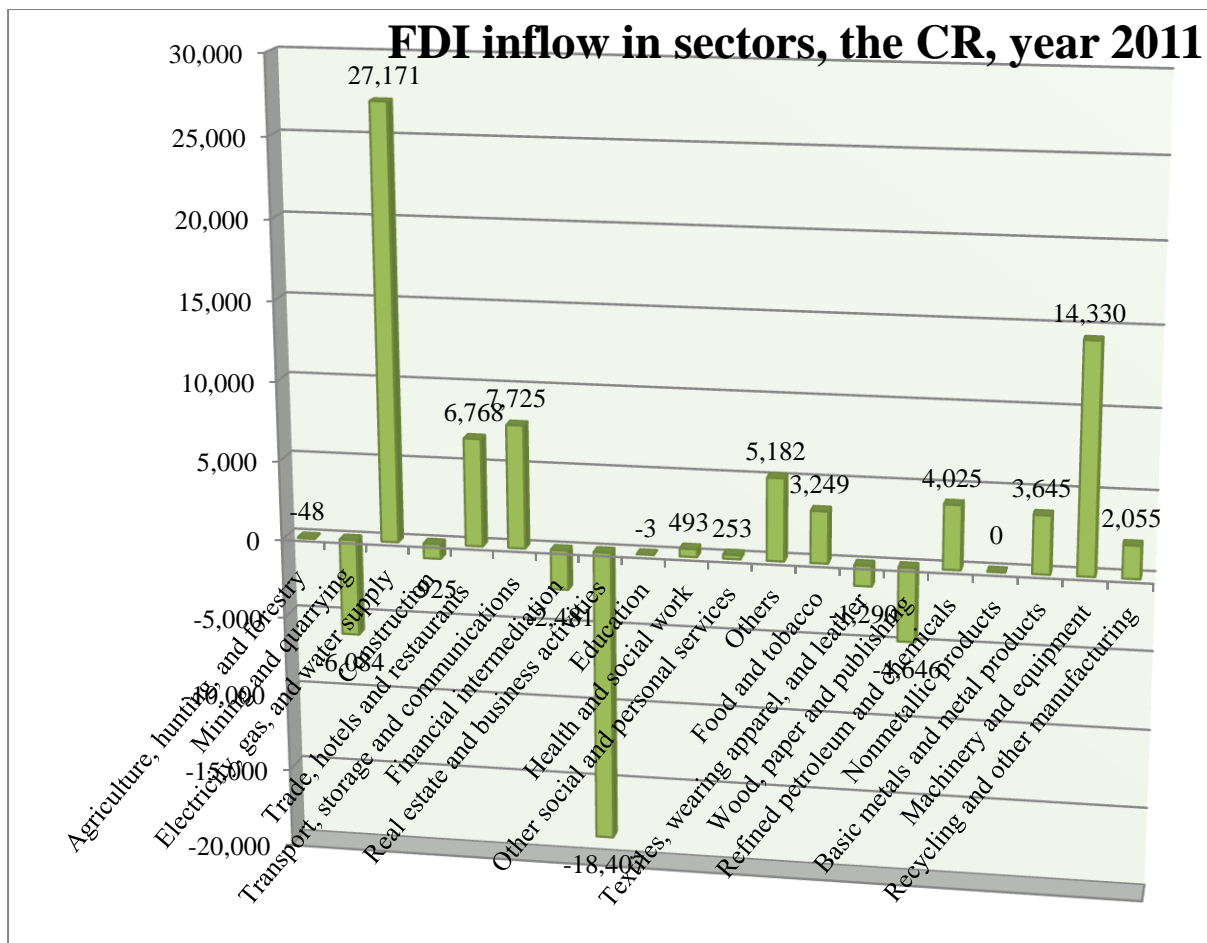




Graph 10\_FDI inflows in sectors, the CR, year 2000, Source: ČNB, PZI books available at [http://www.cnb.cz/cs/statistika/platbni\\_balance\\_stat/pzi/](http://www.cnb.cz/cs/statistika/platbni_balance_stat/pzi/)

In 2000 huge amount went to machinery and equipment. 40 610 000 CZK was record amount until then.

In 2011 we can see that the most investments went electricity, gas and water supply. Of course it is caused by the government incentives for photovoltaic power plants. In other sectors we can see that the net inflow negative which means that the Czech investors started to provide funds to abroad, especially in financial intermediation, real estate and business activities, but also to mining and quarrying and wood, paper and publishing. The Czech Republic still stays net recipient of FDI, but we can register that it changed from developing transition country in 1990's to developed country nowadays and the spectrum of economic activities changed as well as the strategy in managing business and we can find companies that expand from Czech to new markets.



Graph 11\_FDI inflows in sectors, the CR, year 2011, Source: ČNB, PZI books available at: [http://www.cnb.cz/cs/statistika/platebni\\_balance\\_stat/pzi/](http://www.cnb.cz/cs/statistika/platebni_balance_stat/pzi/)

## Regression analysis

### 1) Definition of variables and units

Dependent variable:

$y_t =$  Unemployment rate (ILO) in the Czech Republic in %

Explanatory variables:

$x_{2t} =$  FDI Inflow to the Czech Republic, mil. CZK (current prices)

$x_{3t} =$  GDP, mil. CZK (current prices)

$x_{4t} =$  Population in the Czech Republic, thous. inhabitants

$x_{5t} =$  Average gross wages, CZK (current prices)

$x_{6t} =$  Inflation CPI based (year 1993=100 points)

### 2) Hypothesis

- The unemployment rate (%) - The inflow of FDI in the CR (mil. CZK, current prices in given year) ... effect
- The unemployment rate (%) – GDP (mil. CZK, current prices in given year) ... effect

- The unemployment rate (%) - Population in the CR (thous. inhabitants in given year) ...<sup>+</sup>effect
- The unemployment rate (%) –Average gross wages (CZK in given year, current prices)...<sup>+</sup>effect
- The unemployment rate (%) – Consumer Price Index (year 1993 = 100 points) ...<sup>-</sup>effect

### 3) Data collected

Year	Unemployment rate	FDI Inflow (mil. CZK, current prices)	GDP (mil. CZK, current prices)	Population (inhabitants)	Average Gross wages (CZK, current prices)	CPI, year 1993=100
1993	4.0	19,050	1,144,645	10,334	5,817	100
1994	3.9	24,994	1,323,328	10,333	6,896	110
1995	4.8	67,993	1,533,676	10,321	8,172	120
1996	6.5	38,775	1,761,575	10,309	9,676	130.6
1997	8.7	41,251	1,884,924	10,299	10,696	141.7
1998	8.8	119,969	2,061,583	10,290	11,693	156.8
1999	8.1	218,812	2,149,023	10,278	12,655	160.1
2000	7.3	192,421	2,269,695	10,267	13,219	166.4
2001	7.8	214,585	2,448,557	10,206	14,378	174.2
2002	8.3	277,689	2,567,530	10,203	15,524	177.3
2003	7.9	59,316	2,688,107	10,211	16,430	177.5
2004	7.1	127,844	2,929,172	10,221	17,466	182.5
2005	5.3	279,181	3,116,056	10,251	18,344	185.9
2006	4.4	123,431	3,352,599	10,287	19,546	190.6
2007	6.7	211,944	3,662,573	10,381	20,957	195.9
2008	7.3	110,130	3,848,411	10,468	22,592	208.3
2009	6.7	55,794	3,758,979	10,507	23,344	210.3
2010	7.0	117,275	3,790,880	10,533	23,864	213.5
2011	6.9	41,011	3,823,401	10,505	24,455	217.6
2012	7.0	207,374	3,845,926	10,516	25,112	224.7

Table 7\_Data collected<sup>18</sup>

<sup>18</sup> Sources:

Unemployment rate: CZSO.cz, Czech Republic from 1989, Table 05.05 , FDI:ČNB, PZI books , GDP: czso.cz, table 05.03, Population:czso.cz, table 01.01 , Gross wages: czso.cz, table 13.08,

#### 4) RESULT:

##### Regression model – estimation of the model OLS (Ordinary Least Squares Method)

OLS, using observations 1995-2012 (T = 18)  
 Dependent variable: Unemployment rate  
 HAC standard errors, bandwidth 1 (Bartlett kernel)

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	-13.9449	30.6883	-0.4544	0.65837	
FDI	-3.81855e-06	2.69569e-06	-1.4165	0.18431	
GDP_	-2.6092e-06	1.81785e-06	-1.4353	0.17901	
Population	0.000359844	0.00297025	0.1211	0.90576	
Gross_wages	-0.000985593	0.000344684	-2.8594	0.01553	**
CPI_1993_100	0.250781	0.0444565	5.6410	0.00015	***
Unemployment_rate_2	-0.438285	0.178847	-2.4506	0.03221	**

Mean dependent var	7.028519	S.D. dependent var	1.227801
Sum squared resid	9.465726	S.E. of regression	0.927642
R-squared	0.630641	Adjusted R-squared	0.429172
F(6, 11)	6.191813	P-value(F)	0.004724
Log-likelihood	-19.75665	Akaike criterion	53.51329
Schwarz criterion	59.74589	Hannan-Quinn	54.37268
rho	-0.189045	Durbin-Watson	2.230337

Estimated model:

$$\hat{y}_i = -13,9449 - 3,81855e - 6x_{2t} - 2,6092 - 6x_{3t} + 0,000359844x_{4t} - 0,0009855593x_{5t} + 0,250781x_{6t} - 0,438285x_{7t}$$

##### Interpretation of results

The results confirmed almost all the initial estimations. However, the negative relationship between unemployment rate and FDI inflow to the Czech Republic was not proven to be valid, because the p-value was higher than 0,05. On the other hand, the unemployment rate is slightly negatively correlated to the amount of gross wages and positively to the inflation.

This means, that when the gross wages increase, some people lose their jobs. It is the same principle as with minimum wages. Also if the inflation is increases, the unemployment rate increases. The initial hypothesis was that if the unemployment rate is lower, employers increase the gross wages to attract the best employees.

This model was chosen by inspiration of similar research lead by M.Rafiq, Iftikhar Ahmad, Asmat Ullah and Zahoor Khan, who researched the unemployment rate in 1998-2008 in Pakistan with explanatory variables population growth, FDI and inflation rate. They used

single equation linear regression model. The research is described in article of Abasyn Journal of Social Sciences Vol.2, No.1.

Statistical verification (R-square, significance of parameters):

*Goodness of fit... R squared = 63 %* variance of dependent variable explained in our model

- Confirmation/rejection hypotheses:

H<sub>0</sub>: test statistic is equal to 0, statistically insignificant result

H<sub>1</sub>: test statistic is not equal to 0, statistically significant value

***T-TEST USING P-VALUE:***

P-value		$\alpha=0,05$
$\Gamma_0=0.065837$	>	$\alpha=0,05$ ... reject H <sub>0</sub> , parameter is statistically insignificant
$\Gamma_1=0.18431$	>	$\alpha=0,05$ ... reject H <sub>0</sub> , parameter is statistically insignificant
$\Gamma_2=0.17901$	>	$\alpha=0,05$ ... reject H <sub>0</sub> , parameter is statistically insignificant
$\Gamma_3=0.90576$	>	$\alpha=0,05$ ... reject H <sub>0</sub> , parameter is statistically insignificant
$\Gamma_4=0.01553$	<	$\alpha=0,05$ ... don't reject H <sub>0</sub> , parameter is statistically significant
$\Gamma_5=0.00015$	<	$\alpha=0,05$ ... don't reject H <sub>0</sub> , parameter is statistically significant
$\Gamma_6=0.03221$	<	$\alpha=0,05$ ... don't reject H <sub>0</sub> , parameter is statistically significant

*Fulfilment (or not) of assumptions, explanation of relationships:*

- Statistically significant parameter valid generally for all population
- Statistically insignificant parameter valid for the sample but generally *effect* of the explanatory variable (which belongs to tested parameter) *is zero -> explanatory variable has no effect on the dependent variable*

**Case studies**

**a. Greenfield investment: Join venture TPCA in Kolín**

The unique shared Greenfield investment of Japanese Toyota Motor Corporation and French PSA Peugeot Citroen near Kolín was announced in year 2001. In January 2002 the joint venture contract of world leader Toyota and European leader PSA was signed. The production of automobiles started in February 2005.

It was the biggest Greenfield investment in the Central Europe at that time.

The invested amount in the Czech Republic was cca 85 mil. EUR. The total expense for the company was 20 bil. CZK, this investment represented also purchase of technologies and equipment necessary for production and was not spent in the CR. TPCA has currently around 3200 employees, who make output estimated to 13.2 mil. CZK per year. The factory claims to produce 1000 cars per 1 day, export 99% of cars, and have 80% of all parts supplied from the Czech suppliers. More independent source however claims that Toyota and Peugeot hold on to their traditional foreign suppliers situated in the CR, or abroad. This means that the local suppliers are disadvantaged.<sup>19</sup>

The main reasons that lead the two companies to establish factory in the CR were: strategic location near the key markets for new car models of Toyota and PSA, tradition in automobile industry in the CR, presence of technically developed suppliers, quality, skilled and cheap labour force, good infrastructure and investment incentives from government.

The investment brought together with positive also some negatives effects.

The general pros of the investment in Central Bohemian (Kolíň) region are increase in exports, local GDP and purchasing power of the inhabitants. The presence of factory made more people to move to the region and ancient military quarters were reconstructed into flats. The new factory increases competition in automobile industry in the CR and in the CEEC region and makes pressure on prices and quality of other cars produced.

### **Impacts of TPCA on economy and employment in Central Bohemia region**

The influence of FDI on employment consists in decrease of unemployment rate (proven by graph 14), increase in wages (proven by graph 12, 13). The employees also get benefits in form of monthly sum of points, that can be spent for certain services (language, soft-skills courses, sport, culture, life or pension insurance and contribution for housing in the factory surrounding), which increases their life-style and purchasing power. On the other hand, the wages in TPCA are much lower than in Hyundai and Škoda. One of the reasons could be that TPCA employs staff from Central Bohemia and Usti nad Labem, where the unemployment rate was very high in 2005 and Usti is still one of the 3 regions with highest unemployment rate in the Czech Republic.

Another positive aspect is that TPCA started to cooperate with local technically and industrially oriented high schools, which are potential source of new qualified work force.

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<sup>19</sup> (ŽÍŽALOVÁ, 2008)

TPCA offers excursions to the factory, internships and trainings for the students. The potential engineers and managers are recruited especially amongst student of Czech Technical University in Prague.

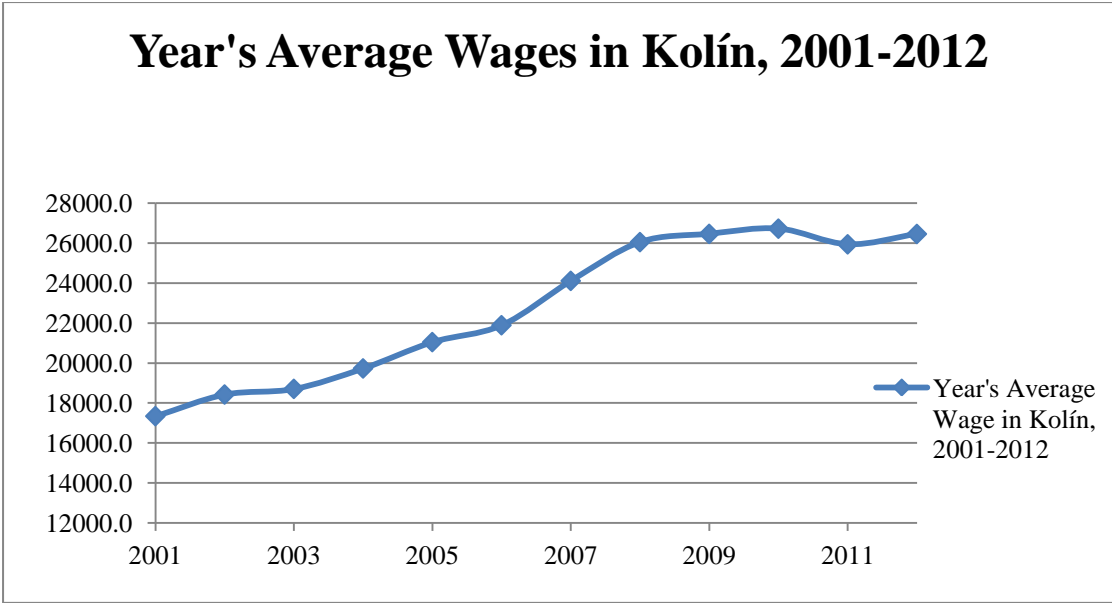
The negative side of this investment is that almost 15% of the investment came from the public budget in form of initial donation by government, contribution to wages by state as well as 0% tax in the first 10 years of production. The Czech government also promised to finish infrastructure to the factory. All this meant less money to the local companies' development. The value added is not very high, because the factory doesn't have any other activity than car production and export, and even uses their traditional foreign suppliers, which the even lowers the benefit for the Czech suppliers. The production halls were constructed on agricultural land and the noise and building machines damaged the nature in the surrounding. Not only the production hall was constructed, but also many new houses and blocks of flats, which made the price of real estate increase. As was described in the chapter with current issues on the Czech labour market, the CR faces structural deficiency in skilled blue collar workers and professionals and the entry of another technically oriented corporation, which needs 3000 workers directly even deepened the conflict between the firms and TPCA has to face difficult problems, which doesn't permit expansion.

Table 8\_Performance in regions, Source: (ŽÍŽALOVÁ, 2008)

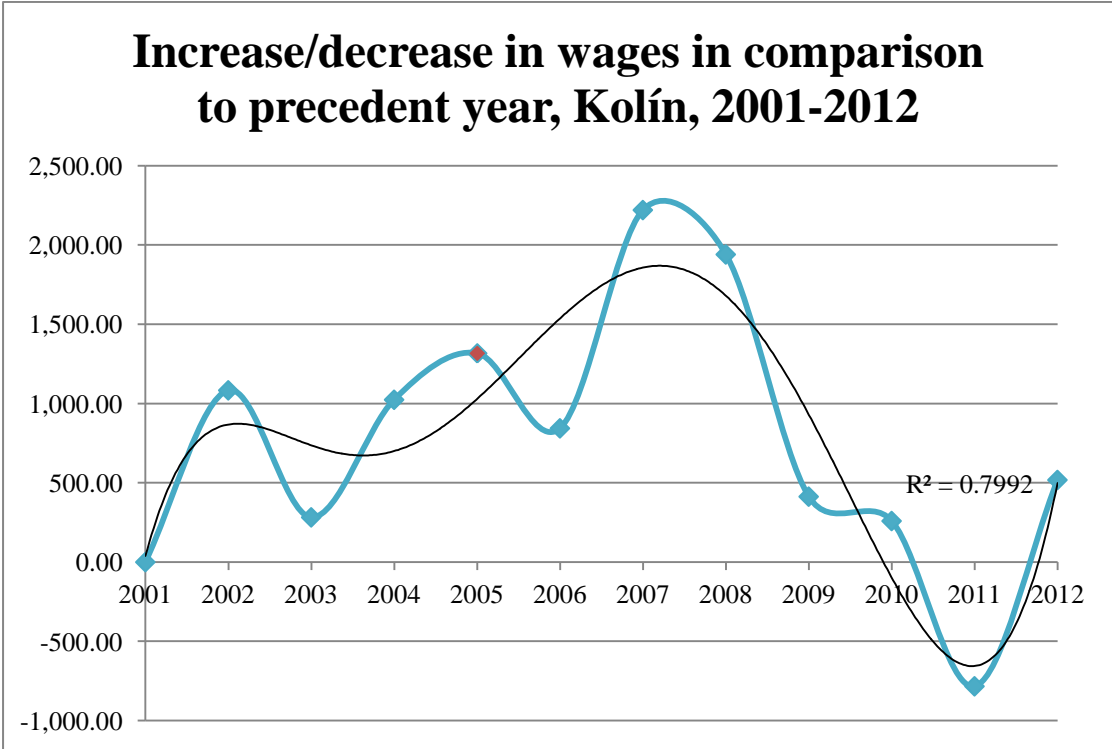
Region	Order according to highest GDP per capita					Index of real GDP, (1995=100)		
	1993	1998	2003	2005	2006	1998	2001	2006
Prague	1	1	1	1	1	113	128.3	157.2
Central Bohemia	14	12	2	3	4	106.6	123	162.8
South Bohemia	7	4	6	6	5	102.5	107.1	136.1
Pilsen	2	2	3	2	2	98.4	108	137.3
Charlesbad	4	10	12	14	13	91	92.5	108.2
Ústí	6	6	9	10	12	92.8	92.3	115.3
Liberec	10	11	11	12	8	98.3	107	136.9
Hradec Králové	11	8	5	5	6	102.2	109.9	132.6
Pardubice	9	7	8	8	10	101.3	104.1	130.8
Highlands	13	14	7	7	9	99.4	116.1	144.4
South Moravia	3	3	4	4	3	101.3	105.7	128.3

Olomouc	12	13	14	13	14	97.6	104.7	125.9
Zlín	8	9	10	11	11	99.9	101.1	128.9
Moravia-Silesia	5	5	13	9	7	96.3	98.6	125.3

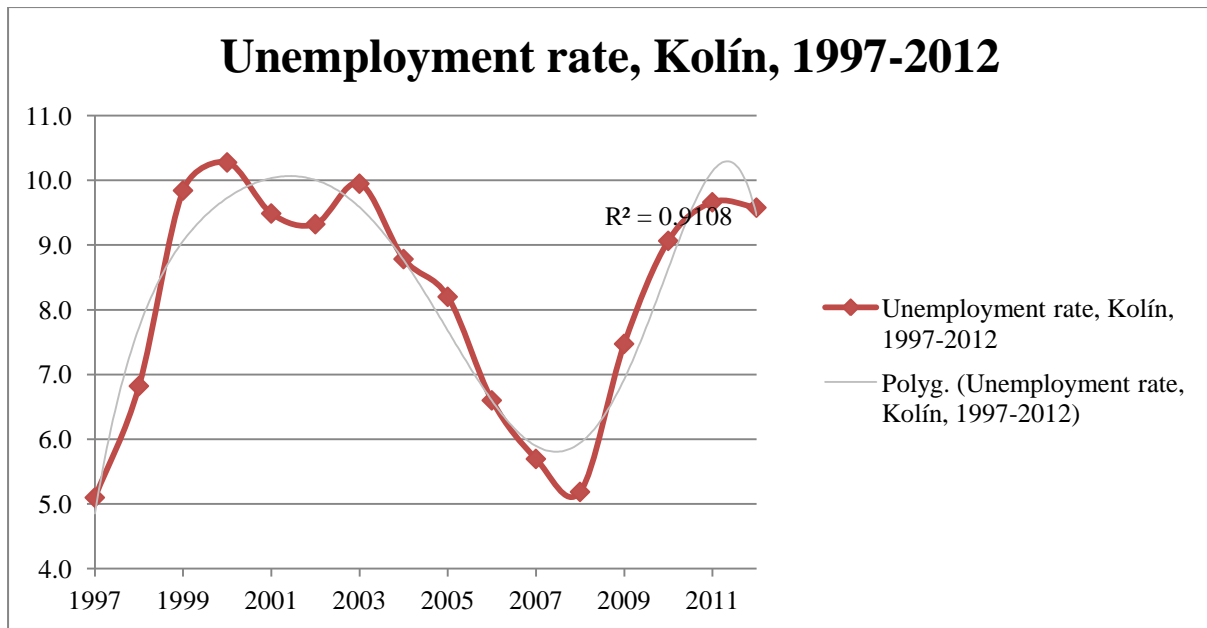




Graph 12\_Year's average wages, Kolin, 2001-2012, Source: <http://portal.mpsv.cz/sz/stat/vydelky/str>



Graph 13\_Increase/decrease in wages in comparison to precedent year, Kolin, 2001-2012, Source: <http://portal.mpsv.cz/sz/stat/vydelky/str>



Graph 14\_ Unemployment rate, Kolin, 1997-2012, Source: [http://portal.mpsv.cz/sz/stat/nz/casove\\_rady](http://portal.mpsv.cz/sz/stat/nz/casove_rady)

#### **b. Brownfield investment of Volkswagen to Škoda in Mladá Boleslav**

The official cooperation between Volkswagen and Škoda started on 16<sup>th</sup> April 1991, the Volkswagen Group purchased a 31% of shares from the Czech government for around 2 bil. CZK<sup>20</sup> (the exact amount is not to be found, the agreement was never made public), beating out Renault. Thanks to this strategic step, Škoda could easily catch up technologically highly developed markets in the Western Europe. VW also implemented new management practices, re-organized the structure, and quality control, and imposed basic cost-cutting measures to increase labour productivity by minimizing waste and improving the effectiveness in employees' working day. Using this simple strategy, VW substantially increased the production and sales of Škoda's Favorit model without any investment during the two years after takeover. The investment of VW to Škoda can be thus classified as acquisition and Brownfield investment, because Škoda went through extensive structural, management and technological changes that can be summarized by the table 9 below.

Very important for the future of Škoda was the introduction of model Felicia in 1994. It was the first model adjusted to compete in the western markets. Soon after, "despite criticism at the time that it did not know what it was buying, VW bought a chunk more in 1995 to

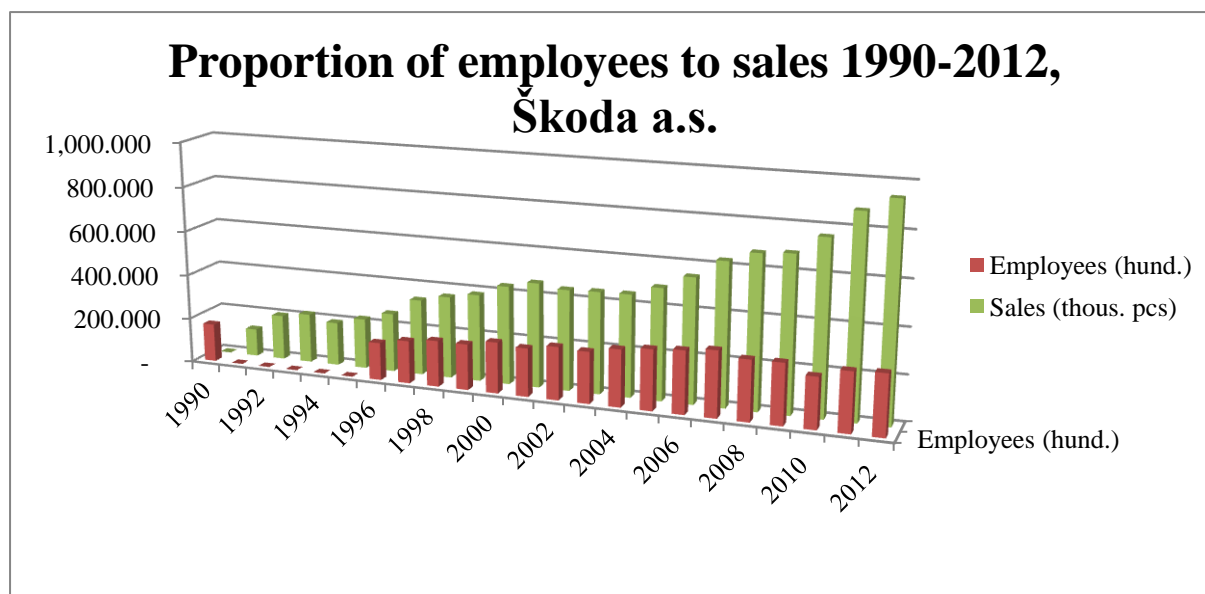
<sup>20</sup> (AKRMAN, 2011)

increase its shareholding to 70 %, and in 2000, purchased the last remaining stock held by the Czech government.” Today, Škoda is the biggest Czech exporter, just as it is one of the biggest employers, with approximately 25,000 professionals in the company. Its main factory in Mladá Boleslav is supplemented by factories in Vrchlabí and Kvasinky in Eastern Bohemia.

It is very interesting to see the table of performance in Škoda (table 9) and compare the annual results in 1991 and almost 20 years later. We can see that in 1991 there were 17,000 thousands employees and company was selling 172,000 cars per year. In 2010 4,5 times more cars were sold worldwide and company employed just 25% more employees. We can of course assume that the results are possible thanks to modernization and automation of work, but the still the results are breathtaking. The proportion of employees to annual sales is further illustrated in graph 15.

<i>Performance of Škoda 1991 and 2010</i>		
<b>Year</b>	<b>1991</b>	<b>2010</b>
<b>Sales (pcs)</b>	172,000	762,600
<b>Employees</b>	17,000	22,506
<b>Markets with brand representation</b>	30	103
<b>Production of cars per year</b>	160,000	583,333

Table 9\_Performance of Škoda in 1991 and 2010-comparison; Source: [http://www.autoweek.cz/csauto\\_archiv-skoda\\_a\\_volkswagen\\_milniky\\_20\\_let-1182](http://www.autoweek.cz/csauto_archiv-skoda_a_volkswagen_milniky_20_let-1182), <http://new.skoda-auto.com/cs/company/investors/annual-reports>



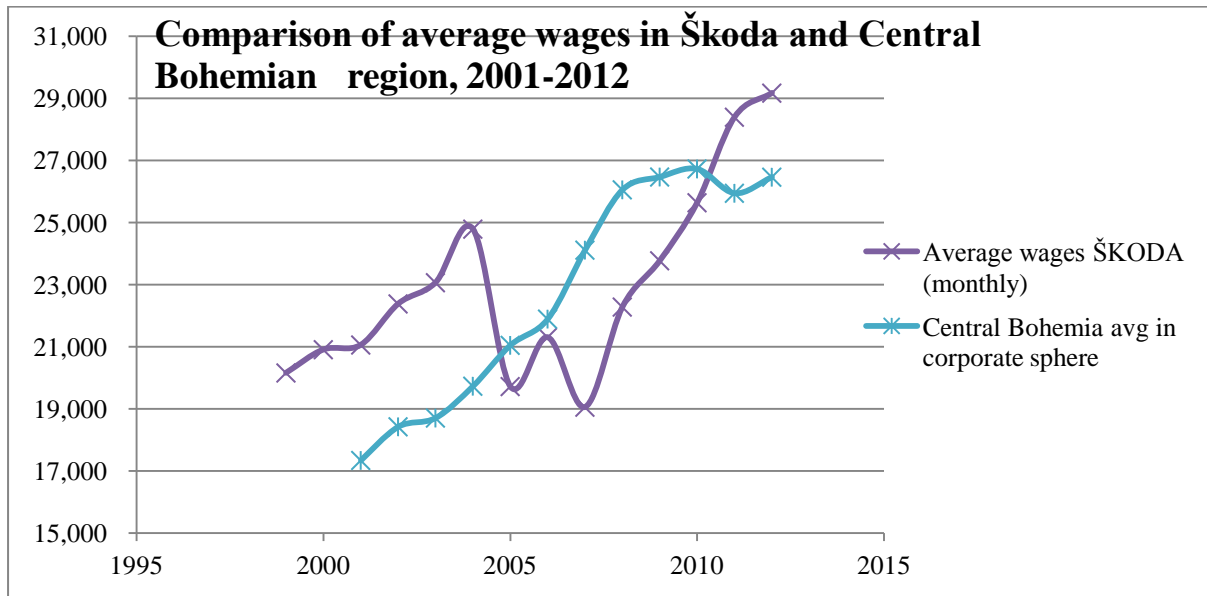
Graph 15\_Proportion of employees to sales in 1990-2012 in Škoda a.s., Source: Annual reports of Škoda available at <http://new.skoda-auto.com/cs/company/investors/annual-reports>, and article inHN newspaper available at: <http://byznys.ihned.cz/c1-51571250-z-popelky-princeznou-skoda-auto-je-jiz-dvacet-let-soucasti-volkswagenu>

<b>Wages - average per capita in Škoda</b>				
Year	Wages expenses	Sum of employees	Average wages ŠKODA (monthly)	Central Bohemia avg in corporate sphere
1999	4,854,152,000	20,066	20,159	
2000	5,486,721,000	21,868	20,908	
2001	5,511,453,000	21,810	21,059	17,343
2002	5,761,417,000	21,452	22,381	18,426
2003	5,883,163,000	21,256	23,065	18,708
2004	6,242,064,000	20,984	24,789	19,732
2005	6,268,000,000	26,486	19,721	21,049
2006	6,810,000,000	26,639	21,303	21,893
2007	6,608,000,000	28,896	19,057	24,113
2008	7,721,000,000	28,878	22,281	26,054
2009	7,655,000,000	26,836	23,771	26,467
2010	8,162,000,000	26,529	25,639	26,726
2011	9,518,000,000	27,936	28,392	25,943
2012	9,991,000,000	28,546	29,166	26,461

Table 10\_Wages in Škoda and comparison to the Central Bohemian average, Source: annual reports of Škoda and site of Ministry of Social affairs (viz. Graph 17)

In table 10 and graph 17, we can see that the wages in Škoda were above the average wage in Central Bohemia in corporate sphere in years 1999-2005. In 2005, the wages in Škoda much decreased and we can see that it was possibly, because around 5000 new employees were

hired. It confirms the graph 14, which shows the decrease of registered unemployment rate in region of Mladá Boleslav. From table 10 can be deduced that the decrease in wages in 2005 and 2007 was caused by the increase of total of employees. In 2007, we can see the wages increase by 3200 CZK and here we see probably the influence of TPCA, in the same region and in the same sector, Škoda had to increase the wages of workers, because the demand for labour force specialized in this sector started to be insufficient.



Graph 16\_ Comparison of average wages in Škoda and Central Bohemian region, 2001-2012, Sources: wages in Škoda, Annual reports, retrieved from <http://new.skoda-auto.com/cs/company/investors/annual-reports>, average wages in Central Bohemia, webpages of Ministry of Labour and Social affairs, available at: <http://portal.mpsv.cz/sz/stat/vydelky/str>

## **Summary of results**

### **Influence of FDI on unemployment rate on NUTS1 and NUTS 3 level:**

On NUTS1 level, there is influence of FDI on unemployment rate, but not the same year as was proven by comparison of shapes of both variables for years 1993-2012. The FDI affects the employment rate, when employment rate is lagged 1-3 years, depending on sector.

The relationship between unemployment rate and FDI is influenced by more factors and the business stage of investment. The evidence are the shapes of graphs with unemployment rate in the Czech Republic on NUTS3 level, which have quite similar trends. The Czech economy is relatively independent and the changes of unemployment rate are comparable and could be rather assigned to global economy changes, than the amount of investment of certain foreign enterprises. The evidence is for example the crisis in 2008/9 when the impact on Czech economy was not so huge as in other states of EU.

### **Influence of FDI on employment in selected sectors:**

The results of correlation analysis that investigated the nature and size of dependence of amount of FDI in selected sector and total of employees in it are: traditional sectors manufacturing industry and raw material extraction have the highest value of correlation coefficient, when FDI was lagged one year and power of correlation coefficient was quite high. In the sector of trade, hospitality and catering the correlation coefficient was highest when FDI was lagged 2 years and in financial intermediation the coefficient didn't prove any high relationship between the amount of investment and total of employees in the sector.

### **Regression analysis:**

The regression analysis should have verified the hypothesis that there was a negative relationship between the unemployment rate and amount of FDI. Other variables, such as amount of GDP, total population of the CR, gross wages and inflation rate (CPI based) were involved for the complexity of this estimation.

The best result had OLS estimation where the equation, however did not proved the initial hypothesis. The unemployment in this estimation was lagged 2 years and goodness of fit was 63%.

Estimated model:

$$\hat{y}_i = -13,9449 - 3,81855e - 6x_{2t} - 2,6092 - 6x_{3t} + 0,00035984x_{4t} - 0,0009855593x_{5t} + 0,250781x_{6t} - 0,438285x_{7t}$$

This means that in this estimation, FDI has a positive effect on the unemployment rate and the amount of FDI makes more people to be employed, but it is not statistically significant for all the population. The unemployment rate neither depends on the gross domestic product (economic performance), and total population. It is influenced by the average gross wages and inflation. When the unemployment is higher, the gross wages are lower. The relationship between unemployment rate and total population is positive, but also not valid generally. The unemployment rate reacts to change in amount of foreign direct investment 2 years after the change in FDI. In the beginning of this thesis was assumed that the unemployment rate is negatively correlated to the amount of FDI, but the problematic is more difficult and the Czech Republic doesn't belong amongst the developing countries dependent on each foreign direct investment so much, because it possesses also relatively huge capital to establish domestic firms and invest abroad. The investment abroad starts to have each year a greater importance and the Czech Republic can be compared each year more with the most economically stable states in the world.

### **The impact of Greenfield investment on employment and wages in Central Bohemian region**

The selected firm, TPCA invested 85 mil. EUR between year 2001-2005 to establish and construct a completely new production hall of car brands Toyota, Peugeot, Citroen. The production started in 2005, February and the company has currently around 3200 employees. The registered unemployment rate in the Central Bohemian region decreased from 8.8% in year 2004 to 5.7% in year 2007. Simultaneously the gross wages in the region increased from 21.000 CZK in 2004 to 24.000 CZK in 2007.

The Greenfield investment has generally a greater impact on employment in the region, is stimulated more generously by the government and creates vacancies in supplier companies. This exact investment however did not create so many indirect vacancies, because the company remains loyal to its traditional suppliers.

### **The impact of Brownfield investment on employment and wages in Central Bohemian region**

The Brownfield investments don't have so huge impact on unemployment rate in the region. Generally, the foreign direct investors acquire the company or establish joint venture to extend their markets and they reorganize the work according to their standards. This is case of majority of all after revolution privatised companies and of Skoda in Mlada Boleslav. The total of employees remained almost all the time. The new shareholder VW reorganized the work and structure and cut the costs. Thanks to these actions, Skoda started to be very profitable and between 2004 and 2007 there was increase of 7.000 more new employees. The wages at that time decreased -5000 CZK, but with longer time in the company, the workers got higher wages. It was at the same time when TPCA started to produce their cars in the same region. The wages since 2007 increased in Skoda and since 2010 are again above the average in Central Bohemian region.

The new investment of TPCA caused in this region a lack of quality labour force for both companies and tensions are thus apparent on the amount of gross wages. Both companies have to reward employees accordingly to avoid high fluctuation of employees' rates.

## **Conclusion**

This thesis clarified the relationship of foreign direct investments inflow to the Czech Republic and employment from different aspects of view. The FDI inflow was not so high in the 1990's, because of the privatisation of former-state enterprises for undervalued prices and was oriented just to sectors which were not in hands of state. However, the MNE helped the Czech economy and labour market to change and catch up the economies of Western Europe and join the international trade organization and EU in relatively short time after the Velvet Revolution. The relationship between FDI and employment until year 2000 (approx.) has to be investigated separately, because it is necessary to take in account the transformation of economy from socialist system, where the unemployment practically didn't exist, to market economy, where the unemployment is defined by the supply and demand on the labour market and government incentives.

Based on knowledge received when writing this thesis, the main problems connected to unemployment are quickly changing demand for skills of workers, constant modernization and automation of work, which is quite difficult for the older workers. Another issue is that the younger generation is not interested and qualified enough in traditional industries such as food processing, manufacturing, automobile, textile industry etc. The new investors who take



advantage of investment incentives usually come to the conclusion that in the CR is not enough qualified work force in the sector they need. The investment incentives appear to be rather not efficient, because the requirements on firms to invest are too high and firms that could invest so huge amount have special requirements on the access to raw material/customers/infrastructure/human capital. This is underlined by the fact that the cities and towns with easy access to all these attractive articles don't have issues with higher unemployment. The worst situation is in regions where workers don't match the requirements of employers (former agriculture, mining and textile or chemical industrial regions). The new generation leaves these regions, because of no job opportunities and the lack of appropriate labour force discourages the investors and employers establish branches there. This could deepen the regional differences, if the Czech Republic doesn't find appropriate investors in size and field of work. Other investments supported by state and Czech Invest fail, because they breach ecological rules or pollute too much the environment (Panasonic factory near Zatec).

The analysis of development of FDI inflow and employment on national and regional level indicated the low influence of FDI on employment, because of the similarities of shapes of trend curves in graphs of unemployment rate in regions with highest and lowest unemployment rate. The conclusion of this chapter is that the unemployment rate is dependent predominantly on the whole economic situation, the evolution of GDP, inflation, gross or minimum wages, the currency rates etc. This chapter also indicated a lag with which the amount of FDI could influence the unemployment rate.

The chapter Development of FDI inflow and employment in selected sectors confirms the hypothesis that the FDI impact on employment rate has certain lag. The lag is estimated for 1 year to raw materials extraction and manufacturing industry, and 2 or 3 years respectively for sectors of trade, services, catering and hospitality and financial intermediation.

The regression analysis disproved the initial hypothesis of this work that the unemployment rate is lower when FDI is higher. After the previous analyses, this result was taken as the most probable from all the possibilities I chose. The lag of impact of FDI on employment was selected to 2 years. The probability of my result could be consolidated with table 11, created by Mehmet Mucuk and M. Tahir Demirsel who summed up the results of works on similar topics in their article The Effect of Foreign Direct Investments on unemployment:

Evidence from panel data for 7 developing countries in Journal of Economics, Business & Finance, Vol. 2, Issue 3, 2013. Their table shows variety of results and methods used, but it is

focused on developing countries. The more the country is developed, the less impact the FDI on employment has. It is also true that the OLS method is not the only and the best to estimate such a relationship.

**Table 1: Selected Empirical Studies on Foreign Direct Investment – Unemployment Nexus**

Authors	Country	Period	Methodology	Conclusion
Craigwell (2006)	English and Dutch Speaking Caribbean Countries	1990-2000	Panel Data Analysis	FDI to unemployment
Jayaraman and Singh (2007)	Fiji	1970-2003	Cointegration, Granger Causality	FDI to unemployment
Massoud (2008)	Egypt	1974-2005	TSLs Regression Technique	FDI to unemployment
Ajaga and Nunnekamp (2008)	USA	1977-2001	Panel Cointegration Approach	FDI to unemployment
Hisarcıklılar et. al (2009)	Turkey	2000-2007	Generalized Method of Moments (GMM)	FDI to unemployment
Aktar and Öztürk (2009)	Turkey	2000-2007	VAR Analysis	No causality
Karlsson et. al (2009)	China	1998-2004	OLS Technique	FDI to unemployment
Waldkirch et. al (2009)	Mexico	1994-2006	Generalised Method of Moments (GMM)	FDI to unemployment
Lipseý et. al (2010)	Indonesia	1975-2005	Probit Model	FDI to unemployment
Saray (2011)	Turkey	1970-2009	ARDL Test, Error Correction Model	No causality
Yaylı and Değer (2012)	27 Developing Countries	1991-2008	Dynamic Panel Data	FDI to unemployment
Habib and Sarwar (2013)	Pakistan	1970-2011	Johansen Co-integration Approach	FDI to unemployment
Göçer et. al (2013)	Turkey	2000-2011	Boundary Test Approach	FDI to unemployment
Bakkalcı and Arğm (2013)	Turkey	1991-2011	Causality Tests	No causality

Table 11\_Selected Empirical Studies on Foreign Direct Investment – Unemployment Nexus

The case studies of Greenfield vs. Brownfield investment and their impact on employment in region proved rather higher impact of Greenfield investment. It could be caused by the nature of Brownfield investments after the revolution, when many foreign enterprises acquired or joint with the formerly state owned enterprises and changed the structure of firms or invested in new technologies and know-how. The new concept of Brownfields which is propagated by Czech Invest consists in making use of already existing production halls or offices, which could of course have similar intensity of impact on employment as the Greenfield investment. As the last thing, I would like to underline the impact of FDI on wages in the region, which increased significantly after the entry of new MNE, when the demand for qualified works increased.

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